ECONOMIC ANALYSIS: AN ISLAMIC PERSPECTIVE

VOL II: MACROECONOMICS

MABID ALI AL-JARHI

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ECONOMIC ANALYSIS:
AN ISLAMIC PERSPECTIVE



VOL II: MACROECONOMICS

A Double Revolution Against
Neoclassical Economics And Market Capitalism



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**الحمد لله والصلاة والسلام على رسول الله وعلى
أله وصحبه ومن والاه**

All praise is due to Allah. May He bestow His blessings on His Prophet, His family, his companions, and his followers.

We want to start by dedicating the two volumes of this book to our parents. My late father, Ali Mohamed Mahmoud Al-Jarhi, a long-time member of the lower house of the Egyptian parliament, gave us the example of being enlightened, educated, and aware. He had been the decisive element in motivating me to persevere in life. His faith in his eldest son was enormous. He had a dream indicating a promising future for his son. He always narrated his dream. His belief in his eldest son was a strong urge to excel. My mother, Nafissa Mabid Ibrahim Khalifa Al-Shiemi, was dedicated to her family. Despite being the daughter of the leading figure of his family, she was modest. She manifested her generosity in keeping her house open to relatives. My step mother, Suad Hussein Ishaq, who joined the family a few years before our mother's passing, was an education superintendent who supervised the schools in our province. She was successful in discharging her official and family duties with ease. She confronted the challenge of raising her own six children as well as her five stepchildren after the passing away of our mother with perseverance.

Arabs say much of their pride to their tribe. At a time when tribes practically disappeared through urbanization, our grandfather, Mohamed Mahmoud Al-Jarhi, told me that we belonged to the Al-Abbar branch of the Al-Awaqeer tribe who migrated from the northern part of the Arabian peninsula at the time when Muslims faced existentialist threats from Europe in Andalusia and North Africa. They were part of Bani Helal, whose diaspora firmly imprinted North African folklore, with poetry chanted in coffee shops. One of their decedents is Omar Al-Mukhtar, who led the liberation movement against Italian colonialism in Libya. Our grandfather mentioned that he had cousins under the family name of Ezzeddine, living in the Bani Suef Province, the next southern province to ours. Our tribal heritage continued to be a source of pride and moral values to stand against foreign occupation and resist domestic oppression.

During our youth, We heard stories about our uncles demonstrating to protest the British occupation of Egypt and its unethical alliance with the royal family. My uncles often went as rebels in political prisons dedicated to the unruly opposition. Under the constitutional monarchy, they segregated political opposition from outlaws. Political prisons had better facilities and allowed inmates newspaper access and mail service. We followed their example in our youth when We participated with high school students in our neighborhood. We regularly demonstrated against British occupation and the amount of corruption that existed then, which was minuscule compared to what Egypt has now under the junta rule. However, such political involvement abruptly ended with the second military coup led by Jamal Abdul Nasser, Egypt's father of military rule. He established governance controlled by security services and transferred political prisons into human butcheries, using torture and employing torture experts from East Germany. He pioneered the army's control of all aspects of life in Egypt. He used the intelligence service to entrap his political enemies. His traditions have been revived and expanded by the current military government, with the lion's share of the army in the Egyptian economy. Thanks to long military rule, Egypt is declining socially, economically, and politically. While the extent of the decline is horrifying, the junta rule continues to survive due to immeasurable help from former colonialist powers, notably the USA, the UK, and France, as well as their neighboring client States.

My moral duty is to thank those who helped in the lonely, slow, and thoughtful efforts to write this book. We are indebted to Allah for His inspiration and the perseverance He gave us during writing this book. We often had to lay down with closed eyes to think about a perplexing problem; with His inspiration, fresh ideas started flowing. Inspiration is not revelation. The former is human, and the latter is divine. That is why we remain responsible for our ideas.

We carefully surveyed the literature in every book section to build further ideas and analysis and present an Islamic perspective. We owe enormous gratitude to all the authors of the book references. Special thanks are due to Steve Keen (2011). His critical survey of neoclassical economics paved the way for me to build up our alternative analyses. The number of references from which We benefited approached 1800. There is no practical way to thank their authors individually.

While remembering the dear relatives who passed away, the first person to come to our mind is our grandmother on our mother's side, Farhana Khulaidi Ahmed, who financially supported our university education. Our parents, may Allah have mercy on their souls, have always considered us unique and worthy of giving extra encouragement to excel.

Our wife's selfless efforts to keep us in comfort while writing and to accompany us during an extended diaspora period have been one of the main elements of our survival.

We are also grateful to our elementary and high school teachers, who imprinted our minds. Our university teachers in Egypt have been very influential, especially the late Dr Ahmed Hosney of Cairo University. May God grace his soul with countless blessings, whose death at a young age was a significant personal loss. He was the first economist to impress us with his analytical ability. Mr Qutb Al-Huraishy, the Librarian of Al-Fayoum Municipal Library, introduced us to the most intriguing Arabic classics by Muslim scholars at a young age. Through this library, we learned about Ibn Rushd, Ibn Tufail, Al-Shaibani, Al-Khwarizmi, Al-Farabi, Ibn Alhaitham, Ibn Sina, Al-Razi, Albairuni, and other giants who established the foundations of modern sciences. While strug-

gling to learn English, we were surprised those authors' books had been used as Arabic textbooks in European universities for nearly 300 years. We were astonished that the Europeans taught Alrazi's books in Arabic, as some Arab countries still teach medicine in English today.

During our studies at Cairo University, our close friends included Zeinhom Kabis, a self-made honors student whose beautiful mind qualified him to be the most promising among his colleagues. He accompanied us to the University of Illinois and taught at Canadian Universities after graduation until he passed away at a young age. Samir Toubar opened his Cairo residence to colleagues at Cairo University. He is one of the grandchildren of Hassan Tubar, the leader of the resistance against French occupation in Manzalah. He received a PhD in economics from Pittsburgh University. He later became active in politics as a member of the Economic Committee of the ruling party during the time of President Mubarak. We predicted a bright future for him in Egyptian politics. Unfortunately, he died at a young age. Another bright colleague is Rifaat Al-Remiessy, who also obtained a Ph.D. in economics and served as a member of the Parliament representing the ruling party during the rule of President Mubarak. He enjoyed charisma and popularity among voters and had the potential to become a political leader, but he died young. Another Cairo University colleague is Medhat Hassanain, who obtained a Ph.D. in business administration from the University of Pennsylvania and served as a minister of finance from 1999 to 2004. Sultan Abu Ali is a Cairo University colleague who obtained his Ph.D. from Harvard and served as a minister of the economy. His wife, the late Hana' Khairuddin, was another colleague who obtained her Ph.D. in economics from MIT. There are more colleagues than we can remember to whom we owe love, friendship, and encouragement.

Our early colleagues in the field of Islamic economics have given us their utmost support. We are grateful to H.E. Prof. Muhammad Omar Zubair, the late president of King Abdulaziz University. His kindness and encouragement were central to our attention to Islamic economics. We are also grateful for our contemporary scholars of Islamic economics, including Anas Zarqa, Monzer Kahf, the late Muhammad Nejatullah Siddiqi, Omer Chapra, Muhammad Fahim Khan, Khurshid Ahmad, and Ausaf Ahmad. On the Egyptian side, the most notable mention goes to Abdulrahman Ahmed Yousri, a University of Alexandria faculty member. He focused on Islamic economics and offered

essential contributions to its history of economic thought. Shauqi Dunia of Alazhar Universit, the most prolific writer in Islamic economics, had similar contributions in the same field.

When we were at UCLA as students, we became curious about a group of students who called themselves *radical economists*. We attended some of their meetings on campus but did not fully benefit from their ideas until We met one of them, Steve Keen. We owe Steve his helpful critique of neoclassical economics, which inspired our thinking. We also consider his book: "Debunking Economics, 2011" a necessary complement to any curriculum in Islamic economics.

During our studies at UCLA, We benefited from the advice of Prof. Armen Alchian regarding the best fields of study for becoming a good economist. We owe much to his advice, which we followed, even when We moved to USC. We are also thankful to the late Prof. Earl Thompson, under whom we studied monetary economics. He was instrumental in USC offering me a teaching assistantship until we finished our Ph.D. D. We would like to make particular thanks to Prof. Axel Leijonhufvud, who influenced our thinking on Keynes and Keynesians as well as on macroeconomics. When his book, Keynesian Economics and the Economics of Keynes, was still in mimeographed form as a Ph.D. dissertation, we had the privilege and the honor to read this draft. We must admit that it influenced our thinking regarding how to react to the doctrine we received. Special thanks are due to Prof. Milton Friedman, who influenced our thinking on optimal monetary policy. We also had the honor of meeting Prof. Paul Samuelson. Prof. Buchanan taught us public finance and was our mentor in this field. We are also grateful to Alice Vandermuelen, who taught us about public finance. We owe much to more UCLA faculty, whose mention would require more than this space.

At USC, We have benefited from the knowledge of Professors Michael DePrano, Jeffery Nugent, and the late John Elliott. Many more names should be on this list of USC faculty. They all have a special place in our hearts. We are also grateful to our former USC colleague, Glenn Vice, for helping us learn how to use the electric typewriter. He guided us in using the touch method, which was instrumental in getting our Ph.D. dissertation done, as well as this book and other articles.

When We started teaching Islamic economics, the vision that the teachings of Islam related to economic activities can be taken holistically to construct a theory that provides acceptable rationale and to form a credible economic system with an underlying methodology and theories was the first to inspire us. It was then paradoxical to find that Jewish and Christian intellectuals did not see the same in the parallel teachings found in their religions. We have speculated on the reasons behind such a lack of vision.

Once We realized the scarcity of analytical teaching material in the field, We started composing our lecture notes. The lecture notes continued to evolve with time. Students played an essential role in this evolution. When We joined INCEIF (The Global University of Islamic Finance) in Malaysia) We mutually agreed with the university about transferring the lecture notes into a textbook. That has proven to be a challenging job. We could not deliver the planned book within two years, as promised. After moving to the Ankara Social Sciences University, ASBU, in Turkey, We resumed following our ambition to write the book but avoided commitment for a specific time. We finished the first volume on microeconomics, which ASBU and the Union of Participation Banks published on an open-access link. We hesitated to offer the book to international publishers, who would put a price that would be exuberant to most students in the Third World. We are grateful to ASBU and the Union of Participation Banks in Turkey as the publishers of the first volume.

We are grateful to INCEIF for motivating us to start writing the book, as well as to our students who took the initiative in the classroom while we were teaching to challenge some ideas in a positive and guiding manner that contributed to the depth and breadth of the book. We are grateful to Hamad Bin Khalifa University, HBKU in Qatar, Social Sciences University of Ankara, and Marmara University, who gave us the generous opportunity to write this book while teaching the same material in draft form.

We are also grateful to our son Muaz, the software engineer who did the frequently required troubleshooting for our computer, guided us through moving our charts from PowerPoint to Microsoft Word, and supervised the installation and proper use of tools for numbering equations and graphs. We are also grateful to our son Mohammad. a software engineer who previously worked with Google but is currently working on his independent project to

serve the Muslim community. He supplied us with the latest hardware and software. He singly reviewed the final copy for order and consistency. We are sure there are many others we have missed, but deep in our hearts, We can feel their names engraved with light.

As Muslims, We consider the favor so graciously advanced by teachers beyond gratitude. It is Islamic folklore to say that teachers are so close to being prophets. We have been so lucky that this statement represents our feelings towards our teachers.

Islamic economists must address many more ideas, but we will leave them for future editions, insha'a Allah. We are hopeful that our students will carry on the torch. The road to learning is long and endless. We are grateful to Allah for enabling us to cover the distance.

To Allah, all praise is due. He knows best, and he is the ultimate vector.

الحمد لله، والله أعلم ولا غالب إلا الله

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INTRODUCTION TO THE FIRST VOLUME

BEHIND THE IDEA OF THIS BOOK

We were honored and privileged to meet and know some important Islamic economics pioneers in the late seventies. To mention only examples, as our memory permits,[1] Ahmed Abdulaziz Elnaggar, Anis Ahmad, Ausaf Ahmad, Eissa Abdu, Khurshid Ahmad, Muhammad Fahim Khan, Muhammad Nejatullah Siddiqi, Mohamed Abdul Mannan, Mohamed Anas Zarka, Mohamed Sakr, Mohamed Shawqi Al-Fangari, Monzer Kahf, Korkut Uzel, Muhammad Oumer Zubair, Muhammad Umar Chapra, Muhammad Uzair, Munawar Iqbal, Sabahattin Zaim, Sultan Abo Ali, Syed Haidar Naqvi, as well as many others. We met many during the First International Conference on Islamic Economics (Makkah, 1976). We presented our article on "the Relative Efficiency of Interest-Free Monetary Economies, the Fiat Money case" on this occasion" (Al-Jarhi, 1976)[2]. By the late seventies, We had already joined the Islamic Development Bank, the IsDB, when we struggled for the first time to find out how to apply Islamic finance in realistic situations. The special relationship

1 Alphabetically ordered.

2 This was a humbling experience, as the audience was mostly religious scholars and the spoken language was Arabic, which was particularly challenging after having spent 13 in the USA. The nature of the conference and the variety of attendants did not allow for a technical discussion of that paper, which appeared to be too cryptic and esoteric.

We enjoyed with Dr. Ahmed Abdulaziz Elnaggar and Sabahattin Zaim and the guidance of HE Ahmed Mohamed Ali, the Emeritus IsDB President, have influenced us.

In 1977, We led the design of a scheme to finance trade among Muslim countries, using Murabaha as the primary vehicle. At the time, the paid-up capital of the IsDB had been entrusted with conventional banks through the Saudi Arabian Monetary Agency, as Islamic banks were not available then. Our idea was to use liquid resources to finance trade among Muslim countries. Such funds would generate non-interest returns. Algeria, which imported coak, and Türkiy, which exported it, concluded the first historical deal. The agreement set the desired rule and pattern, which later became a basis for the "Islamic Trade Finance Program." The program gradually evolved into an institution that started as a department and later became a member of the IsDB Group.

This incident had an imprint on our thinking. We faced the challenge of showing some of the top brass of the IsDB the subtlety that Murabaha is significantly different from interest-based lending. The choice of Murabaha does not imply that Islamic banks should use it exclusively as a mode of finance out of the twenty available contracts. A more critical question came to our mind: *how best to prohibit Reba or interest, and for what rationale*? These two issues have taken a central part of our thinking since then. A third related issue is still being worked on, and an answer is yet to be provided: With many Islamic modes of Islamic finance, should there be an optimum combination at the aggregate level? Would such a combination result from market exchanges or require regulatory interference?

Some pioneers mentioned above were faculty members at King Abdulaziz University in Jeddah. Most of them worked in the *then International* Center for Research in Islamic Economics, which later changed its name to drop the word "international." Our thinking at that time focused on two issues. The first was how to apply the prohibition of Reba. Imposing a zero interest rate by any means appeared as a trivial solution. Forcing a zero-bound rate through continuous deflation raised many issues, which will be discussed later in the book.

The second issue that occupied the center of our thinking has been whether interest-based lending carries inherent risks and inefficiencies and whether non-interest-based finance would bring in some advantages or at least help



to avoid the inefficiencies associated with the interest rate. Fortunately, We found out some crucial aspects of this issue. First, even though perfect-market models mask the disadvantages of the classical loan contract, some economists still found sufficient reasons for apprehension. Second, once a radical shift from perfect market models to search models happens, further inefficiencies of conventional finance will appear. Third, we realized that analyzing such an issue would require detailed specifications of an Islamic economic system, which we volunteered to do.

Our paper (Al-Jarhi, 1981) introduced an Islamic macro-model to answer many questions of this kind. Still, it lacked details, and some comments sidetracked to side issues, like the system of total versus fractional reserves. Several of our latter writings attempted to put more details into the picture. Using the neoclassical Hicksian IS-LM structure (then falsely attributed to Keynes). That does not make our model neoclassical. It is only a technique to demonstrate general equilibrium.

While working at the Arab Monetary Fund, We led a team from the Arab Fund for Social and Economic Development, the Arab League Economic Department, and OAPEC to compose the *Joint Arab Economic Report*, JAER. We also, jointly with the late colleague Rafiq Swailem, presented some options regarding a pan-Arab payment settlement scheme to the Council of Arab Governors of Central Banks. During the preparations and discussions, we sensed the fear in the GCC countries that deficit countries might face difficulties in paying their outstanding balances and interest. We offered the idea of using equity-based financial instruments, explained later in the book, to avoid delinquencies. Being mostly secularists, They ignored the idea.

The significant change in our thinking started when We worked in training Islamic banks' employees. We realized then that the tendency to mimic conventional finance was persistent. A new school of thought has been forming from members of Islamic banks' Shari'ah boards that became increasingly specialized in fishing on Saturdays[3]. It directed our thinking to further questions.

3 When the descendants of the children of Prophet Jacob ﷺ, joined Prophet Moses ﷺ out of Egypt, they passed through several tests. The most important to my mind was that fish disappeared from the sea on weekdays, but came in flocks on Saturdays. Meanwhile, they were ordered not to work on Saturdays. The ingenious ancient Arabs developed a ruse in order to fool God. On Fridays, before sunset, which is the starting moment of Saturday, they

First, does Islamic finance have an economic rationale? Second, would the advantages of Islamic finance be sufficiently convincing to warrant its honest application? The answer to the first question was collected from several of our writings in our paper on *the economic theory of Islamic finance* (Al-Jarhi, 2017b). The answer to the second question was a paper on *the Economic theory of Islamic Finance Regulation* (Al-Jarhi, 2017a).

Our teaching of Islamic economics to graduate students started with a short Ph.D. course in Iran. We then moved to Qatar and then to Malaysia. From teaching, We benefited from developing and evolving some of the central ideas in this book. During the 11th International Conference of Islamic Economics and Finance in 2016, we met Steve Keen[4] for the first time. We attended his workshop on *debunking economics*, held at the IIUM in Kuala Lumpur, through the generosity of our friend Mohausd Aslam Haneef, then the Director of the Center of Islamic Economics at IIUM.

When We started teaching Islamic economics, We introduced neoclassical economics. Nevertheless, later, We realized that this material served little purpose. We thought of teaching the critique to neoclassical economics. However, many contributors to the literature have offered much material which has been sidelined or ignored. It would take another book to survey such counter-orthodoxy. Meeting Steve Keen and reading his book *Debunking Economics* brought an easy solution. As a start, We started teaching his book as a companion to our always-expanding lecture notes. Later, when We started preparing to find the ASBU International Center of Islamic Economics and Finance (ASBU/ICIEF), We added a course on the critique of neoclassical economics, using Keen's book. It became a prerequisite for our Islamic economics courses.

dug deep holes by the shore. On Saturdays, while they were sitting home, the tide brought the fish ashore, which fell into the holes. On Sundays, they collected their catch. They claimed they did not fish on Saturday. The Almighty, cursed them for such a naïve ruse, which involves both transgression as well as a miserable attempt to fool their Cherisher. We have had this coined "fishing on Saturdays" to mean ruses that make deeds apparently compliant, while they are not indeed.

4 Steve Keen, an old member of the school of radical economists, is a Professor of Economics & Finance at the University of Western Sydney, Australia. In 2010 he won the Revere Award from the *Real-World Economics Review*, for being the economist who most cogently warned that the economic crisis that began in 2007 was imminent. He is a staunch critic of mainstream economic thinking, and author of the influential blog www.debtdeflation.com/blogs.

The summary of many of Steve Keen's surveyed points of the counter orthodoxy found their way to our lecture notes. However, Keen's book became and will remain part of our recommended curriculum for any program in Islamic economics in which we would participate. We strongly recommend that whoever uses this book as a textbook uses Keen's book as a companion or, even better, to teach it in a separate course.

THE THIRD GENERATION OF ISLAMIC ECONOMISTS

The *first generation* of Islamic economists has mostly imitated Fiqh using textual and historical analysis. Some even turned into Faqih in terms of material and style. It encouraged some Faqih to write books on Islamic economics, which boiled down to Fiqh material. The *second generation* attempted to use economic analysis tools but has been overwhelmed with the speed at which neoclassical economics as a discipline has developed, how it evolved into an almost religious creed, and how it suppressed the critique of the received doctrine. We realized a new generation of Islamic economists with different qualifications is needed. They must simultaneously master conventional economics, neoclassical critique, and Islamic economics. The ability to establish a helpful dialogue between Islamic and conventional economics would be one of the results. Meanwhile, they can practice economics professionally by avoiding neoclassical faults and observing Shari'ah rules based on acceptable rationalization.

Several economists have highlighted Many of the inadequacies of neoclassical economics. The most important contributions of this sort appeared in a survey by Steve Keen (Keen, 2011). Understandably, Islamic economics can be a revolution in the discipline if it resorts to an analytical approach, using economic tools of analysis rather than textual and historical analysis, both found in Fiqh and the writings of the first and second generations of Islamic economists. Some economists may wish to join the long line of critics of neoclassical and even neo-Keynesian economists. Some may also wish to reconstruct economic theory, provided they stay professional and use rigorous analysis.

Additionally, through several crises, market capitalism has proven that it is a failure. Nevertheless, no one succeeded in providing a sound alternative. Several shades of Marxism failed to impress, whether communism or socialism or mixed with some market capitalism. An Islamic economist would be required

to provide a new institutional arrangement that would fulfill the purposes of Islamic economics, i.e., that would make it possible to carry on economic activities without using interest-based borrowing. It may not sound easy. However, we have found a simple way that does not require the naïve solution of reducing the interest rate to zero. In other words, being charged with two revolutions at the same time: one against neoclassical economics, which entails developing new micro and macro, and one against market capitalism by providing an institutional structure that provides sustainable growth and stability, the job of an Islamic economist has been made extra hard. This, in a nutshell, is the mission of Islamic economics.

This textbook is a part of a program for the benefit of the third generation of Islamic economists, which may include the following:

- Conventional economists wish to give more attention to new reconstructions, especially those that exclude perfect competition and include reasons for holding money, like search costs. An orientation towards disequilibrium analysis would be most important. The idea of an economic system always at a stable equilibrium has failed theoretically and empirically.

- Those who wish to keep in mind the Critique of neoclassical, Keynesian, and neo-Keynesian economics in detail, without losing sight of Keynes' valiant attempt to start a revolution and the neoclassical success, mainly led by John Hicks in responding with a counterrevolution may hopefully find inspiration in this book.

- Economists with a strong dose of Fiqh, including an introduction to Fiqh, Usul Alfiqh, Fiqh Almuamalat, the Islamic creed, and ethics, may be interested in the book material. That must include critics of Shari'ah board members who use ruses in the manner pioneered by ancient (Arab) Jewish scholars but condemned by the Qur'an[5].

- Those who wish to have a heavy dose of analytical Islamic economics as an alternative to conventional doctrine can benefit from this book.

5 A fact that is not often recognized that ancient Jews were linguistically and ethnically Arab. Their fondness of making ruses has influenced the thinking of some Shari'ah scholars in different times.



- Those who perceive Islamic finance as having a solid economic rationale. And are concerned with the *economics of Islamic finance* will find the material of this book suitable.
- Those who are willing to have an increased dose of mathematics (linear algebra, real analysis, stochastic and differential calculus), statistics, and quantitative analysis can benefit from this book.
- Those who are willing to do research on testing the many, still untested hypotheses made or to be made by Islamic economists can find many hypotheses to test.

The use of the book hopefully would produce professional economists with the tools and the training that enable them to carry out an enlightened dialogue with their conventional colleagues. In addition, they can take forward positions in policy-making institutions and cast their shadows on actual decisions. We invite the third generation to contribute to this discipline and provide economic analysis that involves money, production, government, friction, etc. They are also invited to offer a critical analysis of our proposed economic system that will add valuable new aspects to our macroeconomic model. Many troubling concepts in conventional economics wait to be handled by Islamic economists, like equilibrium, aggregate demand, aggregate supply, the theory of production, the theory of the firm, financial market efficiency, and ordinary arguments.

The Islamic economics response to the received doctrine must avoid slogans and even unreasoned rejection, whether partial or total. When rejection of some part of the neoclassical theory is justifiable, Islamic economics should provide an alternative analysis that makes a difference in content, results, and policies.

This textbook has been prepared under a unique program to establish *ASBU International Center for Islamic Economics,* which has become a new institution attached to the *Ankara sosyal bilimler universitası*, ASBU, that offers graduate degrees with double majors in economics/Islamic economics and finance/Islamic finance. The program adopts the following ideas:

First: A good but concise survey of the cumulative criticism directed to conventional economics since the early twenties supplemented by teaching Keen's

book (2011) and similar writings. Economists have ignored much of it by economists and have not yet taken a worthy place in journals or classrooms.

Second, economists teach conventional economics in the program concerning the recent (and not-so-recent) writings that attempt to avoid the inadequacies of the received doctrine. The new material minimizes the orientation towards perfect models. New models that escape the neoclassical framework expose more weaknesses of mainstream economics and point to the advantages of Islamic economics. However, there is a long way to rebuilding mainstream economics to eliminate the many problems we all know.

Third, teaching analytical Islamic economics that leaves most of the textual and historical analysis to religious studies and sticks to economic analysis tools is done while emphasizing certain essential aspects.

- Muslims have not spent enough time elaborating on two of the most essential pillars of Islam, and throughout their history, they ignored them mostly. The first is the implementation of intellect or *'aql*. A good reading of the Qur'an indicates that using intellect is a religious duty. Its protection is, therefore, mandatory as one of the religious objectives or *maqassed Alshariah*. Muslim intellectuals should not close the door to due diligence or *Ijtihad*. Falling into an institute of strict imitation would be against the spirit of Islam. While Muslims are not supposed to innovate in rituals or acts of worship, *Sha'aer, Ebadat*[6], they are free to innovate in the details of the rules or Shara'e'[7] related to our daily life, which Qur'an and Sunnah leave without detailed specifications as a signal for further development through the intellectual due diligence.

- The second ignored tenant is Shura, which is the right of State citizens to choose their rulers from amongst the most qualified. The Umayyads have set it aside. Since then, it has no longer attracted wide attention from the Muslim masses at the political level. Intellectually, writing about Shura can bring authorities persecution of intellectuals by authoritarian regimes. However, some scholars have attempted to present a contemporary structure, opening the door for further contributions (El-Shinqiti, 2018). At the applied level, we can recognize only a few Muslim countries

6 (شعائر، عبادات)

7 (شرائع)

with some civil rights to choose from, practice accountability, and, when necessary, dismiss rulers and political representatives, like Turkey, Indonesia, and Malaysia. However, generally, Muslims have fallen under despotism with no right to choose their rulers. Moreover, some Muslim rulers claim certain types of *Welayaat* or divine rights to rule. We will deal with this issue in more detail later.

- Any economic system requires an underlying political system. Without political freedom, economic activities become handicapped. Most totalitarian regimes under which Muslims live practice market capitalism, allowing for limited economic freedom in an environment of rampant corruption but disallowing political freedom. In authoritarian regimes, the ruling class establishes supporting interest groups that disfavor the anti-religious and reward them through corruption with economic gains. We expect income and wealth dispersion to widen under such regimes. That is why, in Islamic economics, defining our political system at the start is mandatory. In this regard, we need to ignore the debates among Fuqaha' about the divine right of some groups to govern and extract the political values that are embedded in Islam to use as building blocks for our political system. Such values are required to set the type of property rights, enforce them, establish economic rights, establish equity rules, etc. Building Islamic economics in Shura's absence contradicts pressured economic freedom and justice. Under totalitarianism, we can have only some type of fascist economics.

- Fourth, Religious texts are open to interpretation. Non-economists' interpretation of religious texts related to economic activities should be considered unsatisfactory. We offer an example from Islamic finance. Shares Murabaha[8] is a way that some Shari'ah board members of Islamic financial institutions have ingeniously developed as a finance product to finance *short-term* trading in financial assets or speculations potentially destabilizing the economy. Critics of conventional economics call this type of finance the *Ponzi Scheus* to emphasize its harmful effects. A lack of understanding of the economic consequences of activities becomes counterproductive. We can, therefore, agree on two essential rules. First, economists must have the upper hand in determining the ultimate con-

8 (مرابحة الأسهم)

sequences of economic actions. In addition, as we economists attempt to draw institutional arrangements, policy rules, and rationalizations to fulfill the Islamic teachings in economics, we must remember that such constructions are only our human product in interpreting the divine rules. Our constructions are subject to discussion and debate and are not divine.

- Fifth: This calls for looking into a false claim, which some Islamic economists often make, that the Islamic economic system is perfect. Perfection can only be attached to divine rules but not to their interpretation. For example, if we suggest a monetary structure and policy rules in this volume as our interpretation of the divine rules. No matter how ingenious, our interpretation would remain human, subject to discussion, and far removed from perfection[9].

- To tie a few things together, since divine rules are open to interpretation, and since human intellects perceive things differently with different perspectives, differences of opinions must be admitted. At the social level, we must institute an institutional structure for *group due diligence or ijtihad* through which society specialists choose a common ground for social affairs. It is about trying to register in our mind that the wisdom of Allah has been manifest in creating an imperfect man in an imperfect environment (marred, to say the least, with scarcity) with peculiar perceptions so that we struggle with ideas before finding suitable arrangements. The perfect God creates people capable of reaching different levels of but consistently below complete perfection in an imperfect world to see how they perform before resurrecting them in a perfect physical form and deciding who enters his perfect eternal Paradise.

- Sixth: In the field of Islamic finance, the program keeps instilling in students' minds the example of fishing on Saturdays that ancient *Arab Jews* have ingeniously developed as a ruse that AlQur'an has seriously condemned. While the Prophetﷺ [10] has warned us against imitating such

9 Take the example of the prohibition of Reba, which is a divine rule. It requires interpretation of how in fulfillment of such rule, money is created and financial resources are allocated. Any proposed institutioal arrangement would require consensus of scholars, to be accepted.

10 This is a piece of mini Arabic calligraphy that ontains a compact version of a full sentence saying "May Allow bestows His blessings and peace cupon the prophet.



methods or *Sunan*, his warning has been, as expected from humans, repeatedly ignored by Muslims in the field of finance.

- Seventh: Islamic economists have two alternatives. First, they may wish to criticize the received doctrine, sparing no energy to present their genuine economic ideas. We have examples, such as repeating slogans about the total rejection of conventional economics and establishing the "economics of Tawheed" without spelling out what it is or providing any economic rationale. Meanwhile, they would remain inadequately unequipped to have a fruitful dialogue with fellow economists or policymakers who have been understandably suspicious of everything contrary to conventional economics. Second, they can join the critics of neoclassical economists in reforming the received doctrine while presenting their analysis, interpretation, and rationale of the divine rules. Islamic economists have spent too much time on the first alternative; it is about time to focus on the second.

USING AS TEXTBOOK

This book is not in conventional economics. It is perhaps the first book in economic analysis from an Islamic perspective. Islamic economics shares with radical and non-conventional economists the perception of how faulty neoclassical economics is. The reader will find some of the critical ideas surveyed by Steve Keen, which are not a good substitute for Keen's book (2011).

This book would hopefully inspire other works containing more material on other topics. Islamic economists should not mimic neoclassical economics. Equally, it should avoid claiming that an Islamic economic system would be ideal. While the underlying principles of the system may come from divine sources, whose perfection is a matter of belief, the system itself would only be a human interpretation that is subject to debate and has no claim to perfection. While, and for the sake of argument, we may agree with neoclassical economists that exogenous shocks can cause crises, we carefully highlight some endogenous sources that would be equally precipitous. In addition, those who apply it, from citizens to policymakers, are humans whose practices would be far from perfect.

This book is composed of two volumes. An additional volume containing the teacher's manual with review questions and their answers would be an added

value. However, we are not sure that we can provide soon. The first volume includes the introductory chapters, our microeconomic theory of *floating disequilibrium*, the inefficiencies of an interest-based economic system, and the economics of Islamic finance. The second volume covers our macroeconomic theory, the Islamic economic system we perceive, the theory of public choice, the political system, and policy issues.

INTRODUCTION TO THE SECOND VOLUME

In the first volume, we wanted to end what appeared to be an endless engagement of Muslim economists with the neoclassical methodology. Such methodology has demonstrated to Muslims severe defects measured by our modern understanding of economics, which we share with humanity. Our understanding reflects the knowledge that is currently available to Muslims. On the top of our knowledge is the Glorious Qur'an, which has been preserved through a meticulous process of instantaneous post-revelation inscription and amortization during the life of the Prophet ﷺ, followed by a repeated review, comparing the inscribed with the memorized text. Being in Arabic, claimed by linguists (Ismael, 1989) as the ancestor of Indo-Germanic languages and the origin of speech, the Qur'an is easy to memorize and pleasantly chantable. No other text, claimed to be divine, has demonstrated this quality. The words and deeds of the Prophet ﷺ have been recorded in writing during his life and collected in six authentic books based on the critical examination of their authenticity. The six authentic books of Hadith introduced a new and innovative discipline of *Isnad*, based on the narrators' biographies and the assumptions that they are not infallible[11].

11 A small minority of Muslims, called Shi'ah, have collections of Hadith in their own books, based on assigning infallibility to narrators, when the happen to be descendants of the Prophet. Human limited infallibility is assigned exclusively by the Muslim majority only and exclusively to Prophets ﷺ. This does not exclude the possibility of Prophets making mistakes, which are later corrected by God.

The authenticity of the divine texts among Muslims inspired intense intellectual activities, such as using one's intellect because of a religious duty. The ancient Egyptian heritage of knowledge, later bequeathed to the Greeks during the Ptolemaic rule, became available to Muslims through translations and commentaries on Greek philosophy by Ibn Sina, al-Farabi, Ibn Rushd, and others.

Table 1: Examples Of Word Count In The Qur'an

Words (in Arabic)	Words (Transliterated)	Meaning	Appearing Times
الحياة	al Hayat	life	145
الموت	al Mawt	death	145
الدنيا	al-Dunya	mundane	115
الآخرة	al Akhira	the afterlife	115
الملائكة	Malaika	angels	88
الشياطين	Shayatin	demons	88
الرجل	ar Rajul	man	24
المرأة	al Mar'a	woman	24

Fear of contradiction between faith and science, which had Western roots as became apparent through the attacks on Ibn Rushd by Thomas Aquinas, which was motivated to protect the creed of Trinity from intellectual examination, disappeared from among Muslim intellectuals, thanks to the success of Ibn Rushd in his dialogue with al-Ghazali and the appearance of Ibn Rushd's book *Tahaful Altahafut*. Ultimately, Muslims led an inspiring intellectual movement, based on Tawheed as well as intellectual enlightenment, encountered by Europe through the continuous banging of the Eastern doors by military troops to stop the intellectual tide. The Muslim intellect had no choice but to engage with Western thinkers about their pushing the evolution of the human mind to a state of post-modernity that leads to a total void. Therefore, the long engagement of the Muslim mind with Western civilization was the first necessary step in protecting humanity from the final fall into the Western intellectual void of post-modernism. Its harbinger, the dialogue between the pioneer of the scientific method, Ibn Rushd, and other Western philosophers is an essential lesson of how mandatory it is to use the human mind on the one hand and how to use one's intellect to make reasonable judg-

ments about issues related to our universe, like the existence and the unity (*Tawheed*) of God. The answer provided by Muslim intellectuals has been triumphant in the East. It comes in two steps. The first is to define the attributes of the Supreme, which would exclude divisibility and multiplicity from the very beginning. The second is to consider the attributes of revelation.

Islam's most significant advantage over Western intellectualism is the divine text of the Glorious Qur'an, which has been carefully studied and protected by memorization and written records. It stands in contrast to the Holy Bible, which is a collection of narrations under the signatures of different individuals who purportedly witnessed the era of Prophet Eissa ﷺ in Palestine. The Qur'an is the direct word of God, and its superb quality indicates. Meanwhile, the Bible does not rise in terms of textual and linguistic structure to the sales level. The Glorious Qur'an is in Arabic, a language linguists claim to be the origin of Indo-European languages and human speech (Ismail, 1989)[12]. It has a potential for clarity and precision that other languages rarely have. The divine text demonstrates many aspects of perfection that have surprised Quranic scholars. Compared to the Quran, the text of the bible cannot measure up in the degree of eloquence. Muslims have attributed the significant difference to the multiplicity of biblical authors from different linguistic backgrounds and the possibility of tampering with the text at later stages to suit novel changes in the Church creed. A modest literal quality eventually follows.

The first volume presents a comprehensive critique of the neoclassical methodology. We have also proposed a distinctly different methodology for Islamic economics. Our new methodology excludes the homoeconomicus as a unit of analysis, with its extreme rationalism and heroic calculation in addition to utility and wealth maximization. We have replaced this unit with homo ordinarius, which is a satisficing person who has bounded rationality. To enable our analysis to provide policy recommendations with predictable results, we

12 Thyh Abdulaziz Ismael book, Classical Arabic, the ancestor of the Indo-Germanic languages and the Origin of Speech, is a monumental research work in linguistics. Prof. Ismael taught English linguistics at Ainshams University. She published her research in a book in 1989. The book is a comparative study of three ancient languages: Latin, Saxonic and Germanic. Her research has revealed that 80% of Saxonic and 75% of Latin verbs have an Arabic origin. In addition, both Saxonic and Latin languages' roots have an Arabic origin. The two languages roots represent only a fraction of Arabic reflecting a contraction relative to Arabic. While Arabic has been built over five levels, other languages have only four levels. The missing level in other languages is "sounds symbolism," from which speech originated.

insisted on the realism of assumptions and departed from neoclassical perfect competition to a world of imperfect information. We offered a new consumer and producer behavior theory within such an environment.

In this volume, we move to the macroeconomic part. We start by doing away with the typical agent as a unit of analysis together with reductionism. The insistence on microfoundations of macroeconomics is tantamount to making the latter an applied branch of the former. We will, therefore, postulate our macroeconomic behavioral functions independently from microeconomic behavior.

This volume introduces new and innovative ideas in the monetary and financial sectors. As the rules of Shari'ah prohibit the use of the classical loan contract, we offer our fundamental theory of Islamic economics as a stepping stone to invalidate the theories of interest. We will also introduce equity-based money instead of lending-based money, as our proposed model excludes using money for lending. The most innovative and radically different deviation from market capitalism is the switch from lending-based fiat money (that is, money issued for lending to the government and banks) to equity-based money (money issued for offering to the public through banks on a PLS basis to finance their consumption and investment according to 20 Shari'ah-compliant finance and investment contracts).

The interest-free model offers opportunities to develop the economy further, reduce taxation, and enforce social justice. This second volume, therefore, completes the revolution we promise against neoclassical economics and market capitalism in continuation of the revolution of Keynes.

A BRIEF WORD ABOUT ECONOMIC FREEDOM

In this book, we intend to conclude a revolution against neoclassical economics and market capitalism. Such critique of both is not unique as the literature is abundant. The failure of market capitalism has been demonstrated repeatedly through successive crises. In the first volume, we elaborate on our objections regarding neoclassical economics and the need for an alternative. Keynes and the other Western economists who attempted a different course have taken market capitalism for granted. We will explain that such an approach is incomplete. Both the theory and the system must be exposed. The

Marxist critique tries to bring down one of the essential human values: freedom. Hindering economic freedom is a source of exploitation. It is impermissible in Islamic economics.

Freedom is an Islamic value of particular importance that Muslims, unfortunately, have underestimated its importance. Muslims often display ignorance of certain essential parts of their religion. The Qur'an tells about a group of Muslims yielding their souls while having committed a grave transgression[13]: "While taking the souls of those who were engaged in wronging themselves, the angels asked: 'In what circumstances were you? ' They replied: 'We were oppressed in the land.' The angels said: 'Was not the earth of Allah wide enough for you to emigrate in it?" (Qur'an Ch. 4, Verse 97)

This verse clearly states that to accept oppression is a sin that is punishable by Hell, which directly says that freedom is an Islamic value. Some would be perplexed as they see the Islamic world, except for Turkey, Malaysia, and Indonesia, ruled by despotic governments. The answer to this is obvious: despotic governments in Muslim countries are implants by the major Western powers, which had been the old colonial masters. Such an apparent but little-spoken-of phenomenon is one of the manifestations of covert colonialism, as theorized by Albaraddoni, the famous Yemeni poet.

We cannot offer a theory or an economic system that justifies depriving citizens of their economic and political freedom. The Marxist approach of centralized economies would not be acceptable. Consequently, we have offered an interpretation of the Islamic economic system that includes a good measure of economic freedom. Prohibiting specific transactions, like charging interest on loans, debt and pure risk trading gambling, drinking, etc., is based on moral values and can be further justified by having external effects that must be internalized by those involved. In this volume, we have elaborated on the economic harms of the rate of interest and the economic analysis that justifies its exclusion. The prohibition of gambling, drinking, debt, and pure risk trading are for similar reasons.

13 إِنَّ الَّذِينَ تَوَفَّاهُمُ الْمَلَائِكَةُ ظَالِمِي أَنفُسِهِمْ قَالُوا فِيمَ كُنتُمْ ۖ قَالُوا كُنَّا مُسْتَضْعَفِينَ فِي الْأَرْضِ ۚ قَالُوا أَلَمْ تَكُنْ أَرْضُ اللَّهِ وَاسِعَةً فَتُهَاجِرُوا فِيهَا ۚ فَأُولَٰئِكَ مَأْوَاهُمْ جَهَنَّمُ ۖ وَسَاءَتْ مَصِيرًا "

We wish to emphasize that freedom is of utmost importance to Muslims. Those who accept oppression do not fully understand their religion. Economic freedom and the importance of private property are kept in our model as central ideas, although they may be defined and interpreted differently. While contemporary colonialism has taken in Muslim countries new forms, as it rules through Western-supported despots as well as settlers' colonialism, often with apartheid, we emphasize that freedom will remain a cherished value among Muslims.

Indeed, it is a little-known fact that Islam demands from its followers to guard their freedom and avoid oppression. More surprisingly, Islam mandates the use of intellect as a religious duty. The Qur'an has many verses that call for using the intellect. Even the central part of its creed, the absolute unity of God, or Tawheed, is supported in the Qur'an with logical arguments that presuppose intellect use by humans. Muslims, unlike Christians, have no religious authority to advise them to take their creed at face value and not to think about its unthinkable mysteries. It is what attracts people of high intellect to Islam despite its being a largely misunderstood religion in the West.

We can invite Western economists to read the Quran, from which they can take their cue regarding improving the economic system, which they have had trouble with for centuries. However, Western intellectualism has not sufficiently widened the scope of their intellectual freedom to investigate the Arab sources of knowledge. Their old battle with the Church, when it reigned supreme and suffocated intellectual freedom, still influences their unfavorable attitude towards religion. It is something that Muslims did not experience, which makes them less liable to ignore religion than their Christian counterparts. Shari'ah scholars, innovators in philosophy, astronomy, medicine, physics, and mathematics, exercised no authority over the public. The result is that Muslims have a wider choice of sources of knowledge, which provides them with a broader perspective of reality and the truth than Christians.

CHAPTER I:



THE ISLAMIC CREED VERSUS THE INTEREST RATE

THE ISLAMIC CREED VERSUS THE INTEREST RATE

THE CREED

The Islamic creed has been well-defined in the Qur'an and Sunnah. It represents the essential beliefs of Muslims, who are termed the "*followers of Prophet's ﷺ Traditions and Consensus*," or *Ahl Alsunnah wal jama'ah*. Some minority beliefs suffer from serious deviations. We group them under the *esoteric doctrines*, which have no direct or logically acceptable relationship with the Islamic creed. Including their beliefs would serve no purpose in Islamic economics, as some borrow from Judaism, Christianity, Hinduism, and Zoroastrianism. For example, the concept of the reincarnation of God in their alleged saints or imams is apparent in their alleged supernatural powers and their claimed infallibility, etc. We will ignore such minority creeds as they have no Qur'anic or authentic supporting narrations of Alsunnah nor logical reasoning to give them support. In addition, they stand contrary to Tawheed.

Islam teaches *first the existence of God, which is* known through our observation of His creation, even the universe itself. Due to the significant advances in physics, contemporary astronomers have become increasingly informed about the universe. Some of them may not believe in the existence of a divine creator. However, as we will show later, the universe is a carefully designed and intelligently managed system. To claim that it exists by pure chance is

viewed by Muslims as unacceptable. Mainstream Muslims take the side of Creationism against Evolutionism. We will provide the reasons for our position below. *Second*, Islam identifies the supreme creator, Allah, through His attributes amply mentioned in the Qur'an and sufficiently reasoned through intellectual thinking. The most supreme being would have attributes of maximum excellence, which no other being would have. The underlying logic of His attributes is that as he is supreme, He possesses the ultimate excellence in every aspect. He is vast, unlimited by time or space, and nothing can be like Him.

The logical rationale of the attributes of Allah is the denial of anything contrary to His supremacy, like the need for companionship, marriage, or children. It is the essence of *Tawheed, the absolute unity, and the unequaled excellence of God*. It is the basis of *the total submission to Him* as the absolute one, with the most excellent attributes. We observe His oneness through the smooth management of the universe. The multiplicity of gods implies divine competition and would lead to chaos. Empirically, the universe displays a well-established order. God's attributes describe how he ought to be and of what He is not worthy. His absolute unity is central. He is unlike anything else, and nothing is like Him. He cannot be represented physically or in an image, an icon, or a statue of any type. Awareness of creation and its creator produces humility and willful submission to God. It is a state of intellectual worship reflected in performing the underlying rituals. The creed of Islam is revealed to all prophets, starting with Adam[14], down to Prophet Mussa ﷺ Eissa ﷺ (Son of Mary) and Muhammad ﷺ the last prophet. All three revelations have the same theme of Tawheed and submission. Islam abhors idol worshipping, the multiplicity of gods, including the trinity, and the claim of anyone (Arab or non-Arab) to being a chosen nation. The absolute equality of humankind is a corollary of the absolute unity of God.

Differences in creed with non-Muslims are due to differences of opinions that have arisen among Jews and Christians coupled with the wanting documentation of their divine books because they failed to control the process of narration through which Jews and Christians have built and conserved their divine texts. Muslims, however, have avoided fall-

14 We ignore the latinized version of the Prophets' names as they impose a corrupt pronunciation of the original (Arabic) names.

ing into the same pitfall by recording the Quran in memory and on written records immediately after its revelation. The unique composition of the Qur'an, and it is being revealed in the Arabic language, making it easy to memorize. Early Muslims later collected and scrutinized the Qur'anic verses by comparing the written records with those memorized. They also recorded the Prophet's ﷺ narrations and innovated the unique discipline of *Isnad*, which used the careful biography of narrators to check their truthfulness. While narrators were the Prophet's contemporary companions, they were able to supply a contextual background for each narration. Scholars assumed no companion to be infallible or of special status. They were all subjected to rigorous biographical scrutiny. The previous usssages revealed to Mussa ﷺ and Eissa ﷺ have also been elaborated in the Islamic divine texts to ensure their continued authenticity.

An essential part of the creed is that the word for religion in Arabic, *Dien*, means a way of life that goes beyond the acts of worship. It comprises a collection of rites maintaining a direct connection between man and his creator. Prayers in Islam include directly talking to God, with no need for an intermediary, an idol, or an icon. When a Muslim faces the direction of Makkah Almukarramah and starts prayers, he automatically becomes an audience of Allah. When a person dedicates his deeds to the pleasure of God as his underlying intention, all his actions turn into acts of worship.

Islam also includes a political, economic, and social system. In institutional forms, such systems existed under the previous Muslim states that suited the then-prevailing conditions, conventions, and technology. The institutional side of Islamic life has been interrupted in Muslim countries with the advent of Western colonialism, which strived from the beginning to replace Islamic institutions with Western ones. It modified the education system to uneducate Muslims of the tenets of their religion. It installed totalitarian rulers who considered Islam as a threat to their rule with Muslims. The development of Islamic social, economic, and political institutions has been brutally interrupted. Such institutions missed the opportunity to adapt to new economic, political, and social theories and to adapt new technologies in voting and elections. In our contemporary time, such systems require reformulation to identify their intellectual bases, theories, and the institutional structure that suits current technology and conventions while conforming with Shari'ah. Ex-

amples include banking and financial intuitions, the technology attached to political choice through elections, and the use of the ballot box.

Differences between Muslim beliefs, based on the well-documented Quran and Sunnah, and Judeo-Christian beliefs, based upon the wanting documenting of Jewish and Christian divine records, can be summarized in the creed of Tawheed, the underlying intellectual rationale or theory as well as the associated institutional structure. The West has finally succeeded in establishing the links of covert colonialism to replace military occupation through the transformation of states into Muslim-majority countries into functional states that play a carefully designed role in serving Western political interests. The establishment of Apartheid and Genocide Israel as *a buffer state* that used terrorism to usurp the land of native Palestinians completed the *system of covert colonialism*. Such a system currently works to frustrate the liberation of Palestine and to offer a *final pro-Zionist solution* through genocide. As expected, rulers of the Arab functional states are either looking at the other side or providing clandestine support to the Zionist genocide. Meanwhile, the Western powers generously provide the weapons for quick and decisive genocide.

This book focuses on the economic side, both theory and institutions. In the first volume, we identified our methodology as different from the neoclassical one. We offered an alternative structure to study household and firm behavior. In this volume, we offer our treatment of macroeconomics. Since Islamic economics is distinct from the mainstream neoclassical methodology, Islamic economics remains equally distinguished from conventional mainstream economics.

Islamic economics can take the form of deriving behavioral rules and policy recommendations consistent with Shari'ah. Such derivation requires a textual methodology that starts with collecting and collating the divine text related to the research topic and using the rules of *Ijtihad* (due diligence) to derive the required rules. This Fiqh approach has dominated the Islamic economics literature since the middle of the twentieth century. It requires knowledge outside the competence of economists and the types of knowledge attached to the Holy Qur'an (like the occasions of revelation of each verse and its interpretation). Moreover, it requires the knowledge of authenticated Hadith and the discipline of *Isnad* or biographical evaluation of narrators. Finally, it requires knowledge of the rules of *Ijtihad*. That is not the job of an Islamic economist.



It can be done only by someone trained as Faqih. Islamic economists have a non-textual methodology of building theories, or *deduction*, and testing them, *induction*, after the traditions of Ibn Rushd and Ibn Tufail.

Other approaches to Islamic economics would be to study the *history of Islamic economic thought,* starting with Al-Shaybani[15], the father of economics, passed by Ibn Khaldun, and up to the First International Conference on Islamic Economics, Makkah, 1976. Another approach is to study the economic history of Muslims singly or comparatively. We can, therefore, relate to a few branches of Islamic economics, each with its approach, including analytical economics, Fiqh economics, history of economic thought, and economic history.

The particulars of the Islamic creed may not appear to some as a justification for a new kind of economics as an alternative to mainstream economics. Conventional economics is a discipline that started in the eighteenth century, with roots that go as far back as Greek philosopher's "home economics." Why then offer another type of economics based on a different methodology closely associated with a different economic system? The answer can be pointing at the interest rate, or what Muslims know as *Reba* and the interest-based lending through the classical loan contract. Since Islam prohibits interest, and since Islam mandates narrower differences between income and wealth, Muslims need another economic system that is devoid of interest. With a different perception of the relationship between equity and efficiency, Islam pays special attention to redistribution. It mandates a grant sector based on Zakah and Awqaf. Islamic teachings in economics require a new discipline to provide a rationale coupled with rules of behavior and their *Ma'alat* (consequences). That leads to another question: Is something scientific that justifies the prohibition of interest? In this regard, we have the choice of forcing the prohibition of interest without any evidence supporting its prohibition or providing an economic theory that stands as an alternative to neoclassical economics justification of interest. A naughty warning would be attached. What would one do if he fails to show the wisdom of the prohibition of interest? For this warning, we recall that Ibn Rushd's dialogue with Muslim and Christian theologians insisted that science cannot contradict religion. His reasoning for such

15 Al-Shaybani, 749-804 AD is the founder of contemporary economics. He pioneered the first book of microeconomics.

an impossibility would approximately start with saying that Allah, the creator, has placed his laws as a basis for the working of the universe, including the behavior of its components and inhabitants and their consequences. Science is supposed to discover such laws through theoretical analysis and empirical research. Therefore, as our Muslim philosopher advised, let us place the Islamic teachings in economics to rigorous intellectual evaluation while being assured that our results cannot conflict with the religious rules.

GENESIS TO ISLAM

The story of creation has a different twist in the Qur'an. Allah created The universe in six days. Allah dedicated four of them to configuring the sustenance of earth dwellers. These days are unlike solar days in length. The Qur'an states that a day to God equals one thousand of our solar days. In another instance, the Qur'an says that the Day of Judgment is equivalent to fifty thousand solar years. Therefore, the six days are different from our days on Earth. The year could be a calendar or a light year. After creation, He did not need to rest, as He is unconstrained by human weakness.

"No slumber can seize Him nor sleep by"[16] Adam ﷺ, the father of humanity, has been created without parents to become with his children the viceregent of God on earth. The creation of a human being without parents is similar but a bigger miracle than the creation of Eissa ﷺ without a father. When God declared His intention to put a viceregent on earth, the Angels expressed astonishment that such a creature would spoil and spell blood. After creating Adam, God taught him *the names of all things*, i.e., the information attached to the universe and particulars of living on Earth. Third, Allah created Adam's spouse from Adam's body, and both are placed in a garden on earth to train for living. God forewarned them against Satan's temptation and deception. When this occurred, Adam fell for it. However, God taught Adam how to request forgiveness and then forgave him. There is no original sin, hence. He and his wife had the practical experience of coming down to earth and carrying on life. The creation story in the Qur'an is more credible and does not refer to original sin.

16 "His throne doth extend Over the heavens And on earth, and He feeleth No fatigue in guarding And preserving them, For He is the Most High. The Supreme (in glory)." [Surah al-Baqarah 2: 255]. We created the heavens and the earth and all between them in Six Days, nor did any sense of weariness touch Us. [Surah Qaf 50: 28]

THE POST-DARWIN EVIDENCE

Admittedly, biology is not an area for an economist. In siding with creationists, we must rely heavily upon the arguments presented by its major proponents, who have expertise in biology. Usyer (2009) argues that from ancient times, biologists dealing with living organisms found that living things displayed organized structures deliberately arranged or designed for a purpose. Examples include *the covering of the coiled nautilus*, *the interdependent parts of the eye*, and *the interlocking bones*, *muscles*, *and feathers of a bird wing*. Observations of such structures led some intellectuals, philosophers, and thinkers to admit that there was a designing intelligence behind the living world's exquisite structures. Newton's *Opticks*[17] noted that the Bodies of Animals are contrived with so much Art, the Eye works without skill, and the Ear without Knowledge of Sounds.

With the advent of Darwin, modern science attempted to explain this appearance of design as the product of a purely undirected process. In Origin, Darwin (1859) argued that the striking appearance of design in living organisms—in particular, the way they are so well adapted to their environment—could be explained by *natural selection* working on random variations, a purely *undirected process* that nevertheless mimicked the powers of designing intelligence. Since Darwin's theory, most biologists have perceived the appearance of design in living things as an illusion. However, due to Watson and Crick's discovery of the information-bearing properties of DNA (Bansal, 2003), scientists have become aware that there is at least one aspect of biological design that we cannot explain by natural selection or any other *purely natural mechanism*. Watson and Crick discovered that DNA stores information using a four-character chemical alphabet. Strings of precisely sequenced chemicals called *nucleotide bases* store and transmit the assembly instructions—*the information*—for building the crucial protein molecules and machines that the cell needs to survive.

Crick later developed this idea in his famous "sequence hypothesis," according to which the chemical parts of the DNA, *the nucleotide bases*, function like letters in a written language or symbols in a computer code. Depending on their

17 Opticks: or, A Treatise of the Reflections, Refractions, Inflexions and Colors of Light: is a book by the English natural philosopher Isaac Newton that was published in English in 1704 (Wikipedia).

arrangement, an alphabet in a sentence or digital characters in a computer program may convey information. Likewise, specific sequences of chemical bases *along the spine of the DNA molecule* convey precise instructions for building proteins. Like *the precisely arranged zeros and ones in a computer program,* the chemical bases in DNA convey information *under their "specificity."* As Richard Dawkins notes, "*The machine code of the genes is uncannily computer-like*." Software developer Bill Gates goes further: *"DNA is like a* computer program but far, far more advanced than any software ever created." (Usyer, 2013).

Stephen Usyer (2013) applied evolutionary logic to the origin of *the information necessary to produce the first living cell*. His book *Signature in the Cell* (Usyer, 2009) tested the multiple competing hypotheses (or *inference to the best explanation*) to evaluate the "*causal adequacy*" of proposed explanations for the ultimate origin of biological information. Usyer concluded that *chemical evolutionary models* (based upon (i) chance, (ii) physical-chemical necessity, or (iii) the combination of the two) *failed to identify a cause capable of producing the digital information in DNA and RNA*. We, therefore, must search for *the causal power to produce digital code*. The remaining possibility is an *intelligent agency*, as the only cause known to generate *information* (*starting from nonliving chemicals*), the *intelligent design offers the best explanation* for the origin of the information necessary to produce the first organism.

The case for intelligent design advanced by Usyer (2009) was carefully limited to chemical evolution. Many *evolutionary biologists* acknowledge that chemical evolutionary theory has failed to account for the origin of the first life. Many cite its *inability to account for the origin of biological information* as one of the main reasons for that failure. Moreover, because they do not think that natural selection could have played a significant role in evolution until after the first self-replicating organisms had arisen, most *evolutionary biologists also think that explaining the origin of information in a prebiotic context is much more complex than explaining the origin of new information in already living organisms*.

For this reason, in his earlier book, Usyer did not try to argue that intelligent design might help explain the origin of the information necessary to account for the origin of new animals from simpler preexisting forms of life (Usyer

2009). Usyer (2013, Chapters 9-14) demonstrated how Neo-Darwinism fails to explain the origin of genetic information, at least in amounts necessary to build a new protein fold. He showed (Usyer 2013, Ch. 15 and 16) that the other main materialistic evolutionary theories also fail to account for the information necessary to build new forms of animal life. Such theories *presuppose*, rather than *explain*, the origin of the information necessary for structural innovation in the history of life.

It is important to note that, on the one hand, the Darwinian evolutionists have found strong support for their religious belief or atheism. Creationists, on the other hand, found strong support for their religious belief of theism in creationism. That explains that the debate between the two sides took a much sharper tone than the debates usually among physical scientists.

THE CAMBRIAN EXPLOSION

The Cambrian explosion[18] occurred about 539 million years ago in the *Cambrian Period* when practically all major *animal phyla*[19] started appearing in fossil form (Valentine 2002). It lasted about 13–25 million years, resulting in the divergence of most modern *metazoan*[20] *phyla*. Significant diversification in other groups of organisms also accompanied the Cambrian Explosion. Before early Cambrian diversification, most organisms were relatively simple, composed of individual cells or tiny multicellular organisms, occasionally organized into colonies. The diversification rate subsequently accelerated, leading to a much more complex variety of life resembling today. Almost all present-day animal phyla, including the earliest chordates, appeared during this period.

Some experts suggested that we should expand the timing back to include the late Ediacaran[21] rather than just the narrower hausfraus of the *Cambrian*

18 Also known as the Cambrian radiation, Cambrian diversification, or the Biological Big Bang.

19 A principal taxonomic category that ranks above class and below kingdom, equivalent to the division in botany.

20 A metazoan is any of a group (Metazoa) that comprises all animals having the body composed of cells differentiated into tissues and organs and usually a digestive cavity lined with specialized cells.

21 The *Ediacaran* Period is an interval of geological time ranging 635 to 541 million years ago. It was a time of immense geological and biological change, and records the transition from a planet largely dominated by microscopic organisms, to a Cambrian world swarming with animals.

Explosion, which is relatively more visible in the fossil record, based on analysis of chemicals that would have laid the building blocks for a progression of transitional radiations starting with the Ediacaran period and continuing at a similar rate into the Cambrian period (Wood et al., 2019).

During the Precambrian world, the sedimentary record lacks animal fossils. During the following Phanerozoic period, animal life left pervasive evidence of its existence as *body fossils* and as *disturbers of the sediment*. Numerous explanations for the Cambrian "explosion" have been offered, centering on one of the following types of changes: (a) in the *abiotic environment*, (b) in the *genetic or developmental capacity* of the *taxa* involved, or (c) in the *biotic environment*, i.e., in ecology. Developing a coherent explanation for the Cambrian "explosion" faces several challenges. First, most workers interested in the Cambrian "explosion" approach the problem through their primary discipline(s) of activity, including paleontology, geology, geochemistry, ecology, climate modeling, developmental biology, etc. A balanced multidisciplinary explanation is complicated. The fact that different subdisciplines use different approaches Exacerbates geological explanations focusing on events just before or at the Precambrian/Cambrian boundary. They tend to be correlative rather than causal. Identifying the triggering events or changes related causally to the radiation would be challenging. Ecological or developmental explanations are evolutionary, so there is typically a plausible causal relation between these explanations and the biological radiation seen in the fossil record.

Nonetheless, we cannot tie such explanations to the geologic record or the planet's history. The Cambrian "explosion" is an unfolding in history. Each successive step flows from the conditions established in the previous steps, and the current step's interactions shape its unfolding. So, in a sense, there cannot be a simple explanation for the Cambrian "explosion" that is fully satisfying. Understanding the nature of the causation of complex historical events is a big challenge.

CHRONOLOGY, BASED ON FOSSIL DISCOVERIES

Apart from a few older problematic fossils (both body and putative trace), the first relatively continuous fossil record of animal life begins after the *Gaskiers*

glaciation[22], 580 million years ago, mya. This Ediacaran phase precedes the Cambrian, starting some 542–543 mya. There have been significant advances in understanding the absolute chronology of this interval of time, using both new radiometric dates and their association with Carbon-isotopic profiles in the past few years. More challenges remain, especially in placing key fossil localities into the emerging chronologic scheme.

The *Cambrian explosion* of animal life is an *explosion of information and structural innovation*. It raises the question of whether this increase in biological information may represent evidence against materialistic theories of biological evolution and positive evidence for intelligent design explanations. In other words, our uniform experience of cause and effect shows that intelligent design is the only known cause of the origin of large amounts of *functionally specified digital information*. The great infusion of information in the *Cambrian explosion* points decisively to an intelligent cause. Another reason to favor Intelligent design by itself as an explanation for the origin of genetic information is that purposive agents have just *those necessary powers that natural selection lacks* as a condition of its causal adequacy. We have seen that natural selection cannot generate novel information precisely because it can only act after new functional information has arisen. Natural selection can favor new proteins and genes, but *only after they perform some function* (influencing re productive output). Therefore, generating new functional genes, proteins, and systems of proteins falls entirely to random mutations. However, without functional criteria to guide a search through the space of possible sequences, *random variation is probabilistically doomed*. What is needed is not just a source of variation (i.e., the freedom to search a space of possibilities) or a mode of selection that can operate after the fact of a successful search, but instead a means of selection that (a) operates during a search *before* success-and that (b) is guided by information about or knowledge of a functional target. Demonstration of this requirement has come from an unlikely quarter: *genetic algorithms*. Genetic algorithms allegedly simulate the creative power of mutation and selection. Richard Dawkins, Bernd-Olaf Kiippers, and others

22 The Gaskiers glaciation is a period of widespread glacial deposits that lasted under 340 thousand years, between 579 and 579 million years ago, i.e., late in the Ediacaran Period, making it the last major glacial event of the Precambrian. It was also the last and the shortest of at least three major ice ages in the Neoproterozoic era. It is assumed that, in contrast to the Sturtian and Marinoan periods, it did not lead to global glaciation (Wikipedia).

have developed computer programs that putatively simulate the production of genetic information by mutation and natural selection.

Nevertheless, these programs succeed only by the illicit expedient of providing the computer with a "target sequence" and then treating proximity to future function (i.e., the target sequence), not actual present function, as a selection criterion. As mathematician David Berlinski shows, genetic algorithms need something akin to a "*forward-looking memory*" to succeed. However, such foresighted selection has no analog in nature. In biology, where differential survival depends upon maintaining the function, natural selection cannot occur before new functional sequences arise. Natural selection lacks foresight; the process, as evolutionary theorists Rodin and Szathmiry note, works strictly "'in the present moment,' right here and right now, lacking the foresight of potential future advantages."

We can conclude that the debate between evolutionists and creationists has been extra hot since evolutionists take the side of evolution to protect their atheist beliefs. They ignore the importance of the coding found on the limits of the DNA and the information necessary for such a code to work. Such code and the information used are evidence of intelligent design. Evolutionists commit the same error committed by neoclassical economists, viz, reductionism. The incidental changes in certain animal parts as an adaptation to the environment do not necessarily imply species evolving from one another. We can, therefore, understand why Islam, as well as Judo-Christianity, prescribes creationism.

JUDEO-CHRISTIANS AND THE INTEREST RATE

I. Distinction Between Interest and Usury

The concept of interest in economics is relatively simple. It is the premium paid for purchasing present money against future money. If the interest rate is equal to 10 percent per annum, buying $100 of money at the beginning of the year should cost $110 to be paid at the end of the year. This abstracts from the process of interest accumulation. As the borrower receives the present money, he must pay ten percent of the loan's outstanding balance at the end of every lending period (one month, a quarter, half a year, or a full year). We can also settle the principal in installments. The debt service should include

the installment out of the principal plus ten percent of the outstanding balance. Usury, as a concept, implies an act of price restriction. The interest rate becomes usurious if it reaches a certain level. Therefore, while loans carry an interest rate, usury laws limit how much interest borrowers pay. Therefore, applying usury laws means setting a ceiling on the interest rate but having no objection to using the classical loan contract, under which present money sells for a higher amount of future money.

Comparing Jewish and Christian medieval views regarding the prohibition of taking interest on loans exposes a significant difference between Jewish and Christian thinkers (Kirschenbaum, 1985). The dominant interpretation of the early medieval Rabbis (the *Rishonim)* appears to have perceived the taking of interest prohibited by Scripture[23] in accord with natural justice. This opinion reflects no effort to investigate the possible harms (or inefficiencies in economic language) of placing a premium on present money. Early medieval rabies handled this issue from the theological, not the economic, point of view.

Usdieval Rabbis' attention, as specialists in religious law or Jewish Shari'ah, focused on the *formal validity*, ignoring the ultimate purpose of the religious rule under investigation or the *validity of purpose*. The reason was that they were not economists. Determining the economic consequences of charging interest would not be within their knowledge. According to the standards of abstract or natural justice, their view is that there can be no objection to an agreement entered into freely by both sides. In other words, voluntarity is a condition of (formal) validity. Even if we cast doubt on the "freedom" of an impoverished borrower impelled by his pitiful condition to accede to harsh terms, medieval rabbis considered it eminently fair for a creditor to impose a moderate interest rate upon his loan. He is risking the total loss of his money if the borrower goes bankrupt or leaves the country without repaying the debt.

Moreover, even if the borrower pays the debt, the creditor is deprived of his money for the loan period. Indeed, they thought it was reasonable to receive remuneration for the risk and the deprivation he undergoes regarding his money. Hence, the unique prohibition placed by *Halakah* (the *Jewish Shari'ah*) upon the creditor *against taking any interest* at all, at a fixed date, or in an

23 (Deut. 23:20: Thou shalt not lend upon interest to thy brother: interest of money, interest of victuals, interest of anything that is lent upon interest. See other verses in Exod.; Ezek.; Ps. and Prov.) as quoted by (Kirschenbaum, 1985), and by the Talmud (Stein, 1953, 1955)

indirect or indeterminate fashion. Some scholars advised the Jews to perform benefaction, as commanded by Scripture. The concept of *natural justice* was considered by Jewish scholars a good justification to charge a *moderate* rate of interest. In addition, there are the subtleties of lenders facing the risk of default and the opportunity cost of lending a sum of money. The Islamic prohibition of interest does not employ the concept of natural justice but provides an absolute prohibition ({يَمْحَقُ اللَّهُ الرِّبَـا وَيُرْبِـي الصَّدَقَـاتِ وَاللَّهُ لَا يُحِبُّ كُلَّ كَفَّـارٍ أَثِيمٍ}[24]), but warns that those taking interest risk wealth destruction and commit grave sin ({Allah destroys interest and gives increase for charities. And Allah does not like every sinful disbeliever.}). This verse signals to Muslim intellectuals that there are serious economic consequences to taking interest, which they should seek to discover.

II. The Old Testament and Interest

Numerous Old Testament passages are of interest. Exodus 22:25 and Leviticus 25:35-38 prohibit charging interest to those who are poor. Deuteronomy 23:19-20 prohibits the Jews from charging interest to other Jews but does allow the Jews to charge interest to non-Jews. Nehemiah 5:1-13 criticizes those who exacted interest from other Jews and warns of restitution payment for interest charged. Ezekiel 18:5-8,

III. The New Testament and Interest

Luke 6:34-35 says, “Love your enemies, and do good, and lend, expecting nothing in return; and your reward will be great, and you will be sons of the Highest.” In the parable of the Talents, Matthew 25:14-30,17, and Ezekiel 22:12 also criticize those who charge interest. Psalm 15:5 describes a righteous person as one who does not loan money at interest, while Proverbs 28:8 warns that a person who does loan at interest will have his money taken away and given to a person who is kind to the poor. We know from passages like Nehemiah that, at times, the Jews violated the commands against charging interest. However, there were times during which the Jews strictly obeyed the command. Heichelheim puts it this way, “internally, usury was strangled and destroyed” (1965, p. 255). The master expected the servant to invest the money entrusted to him with banks to earn interest if no other opportunities were available. No other New Testament passages deal with this topic.

24 {يَمْحَقُ اللَّهُ الرِّبَا وَيُرْبِي الصَّدَقَاتِ وَاللَّهُ لَا يُحِبُّ كُلَّ كَفَّارٍ أَثِيمٍ} رة البقرة - الآية 276



IV. Terminology

the words used in the Bible gave biblical interpreters a choice between interest and usury, an exorbitant interest rate, not *interest*. If usury, no further discussion would be needed. Only a ban on high interest rates beyond a specific ceiling would be the policy aim. Unfortunately, biblical usage does not allow us to interpret this way. *Neshek* is the most frequently-used word for interest in the Bible, with *marbit* and *tarbit* also used (Ballard, 1994, p. 214). Not everyone agrees with the interpretation of these words. Some interpret *Neshek* as interest in money, while *marbit* and *tarbit* are interest in food and grains.

Others believe that *Neshek* has to do with the interest taken out at the beginning of a loan, while *marbit* and *tarbit* mean interest taken out at the end (Ballard, 1994; Achteusier, 1996; Gehman, 1970). Even though there are some differences in interpretation, all the biblical words used have to do with what we call *interest* and not usury. We cannot end our exploration here. Another smaller problem of terminology exists when discussing this topic. In the Middle Ages, the word used was *usury*, usually meaning any interest. Our current use of the term *usury* applies only to exorbitant interest. Judeo-Christian theologians use *usury* as exorbitant interest, but you will notice that some quotations use *usury* in the sense that we use *interest.*

V. Jewish Economics

Judeo-Christian theologians do not delve into economics, seeking some rationale against loan interest. Had they done so, we would have had an integrated Judeo-Christian perception of an economic theory and an economic system that stands at odds with the prevailing doctrine and the dominant system of market capitalism. Mangeloja (2004) is a rarity in the literature as he argues that the Torah offers *one more alternative basis for understanding economic reasoning and theory* (Mangeloja, 2004). Market capitalism aims to increase material well-being (total output size) through higher economic growth. The ultimate result is to make the relatively minor share of total output big enough to feed and sustain the poorest household. With such a high level of material well-being, we reach class harmony instead of the Marxist class struggle and peaceful co-existence (Nelson 2001). Marx's theory calls for dividing total output equally to establish a peaceful society. The alternative offered by the

Torah (Mangeloja[25], 2004) offers a solution to the economic dilemma. Mangeloja considers that the final state is the same in all economic systems, but the means and ways to that final state of society are entirely different (Mangeloja, 2004). That is an oversimplification.

Mangeloja (2004) uniquely proposes an interpretation of *the economics of the Torah* and envisages that total output, or the economic pie, belongs to God. Establishing an absolute moral base and institution maximizes consumers' gross utility maximization (including material and spiritual) and minimizes poverty. Behind the accumulation of wealth or the accelerated economic growth, there is a unique initial economic condition as there is no scarcity of material resources (if controlled by Torah institutions), and we can easily meet the needs of consumers if households follow the Torah commandments (Mangeloja, 2004). That reflects a holistic understanding of *Biblical economics* that could parallel *Islamic economics*. However, it has not been pursued further by Judeo-Christian thinkers. Such holistic understanding has not been ordinary and has not given rise to a school of thought offering a bold research program similar to that of Islamic economics that aspires to provide an alternative to the neoclassical economic theory.

CHRISTIAN ECONOMICS

As reviewed by a Christian theologist (Issler, 2016), three Old Testament Torah passages command that prohibit charging interest[26]. For two of them, the restriction applies to loans to the poor (Exod 22:25; Lev 25:35– 37). However, for Deut 23:19–20, there is no such qualification. *"You shall not charge interest on loans to your brother...."* The interesting debate centers around the textual difference of the above verses for the ban on interest. In the latter passage, a loan for a "brother" rather than for the "poor" was specified. In the former two

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26 We ignored the use of the word "usury" instead of interest by Issler, as the issue is whether to charge borrowers of present money a premium, and it is not how much premium is allowed to charge.



Torah passages, Deut 23:19–20 has been the central Old Testament passage in the historical usury debate among Christian theologians.

The Christian theologian Issler (2016) emphasizes that the first segment of the article clarifies the relevant issues and interpretive options for making an informed decision about a Biblical perspective on lending and usury. Isseler (2016) divides the controversy involved into four main issues: (a) whether or not there is a relationship between Deut 23:19–20 and the two other usury Torah passages (Exod 22:25; Lev 25:35–37); (b) whether charging interest itself is moral or immoral; (c) what is the intended scope of the prohibition against interest on loans (only to the poor, only to Jews, or a total ban for all); and (4) what type of contrast is intended between "brother" and "an outsider" in Deut 23:19–20?

Regarding this Deut 23:19–20 distinction, Issler (2016) offers three possible interpretive options, in which each option encompasses a view about the other three issues: (a) ethnic status and its relationship to total interest ban; (b) ethnic status and the two-tiered ethic; and (c) economic status and the selective interest ban (the poor-merchant contrast). That is referred to in the theological literature as the "*Deuteronomy double standard*."

Issler (2016) supports the third interpretative contrast (an economic status/poor-merchant distinction) in which the three main Torah passages (Exod 22:25; Lev 25:35–37; Duet 23:19–20) are understood as conveying the Torah teaching on interest. He discusses two other interpretations, including a brief survey of the church history debate on interest, offering a few suggestions for contemporary application.

MUSLIM VERSUS JUDEO-CHRISTIAN ATTITUDES TOWARD INTEREST

It is the consensus of Muslim scholars that Reba or interest is a severe transgression. Some place it in the third degree after disbelief in God and parents' disobedience. Some marginal scholars have argued that Reba is not the same as interest. To consider Reba or interest harmful or impermissible is uncommon among Judeo-Christians. A class of scholars established the discipline of Islamic economics, insisting that Reba is both economically harmful and religiously impermissible. Judeo-Christian economics has not yet appeared.

The average Muslim worries about Reba/interest, while its Judeo-Christian counterpart considers interest a regular part of life. The question is why there are such divergent attitudes among Muslims on the one hand and Christians and Jews on the other hand about the interest rate.

Cultural attitudes may have influenced social attitudes, particularly the dominant Western attitude towards and the widely held commitment to the separation between the Church and the State. In addition, the nature of the scriptures plays a central role. Suppose we assume that the Judeo-Christian and Muslim scriptures are the words of God revealed to Moses, Prophet Eissa, ﷺ and Muhammad. In that case, we note that the Torah was originally in Hebrew. As Moses preached Judaism in Egypt, and as Egyptians had a Semitic language, Hebrew has not maintained its status as the language of the whole Bible. The New Testament language adds complications. As a Palestinian, Prophet Eissa, ﷺ spoke in Aramaic. However, he lived under Roman rule when the Roman empire was culturally Hellenic, and Greek was the dominant language.

As a local language, Aramaic may have been the recording language used to write the scriptures. While the apostles were presumably Greek-educated, they may have spoken Aramaic. Rendering their accounts of the life of Eissa ﷺ in a non-native language raises several questions. Their knowledge of Greek depended on their proficiency in the foreign language of their colonialist master. That may have introduced some disparities in their accounts. They may have written their accounts in their native Aramaic language. Ironically, we have no Greek or Aramaic records that survived the Greeko-Roman era. In addition, we do not know whether they inscribed their initial drafts in their native Palestinian language of Aramaic. If they did, this may have been translated later into Greek, which would have been another source of discrepancy.

Moreover, the apostles wrote their gospels, unaware of composing what Christians would later treat as a holy book. All gospels are personal accounts from a human point of view. They include very little as the direct speech of Eissa ﷺ. Their authority as divine revelation is questionable, hence.

The process of recording scriptures did not gain the concern of the apostles. The bibliographies of narrators who inscribed their versions of the events they lived in were not carefully maintained nor scrutinized. The critical evaluation of successive narrations to ascertain authenticity awaits development. In other words, the protection of the authenticity of early Christian scriptures

enjoyed little attention at the time of Prophet Eissa, ﷺ and most of the three centuries following his life, ﷺ.

The First Council of Nicaea was a council of Christian bishops convened in the Bithynian city of Nicaea (now İznik, Turkey) by the Roman Emperor Constantine We in AD 325[27]. Note that the emperor was a Greek pagan. He had enough authority to impose his point of view. The fact that the emperor's order convened raises suspicion that his decisions fell under the influence of the emperor, who was a child of the Hellenic culture, which was a pagan religion of multiplicity of gods as well as idol worship.

In contrast, there was an influential bishop called Arius. Arius (256 - 336) was an ascetic Christian cleric of Libyan origin who served in the Church of Baucalis in Alexandria. He emphasized the divinity of one God and opposed the trinity. After Emperors Licinius and Constantine made Christianity of the time legitimate and official in the Roman Empire, the newly recognized Catholic Church sought a single, clear theology. Trinitarian advocates represented a dominant Greek influence in shaping the Christian creed. Based on equivalence, Christology states that God the Father and Jesus of Nazareth are "of the same nature" as co-substantial and co-eternal/eternal.

All the writings supporting Arius' theology have been obliterated or hidden. Despite all the opposition acting together, *Arian* or *anti-trinitarian* churches existed in Europe and North Africa, among the Goths and the German kingdoms, after the fifth and seventh centuries. Military conquest or the royals voluntarily converted to the Catholic faith,[28] suppressed them. The debate between Arius and his opponents brought this issue to the theological fore. With the support of the Roman rulers, the Nicaean ecumenical council succeeded in imposing consensus in the church through an assembly representing all Christendom. The convening bishops effectively discredited Arius's ideas, and the Hellenic concept of a multiple Godhead with a touch of idol worshipping reigned supreus. The Nicene Creed set a uniform observance of the date of Easter and promulgated early canon law.

The Council has provided its stamp of authenticity to the gospels that confirm the Trinity doctrine. Other versions have been collected and burnt. Curious-

27 https://en.wikipedia.org/wiki/First_Council_of_Nicaea.

28 https://tr.wikipedia.org/wiki/Arius.

ly, the Council did not think of establishing an intellectually acceptable way of evaluating narrations, using the bibliography of the narrators, as Muslims have later done. The Council did not resolve the language problems related to using Aramaic, Greek, and Hebrew in the inherited scriptures and how to evaluate the correctness of translations. We venture to say that the Council was Greek and Roman in culture, education, and attitude. The issues that should appear to be problematic to the minds of contemporary Christians were not of much significance during the fourth century. Contemporary Christians generally ignore them.

From the beginning, Muslim scholars considered the Qur'an and Sunnah as narrations whose authenticity depended on the trustworthiness of the narrators. Every verse of the Qur'an, once revealed, has been summarized and simultaneously inscribed on a written record entrusted to one of the Prophet's ﷺ companions. The Qur'an is a type of prose that is memorizable. It has its rhyme and can be enjoyably chantable. It is in Arabic, a language classified as the predecessor of the Indo-Germanic languages and the origin of speech (Ismail, 1989). Scholars have saved a bibliography for each to verify the narrators' authenticity. Based on such bibliographies, scholars have classified narrators by their degree of trustworthiness. Should the bibliography show that he/she lied or is known for weak memory, dishonesty, or fudging, his/her narrations are judged as weak authenticity. In addition, the narrations are compared to the Qur'anic text to ensure consistency as a further test.

The Prophet's companions have compiled the Quran in one book, based on the memorized versions of the text, and Hadith (the sayings of the prophet ﷺ himself in direct speech) has been collected and recorded in six books of authenticated narrations, each with a careful account of narrators, Muslims, therefore, had every reason to entrust their divine books. Jurists have carefully evaluated the biography of each narrator. They stand ready to reject any narration that appears unreliable. Except for a minority of Muslims, who subscribe to an esoteric creed that falls outside Muslim consensus, no narrator has been considered infallible.[29]

29 Apart from the Shi'ah minority sect that considered their narrators infallible if they can be defined according to their own set criteria as parts of the house of the Prophet ﷺ. However, the methodology and creed of this group has not gained the consensus of the Muslim majority.

Muslims have readily accepted the decisive prohibition of Reba in the Qur'an due to their perception of the nature of their divine texts and their authority. In addition, except for a few so-called *Sultan Scholars*[30], because of their persistent opinions supporting the status quo, Reba has generally been accepted as equivalent to the interest rate. Meanwhile, the divine text in Christianity is a collection of memories-like books, composed in ordinary prose with little direct speech from God himself or his Prophet ﷺ. No scholarship ensures authentication. Theologians interpreted the Biblical passages related to this topic as a prohibition of usury that was not of the interest rate. The contrast between the perceived nature of the biblical text and the Qur'anic text, as well as the variance in the degrees of consensus in interest prohibition, are the leading causes of the divergent attitudes of Judeo-Christians and Muslims towards interest.

30 A Sultan Scholar is someone who employs his analysis and opinions in the service of the ruler.

CHAPTER II:



THE FUNDAMENTAL THEORY OF ISLAMIC ECONOMICS

THE FUNDAMENTAL THEORY OF ISLAMIC ECONOMICS

ECONOMIC PROCESSES: LENDING-BASED VS. INVESTMENT-BASED PROCESSES

We need a closer look at the effects of charging interest on the processes of decision-making. In economies where the central bank sets a premium on borrowing present money equal to the administered interest rate, economic agents will compare the rate of return on investment with the central bank's administered price. Comparison with the interest rate is typical of all resource allocation processes. Therefore, we can consider lending-based, where finance predominantly uses the classical loan contract; consequently, the interest rate represents an imaginary gulf between the present and the future and becomes the opportunity cost of resources. New economic processes would evolve if the economic system were so structured that it would be void of the use of the classical loan contract, and the central bank did not find it necessary to set an interest rate as an administered price. This arrangement exists in our macroeconomic model, which we explain in the following chapters. Under the absence of the interest rate and the nonexistence of the classical loan contract, arrangements to finance commodities through their sale for a deferred price would naturally come out. Sale finance in an open market would produce *markups* to spot commodity prices. When the finance providers nego-

tiate freely with finance users, the markups will substitute the administered interest rate price with market-determined indicators.

Such a scenario would gain more details when we explain our macroeconomic model. The underlying objective is to provide an institutional structure with a radically different configuration in which the interest rate plays no role. Economic processes would rely on another opportunity cost indicator that provides a market measure of investment feasibility.

THE NEED FOR AN ALTERNATIVE TO THE INTEREST RATE

A positive interest rate in a society indicates one of a family of economic systems. It may be *market capitalism*, it may be *government capitalism*, or it may be *socialism*. In market capitalism, people allocate resources according to lending-based processes. The interest rate takes a frontal position as the opportunity cost of investment.

It is the direction of what could have been *religious economics*, namely economics, that takes the fact that certain religions prohibit certain transactions, including charging interest for lending. In Islam, transactions. In particular, Islam prohibits transactions involving Ghabn (cheating), Gharar (uncertainty or gambling), and Reba (charging interest for lending), in addition to trading in pork, liquor, and materials containing ingredients causing *definite* harm to life and the environment. Such an economic system would appear to be going in the opposite direction of conventional economic wisdom. A student of neoclassical economics would not hesitate to point out that prohibiting transactions inevitably reduces social welfare because it would limit the freedom of choice[31]. The challenge is not modifying the lending procedures to make them appear interest-free. That is the road of ruses on which religious scholars show off their ability to bend the rules. The real challenge lies in providing a structure of an economic system that is void of both the interest rate and the classical loan contract. Providing such a system is an economist's job, not a religious scholar's.

31 A counter argument can be provided when any of the prohibited transaction leads to externalities which cause diversion between social and private costs. For example, smoking leads to a higher bill of medical treatment, independently from the price of tobacco. Alcoholic beverages lead to higher social cost of road accidents, including human life, car damages and medical costs that go beyond the price of such beverages. We have shown in the first volume of this book that the prohibition of nominal transactions would lead to a higher social welfare.

In the discussion of Judeo-Christian economics above, we found that no economist has made such an attempt on behalf of his or other religions. It is now the job of Islamic economists to construct such a system.

THE FUNDAMENTAL THEORY OF ISLAMIC ECONOMICS

Islamic economics is a new field that started with non-professional writings in the fifties of the last century. We present it in this book as a subfield of economics with a distinct methodology. It provides economic analysis based on Shari'ah rules related to economic behavior. We must, therefore, respond to a question regarding the rationale for establishing such a field. One important distinction is that Islamic economics prohibits lending at interest and using the classical loan contract. Islamic economics must, therefore, provide a decisive judgment regarding the theories of interest to justify its existence as a branch of economics. Such a judgment can arise through the reasoning we list below as our fundamental Islamic economics theory.

The presence of an interest rate, defined as a premium or agio that stands between present and future money, has been associated with severe inefficiencies in monetary economics. However, economists do not highlight this fact in economic literature or textbooks. In this chapter, we elaborate on the Samuelson-Friedman and the Hosios inefficiencies that are associated with the presence of the interest rate. The theories of interest rate determination start with assuming a society of mortals with an unpredictable life span and consequently perceive present consumption as more certain than future consumption. They have a time preference for commodities, hence. In a world with heterogeneous intertemporal preferences, interest rate theories claim that an equilibrium interest rate can result from a process of wealth maximization by a society whose typical agent is a homoeconomicus. Such theories project the time preference for commodities to a parallel time preference for money based on the argument that money eventually buys commodities. In general equilibrium, the equilibrium interest rate is equal to the social rate of time preference, defined as the weighted average of the rates of time preferences for all individuals and all commodities. Shares of income spent on each commodity by each individual are weights. We argue that such a conclusion is impossible and that there is a gap between the interest rate and the rate of time preference on commodities. That automatically falsifies the theories of the interest rate. What exists is a rate of interest that is set and administered

by the monetary authority. We conclude that such a rate fails to connect to economic fundamentals. The transmission mehanism between such a rate and the schedules of demand and supply of commodities is absent at worst and cannot be defined at best. Using it as an anchor of monetary policy brings in unpredictable results. Finally, we can say that a new theory is required to redesign the finance processes to tie the rates of time preference with the cost of finance, thereby removing the hiatus between the real and financial sectors. We claim this is the fundamental rationale of Islamic economics.

IBN RUSHD AND THE CONTRADICTION BETWEEN SCIENCE AND RELIGION?

The fundamental theory attempts to justify Islamic economics as a discipline. Since we already have a dominant economic doctrine received from neoclassical economists, why should we rebuild another theory? Our instantaneous answer would be that the theories of interest offered by the neoclassics (loanable funds) and Keynes (liquidity preference) that insist on the existence of a rate of interest somehow set by demand and supply are objectionable. The Muslim intellect must lead research toward an interest-free economy supported by economic analysis through the straightforward interpretation of the Qur'an, Turah, and Enjil (meaning the Bible). We do not accept the mainstream morally. We must provide our reasons for rejecting it theoretically.

Most importantly, we have made an economic analysis, not the scripture, which is the ultimate judge. Our Judeo-Christian fellow economists will protest the alleged intrusion of religion into economics and express their fear of the possibility that science contradicts scripture. Our response to the first is that Islam is a "diet," that is a way of life that includes both rituals and rules that regulate our life socially, economically, and politically; it is not a religion that is limited to rituals performed in a mosque. Our response to the second objection is that in science, we search for the physical laws that apply to matter all over the universe and behavioral laws that apply to humans on Earth. Since both matter and human life owe their existence to one creator, laws sought after by science have the same source. Contradiction is, therefore, impossible. Fear of possible contradiction reflects disbelief in one and consistent creator.

Considering that it is a branch of economics, we cannot accept a theory without proper scrutiny in analytical Islamic economics. A moral judgment, like abhorring interest, must be justified, hence. The pioneers of Islamic economics who led an intellectual movement to establish the foundations of Islamic economics were not professional economists but Shari'ah scholars. They have left the challenge of interest-rate theories to our generation. That is why we must meet the challenge with our economic analysis tools.

THEORIES OF INTEREST

Theories of interest (both loanable funds and liquidity preference) establish some generally acceptable principles. The first is that the homoeconomicus allegedly rational behavior necessarily mandates an intertemporal allocation of resources, where present (real) consumption commands a premium and future (real) consumption suffers a discount. Theories of interest postulate a demand for money inversely related to the reciprocal of the price level and a policy-determined supply of money. The intersection sets an equilibrium interest rate. We cannot find such a market in the real world. However, the government debt market can be an approximation. The popular reason is that government bonds are the nearest alternative to holding money. They face no default risk. They are easily negotiable and convertible to cash.

THE INTEREST RATE AND INEFFICIENCIES

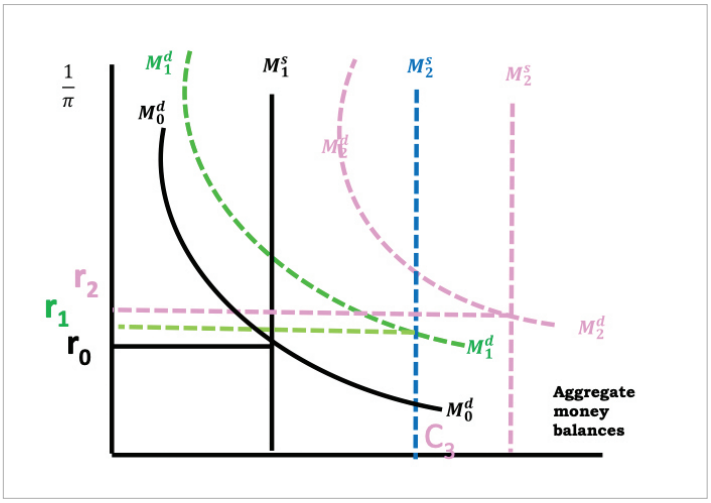


Figure 1: The Illusion Of A Money Market

The mere existence of a positive (>0) interest rate is a source of two inefficiencies. The first is Samuelson's (1958)-Friedman (1969) inefficiency. A positive interest rate imposes a cost on using money in transactions. According to the classical loan contract, borrowers would guarantee the repayment of principal and interest. Lending one's cash to banks (in the form of time deposits) and holding bonds would earn a guaranteed return. The continued desire to make a guaranteed return on money as a barren asset leads to the attempts of economic agents to use as little cash as possible in transactions. However, to keep the volume of transactions from falling, traders substitute real resources for money in transactions and lend their cash balances spared from transactions.

An example would be that because of a positive interest rate, those who receive regular amounts of cash through transactions, like supermarkets and department stores, enter into standing arrangements for collecting and transporting cash to their banks periodically. Any increase in the positive interest rate increases the incentive to modify the standing arrangements, allowing for the depositing of cash at shorter intervals. Transporting cash from supermarkets and department stores would require banks to hire labor to collect money from shops' tellers more frequently and rent or purchase chauffeured armored cars to transport the cash within a tighter schedule. In an economy with electronic payments, banks credit cash to shop accounts through credit and debit cards. Shops would use software and trained accountants to monitor their bank accounts and channel any money over and above certain limits from demand to time deposits. More computers and accountants must switch cash at shorter intervals to time deposits or automatic transfer rules added to the mechanism. That would require more sophisticated software engineers, i.e., more human capital. Banks would obtain the extra labor and capital introduced into the transaction process to substitute for cash from other economic uses. The reduction in the output of goods and services in one corner of the economy goes to the trade sector, where only the volume of transactions is maintained. The result is a GDP below the potential full employment level. We term the reduction in total output as the *Samuelson-Friedman inefficiency* (Samuelson, 1958; Friedman, 1969).

Note that neoclassical economists have made their monetary analysis in a world of perfect competition, where there is no reason to hold money. Under an imperfect model, other inefficiencies surface. The second type of in-



efficiency appears when agents conduct transactions in a price-searching environment that replaces the perfect-information model, and market price takers become *price searchers*. The collection of price information by, traders faces the inability to internalize the extra information they collect but do not use. The inability of information internalization discourages traders from conducting the price searching necessary to make the values of transactions commensurate with maximum output[32]. We can remove this hurdle by adding to the model information specialists who would price-search for an extra fee to be charged as part of offered prices, building a link between trading and finance. The absence of trade information specialists in finance hinders conducting a volume of transactions necessary to produce and trade the optimum output[33]. We credit Hosios (1990) with pointing out this case. We will, therefore, call it the "*Hosios inefficiency*."

Hosios's theory of *information blockage* has a background of imperfect information and price searches. It implicitly assumes neoclassical institutional arrangements for finance, where the finance sector is separate from the commodity sector. In other words, commodity purchases are financing through "borrow then purchase." Therefore, the banking sector plays no role in price searching in the commodity sector.

THE IMPOSSIBILITY OF AN EQUILIBRIUM INTEREST RATE

The interest rate theories condense the time preference for commodities into a parallel time preference for money. In general equilibrium, the interest rate equals the social rate of time preference. The latter is the weighted average of the rates of time preferences for all individuals and all commodities. We can use the shares of incomes spent on each commodity by each individual as weights. We want to show that such a conclusion is *impossible*.

Consequently, there is an unfillable gap between the interest rate and the rates of time preferences on commodities. In the end, the presence of such a gap falsifies the theories of the interest rate. What exists as a rate of interest is an

32 We implicitly assume that each GDP volume requires a certain volume of transactions to produce and to trade.

33 Remember the finance sector in the neoclassical model is totally segmented from the commodity sector, by virtue of the disengagement of the financial institutions from the trading processes. The use of the classical loan contract makes such disengagement inevitable.

administered price by the monetary authority. Our main conclusion is that such an alleged interest rate is unrelated to economic fundamentals, not an equilibrium rate. When the central bank administratively changes the interest rate, the *paths* through which the effects of a change in the rate of monetary expansion to the various excess demand and excess supply functions for all commodities are *highly uncertain*, especially since we have heterogeneous preferences among individuals, and all markets are price-searching markets. Using the interest rate as an anchor for monetary policy would produce unpredictable results due to the uncertainties surrounding the paths through which the relevant transmission mechanism moves from changes in money to the real sector. When the interest rate changes through a monetary authority decision, no mechanism resonates with such a change in the allocation process. The interest rate is a superimposed phenomenon with no intrinsic mechanism determining its level, like the mechanism attached to demand and supply functions.

The presence of *the classical loan contract* as a pivot for the finance process enforces the gap. We can remedy this situation by adding a process that produces an alternative mechanism to the economic model, ultimately reflecting the rates of the preferences of commodities into the finance process. A new design of the finance processes is necessary to tie the rates of the preference of commodities with the cost of finance. Such a design can remove the hiatus between the real and the financial sectors. This design must allow finance providers and users to negotiate a markup, over and above the price, to obtain the commodity against the payment of future money. Each markup would reflect, among other things, the rate of time preference for the financed commodity. Since this is how Islamic finance operates, filling the gap would require replacing conventional with Islamic finance. Hence, we finally have the fundamental rationale of Islamic economics.

WHY FIND AN ALTERNATIVE TO THE LENDING-BASED STRUCTURE?

A positive interest rate in a society indicates one of a family of economic systems, including market capitalism, government capitalism, and socialism. In all, people allocate financial resources according to lending-based processes. The interest rate forces itself to occupy a frontal position as the opportunity cost of investment.



Islam prohibits transactions involving Ghabn (cheating), Gharar (uncertainty or gambling), and Reba (charging interest for lending) are prohibited. In addition, trading in pork, liquor, and materials containing ingredients causing harm to life and the environment. Such an economic system is going in the opposite direction of conventional economic rationale. A student of neoclassical economics would not hesitate to point out that prohibiting transactions inevitably reduces social welfare because it would limit the freedom of choice. The real challenge lies in providing a structure of an economic system devoid of the interest rate and the classical loan contract. Providing such a system is an economist's job, not a religious scholar's. We found that no economist has made such an attempt on behalf of other religions. It is now the job of Islamic economists to construct such a system.

THE FUNDAMENTAL THEORY

The fundamental theory attempts to justify Islamic economics as a discipline. Since we already have the dominant neoclassical doctrine, why should we rebuild another theory? Our immediate answer would be that the theories of interest offered by the neoclassics (loanable funds) and Keynes (liquidity preference) insist on the existence of a rate of interest somehow set by demand and supply, which is objectionable. Since we cannot accept such results, we must justify the rejection.

We cannot accept a theory without proper scrutiny in analytical Islamic economics. Moral judgment, e.g., abhorring interest, must also be justified. The pioneers of Islamic economics who led an intellectual movement to establish the foundations of Islamic economics were primarily Shari'ah scholars. They have left the challenge of interest-rate theories to our generation. That is why we must meet the challenge with economic tools of analysis.

THEORIES OF INTEREST

Theories of interest (both loanable funds and liquidity preference) establish some principles that have gained popularity. The first is that the homoeconomicus allegedly rational behavior necessarily mandates an intertemporal allocation of resources, where present (real) consumption commands a premium and future (real) consumption suffers a discount. Theories of interest postulate a demand for money inversely related to the reciprocal of the price

level and a policy-determined supply of money. The intersection sets an equilibrium interest rate. However, we cannot find Such a market in the real world, except for the government debt market, which can be an approximation. The popular reason is that government bonds are the nearest alternative to holding money. They face no default risk. They are easily negotiable in the bond market, causing them to be highly liquid.

DOUBTS ABOUT THE INTEREST RATE

The mere existence of a positive (>0) interest rate is a source of two inefficiencies. The first is Samuelson's (1958)-Friedman's (1969) inefficiency. A positive interest rate imposes a cost on using money in transactions. According to the classical loan contract, borrowers would guarantee the repayment of principal and interest. Lending one's cash to banks (in the form of time deposits) and holding bonds would imply a guaranteed return and principal. The continued desire to make a guaranteed return on money leads to the attempts of economic agents to use as little cash as possible in transactions. However, to keep the volume of transactions from falling, traders substitute real resources for money in transactions and lend their cash balances spared from transactions.

An example would be that because of a positive interest rate, those who receive regular cash through transactions, like supermarkets and department stores, enter into standing arrangements for collecting and transporting money to their banks periodically. Any increase in the positive interest rate increases the incentive to modify the standing arrangements, allowing for the depositing of cash at shorter intervals. Transporting cash from supermarkets and department stores would require banks to hire labor to collect money from shop tellers and rent or purchase armored cars with hired drivers to transport the cash within a specific schedule. In an economy with electronic payments, banks credit cash to shop accounts through credit and debit cards. Shops would use software and trained accountants to monitor their bank accounts and channel any money over and above certain limits from demand to time deposits. The extra labor and capital introduced by banks and shops into the transaction process to substitute for cash would be withdrawn from elsewhere in the economy. The reduction in the output of goods and services in one corner of the economy would not be offset in the trade sector, where only the volume of transactions is maintained. The final result is a GDP below

the potential full employment level. We term the reduction in total output as the Samuelson-Friedman inefficiency (Samuelson, 1958; Friedman, 1969).

The above substitution process may not be limited to the case between interest-bearing debt and cash in the vault. It can extend between interest-bearing debt and many other assets, e.g., profit-bearing assets like Sukuk, shares, and investment accounts with Islamic banks. The reason for the dominance of interest-bearing debt is that the classical loan contract implies the guarantee of principal and interest. Equity- and investment-based assets include an element of profit and loss sharing, PLS. We exclude cases where asset holders abhor interest for religious reasons as it would not be readily measurable. Such dominance no longer exists when such abhorrence turns into a legal prohibition.

The substitution effect among assets is supposed to work to improve allocation; however, in cases where cash in the vault and other profit- and investment-based assets, the reduction of the latter assets in favor of cash would harm total output. That is the general case of Samuelson Friedman's inefficiency.

Note that neoclassical economists have made their monetary analysis in a world with perfect competition, where there is no reason to hold money. In an imperfect model, other inefficiencies surface. The second type of inefficiency appears with transactions in a price-searching environment; once we replace the neoclassical perfect-information model with a price-search model, market price takers become price searchers. In collecting price information, traders cannot internalize the extra information they collect but do not use it. The failure of information internalization discourages traders from conducting the price searching necessary to make the volume of transactions commensurate with maximum output. We can remove such inefficiency by adding to the price-searching model information specialists who would price-search for an extra fee to be charged as part of the offered prices of the commodities they finance, implying a link between trading and finance. The absence of information specialists in finance hinders conducting the volume of transactions necessary to produce and trade the optimum output. Hosios (1990) pointed out such efficiency. We will, therefore, call it the "Hosios inefficiency."

Hosios' *theory of information blockage* has a background of imperfect information and price search. It implicitly assumes a neoclassical institutional arrangement for finance, where the finance sector is separate from the commodity sector. In other words, financing commodity purchases is done through "borrow then purchase." Therefore, the banking sector plays no role in price searching in the commodity sector.

An alleged "equilibrium interest rate" would summarize all the rates of time preference. These would be attached to all the (heterogenous) commodities (in consumption or investment urgency) by all individuals (with heterogenous preferences). The problem is that such a link between time preferences and the interest rate is missing and is impossible to bring into the usual processes of economic behavior. Our fundamental impossibility theory stresses that we have a missing gap with no process to fill it. Our theory is, therefore, an impossibility theory.

Conventional finance places banks' functions within a commercial banking model, where banks borrow money from customers through deposit products and lend it to borrowers, i.e., to sell present against future money, using the classical loan contract. Islamic finance expands the functions of banks through a universal banking model. It allows banks to provide customers with the commodities they require finance and participate with them in their investment ventures. Banks offer such services based on timed partnerships (profit and loss finance, Mudaraba, or PLS). They can also offer commodities under a permanent partnership or Musharaka. Alternatively, they can offer usufructs under operating lease (Ijarah) or Ijarah Muntahia Bettamleek, as well as other arrangements that involve usufruct provision. Institutionally, Islamic finance transforms the financing processes to involve banks in trade and investment, including specialization in trade information and information related to investment feasibility. Financial institutions must combine collecting information about finance users, commodity potential trading opportunities in which their potential customers are interested, and investment opportunities that satisfy the feasibility criteria. Being *universal banks*[34], Islamic banks may ultimately establish trading and investment subsidiaries

34 Relationship or universal banks are "large-scale banks that operate extensive networks of branches, provide many different services, hold several claims on firms (including equity and debt), and participate directly in the corporate governance of the firms that rely on the banks as sources of funding or as securities underwriters, "(Al-Jarhi, 2003).

specialized in certain commodities. It would relieve banks from the burden of serving their customers in trade and allow them to focus on finance. Since finance is available to purchase consumption and investment commodities/assets, the financial institutions must, directly or indirectly, become information specialists in trade information through subsidiaries.

Price-searching behavior in this system starts at the doors of the monetary and financial system. In other words, we cannot have perfect information and price taking in a monetary system. Imperfect information is the *raison d'être* of money. The economy is a price-searching one. The interest rate or the relative price of the present against future money is not market-determined. In reality, it is only a price administered by the central bank.

Time preference for commodities is simple to explain. Mortals are uncertain of the length of their life. Their death is inevitable, but its timing is unknown. Therefore, economists agree that present consumption is generally more preferred as it is more certain compared to future consumption. Therefore, Present consumption would carry a premium over future consumption due to the rate of time preference.

To simplify further the concept of time preference, we construct a simple model of (n) commodities and (m) individuals, such that:

$$\boldsymbol{X}_{\boldsymbol{t}} = (\boldsymbol{x}_{\boldsymbol{ij}}^{\boldsymbol{t}};\ \boldsymbol{i} = \boldsymbol{1}, \boldsymbol{2}, \dots, \boldsymbol{n};\ \boldsymbol{j} = \boldsymbol{1}, \dots, \boldsymbol{m}) \qquad (1)$$

People are mortal with unpredictable life spans. Therefore, present consumption is more certain than future consumption.

A household has a set of rates of time preference, RTPs, defined as:

$$\boldsymbol{A}_{\boldsymbol{t}} = (\boldsymbol{a}_{\boldsymbol{ij}}^{\boldsymbol{t}};\ \boldsymbol{i} = \boldsymbol{1}, \boldsymbol{2}, \dots, \boldsymbol{n};\ \boldsymbol{j} = \boldsymbol{1}, \dots, \boldsymbol{m}) \qquad (2)$$

Note that different individuals have different RTPs, as we assume the most likely case of heterogeneous preferences. The quantity is time-equivalent to the higher quantity dated in the next period, , so that the rate of time preference for a commodity (i) by an individual (j) is equal to:

$$a_ij\hat{}t = (x_{ij}^{t+1} - x_{ij}^{t}))/(x_{ij}^{t}) \quad (3)$$

We will offer a practical example of the missing link. Consider an agent who wishes to borrow $100,000 to be repayable at the end of the year. Alternatively, a finance provider offers to finance the purchase of a car for the same person who is interested in buying the car. If Murabaha were the finance contract, the finance user and the bank would negotiate a markup over and above the spot sale price. The markup will depend on the buyer's time preference rate and the finance provider's assessment of the financial market conditions (the demand for and the supply of finance and the financial risks involved). Negotiations will result in a mutually acceptable markup, voluntarily determined, while reflecting economic fundamentals, including market conditions. When borrowing $100,000, the finance provider would attach the administered interest rate (usually the prime rate plus some margin) without particular relation to economic fundamentals.

The finance user and provider would negotiate a markup for the transaction at a particular time. There is no presumption that such markup would hold for other finance transactions. We know that the prime rate is the same for all banks. However, more than one variable influences the markup rate resulting from such negotiations. The first is the prime rate of interest administered and set by the monetary authority. The second is the (car) market-specific risk. The third is the customer-specific risk. We can reasonably predict that information specialization among Islamic banks would ultimately result in one risk differential for the car market. We can also expect that the customer-specific risk differential would be equalized among banks for each finance user through the exchange of credit information among banks as well as the process of credit rating. Ultimately, competition smoothes up the markup rates across the market with small differentials reflecting market- and customer-specific risks.

Now we can ask: what is the rate of time preference that the borrower would attach to the borrowed money? Logically, the weighted average of the RTPs for the commodities potentially purchased using the same amount of borrowed money should be. Assuming an amount of money that is sufficiently large,

the borrowed sum can buy *many commodity combinations*[35]. Each combination would have a weighted average rate of time preference. We can, therefore, realize that it is impossible to assign a single rate of time preference to a sum of money, except in one case, when there is only one commodity to purchase with the money. Whether money is a barren asset, yielding no return or utility, is irrelevant to this conclusion. It is related to money being a generalized purchasing power that different individuals can use differently. The link between the rate of time preference of the borrower and the imposed interest rate is missing. We suddenly realize that the administered interest rate has no relationship with economic fundamentals.

The fact that the central bank volunteers to administer the interest rate was a solution that mistakenly dressed the interest rate into the garb of a presumed but unrealistic equilibrium price resulting from a centralized exchange. The central bank's action would be like that of the auctioneer in the general equilibrium model of Leon Walras, who volunteers to act as a manager of *tâtonneusnt*. It is reminiscent of the Walrasian arrangement, where the auctioneer is an absolute dictator. One could not possibly confuse this case with *laissez-faire* but more so with fascism. Scrutiny would unveil the weakness of such a model. The emperor is naked indeed.

There is no market process associated with conventional finance to settle this type of money market to an equilibrium price (interest rate). As an administrator, the monetary authority leans on the government bonds market to guide its interest-rate setting. Admittedly, government bonds can be considered the nearest substitute for money, but they are not money. The demand and supply of government bonds do not summarize the lending and borrowing activities in the national economy, as the government is not the only borrower in the economy. Mimicking the role of the auctioneer in centralized exchange by the central bank keeps the auctioneer's role but ignores the relevant market's role.

35 Borrowing usually takes place with large sums of money. Because of the premium imposed on obtaining present money, people would tend to consider borrowing only when they wish to spend beyond their income constraint. due to the information and transactions costs involved, there are economies of scale in borrowing that justify large-size loans. Using credit cards as a means of borrowing would be justified only for short periods, as the rate of interest imposed would be exuberant.

AL-SUWAILEM'S CONCEPT OF TIME RELATIVITY

Al-Suwailem (2013) argues that *time is an abstract concept.* Einstein's Relativity Theory supports his view of time: Time is "*relational*." That is, there is no objective or independent entity called time. Likewise, there is no objective or independent entity called space. Both time and space are relational, i.e., they emerge from their relationship with real objects.

If time is relational, it arises only in connection to real objects, i.e., goods and services. However, this requires integrating the time value with the value of real goods and services.

Moreover, with the Relativity Theory, the universe has no global or universal clock. Time is relative. But relative to what, from an economic vantage point? We can evaluate different periods by the events during which they take place. Without such happenings, time has no value by itself.

Al-Suwailem concludes that time has value only when associated with something that works to generate added value over time. Time would, therefore, have a price in such cases. For example, when time is associated with work, proper compensation in the form of a wage or a product price arises. In both cases, compensation would depend on the quality of work and the product type when time is associated with the ownership of a commodity (a good or a service) to facilitate present against future consumption. In such a case, a deferred price would be higher than a spot price. The time associated with money remains an imaginary idea without being associated with something (labor or commodity) that provides an intrinsic value. The dilemma is that any rate of time preference associated with money will depend on the basket of goods (assets, commodities) money holders potentially buy. In all such cases, it is impossible to set a unique rate of time preference to a sum of money that would underline a premium of present over future money.

THE FUNDAMENTAL THEORY IS AN IMPOSSIBILITY THEORY

Interest rate theories (loanable funds and liquidity preference) give the impression that in some specified worlds, people make intertemporal choices. Dividing expenditures between the present and the future requires a relative price or a discount rate. The implication is that a theory of intertemporal al-

location would provide a rate that, when applied to money as a means of exchange, will give a weighted average of the time preference for all commodities, which can be traded against money by all individuals.

This result is impossible. To explain, let us first introduce some axioms about the rate of time preference for a commodity:

First, we can present a few facts as axioms.

- All individuals are mortal, with an uncertain life span.
- The result is that future consumption is less specific than present consumption.
- Consumption applies to commodities that have intrinsic values (utility).
- A commodity that has no intrinsic value is not consumable.
- Money is not consumable by itself. Nevertheless, we can use it to acquire consumables.
- Any sum of money is exchangeable for many alternative baskets of consumables.
- The larger the number of baskets gets, the larger the sum of money in question, making it impossible to tie a unique rate of time preference to money.
- Different commodities have different rates of time preference for the same individual. In other words, commodities have heterogeneous time preferences.
- Different individuals have different rates of time preference for the same commodity. In other words, individuals have heterogeneous preferences.

The rate of time preference for a specific commodity as perceived by an individual depends on his real income, income relative to others, income distribution, and whether the commodity in question is a basic need or a luxury. We can expect basic needs, like food, clothes, shelter, primary healthcare, and transport, to have higher rates of time preference than luxury goods.

The rate of time preference for a specific commodity by an individual is not related to its price. Therefore, some food items like bread and water would have high rates of time preference, although they may have a low price. In other words, time preference is unlike simple scarcity. It is scarcity over time or intertemporal scarcity. Because of time preference, each present commodity is relatively more scarce than its future counterpart.

A unique market-wide rate of time preference for an individual commodity requires the summation of the demand curve for its present and future units.

Extending the SMD conditions to this case would mean that horizontal summation is impossible without homogeneous preferences and homothetic goods. We cannot assume preference homogeneity and homothetic goods across the board for an apparent lack of realism.

The conclusion is that we cannot construct *market demand and supply* schedules for spot units of each commodity against its future goods every two successive periods.

The SMD conditions mean that commodities do not have an equilibrium rate of time preference.

For any sum of money used to purchase several alternative baskets of commodities, we can assign no unique rate of time preference to it because:

- The purchasable basket is not unique.
- Each commodity in a potential basket does not have an equilibrium rate of time preference.

Therefore, assigning an equilibrium rate of time preference for money is impossible.

That is proof of the fundamental theory.

A SIMPLIFIED EXPLANATION OF THE FUNDAMENTAL THEORY

Now we know that a positive interest rate harms the economy in more than one way, as Samuelson-Friedman and Hosios show. What about the theories

of the interest rate? How can we respond to them? Such theories claim that interest is the premium of present money over future money. It reflects the time preference for cash. $100 of current money should be worth more than $100 of future funds. People are mortal. They are less confident about future consumption than about present consumption.

We can answer this by saying that while present consumption is "time-preferred" to future consumption, this does not imply the need for money. Money is barren, and we cannot consume it. A neoclassical economist would retort that while one cannot consume money, one can still buy present and future goods with future money. The neoclassics claim that we can represent time preference between present and future commodities by time preference between present and future money. So, we understand that the rate of time preference on a present to future $100 summarizes the time preference on the basket of commodities that that sum of money can purchase. Even if doubtful, the neoclassical economist would respond that one can calculate the weighted average of the rate of time preference for any basket of commodities. Going along with this logic, we ask: how many baskets of commodities can $100 purchase? The answer is many. Can those baskets have the same weighted average rate of time preference? Of course not.

The neoclassical economists may say yes. We argue back that this is so under two conditions. First, all preferences are the same, i.e., homogeneity of individuals. Second, all commodities are homothetic. It is a fanciful world of interest when one can assign any basket of commodities a unique rate of time preference. Is this a real case? Of course not. It is possible only in the trivial case of one individual and one commodity. With preference and commodity heterogeneity, no unique time preference rate is assigned to a sum of money, regardless of the content of the various baskets it can purchase.

In plain words, we have two conclusions. First, we cannot construct market demand and supply schedules to produce an equilibrium interest rate. Second, the interest rate on money cannot summarize all individuals' time preference rates on commodities. We now have our impossibility theory that emphasizes the missing link between the interest rate and commodity time preferences.

The fundamental theory attempts to justify Islamic economics as a discipline. Since we already have a dominant economic doctrine in the form of neoclas-

sic economic theory, why should we rebuild another theory? Our immediate answer would be that the theories of interest offered by the neoclassics (loanable funds) and Keynes (liquidity preference) insist on the existence of a rate of interest somehow set by demand and supply. On the one hand, we cannot reject such results or ignore them based only on abhorring interest charges on lending. On the other hand, we cannot relate the interest rate imposed by the monetary authority to individuals' time preferences. It is impossible to reduce all the rates of time preferences for all commodities by all individuals to a rate of interest on money. This impossibility theorem justifies developing an alternative theory and an alternative economic system. Market capitalism has performed unimpressively in terms of equity and stability. Its lack of performance is an empirical proof of the failure of the theory and the system. Therefore, we will propose an alternative economic system in which the interest rate and the classical loan contract play no role. That enables us to provide further advantages in reaching equity and stability.

We cannot accept a theory without proper scrutiny in analytical Islamic economics. An essential part of our methodology is that moral judgments, like abhorring interest, must also be analytically justified while we do not claim a positive theory.

Now, we have debunked all interest-rate theories. Why do we still have a rate of interest? From where does it come? The central bank is the culprit. It sets the interest rate as an administered price. It even uses it as a policy tool. Suppose the interest rate was connected to economic fundamentals. If the link between the rate and time preferences on commodities were not missing, using the rate as a policy tool would be easy to understand. It would influence the intertemporal allocation of consumption and investment, affecting the economy. We can then have an identifiable transmission mechanism from the changes in the monetary expansion rate to the real sector's economic fundamentals.

Under the neoclassical theory, there is no way we can ascertain how changes in monetary policy in the form of changing the administered interest rate can influence the excess demand functions in commodity markets. Unless we can identify specific paths for transferring the effects of changes in interest rates on the real sector, we cannot claim to be able to predict the effects of such

a policy. We can now understand why crises have been repeated and rarely resolved. We have no effective monetary policy to encounter crises with predictable results.

That is why using LIBOR as a benchmark for the markup on Murabaha is not reasonable. It is an administered price that is unrelated to financials in any country. Moreover, British policymakers set LIBOR in Britain with British economic conditions in mind. Islamic banks' Shari'ah boards are committing a grave mistake by using LIBOR for any purpose whatsoever. First, its relationship with fundamentals in the UK is nebulous. Second, it would be even less related to domestic economic conditions in other countries.

INTEREST RATE CORRUPTION

A phenomenon that gained no attention when studying Reba or the interest rate. Economic analysis confirmed that a positive (>0) interest rate leads to inefficiency. According to our Fundausntal Theory of Islamic Economics, we concluded that the existence of an equilibrium interest rate is impossible. Even if it existed, it is unrelated to the time preference rates of all commodities for all individuals. Such a link is simply missing. The interest rate administered by the monetary authority is unrelated to economic fundamentals. Predictably, there is no definite transmission mechanism carrying the effects of a change in the rate of monetary expansion to aggregate demand (consumption and investment functions).

Moreover, the presence of the interest rate causes borrowing-based economic processes to dominate the decisions of economic agents. It encourages people to use the interest rate to compare current and future values and thus directly affects the intertemporal allocation of resources. Investors also resort to comparing the rate of profit with the interest rate to verify investment feasibility. Thus, economic activities outside lending and borrowing operations are affected by a value *not determined by markets or related to economic fundamentals*. This influence is not limited to one financial aspect but permeates to all other aspects. The conventional economy, where an administered interest rate is a standard feature, has a general culture of using the interest rate in all economic decisions. It spoils things in the economy because the interest rate has no basis in the markets and is unrelated to economic fundamentals that

directly affect the production sector. Therefore, the existence of the interest rate brings with it a general culture that corrupts economic decisions so that the adverse effects of the interest rate are not limited to the mere economic inefficiencies named after Samuelson, Friedman, and Hosios. Instead, its impact extends to all economic activities by corrupting the decision-making processes and linking them to a notional value extraneous to the economy's fundamentals. We will call this phenomenon *interest corruption*.

DIVERGENCE BETWEEN WEALTH AND DEBT CREATION

Sami Al-Suwailem (2008) argues that interest is the divergence rate between wealth creation and debt creation. The structural differences and the forced dichotomy between the real and financial sectors cause interest to become a wedge between the two sectors. Both loan principal and accrued interest are guaranteed under the use of the classical loan contract, while investment capital and profits in the real sector are subject to risk. Ultimately, debt enjoys lower risk based on borrowers' guarantees and collateral. Therefore, investors are exposed to higher risks than debt. This divergence allows for the self-replication of debt, leading to the "inverted debt pyramid."

Once detached from wealth creation, debt will self-replicate, as borrowers can keep their debt balances if they can service their debt through further borrowing. Self-replication allows debt to grow faster than wealth. This results in debt services growing faster than income, eventually leading to a crash that wipes out the debt unsupported by real wealth. That may explain the debt overhang phenomenon observed in China.

Self-replication of debt leads to *Ponzi debt gauss (PDG)*, ruled out by the *intertemporal budget constraint* (IBC). However, the *IBC may not be self-enforcing in real-world activities*. Credit integration with trade and production is an effective way to reflect the IBC in real-world activities. That is absent in market capitalism, causing a dichotomy between the real and the financial sectors.

Even when we replace monetary debt with interest-based commodity debt (rare under monetary economies), PDGs lead to bubbles, crashes, and wealth destruction. In other words, *Reba is a general mechanism that leads to the self-replication of debt* and, therefore, self-destruction of the economy. That is an additional reason to feel dubious about interest-based lending.

APPENDIX TO CHAPTER II

ASSUMPTIONS AND NOTATION

The transpose of vector x is x^T, and the scalar product of vectors x and y is $x^T y$.

Assume a group of H individuals consuming M commodities, including leisure. All M commodities are for private consumption, while the remaining $(J = M - We)$ are for public consumption. To extend to intertemporal behavior, risk-sharing, and group decisions under uncertainty, we add a given physical commodity indexed by the period or the state of the world (or both) at which it is available.

(x_h^i) denotes the private consumption of commodity (i) by group member h, and X^j is the group's consumption of public goods (j). An allocation is a $(J + HI)$ vector $(X, x_1, .. ., x_H)$, where,

$$\mathbf{X} = \left(\mathbf{X^1}, \ldots, \mathbf{X^j}\right) \in \boldsymbol{R^J} \qquad (4)$$

and

$$\mathbf{X_h} = \left(\mathbf{x}\,\mathbf{^1_h}, \ldots, \mathbf{x^J_h}\right) \in \mathbf{R^I} \qquad (5)$$

and the group's aggregate demand is

the vector $(X, x) \in \boldsymbol{R^M}$, where $\mathbf{X_h} = \sum_{\mathbf{h}} \mathbf{x_h}$ (6)

We denote the vector (X, x) as e for brevity.

Each person has a utility function over allocations. We denote *h's* utility function by $Uh\ (X, x_1, \ldots\ldots\ldots, x_H)$. Such a general formula allows the utility of h to depend on the private consumption of other members either as a result of altruism (care about others' wellbeing) or paternalism (concern about others' consumptions); it may also reflect negative intragroup externalities (e.g., a member's smoking effects on others welfare). We impose no separability re-

strictions, i.e., other members' consumption of private goods may affect the marginal substitution rate between private and public goods.

Moreover, the utility functions U^h, h = 1,..., N, are well-behaved, continuously differentiable, *and strictly concave*[36]. The above form of the utility function incorporates such preferences into a model in which agents live alone for some part of their life cycle. Consequently, in many models, preferences are egoistic, of the form [*Uh(X, xh)*]. Finally, a fraction of the literature deals with market economies. In this context, preferences are strictly selfish, and all commodities are privately consumed. Interactions between group members are restricted to commodity trading. Then, the general form just defined ultimately becomes

$$U^h(X, x_1, \dots, x_H) = u^h x_h \qquad (7)$$

To specify the income constraints, let p denote the price vector of private goods, P the price vector of public goods, and y the group's total income. Again, for brevity, the vector (P, p) is often denoted n, so the aggregate demand (as a function of prices and income) becomes $e(n,y)$. The group has limited resources. Specifically, its purchase vector e=(X, x) must satisfy a standard market budget constraint of the form:

$$\pi^{\mathbf{T}}\epsilon = \mathbf{P}^{\mathbf{T}}\mathbf{X} + \mathbf{P}^{\mathbf{T}}(\textstyle\sum_{\mathbf{h}} \mathbf{x_h}) \leq \mathbf{y} \qquad (8)$$

All functions used are homogeneous in prices and income of zero degrees. We normalize the group's total income to one. The group's budget shares can be defined by

$$\varphi = (\varphi_1, \dots, \varphi_M) \; where \; \varphi^i = \frac{\pi_{i\,\epsilon}\, t}{y} \qquad (9)$$

36 In some cases, stronger restrictions may be required (e.g., infinite differentiability; strong concavity, so that that the matrix of second derivatives is negative definite everywhere; or strong quasi-concavity, requiring that the restriction of this matrix to the subspace orthogonal to the gradient is negative definite).

$$\Psi = (\Psi_1, \ldots, \Psi_M), \text{ where,} \quad (10)$$

$$\Psi^i = \frac{\pi_{i\xi^i}}{y} \quad (11)$$

Assume, again, that total income is distributed between individuals, with each individual *(h)* receiving some amount *(Yh).* Now, we can ask our critical question. Under what conditions we can obtain some (possibly vector-valued) aggregate statistic ($\bar{y}$), dependent on income distribution within the group, such that aggregate demands can be functions of prices and *y* only? The answer is when individual demands have the form

$$x_h^i(p, yh) = \sum_{k=1}^{K} a_h^{k,i}(p) b_h^{k,i}(y_h) \quad (12)$$

In a neoclassical world, with perfect information

CHAPTER III:

ECONOMIC PERFORMANCE: EFFICIENCY AND EQUITY

ECONOMIC PERFORMANCE: EFFICIENCY AND EQUITY

Neoclassical economics considers efficiency and equity separable issues (Klasen, 2006). However, five strands of the literature suggest that *more significant equity will promote greater efficiency*. Findings from the experimental literature on the importance of equity or fairness, the subjective well-being literature on the importance of relative incomes and inequality on subjective well-being, the distribution-adjusted well-being literature that combines measures of mean incomes with measures of income inequality to derive welfare judgments across space and time, the literature on the relationship between income and gender inequality on economic growth, and finally the literature of Islamic economics on Zakah as a redistributive tool consider the change in the productivity of the poor when Zakah adds to their portfolio of productive assets.

Neoclassical economics, with the advent of marginalism, emphasized efficiency. The solution to the economic problem became possible by solving the problem of maximizing a utility function that was subject to an income constraint. It produced marginal conditions that indicate an optimum allocation of resources. Such perception cannot easily be generalized from consumers' and producers' behavior to the whole economy, as this faces a serious aggregation problem.

The two laws of welfare economics summarize the inclination of neoclassical economics to efficiency. The first law focuses on efficiency, and the second addresses the possibility of achieving redistribution while maintaining efficiency. The main reason lies in the narrow criterion of Pareto optimality as the central welfare economic concept, which is also the key concept used in the two laws of welfare economics. Since Pareto optimality is only *a criterion of efficiency*, neoclassical welfare economic judgments of different Pareto optimal outcomes are impossible. Economists consider them as normative issues outside the scope of economics. The evolution of neo-classical welfare economics is detailed elsewhere (Sen 1999). The underlying factor has been the reluctance to engage in interpersonal welfare comparisons, for which, following Robbins (1935), there is no sound scientific foundation.

Four strands of literature seem to challenge the separation between efficiency and equity issues. With a focus on efficiency issues, We refer to economic analyses that implicitly (or explicitly) assume that maximizing total resources in society also maximizes the well-being of that society. In contrast, a focus on equity examines the desirability of various distributional arrangements. We will argue that these four strands of literature support the view that equity and distributional considerations are both critical for maximizing the well-being of a society and that equity matters for efficiency. These strands are the experimental literature on equity and fairness, the empirical literature on subjective wellbeing, the related empirical literature on inequality-adjusted wellbeing, and the theoretical and empirical literature on inequality-growth linkages.

The five strands call for a profound rethinking of the neoclassical separation between efficiency and equity issues. A case can be made that equity concerns are central to economics. Proper treatment suggests that more equity promotes more efficiency.

THE EXPERIMENTAL LITERATURE ON EQUITY

Experimental economics has evolved into a significant field of research within economics in the past fifteen years. Recently, experimentalists have directed their attention to testing whether key assumptions of neoclassical analysis hold in experiments. Another concern is whether equity issues play a role in explaining these results. If equity is an important motivating factor,



economic analysis must include it, and thus, singling out efficiency would not be tenable.

There are three types of evidence. First, we consider the gauss between the dictator and the ultimatum gauss. In the former, a dictator decides on the allocation of a pay-off, and the other player can only accept or reject the offer, which only affects his/her pay-off. In the latter ultimatum Gaus, the proposer makes an offer, but if the other person rejects the offer, neither receives the payoff. In both Gaus, the dominant strategy would be for the proposer to offer next to nothing and for the other person to accept. However, there is a vast literature now demonstrating this is not the case, and this is the case in different cultural backgrounds, different pay-offs, different framings, and the anonymity of the players (Fehr and Schmidt, 1999, World Bank, 2005; Hoffman *et al.* 1996; Engelman and Strobel, 2005, etc.). In both Gaus, the proposers offer a substantial share of the pay-off to the other person, with an equal division sometimes being the modal offer. Other players may reject offers they consider unfair. The standard explanation for such behavior is a concern for equity or fairness. Different models have been proposed (Fehr & Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002). While there are differences between these models, all reject the notion that people are individual utility maximizers and thus reject the separability between efficiency and equity. More equity improves individual and aggregate well-being and is thus 'efficient' or improves efficiency.

A second type of experiment is the l*eaky bucket,* where a trade-off between equity and efficiency is studied explicitly to determine the relative importance of *inequality aversion* against efficiency concerns. In such experiments, managers question subjects about the desirability of redistribution from a richer person to a poorer person depending on the sums of money that get 'lost' in the transfer (Okun, 1975; Cowell, 1985). Based on such experiments, one can directly deduce the amount of inequality aversion. Results from such studies reveal that *inequality aversion* exists, i.e., that subjects find it desirable to transfer resources from rich to poor persons even if some of the transfer gets lost in the process, suggesting again that more significant equity is preferred even if the overall shared pie gets smaller as a result (Amiel, Creedy, and Hurn, 1999). However, the magnitude of determined inequality aversion is relatively small, which might be related to some resistance to such 'arbitrary' redistribution schemes (Carlsson *et al.* 2005).

A third set of experiments is about hypothetical societies, where experiment managers ask subjects about preferences for income distributions affecting their grandchildren. In these experiments, the set-up separates *risk aversion* from *inequality aversion* to see whether the reason for inequality aversion is simply a result of risk aversion or whether it exists above and beyond risk aversion.

In one experiment, directors ask subjects to choose an income distribution where their grandchildren are equally likely *to be anywhere in that distribution* to test for risk aversion. In the inequality aversion experiment, subjects choose an income distribution, but this time, their grandchild's income equals the distribution's mean income. This distinction between risk aversion and inequality aversion is also essential for assessing Rawls' theory of justice, which uses the thought experiment of the original position.

In some of his writings, Rawls called for a society where the well-being of the worst-off individual is exceptionally high by risk aversion (we fear we could be the worst off after lifting the veil of ignorance). Inequality aversion beyond risk aversion would seem to be a social contract reachable in the original position.

Results by Carlsson *et al.* (2005) suggest that inequality aversion is quite large; it exists over and above risk aversion, is related to ideological preferences, and appears to be larger among females.

All three types of experiments convey the clear message that *inequality aversion or concern for fairness is an essential motivation of economic agents*. People are willing to trade off the size of the pie for lower inequality in the distribution, although there appears to be substantial heterogeneity between people and between settings (Fehr and Schmidt, 1999; World Bank, 2005). People often reject even Pareto's superior solutions out of a concern for more significant equity. Consequently, an exclusive focus on achieving efficiency seems misplaced and does not conform to people's preferences.

RAWLS' JUSTICE THEORY

Justice is an abstract idea. Understanding the core concept of various types of justice can help scholars, lawyers, and law enforcement develop and use the theory for legislative drafting judicial review, case review, court defense, legal



research, and writing. (Said and Nurhayati (2021) discuss the essence of Rawls' Justice and its implications and compare it to other theories of justice using doctrinal legal research. While we discussed the three Rawls principles, the result of this study is that they are not reachable because one principle collides with another. Rawls prioritizes the principle of equal liberty, which precedes the second and third principles. However, we believe Justice as Fairness in action should not mean equality but rather emphasize *the concept of balance for the law in providing justice.*

SUBJECTIVE WELLBEING

Another approach to studying the importance of equity for efficiency is to tackle the problem of well-being comparisons directly through survey evidence. This new research field has developed in the past ten years and focuses mainly on analyzing answers about reported 'happiness' or reported 'life satisfaction' (Frey and Stutzer, 2002). While there are many questions and issues about the reliability and interpretability of responses to these questions, several relatively robust results have emerged from this literature. One of the factors influencing happiness is a pronounced non-linear age effect and the importance of personal work and family circumstances (with unemployment and divorce leading to much lower reported happiness or life satisfaction) (Frey and Stutzer, 2002). More important for our purpose is the relationship between income and reported happiness or life satisfaction. Here, some very robust results exist. First, a clear positive (but log-linear rather than linear) relationship exists between income levels and reported well-being within society. Oswald (2005) calls for caution regarding interpreting this seemingly log-linear relationship. Being richer at a given time increases well-being, but the increased reported well-being declines with income levels (Easterlin, 1995; Clark and Oswald, 1995; Clark et al., 2005). Evidence is less clear on what drives differences between countries in reported levels of well-being, although here, average income levels play only a minor role (Alesina *et al.*,2004; Clark *et al.,* 2005). That will ensure that inequality reduces aggregate well-being as the excess of income (over and above mean incomes) accruing to the rich generates lower additional well-being than the well-being losses associated with the income deficit (compared to mean incomes) of the poor.

Second, income growth in a society does not appear to have a noticeable impact on reported well-being. While in some studies, a small positive effect is

found, in many others, there is no effect suggesting that rising average incomes in a country have only a minimal (if any) impact on reported well-being (Easterlin, 1995; Frey and Stutzer, 2002). Third, there appears to be considerable evidence that inequality reduces perceived well-being over and above the effect it has on individual income levels (Blanchflower and Oswald, 2003; Alesina *et al.*, 2004).

The most common interpretation of these results is that relative incomes (relative to a reference group) matter more for subjective well-being than absolute incomes (e.g., Easterlin, 1995; Frey and Stutzer, 2002). Clearly, lower inequality would reduce the well-being 'penalty' the rich impose on the rest and thus lead to higher well-being. These findings support the notion that, in addition to positional competition, inequality aversion exists in the sense that high inequality reduces reported well-being, so this adds a second factor that supports the notion that more significant equity improves well-being.

DISTRIBUTION-ADJUSTED WELL-BEING MEASURES

We can combine the insights from the new experimental and subjective well-being literature with the axiomatic inequality literature started by Atkinson, Sen, and others in the 1970s to derive measures of well-being sensitive to income distribution to assess inequality's impact on aggregate well-being. The efficiency-focused analysis would concentrate on increasing the economic pie, usually measured by GDP per capita growth rates. At the same time, the findings above suggest that we should consider distributional needs when assessing aggregate well-being.

There is a small empirical literature on this topic (Sen, 1982; Kakwani, 1981; Jenkins, 1997; Chenery and Srinivasan, 1974; Klasen, 1994; Grün and Klasen, 2001; 2003, 2006). The distribution-adjusted measures based on the following formula:

$$W = \mu(1 - I), \qquad 0 \leq I \leq 1 \tag{13}$$

Distribution-adjusted well-being W is a function of mean income μ (i.e., the usual GDP per capita indicator often used for international and intertemporal comparisons) reduced by a measure of inequality We, where these inequality



measures are between 0 and 1, with higher values implying higher inequality. Thus, the existing degree of inequality adjusts mean income downward to reflect the welfare loss associated with that mean income's (unequal) distribution. Following Atkinson (1970), (W) can also serve as the *equally distributed equivalent income,* i.e., the income that would, if distributed equally, generate the same level of well-being as the actual income and the actual (unequal) income distribution.

We consider two types of such distribution adjustments. One draws from Sen (1982) and Dagum (1990), which use the Gini coefficient as the inequality indicator, with the Dagum measure providing an additional penalty for high inequality. The other type of adjustment reflects the work by Atkinson (1970) based on a social welfare function where agents exhibit inequality aversion, and a parameter drives the amount of inequality aversion (ε). An (ε) of 1 implies a logarithmic social welfare function so that we treat a percent increase in income as the same regardless of its recipient, while a higher (ε) implies higher inequality aversion.

There are essential axiomatic differences between the two measures, which Grün and Klassen (2001, 2006) describe in detail. The most crucial substantive difference is that the Gini coefficient measures derived from social welfare functions where relative incomes matter for well-being. We formulate The Atkinson-based measures where we observe a declining marginal well-being impact on incomes. Based on the discussion of the experimental and subjective well-being literature, Gini-based measures seem to be in better harmony with the findings from this literature. Regarding the magnitude of the welfare loss of inequality, the experimental and subjective well-being literature would suggest a (ε) between 1 and 2 or the Sen measure as the best approximation (see Grün and Klasen, 2006).

It turns out that the incorporation of inequality in the measurement of well-being has a very significant impact on our impression of levels of well-being as well as international and intertemporal comparisons of well-being. We will illustrate that by selecting findings from the papers mentioned above. Table 1 compares per capita income, the indicator most commonly used for international comparison of economic performance and well-being, with the distribution-adjusted well-being measures. We express the distribution-adjusted

measures as the ratio of the welfare measure to per capita income shown in the first column and, thus, the ratio of the equally distributed equivalent income to per capita income. Two findings are of particular importance. First, *the well-being penalty of inequality is substantial*. For example, in Sub-Saharan Africa, well-being is only half as high as suggested by per capita income using the Sen measure; in Latin America, it is just above 1/3 of per capita income using the Atkinson ε=2 measure. Second, significant regional differences in inequality translate into big differences in relative well-being between the regions. High inequality in Latin America means lower well-being than in more equal regions in East and South Asia.

Table 2. Average Welfare Level By Region

	GDP/cap	A1	A2	A5	Sen	Dagum
Sub-Saharan Africa	1671	65.3	46.7	30.0	48.6	32.4
South Asia	2392	71.3	54.5	38.6	54.0	37.6
Middle East & North Africa	4430	72.4	55.2	37.0	55.3	38.7
Latin America & Caribbean	5608	59.4	37.4	20.8	44.6	28.8
Europe & Central Asia	7907	80.3	66.2	47.6	62.4	45.6
East Asia & Pacific	8071	70.9	53.4	35.9	53.3	36.7
High income countries	25848	81.7	67.7	48.6	63.4	46.8

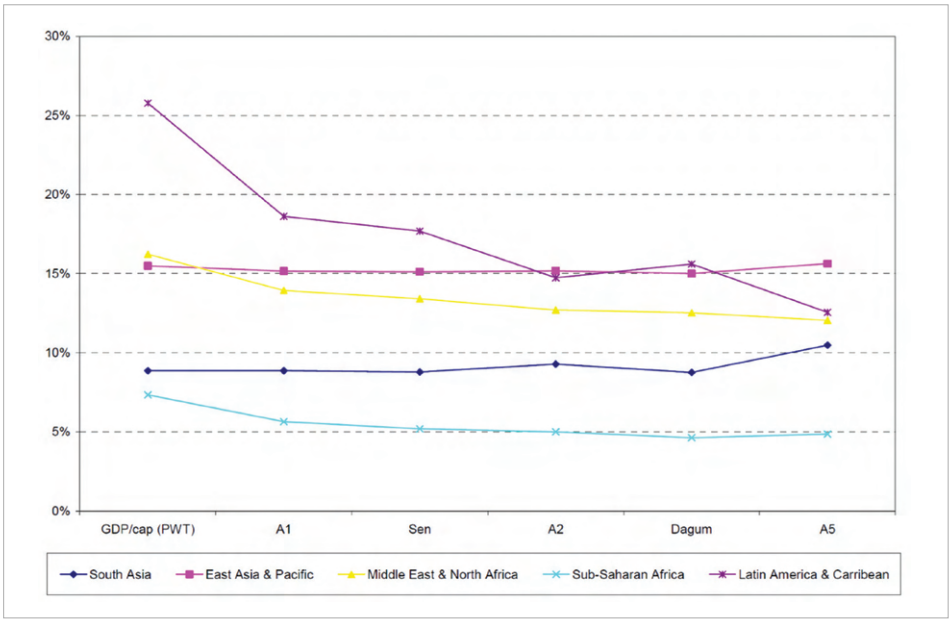
Notes: based on 101 countries. A1, A2, and A5 refer to the Atkinson measures with ε=1, 2, 5, respectively. For details refer to Grün and Klasen (2006). The figures in the distribution-adjusted well-being columns refer to the welfare level using this measure as a percentage of per capita incomes (or, equivalently, the equally distributed equivalent income as a percentage of per capita income).

Source: Grün And Klasen (2006)

Table 2 shows the well-being measures in the regions in 2000 compared to industrialized countries. When using per capita incomes, Latin Africa has reached over 25% of the income levels of industrialized countries. When accounting for inequality, it only reaches about 15% of the well-being levels of industrialized countries, again due to much higher inequality than in rich countries.

Conversely, when we consider inequality, East Asia and the Middle East are on similar levels with Latin America due to much lower inequality in the four regions.

Figure 2: Average Welfare Level By Region



Source: Grün And Klasen (2006)

Including equity as a factor affecting well-being affects trends in well-being over time. Two striking examples are noticeable here. The figure shows losses between 1988 and 1995 in the well-being of transition countries in Eastern Europe and the former Soviet Union. It was when output declined sharply in all of them, and inequality increased. While the output decline (see Y weights in Figure 2) already shows dramatic well-being problems, the increase in inequality magnifies this welfare loss significantly. Using inequality-adjusted measures, the well-being loss in some of the successor states of the Soviet Union was as high as 50-80% in a mere seven years, where the inequality increase contributes about half to the overall well-being loss.

Another is using these distribution-sensitive measures to assess US well-being changes from 1960 to 2000, as shownas When using per capita incomes, the 1950s and the 1960s led to much higher improvements in well-being than the subsequent three decades. The comparison becomes much more accentuated when we consider the distribution-adjusted measures of well-being. A comparison between the 1960s and the 1980s is instructive. Using per capita incomes, the annual growth in well-being was about four times larger in

the 1960s than in the 1990s (3.2% versus 0.8%). Using the Sen measure, the difference is much more significant, with improvements in well-being in the 1960s being 12 times more significant than in the 1980s. Using the Atkinson measure, well-being shrank throughout the 1980s. The reason for this diverging performance is that the higher income growth of the 1960s was associated with falling inequality. In comparison, the much lower growth during the Reagan/Bush era accompanied sharply rising inequality, effectively wiping out any income growth gains.

These empirical illustrations show that reasonable ways to incorporate distributional concerns in the measurement of well-being are consistent with our findings from the experimental and subjective well-being literature, leading to very different impressions of levels and changes in well-being across space and time. A critical conclusion here is, as above, that *addressing equity issues can be critical for promoting efficiency and aggregate well-being*.

INEQUALITY-GROWTH TRADE-OFFS

While neoclassical economics justifies the separation between efficiency and equity issues on conceptual grounds, there is the additional concern that a focus on equity and redistribution would cost at the cost of promoting greater efficiency, i.e., there is an *efficiency-equity trade-off* or a closely related *growth-inequality trade-off*. If such a trade-off existed, this would also partially undermine some of the findings from the previous section. If focusing on reducing income inequality reduced growth, then the 'cost' of improving equity might be larger than the perceived benefits.

The question of this trade-off is an old one in economics. Models in the Keynesian, as well as the neo-classical tradition, can yield such trade-offs. Most arguments surrounding such a trade-off center on a claim to an alleged empirical judgment about the role of *inequality in promoting savings and providing effort incentives*. The savings argument turns on *the claim that rich people are more likely to save than poor people. Thus, redistribution from the rich to the poor will depress aggregate savings and economic growth*. The incentive argument is more focused on the process of redistribution and argues that redistribution via high marginal taxes blunts incentives for the effort, which depresses overall economic growth.



While both arguments have some plausibility, their empirical relevance is open to question. In particular, *there is evidence that the middle classes have the highest propensity to save and typically fare poorly in a highly unequal society* (Ray, 1998). Second, while the incentive argument is bound to have some relevance at the extremes (payment, largely regardless of effort, is sure to depress incentives as the experience of socialist countries has amply shown), its relevance is less clear when redistributive policies of the type undertaken in rich countries are considered (see, for example, Atkinson, 1998).

In the last ten years, a range of models has precisely suggested the opposite relationship, i.e., inequality reduces economic growth. Conversely, reducing income inequality might promote growth and efficiency. These models concentrate mainly on three issues. The first argues that high inequality increases capital market imperfections for poor people because of their curtailed access to credit and insurance. It prevents them from engaging in productive investments and forces them to concentrate on low-risk but low-return economic activities, which depress overall growth and efficiency [37]. The second argument is focused on political and social stability and argues that high inequality reduces both and thus depresses investment and growth (Rodrik, 1999). The third argument turns on the process of redistribution and argues that high inequality will lead to calls for high marginal taxation of the median voter (the voter that essentially decides on political outcomes), which will then blunt incentives (Alesina and Rodrik, 1994).

Given the opposite conclusions from these different models, the relationship between inequality and growth becomes an empirical question. Since reliable and (roughly) comparable distributional data have only recently become available for many countries, investigating this empirical relationship has been the focus of intense debate and research in the past decade. While results are going in both directions, the preponderance of evidence suggests that, if anything, *initial inequality seems to be associated with reduced economic growth*[38]. It also appears that the channel operating via credit market imperfections and political and social stability are particularly relevant in explaining this effect (Deininger and Squire, 1998; World Bank, 2000). While these findings suggest that *initial income* (particularly initial asset) inequality harms subsequent eco-

37 See Galor and Zaira, 1993; Deininger and Squire, 1998; World Bank, 2005.

38 See, e. g., Deininger and Squire, 1998; Alesina and Rodrik, 1994, Lundberg and Squire, 2003

nomic growth, the literature is less conclusive on the impact of redistribution on subsequent growth (e.g., Forbes, 2000; Banerjee and Duflo, 2003). Here, the results are less clear, with different studies suggesting opposite conclusions. This uncertainty is primarily related to data and estimation issues, which are more challenging to solve. Country-specific research has shown that redistribution and distribution-sensitive policies can provide an essential boost to kick-start development, as was the case in many East Asian countries (Fai and Ranis, 1988; World Bank, 1993; Timusr, 2006; Grimm, Klasen, and McKay, 2006; Ravallion, 2005); they can also lead to lower growth, depending on the instruments chosen for redistribution (e.g., Besley and Cord, 2006; Grimm, Klasen, and McKay, 2006). Even if this last point remains contentious, *there is little evidence of a clear growth-equity trade-off*. The opportunities for promoting growth through higher equity are considerable, particularly in high-inequality regions such as Latin America (e.g., World Bank, 2006).

A related theoretical and empirical literature investigated whether gender inequality affects economic growth. A few models suggest that gender inequality in education or earnings can lower growth and lead to a self-reinforcing poverty trap (Lagerlöf 2003, Galor and Weil 2000). The empirical literature has found considerable support for such a view. Several papers have particularly documented the negative impact of gender inequality in education on growth (e.g., Knowles et al., 2002; Yamarik and Ghosh, 2003; Klasen, 2002; Klasen and Lamanna, 2003). The effects are sizable and account for a significant portion of the poorer growth performance in past decades in South Asia and Sub-Saharan Africa (Abu-Ghaida and Klasen, 2004). Also, greater equity in this division appears to lead to greater efficiency.

While both arguments have some plausibility, their empirical relevance is open to question. There is evidence that the middle classes have the highest propensity to save. They typically fare poorly in a highly unequal society (Ray, 1998). While the incentive argument is bound to have some relevance at the extremes[39], its relevance is less clear when redistributive policies undertaken in rich countries are considered (see, for example, Atkinson, 1998).

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39 The experience of socialist countries has shown that payment regardless of effort depresses incentives.



income inequality might promote growth and efficiency. These models focus on three issues. The first argues that *high inequality increases capital market imperfections for poor people* because it curtails their access to credit and insurance. That inhibits their engagement in productive investments and forces them to concentrate on low-risk and return activities. The ultimate result is to depress overall growth and efficiency (Galor & Zaira, 1993; Deininger & Squire, 1998; World Bank, 2005). The second argument is focused on *political and social stability* and argues that high inequality reduces both and thus depresses investment and growth (Rodrik, 1999). The third argument turns on the process of redistribution and argues that high inequality will lead to calls for *high marginal taxation of the median voter* (the voter that essentially decides on political outcomes), which will then blunt incentives (Alesina & Rodrik, 1994).

Given the opposite conclusions from these different sets of models, the relationship between inequality and growth becomes an empirical question. Since reliable and (roughly) comparable distributional data have only recently become available for many countries, investigating this empirical relationship has been the focus of intense debate and research in the past decade. While results are going in both directions, the preponderance of evidence suggests that, if anything, *initial inequality seems to be associated with reduced economic growth.*[40] It also appears that *the channel operating via credit market imperfections and political and social stability appears to be particularly relevant in explaining this effect* (Deininger & Squire, 1998; World Bank, 2000). While these findings suggest that initial income (particularly initial asset) inequality harms subsequent economic growth, the literature is less conclusive on the impact of redistribution on subsequent growth (e.g., Forbes, 2000; Banerjee & Duflo, 2003). Here, the results are less clear, with different studies suggesting opposite conclusions. This uncertainty is primarily related to data and estimation issues, which are more challenging to solve. Country-specific research has shown that redistribution and distribution-sensitive policies can provide a significant boost to kick-start development, as was the case in many East Asian countries[41]; they can also lead to lower growth, depending on the instruments chosen for redistribution (e.g., Besley and Cord, 2006; Grimm, Klasen, and McKay, 2006). Even if this last point remains contentious, there is little

40 See, e.g., Deininger and Squire, 1998; Alesina and Rodrik, 1994, Lundberg and Squire, 2003

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The fifth strand of the literature comes from Islamic economics concerning Zakah, which mandates a wealth levy to be centrally collected annually and then given to the poor.

ECONOMICS FINAL STAND ON EQUITY

There is a long and proud tradition within economics *to think of equity issues from a normative perspective*. Considering the five strands of literature we discussed, it is not necessary and helpful to confine the topic of equity to normative economics. We have tried to show that one cannot undertake positive economic analysis focusing on efficiency issues without considering equity issues as a central ingredient for economic analysis. The experimental and subjective well-being literature has demonstrated that equity concerns affect behavior and well-being, and the empirical implications for assessments of well-being (and associated policy choices) are significant. Moreover, the long-suspected trade-off between equity and efficiency does not appear to hold in practice, and greater equity might be a pre-condition for achieving greater efficiency in many contexts. Thus, the reluctance to explicitly consider equity issues in theory and applied within economics distorts analysis and policy advice and leads to erroneous and sub-optimal policy recommendations.

42 See, e.g., Knowles et al. 2002; Yamarik and Ghosh, 2003; Klasen, 2002; Klasen and Lamanna, 2003.



Stating that equity matters for efficiency analyses can only be the starting point for a much broader research agenda on how to incorporate equity issues within economic analysis. Among the issues to consider are the types of inequality that appear to matter for well-being and efficiency (e.g., incomes, assets, education, opportunities, freedoms?, see Sen 1992), how to model that attitude towards inequality adequately differs between people, and settings (see Fehr and Schmidt, 1999), how to model the political economy of inequality, and whether the equity-focused results within a country also translate to equity between countries or at a global level (e.g. Klasen, 2006; World Bank, 2005). Thus, much more work is needed to demonstrate that embarking on this exciting and vital research agenda is worthwhile.

THE SALIENT FEATURES OF ZAKAH*

Zakah is one of the pillars of Islam[43]. Denying it by a Muslim is tantamount to apostasy, which is equivalent to treason in an Islamic State.

It is similar to a redistributive wealth tax to which all assets, *Amwal*, are subjected beyond a specific limit, regardless of the age or status of their owners. It is a religious obligation of each Muslim. Nonetheless, the Islamic State can levy a similar tax on its non-Muslim subjects for the same purposes. The assets on which *Zakah* is payable must fulfill the following conditions:

1. Assets must be capable of Growth, except for monetary balances.
2. Value owned exceeds a certain minimum level called Nissab.
3. The value owned exceeds the necessary amount of assets whose income supplies the basic needs of their owners, Hajiat Asliah.
4. Basic needs include food, clothing, shelter, defense weapons, debt repayment, work tools, house furniture, and transportation for the owner, his wife, children, and those for whom he is financially responsible.

43 An earlier version of the author's paper upon which this section was based, was presented to the Second International Conference on Islamic Economics (Islamabad, March 1983). The author benefited from Ausaf Ahmad's paper (1982), the comments of Sayed Taher of the Islamic University, Islamabad, and of other conference participants. We am also grateful for the comments of Ibrahim Ibrahim, the editorial assistance of Mrs. Fatema Bashier, and the typing efforts of Mrs. Elham Ghosheh, all at the Arab Monetary Fund. Two anonymous referees also contributed substantial comments which assisted in correcting some errors. The author is grateful for their assistance.

5. If the asset is either cattle or money, its ownership by the individual must continue uninterrupted for one year before Zakah becomes due.

VI. KINDS OF *ZAKATABLE* ASSETS[44]:

1. Animal wealth, except working animals.
2. Gold, silver, and money.
3. Jewelry beyond reasonable requirements.
4. Commodities (including assets) in the hands of merchants for exchange (working capital).
5. Crops and fruit.
6. Rented land.
7. Honey and animal products.
8. Mineral resources.
9. Marine products like fish, pearls, ambergris, minerals extracted from the sea, coral, etc.
10. Buildings and factories.
11. Wages and salaries (as they are received).
12. Stocks, Sukuk, investment certificates, and other financial assets.

VII. RATES OF ZAKAH:

According to the common practice based on the opinion of most jurists, the income from rented land, buildings, and factories are subject to Zakat at an annual rate of 2.5%, and wages and salaries are Zakatable not as they are received but, with other wealth, at the end of the year. We have adopted the opinion of Al-Qardawi, who considers wages and salaries to be Zakatable when they are received and to subject the yield of rented land, buildings, and factories, net of depreciation, to a rate of 10% (analogous to rain-fed crops).

44 Based on Yusuf Al-Qaradawi, Fiqh Al-Zakah, Al-Risalah est., Beirut, 3rd ed., 1397 H, 1977 g.

VIII. THE USES OF *ZAKAH* REVENUE

Al- Quran mentions eight uses.[45]

1. the poor
2. the needy
3. *Zakah* collectors
4. "those whom we wish to reconcile their hearts
5. to free captives
6. insolvent debtors
7. the cause of Allah
8. the wayfarer

Putting the poor and the needy on the top of the list allows them the highest priority. That reflects the ostensibly distributive nature of *Zakah*.

IX. HOW MUCH TO BE GIVEN

The poor and the needy can be divided into two categories: those capable of earning a living and those who are not.

The first group gets assets that would be sufficient and suitable to enable each to sustain his/her living, e.g., tools of the profession, capital for an enterprise, land to farm, etc. Members of this group would be made properties in a way that disqualifies them from obtaining a share in *Zakah* in the future.

The second group would get income maintenance to sustain themselves periodically, e.g., monthly or weekly.

This redistribution method enables the first group to cross the subsistence line into property ownership. Thus, they find themselves interested in saving to maintain their wealth on the one hand and to accumulate on the other hand. Their saving propensity is not smaller than their wealthier counterparts.

This chapter presents some ideas for constructing an Islamic economy's macro-distribution model. It introduces a model based on the concept that in the Islamic (in contrast to Muslim) society, most Muslims are propertied, though

45 The Glorious Qur'an, Al-Taubah, IX. 60.

to different degrees, because of the application of *Zakah*. That implies two critical propositions. *First*, the study of distribution is inseparable from that of redistribution. *Second*, the distinction in saving behavior between "capitalists" and "laborers" becomes immaterial.

The model results indicate no predominance of the behavior of any particular class to the determination of either factor shares or profit rate.

The model results also indicate that an Islamic economic system would have higher growth, higher return on capital, and more equitable distribution of wealth than an economy of market capitalism of the Kaldor-Pasinetti type.

WESTERN APPROACHES TO DISTRIBUTION

Western capital, growth, and distribution thought split between traditionalists and non-traditionalists. The traditional approach encompasses the classical, Marxist, and Austrian theories, while the non-traditional includes neoclassical economics and the post-Keynesians.

THE TRADITIONAL APPROACH

The following review of the traditional approach will be limited to the Austrian and Marxist theories since providing a compact description of the classical capital theory would be challenging.

I. FACTORS AFFECTING DISTRIBUTION

The traditionalists apply a choice-theoretic structure to the allocation of resources. Nevertheless, extra-economic variables determine the distribution. Analysts usually divide Society into arbitrary socio-economic classes: workers, capitalists, and sometimes landlords. The social behavior embedded in each class's structure determines the long-run output distribution.

The size of the working class is assumed to depend upon the real wage. Workers' social behavior is such that they do not save. Instead, when their real wage rises above subsistence, their natural rate of growth increases until the real wage rate returns to its lower level through competition for subsistence.

The capitalist class does all the savings. They provide capital for the industry. Their social behavior is such that larger profits increase savings. Landowners



receive rent on their property, which is determined by the differentials between the degrees of fertility of different plots.

II. THE CONCEPT OF CAPITAL

The traditionalists viewed production as a result of using labor only or labor and land. The capital was considered neither fixed nor durable but circulating and continuously reproduced. It is composed of "stored-up subsistence" owned by capitalists which would permit advances to laborers, landowners and capitalists" (Stigler, 1968: 275).

THE MARXIST APPROACH

The original Marxist approach contains ambiguity and uneven rigor. However, the main propositions of Marx have been recently restated less ambiguously and more rigorously (von Neumann, 1945-1946; Morishima, 1971; Brown, Sato and Zarembka, 1976: 240-269). Marx stressed the extra-economic variables influencing distribution in a capitalist economy[46]. He intertwined the classical concepts of socio-economic classes with Hegelian dialectics to produce a distribution theory based on dialectical materialism.

Marx offered two important postulates: the inverse association between profits and wages, capital growth, and means of subsistence (consumption per worker). Nevertheless, he was only vaguely aware of how the two propositions are related (Marx, 1968: 94 and 218).

Marx's arguments related to those propositions implied two assumptions. First, defining the m*aximum attainable real wage rate* as the rate that would prevail if all profit disappeared from every industry and the *rate of exploitation* as the difference between the maximum attainable and the paid wage: he assumes that the rate of exploitation is determined sociologically through class struggle. That is tantamount to assuming a constant (actual) real wage rate.

Second, he assumed workers' savings to be zero, equating consumption per worker to the real wage rate. As a result of the consumption-investment relationship implicit in his postulate on capital growth and means of subsistence,

46 Marx's writings show no awareness of economic systems outside the western historical experience, which he confused with human experience, regarding nonwestern systems as either primitive or barbaric.

the growth rate corresponding to the prevailing wage rate must equal the rate of profit, provided that capitalists do not consume. Both the rate of growth and the rate of profit are positive if and only if the rate of exploitation is positive.

An essential aspect of the Marxist model, of which Marx himself was unaware, is the implicit assumption of the *indecomposability* of the system. Marx's first postulate of a negative relationship between profits and wages is equivalent to a relationship between the uniform equilibrium rate of profit and the real wage rate, a factor price or a wage-profit frontier[47]. The inverse relationship between capital growth and consumption is equivalent to a relationship between the growth rate and the consumption level or the consumption-investment frontier.

Morishima (1971) has established the dual relationship between both frontiers[48]. He also showed that Marx's conclusions require that *both frontiers are unique and identical*. That holds only for *indecomposable economies*. Decomposable economies, in contrast, have many consumption-investment frontiers, each of which is associated with a corresponding wage-profit frontier. This more general case has many equilibrium rates of profits and rates of growth, where the highest equilibrium rate of growth on any consumption-investment frontier is equal to the highest rate of profit on the *corresponding* wage profit frontier. Marx's model is only an exceptional case.

A general equilibrium condition for the classical model is that the rate of balanced growth (g), which is a function of the real wage rate (w) and the (natural) rate of growth of the labor force, n, must be equal to g(w). Since the assumption of constant (n) could render the last equation insolvable, (n) has been made positively dependent on (w) so that (n) would be negative when w = 0, n = 0 when (w) is at subsistence, and n > 0 when (w) is above subsistence, which makes,

$$\mathbf{g(w) = n(w)} \qquad \mathbf{14}$$

With this specification, Morishima (Brown, Sato, and Zarembka, 1976) has shown that both (g) and (n) are positive *if and only if* the subsistence real wage

47 This frontier could have, under certain conditions. what is called reswitching.

48 This is an extension of Bruno (1969) and consistent with Kemeny et al (1956). see Brown, Sato and Zarembka (1976).

is lower than the wage rate. In other words, under the exceptional case of the Marxist *indecomposable* economies, exploitation is necessary for the capitalist economy to have balanced growth.

Marx built his model in real terms, where money plays no specific role. There is no reason for the holding of money by individuals to be rational. It is, therefore, a barter growth model which, in some mysterious fashion, manages to conduct all transactions at no cost and with no medium of exchange. The interest rate, in a real or monetary sense, plays no role.

THE AUSTRIAN APPROACH

The Austrian approach is another trend that evolved in reaction to Marxist thought[49]. The role of capital (as known to the classics) is, according to this school, to permit the use of *roundabout* methods of production (Stigler, 1968: 201-19). Those methods are more productive than direct or non-capitalistic methods. Capital intensity rises by increasing the degree of roundaboutness (Hicks, 1973: 6-8; Hayek, 1941: 41-49). The (average) *period of production* measures the length of roundaboutness.

As restated by Wicksell (1901) and Stigler (1968), if the actual output is (y), the real wage rate is (w), the period of production is (t), and the rate of interest is (r), then the annual product per worker (p) is equal to , and

$$P = W\left(1 + \frac{rt}{2}\right) \qquad 15$$

To maximize the wage rate, we must have

$$\frac{dp}{dt} = \frac{wr}{2} \qquad 15$$

We can therefore rewrite (3) as

$$P = W + T\frac{dp}{dt} \qquad 16$$

49 The main figures in this school are Bohm-Bawerk (1921), Wicksell (1901), and Walras (1926). Two authors have been most influential in providing a modern restatement of the Austrian theory namely, Hayek (1941) and Hicks (1973).

Equation (5) implies that capital gets its marginal productivity. At the same time, wages are ostensibly a residual. As Wicksell pointed out, in the Austrian model, the direction of change in the labor and capital shares, as more capital is applied (the production period lengthens), cannot be determined *a priori*.

The above model reflects the Austrian view of distribution and their interest theory. The Austrians (Bohm-Bawerk, 1889; Wicksell, 1901) discussed the three grounds for the existence of a rate of interest. They criticized the first ground, namely, individual differences in want and provision in the future relative to the present, as tending to cancel out in a stationary economy. They have accepted the second ground of myopia. The third ground of the technical superiority of the present over future goods has been used, especially by Wicksell, as a direct *productivity* explanation of interest.

The Austrian school has been criticized (Bliss, 1975) for failing to capture the essential features of reality concerning the capital concept of roundaboutness and the sole recognition of the case of a single interest rate. The latter claim to a unique interest rate[50], which reappears in the neo-Austrian formulation, particularly Hicks (1973), requires the assumptions of no uncertainty and no externalities (Burusister, 1974: 419-20).

The Austrian theory treats capital as wealth or command over current output (Bliss, 1975), considering capital to be the physical goods used in production. Viewing capital as wealth can lead to viewing the interest rate as the price of capital. Nevertheless, the interest rate is not the price of capital[51].

If the interest rate were the price of capital, it should be lower along a capital-rich relative to a capital-poor growth path. However, Bless has shown (Bliss, 1975: 81-83; 111) that the rental of capital vector, which is the price of the use of capital and the analog of the wage rate, is that which we expect to be lower, and not the interest rate[52]. The central role of the interest rate in the Austrian theory is insidious. Modern capital theoreticians call, either explicitly

50 Called by Hicks a "Fundamental Theorem," (Ricks 1973:19).

51 In the words of Bliss (1975: 6), "The value which accrues from a sale is the product of price and quantity sold. Hence if the rate of interest is the price of capital, the quantity of capital must be the wealth on which an interest yield is calculated". Also, see Burmeister (1974: 421).

52 The price of the use of capital goods would be determined as the price of a composite capital good in terms of a numeraire consumption good.



or implicitly through their analysis, for the substitution of an intertemporal price system for the interest rate as the central concept of the theory[53]. In our fundamental theory of Islamic economics, we have shown the impossibility of assigning a rate of time preference for a sum of money similarly to assigning (a weighted average) rate of time preference to a basket of commodities.

THE NEOCLASSICAL APPROACH

I. THE CAMBRIDGE MODEL

The Cambridge approach has arisen within the neoclassical framework, which endeavors to explain income distribution through rational choice processes. Despite controversies within geographic confusion between American and British Cambridge, the Cambridge model represents the neoclassical analysis *par excellence*. It is, therefore, advisable to briefly review the salient features of that model[54].

The Cambridge model assumes the same underlying assumption of the *semi-stationary* state, namely, every input used in production grows at the rate of growth of the economy (g), and one of those inputs, which is labor, is not produced[55] but fully employed. Labor has a subsistence level of consumption, so the growth rate of labor, g, does not depend on the real wage rate. That implies that the interest rate is not too high and that each worker should be allowed to reach subsistence.

This school's critical assumption is the *classical savings assumption* (Hahn & Matthews, 1964: 793-94), which has few implications. Laborers spend all wage income on consumption, which makes profits the only source of saving, and

53 This is not to deny the pedagogical role of the Austrian theory referred to by Burmeister (1974: 499).

54 The Keynesian revolution has taken its toll from Cambridge, that we can find within the school the (neo-) neoclassicals such as Paul Samuelson, and Robert Solow from the USA and James Meade of England, as well as the neo-Keynesians such as Joan Robinson, Nicholas Kaldor and Lonigi Pasinetti from England (Harcourt, 1972:1).

55 To consider that labor is produced necessitates the consideration of family structure and the employment of women outside the family. This brings issues that the Western culture would rather ignore, as it would mandate s serious consideration of their preconceptions on social issues. Including social factors would be an admission of certain facts, like the quality of labor depends on a male-female family structure and full time motherhood during a part of children's life.

the proportion of profits saved is constant. Profit finances all investments, and capitalists invest a constant fraction of profits. The *saving-profit and the investment-profit* ratios would thus be equal to (b) where 0< b<1.

Production activities within the Cambridge model come through a linear homogeneous production function exhibiting constant returns to scale or the famous Cobb-Douglas formula. Accordingly, factor earnings correspond to their marginal products.

The theory's assumptions lead to conclusions in distribution and growth. Factor shares in the total product will equal the output elasticity concerning each factor evaluated at the point concerned.

The rate of growth of the economy, (g), when written as a function of the rate of profit, (r), will be equal to the saving-profit ratio (b) multiplied by the interest rate (r) (Bliss, 1975: 119-29)[56].

$$g(r) = br \qquad (18)$$

The neoclassical approach, as it appears from its conclusions, claims that the pricing of the factors of production is the primary mover in the income distribution process. The critical element in that pricing process is the substitutability of the factors of production.

The one-commodity (output) model used by the neoclassical theory, which underlies the Cambridge model, has been a source of some controversies named after Cambridge. The reason is that paradigms derived from the one-commodity model "do not always carry over to multicommodity intertemporal general equilibrium models" (Brown, Sato & Zarembka, 1976, xvi). Some of the properties of the one-commodity model that do not generally hold, as presented by Samuelson (Brown, Sato & Zarembka, 3-23), are the equality of the interest rate, and the marginal product of capital, monotonic increases in per capita consumption, the capital/labor ratio, and the output/capital ratio as the interest rate falls; no re-switching; and the equality of the elasticity of the factor-price frontier and the factor-share ratio.

56 In this model, the rate of return on capital, the rate of profit and the rate of interest are all equal.

II. THE POST-KEYNESIAN CRITIQUE

The most apparent aspect of the neoclassical approach, and perhaps the source of the most potent attacks, is its insistence upon the sole importance of technical substitution between factors and commodities. The approach, thus, ignores the institutional and sociological factors influencing distribution. Joan Robinson, a strong critic of this approach, accuses it of *suggesting harmony, if not justice,* among the different groups in the capitalist system or an apparent support for the *status quo*.

The contributions made along the line of aggregate production functions, the vintage models concerning the concept of capital, the explanation of productivity changes over time, and the attempts to update the Fisherian analysis settled the debate. On the contrary, more economists hurled further criticism against marginalism about *double switching and capital reversing*.

Finally, macro-theories of distribution have come out in response to the desire to return to the classical tradition where "*pricing is an aspect of distribution* rather than, as in neoclassical thought, *distribution being but an aspect of pricing*." Harcourt (1972: 9). Kaldor (1955-56), and Pasinetti (1962) are some of those who contributed in this regard.

THE RETURN TO THE CLASSICS: POST-KEYNESIANISM

If the post-Keynesian trend in reshaping capital, growth, and distribution theories is traceable to a particular writer, Kalecki (1933) would be the one[57]. The issue, as might be expected, was the classical saving assumption, paradoxically one of the building blocks of the neoclassical (Cambridge) version. The assumption amplifies the classical perception of savings: that savings from profits ($S_P P$) dominate savings from wages ($S_W W$), the total saving is equal to

$$\mathbf{S = S_W W + S_P W;\ \ 0 \leq S_W \leq S_p \leq 1} \qquad \mathbf{19}$$

The general saving function is equation (7) without the right-most condition (Hacche, 1979: 55-62). Given such conditions, it becomes the classical saving function when 0 = SW < SP (Kalecki, 1933) has shown that investment determines profits, not vice-versa.

57 See Joan Robinson (1977: 15), and Hacche (1979: 175).

Another aspect of the neoclassical approach is factor substitutability, which was assumed to assure equilibrium and stable growth and requires capital malleability and a smooth production function. Kaldor (1961: 202) pointed out the limited and costly substitution possibilities. That seriously questions the equilibrium of the system and its stability.

A third aspect of the neoclassical approach is using K for aggregate capital in the production function, which implies an assumption of homogeneity. As Robinson (1954) pointed out, meaningful definitions of the aggregate capital, the production function, and marginal products require knowledge of relative values of goods, *viz*, the price vector and the rate of profits. It is the latter that the neoclassical theory attempts to explain.

As for the questions of saving propensities and capital malleability, Hacche (1979: 176-78) has shown that if (S_w) and (S_p) are sufficiently different and the profit-income ratio is variable (between zero and unity), the saving function shown in (7) can be incorporated in the neoclassical model to produce stable equilibrium growth.

KALECKI

We can trace the post-Keynesian trend in reshaping capital, growth, and distribution theories to Kalecki (1933) ((Joan Robinson, 1977: 15) and Hacche (1979: 175)). The issue, as might be expected, was the classical saving assumption, which was paradoxically one of the building blocks of the neoclassical (Cambridge) version. The assumption amplifies the classical perception of savings: that savings from profits (SPP) dominate savings from wages (SWW), the total saving is equal to

$$\mathbf{S} = \mathbf{S_W W} + \mathbf{S_P W}; \quad 0 \le \mathbf{S_W} \le \mathrm{Sp} \le 1 \qquad (20)$$

The general saving function is equation (7) without the right-most condi*tion* (Hacche, 1979: 55-62). It is the classical saving function when . Kalecki (1933) has shown that given such conditions, investment determines profits and not *vice-versa*.

Another aspect of the neoclassical approach is factor substitutability, which was assumed to assure equilibrium and stable growth. It requires capital mal-



leability and a smooth production function. Kaldor (1961: 202) pointed out the costly possibilities of substitution. Without the fulfillment of such conditions, a stable equilibrium remains in doubt.

A third aspect of the neoclassical approach is using K for aggregate capital in the production function, which implies an assumption of homogeneity. As Robinson (1954) pointed out, meaningful definitions of aggregate capital, the production function, and marginal products require knowledge of the relative values of goods, the price vector, and the rate of profits. It is the latter that the neoclassical theory attempts to explain.

Kalecki (1933 & 1954) and Hacche (1979:186-192) ignore the public sector and focus attention on the manufacturing industry, assuming the marginal cost to be constant within the normal (below total capacity) range of output. Regarding salaries as overheads, he proposes that the manual labor share in income (wages) determines the manual labor share of income.

Kalecki's theory was considered a tautology for he defines his explanatory variable, the degree of monopoly, as the price/prime cost ratio, closely related to the reciprocal of the share of wages and the variable he intended to explain. However, Kaldor defended Kalecki's proposition that income distribution is determined by market structure, i.e., the strength and weakness of the forces of competition, as neither empty nor invalid, although it may be challenging to test.

KALDOR

In dealing with a fully-employed economy, Kaldor (1961) postulates a saving function of the form (19). He identifies the profit share with the profit margin of the Marshallian representative firm. He also assumes that excess demand (excess supply) of goods causes the profit margin to rise (fall) at full employment, i.e., profit margins are flexible. Using

$$Y = W + P \qquad (21)$$

and equating investment (I), which is assumed to be exogenous, with saving, he obtains the profit share as equal to

$$\frac{P}{Y} = \frac{(\bar{I}/\bar{Y}) - S_W}{Sp - S_W} \quad (22)$$

Where $\check{I}$ and $\bar{Y}$ are full employment investment and income, respectively. Moreover, in order that P/Y remains between zero and unity, (9) implies that

$$S_W < I/Y < S_P \quad (23)$$

Condition (10) requires the propensity to save out of profits to be higher than that out of wages. Kaldor's theory implies that, given full employment output, the propensities to save and invest determine the distribution of income, subject to some external constraints.

First, the assumed exogeneity of investment implies that it is independent of both the saving function and profits. Independence from the former has a Keynesian flavor, but independence from the latter is hard to justify. Kaldor tries to overcome this by introducing an investment function in which investment directly varies with profits. However, a rise in profit margins (because of excess demand) may lead to a larger increase in investment than in saving, which can be a source of instability (Hahn and Matthews, 1964:34).

Second, given the capital/output ratio v, the rate of profit P/K should not fall below the interest rate r plus the internal rate of return on (the marginal product of) capital I, that is

$$\frac{P}{K} = \frac{P}{Y} \cdot \frac{1}{V} \geq \bar{i} + \bar{r} \quad (24)$$

This condition implies that (i + r) represents the minimum financial conditions necessary to entice producers to invest.

Third, defining the degree of monopoly (Kalecki, 1933, and 1954) U as the proportional margin of price P over average cost a (the sum of unit wage cost and unit raw materials cost), or

$$u = \min\left(\frac{P-a}{P}\right) \quad (24)$$

the profit share must fulfill the following:

$$\frac{P}{Y} \geq u \qquad (25)$$

The *fourth* external condition is that the profit share must not exceed the level allowing the labor force to receive the minimum socially acceptable wage rate (w') that is:

$$\frac{P}{Y} \leq \frac{Y - W'}{Y} \qquad (26)$$

If the assumption of full employment is dropped, with the existence of under-employment, equilibrium output, profits, and wages are determined solely by the degree of monopoly.

PASINETTI

Pasinetti (1962) returns to the classical distinction between capitalist and labor classes, assigning each within the Kaldorian model a different propensity to save.

By defining the propensities to save by capitalists and laborers as S_c and $S_{L,}$ respectively, he rewrites (7) as

$$S = SL\,(W + PL) + Sc\,Pc\,;\ \ O \leq SL \leq Sc \leq 1 \qquad (27)$$

While (5) implies that Kaldor (1966: 298) attaches the higher propensity to save to profits rather than to capitalists, Pasinetti attaches it to capitalists rather than to profits (Hacche,1979:221). The Kaldorian full-employment distribution of income, as modified by Pasinetti, then implies a capitalist share of income equal to:

$$\frac{P_c}{Y} = \frac{(\bar{I}/\bar{Y}) - S_L}{S_C - S_L} \qquad (28)$$

Which would fall between zero and unity, provided that

$$S_L < (\bar{I}/\bar{Y}) < S_C \qquad (29)$$

In distinguishing between capitalists' and laborers' wealth, Pasinetti assumes that both grow at the same natural rate (n). In equilibrium, the profit rates for capitalists and laborers must be the same. Pasinetti's growth model would have one feasible solution: when capitalists' wealth is positive[58].

$$\frac{P}{K} = \frac{n}{S_C} \qquad (30)$$

According to this solution, the saving propensity of the propertied non-working class is the only strategic variable determining the long-run share as well as the rate of profits in the Pasinetti model. This conclusion still holds, no matter how many other social classes we introduce into the model. Even if we introduce a neoclassical production function, it will not affect long-term profit rates. That has been dubbed the *Pasinetti Paradox*[59] (Hacche, 1979:223).

AHMAD

Ahmad (1982) introduces *Zakah* into a Kaldor-Pasinetti model. The government collects *Zakah* on *zakatable* assets (A), some of which may not be *productive capital*. This distinction gives rise to some conceptual problems. The so-called non-productive assets are held either for their stream of services, as in consumers' durables, or for speculation (the expected price appreciation), or both. Since there is no inflation in Kaldor's non-monetary model, people will hold only consumers' durables as "non-productive" assets. Apart from monetary uses, there would be no rational reason to hold barren assets like bullion.

Defining *zakatable* assets owned by the capitalist as (A_c), their capital assets as (K_c), their profit earnings as (P), and their savings as (S_c), we can derive the steady-state equilibrium, which corresponds to (18). By using Ahmad's results (Ahmad 1982:13), we obtain[60]

$$\frac{P_c}{K_c}(1-\delta)\left(\frac{A_C}{P_C}\right) = \frac{n}{S_c} \qquad (31)$$

58 The details of these derivations are found in Hacche (1979), especially Ch. 12. The reader can refer to the same place for the solution when capitalists' wealth is zero.

59 For a helpful synthesis of the issues revolving around this paradox see Meade (1966).

60 See Al-Jarhi, 1985; appendix We for the derivation.



Where δ is the *Zakah* rate as defined by Ahmad (1982). Remember that profit rates for capitalists and workers are equal in equilibrium, where P is total profit, and K is total capital resources.

The above result shows that, like Pasinetti's model, the profit rate depends on the saving propensity of the capitalist class. However, It also depends on the *Zakah* rate[61].

A requirement for a feasible solution would be

$$\delta\left(\frac{A_C}{P_C}\right) < 1 \quad \text{or,} \quad \left(\frac{A_C}{P_C}\right) > \delta \tag{32}$$

That means that for growth to be positive, the profit rate on capitalist total (productive and non-productive) assets must exceed the rate of *Zakah*. It explains why the Zakah rate is generally low. In particular, the Zakah rate on cash balances held for a year is 2.5 percent.

In addition, the income shares, as derived by Ahmad (1982), depend upon the saving propensities of both capital owners and wage earners, as well as the *Zakah* rate. In other words, the Zakah rate plays a role in correcting income shares.

Although made within the Kaldor-Pasinetti traditions, Ahmad's above conclusions show a positive breakaway from its precursors. However, the results shown by (20) that the profit rate depends upon the saving propensity of the capitalist class imply that the breakaway is incomplete.

Kaldor-Pasinetti's remaining influence on Ahmad's model is his division of income between capital owners and wage earners. We will show that below, which contradicts some of the characteristics of an Islamic economy. Once this is corrected, the breakaway from post-Keynesian influences will be greater.

TOWARDS AN ISLAMIC APPROACH

I. ISLAMIC VERSUS CONTEMPORARY MUSLIM STRUCTURES

We have seen from the preceding short survey of literature that the factors behind distribution are Socioeconomic, mainly class struggle stressed by the

61 This is a step further towards showing that distribution and redistribution are inseparable.

classics, and purely economic, mainly market forces stressed by neoclassical economics. At the outset, a distinction must be made between the *Muslim* economies as they exist in the post-colonialism era and an Islamic economy that genuinely adheres to the teachings of Islam along the lines of our macroeconomic model.

II. MUSLIM ECONOMIES

Two phenomena accompanied the advent of colonialism in the Islamic world. The first was *the mass destruction and deformation of the existing Islamic socioeconomic institutions*. The second is *the mass transplantation of Western institutions into Dar Al-Islam*. Successive changes have brought the Western-adopted ways of nationalism, Capitalism, and Socialism to the formerly Islamic adherents. A direct interference in the education system enforced the gradual abandonment of Islamic economic institutions. Some early victims were Islamic banking and finance institutions, Zakah institutions, and consumer protection institutions. Direct interference through the education system succeeded in reorienting the Muslim mind to favor Western values. Remodeling the Egyptian educational system succeeded in challenging the Egyptian mind to accept a variety of economic institutions that gradually installed the system of market capitalism, including the monetary and financial system while leaving no space for installing Islamic economic institutions.

Such an influx of socioeconomic change has Westernized the way of life in some countries and caused them to convert to Western values. In some other countries, the transformation was incomplete.

It is unsurprising to find elements of Western civilization lurking in Muslim countries and sufficiently tempting economists to use Western theories as a basis for analysis. Analysts with Western-minded intellects have done much to look at Muslim economies through market-oriented processes, which is not very different from the neoclassical eye. Marxist analysts have done Much to analyze contemporary Muslim activities and history through Marxist eyes.

Another critical element in the Westernization process of the Muslim mind is the extended periods of military and rule. The military in Egypt gets minimal education due to their focus on military sciences. They are mostly unaware of cultural and institutional colonialism. Since they obtain most of their politi-

cal support from their club membership in clusters of functional states, they have little concern about popular reaction to secularism and Westernization. Note that a Junta has ruled Egypt since 1952. From the start, the leader of the first coup succeeded in welding a military-security alliance to maintain Junta rule. Such an alliance was able to launch an effective counter-revolution against the Arab Spring that ended with the Rabi'a massacre, the arrest of the first freely elected President, the incarceration of about one hundred thousand political prisoners, and the forcing of about 10 million Egyptian intellectuals into exile.

The Junta regime that replaced the civilian government badly mismanaged the Egyptian economy, which now suffers from high foreign debt, exceeding $160 billion. While Egypt's external debt reached $164.73 billion at the end of June 2023, the Central Bank of Egypt's data shows that the country is required to pay $29.23 billion in external debt service in 2024, $19.43 billion in 2025, and $22.94 billion in 2026. Such bad news becomes much worse when inflation and unemployment are running high and the standard of living is deteriorating.

It would be naive on the side of Islamic thinkers to claim that their contemporary socioeconomic structures cannot be analyzed using a capitalist or a Marxist laboratory manual. Such structures bear a great deal of resemblance in their formal build-up to both centers of Western civilization. The process of Hellenizing the East, which failed in pre-Islamic time[62]s, has finally succeeded in our times, not through Athens or Rome, but rather through London, Paris, Washington, and Moscow.

It is not, therefore, unexpected to see Western models being readily applied to Muslim communities by different scholars with some measure of success. That is because the f*ormal processes* in those societies in the socioeconomic and political fields have sometimes taken Western forms.

III. THE ISLAMIC MODEL

While the Muslim world has been, through either foreign or domestic hands, forcibly transformed into Western forms, most Muslims have not converted to Western ways. Many still yearn for a contemporary application of Islam. That

62 Apart from the Hellenization of Christianity which was a total success.

appears on its face to be unattainable. Islamic economic institutions have not survived through the contemporary era to benefit from the technological changes and the evolution in human understanding of the role of economic institutions. Muslim intellectuals must, therefore, come up with some perception of how Islamic economic institutions would appear *had they survived the passage of time*.

Muslim intellectuals must, therefore, provide an Islamic model through which they can accomplish many goals. First, it is helpful to envision a set of Islamic institutions that can ultimately replace the current hodgepodge of imported institutional concoctions. Second, economic analysis within an Islamic environment is almost impossible without such a model. Third, we cannot find policy implications without referencing a formal structure.

The difficulty connected with constructing that model, apart from the intellectual effort involved, is that current socioeconomic structures in the Muslim world could easily play the unwary analyst the role of a red herring. One must be aware of the distinction between Islam and contemporary Muslim societies in order not to be fooled by the Western elements prevailing in our societies.

Turning to the theory of distribution, one may ask, what is in Islamic teachings that would assist in building a macro theory in this field? We review some of the elements we should consider in the following section.

FACTORS AFFECTING DISTRIBUTION

Certain non-economic factors that influence distribution exist in an Islamic society.

1. Differences in human-capital endowments.
2. Differences in non-human capital inheritance.
3. Technological relationships.
4. Financial relationships.
5. Social relations within families, kith, and kin

The first two variables are not unique to the Islamic model, for they play a role in other societies. The Islamic model, nonetheless, contains financial relationships that are unique in two ways: efficiency and redistributive implications.

The efficiency aspect relates to whether an Islamic economy can reach and maintain full employment. We have no answer to this question, but traces appear in some writings (e.g., Al-Jarhi, 1981). It will be treated in more detail when we offer our perception of the Islamic macroeconomic model.

Briefly, social relationships combine the prohibition of interest on money with Zakah's payment on wealth, including cash holdings. The two added together imply a negative rate of return on hoardings. Banks in the Islamic model act as direct investors by supplying finance based on various contracts, including sale finance and profit and loss sharing, PLS, and banking services.

As Zakah has made hoarding irrational, financial resources are held for transaction purposes or used for consumption or investment. The interplay between the rate of time preference and the rate of return on investment produces an allocation of financial resources. If there is no technological problem (e.g., shortages of investment opportunities), and as long as the economy is below full employment, *the rate of return on investment is larger than zero*. Full employment is attainable if the weighted average of the rate of time preference is kept reasonably low[63].

An effective yearly income redistribution can lower the rate of time preference, which could further facilitate the attainment of full employment. Therefore, We will assume a modest degree of factor substitutability and an effective redistributive policy.

A question would arise about socioeconomic classes, whether speaking about distribution to capitalists, laborers, and landowners would be legitimate. The answer to this question lies in the fourth variable, the financial relationships (Al-Jarhi, 1981).

In an Islamic economy, each Muslim channels savings to investment directly through buying stocks and other equity-based financial instruments (Sukuk, investment certificates, and fund certificates) or indirectly through invest-

63 Our fundamental theory argues for the impossibility of time preference being reflected on money. In a conventional economic system, the rate of interest administered by the central bank will motivate people with higher average rate of time preference for commodities to borrow and those with lower average rate to lend. In an Islamic economic system, where the interest rate is not administered by the central bank, those with higher average rate will invest through holding CDCs and vise versa.

ment accounts with (Islamic) banks. A Muslim would then be like holding a common stock in an investment bank or company. Meanwhile, he could be working for a wage or a salary. Therefore, the distinction between propertied and non-propertied individuals becomes more tenuous in such an economy. It becomes even more so because the poor whose property is below a specific limit, called *Nissab*, are to be given more property through *Zakah*.

We can, therefore, say that Muslims in an Islamic society would mostly be capital holders, and most of them are salary- and wage-earners at the same time[64]. Therefore, the division of social classes would become theoretically meaningless and practically dubious.

Distribution within this framework can be studied functionally, i.e., in terms of factor shares. It can also be studied personally, i.e., the relative shares of the poor, with property (temporarily) below *Nissab,* and the rich, those with property above it.

Since *Nissab* is not set regarding a subsistence level, as it is supposed to cover all necessities (food, clothes, and shelter) plus merit wants (education, health, marriage or family support, and transportation) for a median-size family, its head should be capable of saving and investment. The Zakah institution adjusts personal wealth yearly to ensure that those below Nissab rise above it. No one should die in debt, as relatives or philanthropic institutions must pay it. Generally, those with negative net worth will find Zakah and Awqaf institutions that pay their liabilities. Therefore, looking at the profit and wage shares of those who are temporarily below Nissab and those who stay above it within an Islamic economy should be interesting.

We can now look at the role of market forces in distribution within an Islamic economy as related to the *market order* of the Islamic financial system (Al-Jarhi, 1981). Its functions would disallow monopoly and collusive behavior. *Kalecki's degree of monopoly would not be significant in this regard as a factor influencing distribution*[65].

64 Some Muslims would become temporarily non-propertied for short periods before the yearly redistribution of zakah; which is given to the needy who can earn a living in terms of assets to enable them to be sufficiently productive for self-sustenance, and to those incapable, in terms of an income maintenance scheme.

65 This would not remove the monopoly elements related to having special talents or owning a specific Site, although the market order division would attenuate the effects of such monopolies on prices.

REDISTRIBUTION

The Islamic economic system makes a premise that the prevailing distribution of wealth will inevitably deviate from that which is most desirable, i.e., where each Muslim capable of earning a living would be an owner of a minimum level of real wealth. Unsurprisingly, several means of distribution have been built into the Islamic economy to ensure attaining that level of wealth (Al-Jarhi, 1985; Appendix III). This type of redistribution significantly modifies people's behavior towards saving, making it theoretically difficult to study redistribution separately.

We briefly review some of these means below to demonstrate that an Islamic economy's distribution cannot be separate from redistribution. Western models discuss the two questions separately. We build a macro distribution model first; then, redistributive measures are introduced. Moreover, Western thinking places macrodistribution models in positive economics, while it places redistribution into welfare economics.

In an Islamic economic system, redistributive measures are integral parts of the Islamic economy, without which we cannot consider positive analysis. We claim that even if separation is attempted, it cannot work. An example is the paper of Ahmad (1982), in which the only essential characteristic of an Islamic economy he found appropriate to introduce to the Kaldor-Pasinetti model, viz, *Zakah*, is redistributive.

In addition to *Zakah* as an Islamic means of redistribution, we find the system of inheritance, which forces an individual's wealth to be redistributed after his death among a group of specific heirs in a prescribed manner. Islamic law allows no one to tamper with the *post-mortem* redistribution of his wealth except within a maximum of one-third of his wealth. For that one-third, each Muslim is called upon to will it out to the needy (within his relatives first, and then without) who would not otherwise be entitled to a share of his estate[66].

Another means of redistribution is through public goods, where the relatively poor can be favored with certain government services, e.g., education, health, housing, debt repayment, paying for the freedom of slaves, helping the wayfarer, assisting with marriage costs, and so forth.

66 Many jurists opine that such will is obligatory.

Another means of redistribution is informally in an Islamic economy through brotherhood requirements, which should exist among Muslims. Examples include the rights of neighbors, relations, and guests; the dislike of a Muslim to keep extras of consumers' goods (clothes, food, etc.) to himself while others are in need; and so on.

It must be stressed in this respect that redistribution is not limited to *political borders, for we must carry it among the Islamic Ummah as a whole*. Such is a concern for inter-country wealth disparity that is rare in other systems. However, its implementation by Muslims is still below expectations.

A PROPOSED ISLAMIC FRAMEWORK

The basic requirements for an Islamic model enumerated above demand much effort, perhaps at stages, to arrive at an Islamic distribution model. Nonetheless, the latest attempt to do so (Ahmad, 1982) has been a positive step in that direction, calling for another attempt to construct a model closer to Islam than post-Keynesianism.

First, let us define national income as

$$\mathbf{Y\,(P_R + W_R + a\,Z) + (P_N + W_N - Z) + (1 - a)\,Z} \qquad (33)$$

P and W refer to profits and wages, and subscripts R and N refer to recipients and non-recipients of *Zakah*, Z, respectively. The ratio (a) represents the proportion of *Zakah* given to the poor. The last term of the identity represents the part of *Zakah* allocated to other uses[67].

We remember that in an Islamic economy, the *investment-centered banking processes* (Al-Jarhi, 1981) ensure that savings are all invested. Moreover, since we levy *Zakah* on all financial and real assets, monetary hoardings will earn a negative rate of return equal to the *Zakah* rate. It implies that hoarding in an Islamic economy is irrational.

The automatic transfer of savings into investment and the nonexistence of hoarding assure that savings are equal to full-employment investment.

67 Al-Jarhi, 1985; Appendix II.

Defining the average propensity to save out of *Zakah* allocated to other uses S_o, we obtain[68]

$$\mathbf{I = SSR(\bar{PR} + \bar{WR} + aZ) + SN(PN + WN - Z) + S_O(1 - a)Z} \quad (34)$$

Where (W) and S are full-employment levels of investment and savings, respectively.

We have used the propensities to save by recipients and non-recipients of *Zakah*, S_R, and S_N, respectively, in (34), in addition to the propensity to save from *Zakah* allocated to other uses. The distinction between these two groups by the level of wealth lies in contrast with the division of society into social classes of laborers and capitalists made by Kaldor-Pasinetti following the classics. It is also notable that Ahmad (1982) attempted a distinction like that of (34) but did not carry it through. Instead, he returned to the classical social classes.

I. INCOME SHARES

The application of *Zakah* deserves some observation. There is a general agreement in the literature to levy *Zakah* on wages and salaries above *Nissab*. As to productive assets, *amwal namiah*, opinions vary as to whether *Zakah* should be levied on its total value or its net (after depreciation allowances) returns, with the second opinion taking precedence. Considering that wages and profits accrued to non-recipients contain the net returns of productive assets above *Nissab*, we can define *Zakah* collected as:

$$Z = Z\,(P_N + W_N) \quad (35)$$

Where z is the average rate of *Zakah* (corresponding to Ahmad's δ), an average of actual rates weighted by their respective bases, we can derive the income shares of recipients and nonrecipients[69] at the full-employment level of income Y.

68 We am indebted for the addition of this term to Prof. Syed Taher of the Islamic University, Islamabad.

69 Al-Jarhi, 1985; Appendix II.

$$\frac{W_R + P_R}{\bar{Y}} = \frac{\frac{\bar{I}}{\bar{Y}} - (S_N - S_O Z(1-a)}{S_N - S_R - S_O Z(1-a)} \quad (36)$$

$$\frac{W_N + P_N}{\bar{Y}} = \frac{I/Y - S_R}{(S_N - S_R) - Z(S_N - aS_R)S_O.Z(1-a)} \quad (37)$$

In contrast to the Kaldor-Pasinetti approach, fulfilling the requirement that income shares lie between zero and unity depends upon the following:

a- both of the saving propensities and not the saving propensity of just one group

b- the average *Zakah* rate,

c- the proportion of *Zakah* allocated to the poor and

d- The propensity to save from Zakah is allocated to other uses.

Since equations (26) and (27) show the pre-redistribution shares, it is remarkable that those shares should depend on the rules of redistribution, i.e., (a) and (z). That confirms our earlier postulate that the study of redistribution cannot be separate from distribution in an Islamic economy.

II. FACTOR SHARES

We can derive factor shares from the model after defining the average rates of *Zakah* on wages and profits as Z_W and Z_p, respectively, and the propensities to save out of wages and profits, S_W and S_P, respectively, as the weighted averages of the saving propensities of recipients and non-recipients in each category of income[70].

$$\frac{W}{Y} = \frac{I/Y - SP + (1-a)(SP - SO)Z/\bar{Y}}{(SW - SP)(1 + aZW - ZW)} \quad (38)$$

$$\frac{P}{Y} = \frac{I/\bar{Y} - S_W + (1-a)(S_W - S_O Z/\bar{Y}}{(SP - SW)(1 + aZ_P - ZP)} \quad (39)$$

70 Detailed derivation is presented in Al-Jarhi, 1985; Appendix II.



Another contrast to the Kaldor-Pasinetti results is apparent in (38) and (39). Factor shares do not depend on the propensities to save from a particular income (wages or profits) alone, as in equation (16) above. Each factor share in (28) and (29) depends on both propensities to save and the Zakah rate and the redistribution rate.

When steady state growth rates are derived, the profit rates on capital owned by recipients K_R and non-recipients K_N are equal[71].

$$\frac{P_R}{K_R} = \frac{g}{S_R} - \frac{W_R + aZ}{K_R} \qquad (40)$$

$$\frac{P_N}{K_N} = \frac{g}{S_N\,(1-Z)} - \frac{W_N}{K_N} \qquad (41)$$

Similarly, equations (30) and (31) drastically differ from (18) in the Kaldor-Pasinetti model and (21) in Ahmad's model, especially in the fact that the rate of profit depends, in addition to the saving propensity of either group, on the rates of *Zakah* and redistribution.

III. COMPARISON WITH THE WESTERN MODEL

We can now compare the results obtained above with those of the Western model as elaborated by Kaldor (1961) and Pasinetti (1962) in three ways: income disparity, rate of return on capital, and growth.

Zakah receipts will raise recipients' incomes in two ways: One in terms of an income maintenance scheme and the other in terms of productive assets enabling recipients to sustain a living independently during their lifetime. In either case, the income differential between recipients and non-recipients is narrower. Consequently, we reach a higher degree of distributive equity.

The rate of return on capital in the Western model is represented by

$$\frac{P}{K} = \frac{n}{S_c} \qquad (42)$$

71 Equations (42) and (45), Al-Jarhi, 1985; Appendix II.

Where n is the growth rate, and S_C is the savings propensity of the capitalist class.

Equations (30) and (31) represent the rate of return on capital in the proposed Islamic. Assuming that $S_C = S_N$ and $g = n$, the rate of return on capital in the Islamic model is more significant than that in the Kaldor-Pasinetti model when

$$\frac{g}{S_N}\left(\frac{Z}{(1-Z)}\right) > \frac{W_N}{K_N} \qquad (43)$$

The right-hand side is the wage income ratio to nonrecipients' capital holdings. It is a small percentage, for if the ratio of total earnings to capital were 10% (a reasonable figure under stable prices), the wage income/capital ratio could not exceed 5%, implying a rate of return on capital amounting to 5%. Assuming a lower wage income/capital ratio would be more reasonable. However, non-recipients depend relatively less on that source of income.

On the left-hand side, the rate of growth (g) is greater than one, while the saving ratio is less than one, causing their quotient to be a multiple of one. Assuming negligible growth of 1% and a saving ratio of 10%, we get a quotient of 10. Assuming the *Zakah* rate is 0.025, the left-hand side will equal about 26%, which is higher than the wage income/capital ratio of 5%.

We note that the left-hand side would assume even greater values with higher real growth and higher saving ratios. We must, therefore, conclude that, under normal conditions, the rate of return on capital in an Islamic economy should exceed the corresponding rate in a Western-type economy characterized by Kaldor-Pasinetti properties. Remembering our assumption of $S_C = S_N$ and g = n. However, if g>n, as shown below, the rate of return on capital would even be higher in an Islamic economy. The case where $S_C \neq S_N$ requires further investigation.

To judge which economy has the higher growth, we can derive from (30) and (31) the following two conditions under which the growth rate in an Islamic economy should be higher.

$$S_R\frac{P}{K} + \frac{W_R + aZ}{K_R} > \frac{P}{K}.S_c \qquad (44)$$

It is evident that the first condition, as expressed by (34), is true. In equation (35), it becomes evident that we have satisfied the second condition when we notice that:

$$S_N\,(1-Z)\left(\frac{P}{K}+\frac{W_N}{K_N}\right) > \frac{P}{K}\,.S_c \qquad (45)$$

We, therefore, conclude that an Islamic economic system so outlined would have higher growth, higher return on capital, and more equitable distribution of wealth.

CHAPTER IV:

SUSTAINABILITY AND THE ENVIRONMENT

SUSTAINABILITY AND THE ENVIRONMENT

THE AMMAN MESSAGE

The Amman Message, which began as a statement of Jordan's King Abdullah in 2004, turned out to be the most significant effort in many centuries by Muslims worldwide (Sunni, Shi'i, Sufi, etc.) to come to a consensus on the three pivotal issues of 1) *Who is a Muslim?* 2) *Can a Muslim call another Muslim an "apostate"* (or the issue of takfir)? 3) *What qualifications are for issuing an Islamic legal opinion (fatwa)*? A highly representative body of leaders and scholars drafted a standard text, ratified between 2005 and 2006 by all the most representative Islamic international bodies (including the International Fiqh Academy based in Jeddah).

This declaration enabled the minority sect to tone down the common criticism against their creed, establishing a rank called Willayah, which they claim to be higher than prophethood. It also assigns some divine attributes to Ali, the fourth Calif. The creed borrows from Christianity the idea of mixing human and supernatural attributes and assigns infallibility to their imams. That was also balanced, at least partially, by making their beliefs less pronounced. However, the declaration failed to integrate the Shi'ah minority into the main body of Islam. The declaration was even less successful in modifying the esoteric beliefs and practices of the Sufis, which often appear to contradict the belief in the absolute unity of God, or Tawheed.

Potential success is reachable by the agreement of both minority sects to accept a common authentication of the Hadeeth narrations and reject all objectionable narrations. In addition, a clear-cut admission of the absolute unity of God and limiting infallibility to prophets would go a long way in integrating the two minority sects in the body of Islam.

The West has taken an expedient position. On the one hand, it shows consistent sympathy towards Shi'ah and Sufis. The reason is that they both echo the mixing of human and divine attributes in their saints and Church officials. In addition, the esoteric elements of Shi'ah and Sufis are similar to the Christian creed.

ISLAM AND THE ENVIRONMENT

Islamic teachings closely conform to the Ten Principles of the UN Global Compact. Furthermore, in many respects, they go further than the minimum standards adopted by the Global Compact. First, it is broader in scope, as in developing human capital and the transparency requirements in business transactions. Second, it has an explicit codification defining what is *halal* (permissible) and what is haram (forbidden). Third, it has an explicit enforcement mechanism in the Shari'ah as well as in community enforcement and the final sanction of the accountability of the individual for unethical behavior on the Day of Judgment. (Qur'an, Ch. 17, v. 13).

However, the analysis so far has focussed on the teachings of Islam, but, as in all other ethical systems, there is often a difference between teaching and practice, and we must recognize that Muslims do not follow all of the teachings of Islam in many Muslim countries. For example, we have already noted that when it comes to equal treatment of women, many Islamic countries fall short of basic standards of equality as defined by the UN, and the same is true of issues related to fundamental human rights and transparency of the judicial process (Beekun and Badawi, 2005; UNDP, 2002). In addition, many corruption measures, such as those provided by Transparency International, show that Islamic countries are often high on the corruption scale. More generally, studies such as those of Hofstede and Hofstede (2005) or Ingelhart (1997) based on the *World Values Survey* show that Islamic countries tend to be more deferential to hierarchies, less equal in their treatment of women and



minority groups, and less supportive of the rights of individuals. Nonetheless, these issues are almost certainly not related directly to Islam *per se*. However, they are more likely due to other socio-political factors related to the nature of government and the development of civil society since many non-Islamic countries also perform badly along these dimensions (Williams and Zinkin, 2006).

A final possible area of dissonance arises in the focus on individual responsibility in Islam, an idea reinforced by the lack of priestly intermediation between Muslims and Allah and the apparent recognition that the corporation is no more than a legal entity that has no responsibilities that can be separated from those of the individuals who make up the organization (Bhatia, 2004). Nonetheless, in general, the close conformity between Islamic ethical standards in business and the universal global standards in the UN Global Compact is very encouraging since it suggests that a discourse based on the Ten Principles and discussions of how best to develop CSR can usefully emphasize the commonalities and convergence between modern stakeholder capitalism and Islam.

MUSLIMS AND THE ENVIRONMENT

Johnston's Survey of the Literature by Muslims on ecology indicates that the majority favors some role for Shari'ah in solving ecological problems (Johnston, 2012). In his paper, he surveys scholars/activists who chiefly refer to "Shari'ah" as a source of ethical values. The first to address these issues was Iranian-American philosopher Seyyed Hossein Nasr, who proposed a pluralist theology hospitable to all faiths' spiritual input. Today's most influential environmentalists are the British scholars Mawil Izzi-Dien and Fazlun Khalid, whose writings and campaigns have impacted millions of Muslims worldwide. Their appeal to past norms of eco-friendly Shari'ah norms and their desire to update them in the present context fits nicely with the Earth's Charter call for "a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace."

Since the onset of the twenty-first century, political debates in the US have been swirling around the issues of Islam, Shari'ah, terrorism, singly attached to Muslims, and jihad. In 2011, New York Representative Peter King held con-

gressional hearings on the "threat of homegrown Islamic terrorism," *implying a solid feeling of Islamophobia*. Some thirteen states had laws pending that would ban legal recourse to Shari'ah in their jurisdiction. The Tennessee bill written by Arizona-based attorney David Yerushalmi in 2010 was the most extreme: it would make it a felony to follow certain parts of Shari'ah."[72] Tennessee Muslims active in trying to block such legal action retorted that Shari'ah is at the core of their faith—it includes the divine guidelines for how to pray, how to fast during Ramadan, how to give to the poor, and how to conduct one's life with compassion and integrity.

Many Muslims use Shari'ah to promote earth-friendly practices and lobby for government regulations that protect the environment. Johnston examines a cross-section of the literature on Muslim environmentalism and looks into Shari'ah's role in curbing pollution, conserving natural resources, and reducing greenhouse gas emissions. Muslim activism impacts Shari'ah's interpretation. Let us first look at the Earth Charter, which is still the most comprehensive global statement on environmental ethics, and then at recent polls among Muslims about how they see Shari'ah (Johnston, 2012).

THE EARTH CHARTER

The Earth Charter was officially launched in June 2000 under the auspices of Queen Beatrix of the Netherlands in The Hague. It was the culmination of five years of efforts on the part of an international drafting committee that had sought the contribution of scientists, religious leaders, and international lawyers worldwide. The charter claims that humanity stands at a "*critical moment in Earth's history*," the Charter asserts that the way humanity must start with an acknowledgment "that amid a magnificent diversity of cultures and life forms, we are *one human family* and *one Earth community* with *a common destiny*" (Earth Charter 2000). We must start a concerted effort to create "a sustainable global society founded on respect for nature, universal human rights,

72 Islamophobia can be related to the impression that Muslims support native Palestinians in their quest against the apartheid regime that usurped their land in Palestine. It is a politically and definitely pro-apartheid motivated feeling, supported by strong lobbying organizations. Yerushalmi was co-author of the Center for Security Policy's report, "Shariah: The Threat to America." See also an article blasting Yerushalmi posted on the Anti Defamation League website (no author) on March 25, 2011: http://www.adl.org/main_Extremism/david_yerushalmi.htm .

economic justice, and a culture of peace." Adopting the expression "*Earth community*" implies a revised and humbler assessment of the value and role of humankind compared to the modern Western view. The preamble ends with a call to a new ethical vision: "Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and future generations."

Muslims mainly live in developing countries. Their political systems tend to be more totalitarian than democratic. Not being elected, their rulers seek support from outside sources through political exchanges. Each of the old colonialist masters had under its umbrella a group of developing countries that were loyal to the master. For example, the US claims Egypt and the GCC countries. Britain and France claim several Western and sub-Saharan African countries. France controlled the CFA countries and got a portion of their GDP paid yearly in cash. The rulers of the Muslim-majority countries provide critical political services to their old colonialism masers, including acceptance of the African apartheid regius in Palestine. Acquiescing to the usurpation of Palestine against the will of its natives, protecting European borders from illegal immigrants, protecting raw materials and energy to flow from the Middle East and Africa without interruption, keeping their territorial waters open without hindrance to the ships of the apartheid regius, and ultimately keeping those with anti-Western sentiments from gaining political power, yielding control of the east Usditerranean gas to Greece and the apartheid regius, keeping the exploitation of crude oil, natural gas and other minerals that include diamonds, gold, and uranium in the hands of Western multinationals, and many other political and economic concessions conceded by the Muslim majority governments to their Western sponsors.

As explained in the previous chapters, Islam is not just a religion composed of worshipping rituals. It is a way of life that offers political, social, and economic systems and a set of values that run against many of humanity's ills. Populations in Muslim-majority countries suffer from their inability to fully apply their religion and the inability to regain freedom and dignity. The colonialist arrangement leaves no room for escape.

Muslims did not start World War I and II. They did not build apartheid regimes in South Africa or Palestine. Western Renaissance accompanied the Islamic

tide that reached Europe. Without Islam, Europe would have continued living in the dark ages. Nevertheless, colonialism exercised by the West in the Third World was brutal, exploitative, and anything but human. Muslims yearn to apply Shari'ah, as it contains the political, economic, and social values that would offer a better life for all humans. The message of Islam is to make such values available to the rest of the world without compulsion. Muslims perceive Shari'ah as a body of behavioral rules that embody all good for humanity.

The image projected in the West of Shari'ah is quite the opposite. It is not difficult to show that the projected image of Shari'ah in the West is false. Its falsification does not come from a vacuum. Interest groups that benefit from the sociopolitical and economic exploitation of Muslim-majority countries work hard to prevent any bridge of understanding between the Muslim East and the Christian West. In the forefront, we find the supporters of the apartheid regime established by Westerners in Palestine, the Church that fears the simple and logical message of Islam to replace the originally monotheistic, turned Trinitarian, Christian creed. The Islamic creed calls for worshiping one vast and limitless God, directly reachable without intermediaries. The Christian creed became later Hellenized into a pagan-like creed, in which Christians worship a Palestinian man as God. Ironically, a simple Muslim farmer can understand the concept of Tawheed. At the same time, a Western person with relatively higher education believes in a creed that he/she does not understand and cannot explain with clarity. We define paganism by starting with the monotheistic concept of God as elaborated in Islam. God, the creator of the universe, is perceived in Islam as vast and unlimited by time, form, and space. He cannot be embodied in a human, animal, plant, or mineral form. *Nothing is like him.* He is known to us by His attributes, not by His nature. Pagans would stand at odds with this perception. They would worship everything, like Hindus, human beings, like Christians, a plant or a place or a statue as an idol, like others.

The wrong perception of Islam and Muslims in the West hindered Westerners' understanding of the Muslim ecological vision. The East-West dichotomy, which is like the dichotomy between finance and the real sectors in market capitalism, motivated some Western intellectuals to query the perception and attitudes of Muslims towards Shari'ah. How does this ethical imperative of "Earth community" square with this to enact legislation that matches society's fundamental values?

JOHNSTON'S SURVEY OF FOUR MUSLIM ENVIRONMENTALISTS

David Johnston (2012) gives a brief overview of four influential Muslim intellectuals and activists who argue, in very different ways, that all Muslims must respond to environmental threats as part of their religion.

Johnston gives examples of experts who make their arguments out as Shari'ah. For example, Mawil Izzi-Dien, at the University of Wales, has written a book that outlines a Shari'ah-based response to ecological challenges. Importantly, Johnston notes that when authors like Izzi-Dien use "Shari'ah," they refer to an ethical ideal rather than a body of laws. Therefore, Johnston employs the notion of Shari'ah as a "rhetorical strategy," a markedly religious term recognizable to Muslims worldwide and can mobilize a broad response. In this sense, Shari'ah-based arguments are more effective and broadly influential than esoteric mystical discussions of famous Muslim philosopher S.H. Nasr, whom Johnston analyzes his works. As we will see below, however, there is still an essential role for religious traditions' esoteric and affective side to play in any effective response.

Johnston is aware that some of his authors seem almost apologetic in their attempts to describe Islam as environmentally friendly. In other words, some Muslim authors seem anxious to defend Islam as being just as earth-friendly as Christianity, Judaism, and other traditions. That serves as a reminder that Johnston wrote this collection of essays to highlight the work of Muslim activists, not to represent the broad range of discussion in the Muslim world.

Iran, with oil production, a relatively wealthy population, and heavy industry, happens to have the most significant carbon footprint of any majority Muslim country. However, its annual output of 538,000 kilotons of CO2 is only double that of Pennsylvania, while Iran's population is six times greater. Of course, Iran's output pales compared to 5.5 and 7 million kilotons for the United States and China, respectively.

In Iran, as in the United States, high carbon output is a means to a comfortable, even opulent, lifestyle. Nevertheless, this is the exception in the Muslim world. For example, the 150 million people of Bangladesh produced 46,000 kilotons of CO2 in 2008. The 16 million Niger produced only 851 kilotons.

21 For a comparison, consider that this number is approximately double the carbon footprint of the Pennsylvania State University, where We work. Penn State has steadily reduced its greenhouse gases to 460 kilotons in 2010. This calculation does not include the carbon load of university-related travel.

It is a sad irony that the very same Muslim countries, which have contributed almost nothing to the rise in greenhouse gases, will be among the most brutally hit. Already, the droughts in East Africa in 2011 and the endless rains that brought devastation to Pakistan in 2010 serve as harbingers of the changes scientists have predicted for our climate, not to mention the possibility that the Maldives and half of Bangladesh will be underwater within the next one hundred years.

Western overconsumption causing their suffering is outrageous and violates every ethical principle. How did our species reach such a point that we so easily dismiss the lives of millions so we can live in climate-controlled comfort?

Forty years ago, Lynn White, Jr. offered a provocative thesis that laid the blame at the feet of monotheistic views of God that, he argued, separated human beings from nature. Where pagan, polytheistic devotees saw the natural world as alive, enchanted, and full of spiritual meaning, monotheistic men subjected nature to the scientific gaze to be exploited, her secrets revealed. Ahmad Afzaal deftly points out in his contribution to Worldviews journal that White's thesis does not map to the empirical experience of Christianity or other monotheistic traditions. To the extent that it works at all, it is a critique only of one particular view of God as supremely transcendent, distant from the natural world. Afzaal calls this "supernatural theism" and argues that this notion of God has only recently gained prominence, and even so, only in certain circles. Afzaal's key point is that while religiously motivated activism is valuable, theology is even more critical. The magnitude of ecological crises facing humankind now requires a massive reconsideration of the most fundamental questions of the meaning and end of human existence.

Afzaal finds inspiration in the early twentieth-century philosopher and poet Muhammad Iqbal to respond to this crisis. He writes, "For Iqbal, nature is not a thing but a process. Nature is not what God created in the distant past; nature is what God does now." Here, Afzaal is marking two different theories of God's relationship with nature to understand the ideal human relationship

with nature. In the understanding of supernatural theism, God is above and apart from nature, and nature is either negative or neutral, a thing to be tamed or exploited. What Iqbal is promoting is a form of panentheism, of God's existence pervasively throughout Creation. In this case, it is through our human interaction with nature that we discover God. It is this vision of God that Afzaal believes Muslims (and We would say all believers) must recover to develop a viable eco theology that will carry us through the trials of the coming century.

For students of Genesis, these two visions of God are familiar in the two creation stories. In the first (Genesis i:r-2:3), God speaks the world into existence on a cosmic and timeless scale. (such embodiment of God in unacceptable to Islam) In the second {Genesis 2:4-3:24), God (walks into the garden}, plants its trees, and forms humankind out of the earth itself (attributing walking and other human attributes to God is unacceptable in Islam).

In the second chapter of the Qur'an, Allah enunciates that He shall place a viceregent on earth. Before creation, He bestows on his servant authorities worthy of making him a vicregent of God. Adam is then sent for a training period with his wife to learn the art of living in virtue. After finishing his training period, Allah ordered Adam, his wife, and their descendants to go down to earth and periodically receive guidance to follow. In the end, they would be made accountable. Those obeying guidance shall end in Paradise. The Qur'anic genesis mentions no original sin or banishment from the Garden but stresses the relationship between man and earth in one word, khilafat or viceregency. However, there is a hereafter and strict accountability.

The message of Islam is evident. God created man and earth for each other. Man has the power to destroy or construct. He is being tested and watched. In the end, accountability will be meticulous. Effects of actions as small as a mustard seed can be evidence. A Muslim must economize on water while doing the pre-prayer wash, even if he is washing on a river. The community must manage specific resources: pasture, water, and minerals for conservation. Shari'ah provides the code of behavior

The Islamic perception of God is not of someone who tires, sleeps or takes a human form. But someone who creates by command, manages, rewards and punishes.

Johnston, 2012, mentions four Muslim scholars who had some significant ideas on the environment. The first is *Seyyed Hossein Nasr*, an Iranian exiled Sufi philosopher who gained popularity in the West. The second is Mawil Izzi-Dien who is a lecturer on Shari'ah and ethics at the University of Wales. The third is Fazlun Khalid, Founder, and director of the Islamic Foundation for Ecology and Environmental Sciences (IFEES) in Birmingham, UK, who chaired an interfaith conference on Religion and Ecology in Japan in 1995, producing the Ohito Declaration for Religion, Land, and Conservation. The third is *Othman Llewellyn*, a convert to Islam, who grew up in a conservationist house in Colorado and has worked many years for the National Commission for Wildlife Conservation and Development in Saudi Arabia (Faiz 2008). The fourth is *Abdulahi Ahusd An-Na'im*, the Sudanese legal scholar at Harvard University who has long been concerned about environmental issues.

Seyyed Hossein Nasr remains in a category by himself—and partly because his adherence to the perennial philosophy initiated by Frithjof Schuon and René Guénon puts him at odds with the vast majority of Muslims whom Johnston describes as *exclusivists*. Such a description ignores an essential part of the Islamic creed. Muslims believe that revealed religions (Judaism, Christianity, and Islam) caus from one source. Their underlying and unifying principle is submission to God's will (or *Islam* in Arabic." Differences among their followers are due to insufficient care by the followers of other religions to authenticate the narrations through which they received the divine texts of their scriptures. Muslims have endeavored to ensure the authenticity of their divine scriptures. The Qur'an was memorized immediately after the revelation of each verse. The book style is most eloquent, easy to chant, and memorize. It contains at least one-third of the roots of the Arabic language[73]. Those who memorize the Quran receive it through previous narrators. The words and acts of Prophet Muhammad ﷺ have been recorded in both written transcripts and memorized as narrations during and after his life. Scholars later collected them in six books of authentic Hadith. Hadith narrators must pass rigorous biographic scrutiny. Narrations of those suspected of lying or fabrication are considered weak or unacceptable. Narrations that prove contradictory with creed and Qur'an are considered unworthy of trust. The significant differences between

73 No book written in any language can encompass more that one tenth of language in which it is written.

the Sunni and the Shi'a beliefs come from narrations considered authentic by both groups. However, agreement on authentication can be mute due to the Shi'ah insistence on the infallibility of some narrators.

Christians have not given sufficient care to the authentication of their divine texts. The original text provided by Jesus ﷺ presumably in Aramaic (an older form of Arabic common in the levant during his time.), is not available. Only translations in Greek (the language of the then-occupier of Palestine), which are hard to trace back to their original authors, are available. Therefore, we can conclude that the lack of careful authentication of the divine text opens the door to vast differences in creed, even though they come from the same source.

Those supporting perennial philosophy are correct in arguing that the three *revealed* religions come from the same source but unfortunately ignore the necessary and sufficient condition of inclusiveness, which is the authenticity of narrations underlying the divine texts. While Western intellectuals may be impressed by the idea of one space encompassing all religions, the historical perspective is not as bright. We can conclude that the authentic versions of revealed religions are contained in the Qur'an and the six authentic books of Hadith. Christians are invited to compare notes with Muslims on authenticity.

Abdullahi Ahusd An-Na'im argues that Shari'ah is both *a concept and a methodology* (An-Na'im, 2008; Johnston, 2012). As a concept, it is the religious law of Islam—*how God enjoins people to live*. This "normative content" of Shari'ah includes Islamic rituals (mostly the Five Pillars) and the unambiguous injunctions and directives of the Qur'an and Sunna. To access this content, we must consider the sociopolitical contexts when interpreting sacred texts. That is where the "methodology" comes into play: trained legal scholars (*ulama* or *fuqaha*) use their due diligence (*ijtihad*) to deduce new rulings as called for by new situations arising.

Classical Islam, through a process of consensus over time (*ijma'*), decided on a particular methodology for "discovering" this normative content. Hence, it is common ground that one can build upon in various works of *usul al-fiqh* (legal theory) over the centuries. An-Na'im argues that times have changed, calling for a new consensus (An-Na'im 2008: 13). Nevertheless, he refuses to allow any *state or official religious body* to carry on a new *Ijtihad*, claiming that each

Muslim is responsible before God for the decisions he or she makes based on his or her understanding of the texts. With this extreme opinion, he renders all Muslim schools of thought useless and wishes to replace scholarly Ijtihad with personal interpretations. Probably, this is not what he wishes to state. We can understand why we must exclude governments and their official political institutions from the process of *Ijtihad*. However, academic freedom must be assured for scholars to exercise Ijtihad while bound by the methodologies developed by the schools of thought.

An-Na'im admits that *religious and political authorities will always live in relative tension*. *Fazlun Khalid*'s achievements in Indonesia produced a creative way to solve this issue. The *ulama* issued legal opinions about the impermissibility of *wanton deforestation*, either through burning to sow new crops, logging, or mining. At the same time, parallel laws were enacted in this direction by the Parliament. The *ulama* and community leaders who participated in the Islamic *Foundation for Ecology and Environment* IFEES workshops supported the regulatory bodies and law enforcement agencies responsible for enforcing the new laws. Everyone was pushing in the same direction, and whatever lobbying power the logging and mining companies had at their disposal seemed to be kept at bay. In practice, however, enforcing such laws will always confront serious challenges.

Richard Foltz, who has studied these issues for over two decades, is cautiously optimistic about environmentalism's prospects as a cause in Muslim-majority countries. On the one hand, at least three obstacles still seem daunting: a) economic development tends to trump any concern for the ecological degradation it might cause; b) Muslim writings on ethics focus much more on social justice than on human harm caused by air, water, and climate; c) most Muslims perceive environmental activism as a Western-led initiative that is either unwelcome politically for that reason, or foreign to the values and teachings of Islam, or both. In this regard, we must point out that the lack of widely accepted perception of a comprehensive Islamic economic system is the real culprit. Once we remove this obstacle, we can achieve balanced attention to social justice and environmental problems.

On the other hand, since the 1990s, hundreds of environmental NGOs have sprung up in many Muslim countries. Besides the work of IFEES highlighted

here, there are grassroots initiatives in India and Indonesia as well. Besides, with Iran in the lead, several Muslim states have cabinet posts for ministers of environmental affairs, and they are beginning to consult with one another regularly (Foltz 2003, 2006, 2009).

This background information only seems to confirm the wisdom of local, hous-grown, and Shari'ah-based articulations of *ecological activism*. What is certain, however, is that the use of "Shari'ah" in this context has nothing to do with the notions of theocracy and the imposition of oppressive medieval laws mistakenly attached to Islam in the West but instead, everything to do with a thriving civil society seeking to protect the precious resources of a planet created by God for the welfare of all his creatures.

When some asked Llewellyn what he saw as the most urgent action to protect the environment, he answered: contemporary Muslim views and what it means to be faithful to the divine revelation in the Qur'an and the teachings and example of Islam's Prophet, Muhammad ﷺ.

The Gallup Polls that led to the book ***Who Speaks for Islam?*** Tell us that "large majorities of respondents in the countries surveyed cite the *equal importance of Islam and democracy* as essential to the quality of their lives and the future progress of the Muslim world" (Esposito and Mogahed 2007: 35). Equally, a vast majority of Muslims worldwide want "Shari'ah" to be a source of legislation in their nations. What might this mean? "The answer to this is as diverse as the Muslim community itself," the authors respond. While in only a few countries, the majority said Shari'ah should not play any role in society, only a tiny minority wanted Shari'ah to be the "only source" of law[74]. However, for many who desire more input from Islamic law, "significant minorities in many countries say religious leaders should play no direct role in drafting a country's constitution, writing national legislation, drafting new laws or deciding how women dress in public or what is televised or published in newspapers" (Esposito and Mogahed 2007: 50). Hence, there is no direct correlation between advocacy for Shari'ah and theocracy across the board. This is strong evidence that Muslims do not view the Islamic political system as *a theocracy*.

74 The exceptions were Jordan, Egypt, Pakistan, Afghanistan, and Bangladesh, where most people wanted Shari'ah as the "only source" of legislation (Esposito and Mogahed 2007: 48).

Whatever definition of "Shari'ah" Muslims are working from in these conversations, it is not, it would seem, the Sunni consensus on ***Fiqh*** (applied jurisprudence) in the sixth century ***Hijri*** (twelfth-thirteenth century CE). Nor is it necessarily the fatwas and documents produced by the International Islamic Fiqh Academy of Jeddah or the dramatically wider grouping of Islamic movements sparked by the Amman Message. To most Muslims today and the thinkers examined here, Shari'ah seems to be an ethical ideal rather than a body of laws. However, such perception would assure Western sources that Muslims are not yet keen to reconstruct their life in all social, economic, and political aspects, as expressed by the respondents to Gallup's survey in Egypt and Jordan.

Muslims are motivated by their religious traditions to protect and preserve natural resources. In Indonesia, official Muslim institutions are strengthening and justifying environmental laws (Brockopp, 2012).

ENVIRONUSNTALISM OLD AND NEW

Old environmentalism, largely ignored by Western academia, has a philosophy similar to its modern counterpart. The troubled Western industrialization and modernity experiences have inspired most ideologies of environmentalism. However, western thinkers ignored non-Western experiences and traditions and considered them outdated results of *undeveloped* societies and history (Farooqui 1994). Due to this ethnocentric bias and neglect, some medieval traditions, despite having provided a profound legacy and impetus to modern civilization, remain predominantly "dark" in the eyes of Western academia. Deconstructing the ethnocentric bias of modern environmentalism directs due attention to the "new" paradigm of environmentalism- both on the levels of philosophy found in the "old" *medieval Muslim traditions* and of activism in the modern world based on that philosophy. Islam (2012) calls it *the Islamic Ecological Paradigm* (IEP), which is primarily similar to and capable of offering an avenue for an ontological alliance with many other paradigms of modern environmentalism.

Modern environmentalism is a *social program* that protects the environment against degradation and recommends less destructive technologies and lifestyles (Taylor, 2000). Modern environmentalism has cut across religious, national, and political divides and reached everywhere, winning enormous



numbers of adherents, redirecting people's lives, generating a new body of knowledge and laws, hatching green political parties, encouraging a rethinking of economic patterns and priorities, and gained a strong voice in international relations (McCormick 1989, Guha 2000). While contemporary environmentalism as a social movement in the West is a postwar phenomenon, human misuse of the environment has a long lineage (Hughes 1975; Chew 2001; Glacken 1976; Deevy et al. 1979). From a long-term world-historical perspective, Chew (2001: 171), for instance, remarks that *environmental movements always seem to emerge during ecological degradation and crisis eras.* Utilizing world systems theory, Chew (2001) makes an excellent study of the ancient world's conflict between culture, society, and economy. It presents the patterns of overuse of resources in seven periods:

1. Mesopotamian civilization from 4000 B. C.;
2. Harappan (in the Indus Valley) civilizations from 3000 B. C. to about 1700 B. C.;
3. the periods of Crete and
4. Mycenaean Greece, roughly between 2000 B. C. and 1000 B. C.;
5. classical Greece;
6. Rous's Empire; Europe between A. D. 500 and A. D. 1800; and finally
7. the Industrial Revolution and its aftermath.

Notably, Chew does not include the ancient Egyptian era among the above periods. According to Hughes (1992), the Egyptians were in charge of their government and were able to set their environmental policies from before 3000 B.C. to after 1000 B.C. No other ancient civilization lasted so long while maintaining a stable pattern in its economy, government, religion, and ecological viewpoints and techniques. Many historians of Egypt remark upon the stability of Egyptian culture in a pejorative tone, attributing a lack of change to traditionalism and the absence of creative thought as if stability meant only stagnation. However, we will argue that the stability of Egyptian civilization resulted from the sustainability of Egypt's ecological relationships.

Hughes (1992) demonstrates that while the contemporary ecological crisis is larger in scale, it is not different in fundamental form from historical patterns of resource exploitation.

Karl Butzer (1976) remarked that it has become difficult to ignore the possibility that significant segments of ancient Egyptian history may be unintelligible without recourse to an *ecological perspective*. Anyone who seeks an understanding of ancient Egypt should follow His advice. Butzer also remarked that the history of floodplain civilization in the Nile Valley offers *a test case of human-land relationships*. However, the ecological attitudes and practices of the Egyptians reflect a worldview that affirmed *the sacred values of all nature, and land in particular.*

Although one of the first societies to attain civilization in the sense of developing cities, Egypt remained agrarian rather than urban (Adolf Erman, 1971). The Nile annual flood and the deposition of fertile alluvial soil are behind the sustainability of Egyptian agriculture. The Greek Egyptian-educated Greek historian Herodotus (2008) pronounced Egypt the "gift of the Nile. The Egyptians were aware of this, for as an early inscription witnesses, the Nile "supplies all the people with nourishment and food." Second, they knew a stable climate without freezing or storms, and although there was little rain, the river supplied the water needed. Their environment encouraged them to think of processes of nature as operating in predictable cycles. The Nile flooded its banks simultaneously every year, bringing moisture and new soil to the fields, and then subsided. The only fertile land was what the river watered, both in the long, narrow, cultivated valley floor of Upper Egypt and in the broad, flat, fruitful Delta of Lower Egypt.

Chew (2001) Utilizes the *world systems theory* to study the conflict between culture/society/economy over the past five thousand years. It presents the patterns of overuse of resources in seven long historical periods: Ussopotamian and Harappan (in the Indus Valley) civilizations from 3000 B. C. to about 1700 B. C.; the periods of Crete and Mycenaean Greece, roughly between 2000 B. C. and 1000 B. C.; classical Greece; Rous's Empire; Europe between A. D. 500 and A. D. 1800; and finally the Industrial Revolution and its aftermath. He demonstrates that while the contemporary ecological crisis is larger in scale, it is not different in fundamental form from historical patterns of resource exploitation. A visible environmental movement began in the mid-nineteenth century, particularly in the United States. Through the conservation movement, the philosophy of environmentalism dates farther back. Echoes of many of the concerns of the environmentalist movement in the West are to be found much earlier in foundational Muslim texts.

ENVIRONMENT PROTECTION SAFEGUARDS IN ISLAMIC FINANCE

Islamic finance applies rules that ensure that all financed activities, public or private, are sustainable. A modern example is the standards issued by the Dubai Financial Market. The standard prohibits acquiring and trading in shares if the firm in question is involved in the following activities:

- Interest-based lending and borrowing.
- Conventional (interest-based) financing,
- Conventional (interest-based) investment,
- Conventional (interest-based) insurance,
- Deferred transactions in gold, silver, or currencies,
- Trade in pork or its by-products,
- Trade in all kinds of liquors and alcohol,
- Trade in narcotics for non-medical purposes,
- Trade in tobacco or its products,
- Gambling, Dealing in pornography or permissive materials that contravene Islamic ethics and values in any manner, such as by
- publication or distribution of acts of an obscene nature through any means,
- Entering into non-Shari'a transactions,
- Entering into impermissible debt-based transactions, such as discounting debt instruments and taking a commission on a mere act of guarantee,
- Inhuman and unethical dealing in human-related objects, such as human trafficking, trading in human organs, and prostitution,
- Producing or trading in weapons against the law of the land,
- Hotels, tourist resorts, and similar establishments that provide or deal in prohibited products and services or market them or act as agents in such deals,
- Activities that are harmful to the environment,
- Materials that jeopardize, whether alone or when mixed with other elements, the health of the living (humans, animals, and plants),

- Biological research projects that conflict with principles and fundamentals of Shari'a, such as human cloning or setting embryo's sex through non-Shari'a means,
- Hereditary or genetic engineering leads to changes in the physique of humans unless it is for medical purposes, such as the treatment of disabled organs to restore their original function.

The above list satisfies the conditions for maintaining religious morality, environment, and life protection. It practically summarizes the sustainability criteria of all DFM standards and for all Islamic finance activities.

ENVIRONMENT PROTECTION AND MAQASSED ALSHARIAH IN ECONOMICS

Maqassed Alshariah summarizes the significant objectives of Islam as being beneficial to humanity. They include the protection of faith, life, intellect, progeny, and property. When interpreted into economics, they include sustainable and balanced growth, full employment, equity, efficiency, and sustainability.

MANDATORY COMMONS IN ISLAM

The Prophet Muhammad ﷺ ordained that people are partners in water, pasture, and minerals. The three resources must be commons in each country. Commonality as a concept to ensure sustainability has been pioneered in theory by Muslims. However, it is still far from being adequately applied nationally and internationally. Transforming a resource into "a common" requires joint management by "common usmbers," the stakeholders. A governance problem automatically arises unless the society sets up a suitable governance system. It has an echo in economic analysis, which we will explain below.

THE COMMONS VIEWED THROUGH COOPERATIVE GAUSS

In a tragedy of the commons, competition over a resource by individuals can reduce the resource itself, thus threatening the whole group's welfare. When the life of a community depends on a resource, l*ike water or fish*, and the selfish interests of free-riders and cheaters overwhelm cooperative behavior, and the social good upon which they depend ceases to exist, the whole community vanishes. Case studies cite many different and seemingly in-

teracting factors leading to a tragedy of the commons. Here, we propose an equation-based theoretical model to predict changes in this balance, which determines whether the tragedy of the commons arises in a particular scenario. Using survey data from 20 Balinese subtasks, we explore the explanatory power of two theoretical traditions currently used to analyze common management institutions, revealing multiple regions with correlated responses to environmental threats. Exploring case studies from a comparative perspective requires theory and methods to account for regional differences and explore transitions between them.

Neoclassical economics enables us to predict how prices change in response to changes in economic factors. However, we have no comparable theory for common pool resources, which lack prices. Utilizing these resources requires *exploitation restraint* by selfish actors, or the resource will cease to exist. N-person cooperation gauss (Santos et al., 2008) provides a framework to define this problem but does not explain why the balance between selfish and prosocial behaviors changes in particular scenarios. This problem is also at the forefront of research on the tragedy of the commons in evolutionary biology. Here, we propose an equation-based theoretical model to predict changes in this balance, which determines whether the tragedy of the commons exists in a particular scenario. We highlight the potential significance of multiple equilibria because it bears on the explanatory power of the two theoretical traditions currently used to analyze common management institutions, both of which require an equilibrium assumption. Neoclassical economic analysis, including Gauss theory, is based on analyzing utility functions for individuals or firms, yielding equilibrium solutions, though multiple equilibria are possible (Crepin and Lindahl, 2008; Kossioris et al., 2008). A second approach developed by Elinor Ostrom (1990) and colleagues analyzes the salience of the rules used to govern institutions engaged in the cooperative management of common property. The first approach assumes the uniformity of agents, and the second assumes that the same rules will produce identical outcomes. If either assumption does not hold, there may be more than one equilibrium solution, reducing the power of analyses that assume uniformity. Case studies cite many different and seemingly interacting factors for success, as Agrawal noted in 2002, and consequently "arrived at *no consistent theory* to explain viable and successful commons management," a problem that persists. (Agrawal, 2002; Rose, 2020)

MULTIPLE EQUILIBRIA: THE BALI SUBANKS AS A CASE IN COMMONS

Multiple equilibria (Lade et al., 2013; Sugiarto et al., 2015) are likely to arise *naturally* in the management of the commons because the incentives for collective action depend on both social relations (Chung et al., 2013) within the group and the efficacy of governance institutions, as well as the costs and benefits of the shared resources. Adaptation is ongoing on both levels: *sustaining effective collective action* and the tug-of-war between selfish exploitation, free–riding, and active member cooperation. The resulting processes of ongoing co-adaptation to one another and challenges to the group can produce divergent outcomes. We observe this in the twenty Balinese communities in our study, which share identical goals – the effective management of irrigated rice terraces – and identical governance rules designed to sustain high levels of consensual cooperation.

A sample survey of 25 farmers in each of the 20 communities showed that their success in meeting these goals and their internal dynamics vary. Analysis of the survey results showed that the 20 subtasks fall into three distinct, sharply contrasting attractors with correlated responses.

In a tragedy of the commons, individual competition over a resource can reduce the resource itself and thus reduce the fitness of the whole group. Evolutionary biology illustrates this phenomenon. An extreme example is evolutionary suicide, which eventually occurs when the selfish interests of *free riders and cheaters overwhelm cooperative behaviors*, and the social good on which they depend ceases to exist. It occurs, for example, in Cape honey bees when workers cease to help the colony and instead invest in their selfish reproduction, leading to very few individuals becoming workers and, in turn, the colony collapse. (Martin et al., 2002) Biologists distinguish between *"collapsing" tragedies,* where the entire resource vanishes, which can lead to the group's extinction, and *"component" tragedies,* resulting in a lower average fitness due to selfish competition. However, the group persists on the resource in question. Thus, There is a continuum between component and collapsing tragedies, which prompts the question, "Why do component tragedies not always become collapsing tragedies, or why do individuals in some cases cooperate so diligently that even component tragedies are absent?" (Rankin et al., 2007).

In the simplest case, all that is required is *restraint in exploiting the shared resource*. However, in the cases we consider, more is required: *self-interested competition* must give way to collective action to sustain the shared resource, as is evident from ethnographic and historical studies of the cooperative management of Balinese irrigation (Lansing and de Vet, 2012). It minimally requires an effective system of governance, which determines the steering capacity of the group. We suggest that it varies in response to threats to the benefits that members accrue from the group's shared resources. Threats to vulnerable resources that produce significant benefits can motivate higher investments in the steering capacity that sustains them, damping internal competition or free-riding.

Environmental economists tested this hypothesis with a sample survey of farmers in each of the study's 20 Balinese rice-growing communities. These communities are not villages, but *specialized institutions called subak*, whose members collectively manage their irrigation systems. Subaks have existed in Bali since the 11th century (Figure 3). They provide a good test for the steering capacity hypothesis for several reasons: they are independent, self-organizing, and self-governing institutions that tend to persist for generations. Prior research shows they are vulnerable to both component and collapsing tragedies of the commons. (Lansing, 2006) we report an analysis that proceeded in three steps. First, It surveyed the farmer's views on pro-social behavior in their subak, the effectiveness of its governance institutions, and environmental conditions. Second, we drew from the results to *formulate and test an equation that predicts changes in steering capacity in response to threats to the continued benefits from the shared resources managed by the subak*. Third, we analyzed variation at the subak level that bears on the likelihood of movement towards or away from component tragedies in response to changes in steering capacity.

DISCOVERING ATTRACTORS USING SURVEY DATA

Subaks are traditional, community-scale institutions that manage irrigation flows into rice paddies. The ancient polycentric governance of subtasks emerged over centuries and has been extensively studied (Lansing and de Vet, 2012; Lansing et al., 2017). The subak system requires farmers to share limited water and suppress rice pests by coordinating their crop planting schedules and managing local networks of irrigation canals. Regular subak settings

guiding collective action help achieve coordination through which, when successful, increase crop yields of individual farmers and the subak as a whole (Lansing et al., 2017). Coordination helps reach stable crop yields, and in the long run, further cooperation is the norm, consistent with a model of co-adaptation that predicts the emergence of Pareto optimality when local groups of subtasks cooperate. (Lansing, 2006) However, cooperation sometimes falters, usually for brief periods but occasionally permanently. To characterize the functioning of the subtasks as social-ecological systems from a comparative perspective, we designed a comprehensive 35-question survey covering environmental, social, and institutional variables.

The researchers enrolled approximately 25 traditional farmers from each of the 20 geographically dispersed and diverse subtasks in the survey. In the first data analysis stage, we removed relatively unimportant descriptors using higher-order clustering (Sugiarto et al., 2017). We analyzed the remaining 19 descriptors (Table 1) using principal component analysis (Legendre and Legendre, 1998). They observed three groups of closely correlated descriptors,

The Principal Component Analysis distribution at the farmer level showed weak correlations. However, survey results at the subak level reveal clusters of subaks with similar principal components (Figure 3). Projecting the mean responses of the 19 descriptors for each subak into an embedding space of two dimensions, accounting for 62% of the variance (PC1 = 38% and PC2 = 24%), subaks are dispersed in three different-sized clusters with significant differences in their responses to survey questions (see SI). A plot in an embedding space of three dimensions (PC3 accounting for 9.6% of variance) confirms clustering behavior using *principal component analysis*, PCA. We can explain more variance by dividing the subaks into three distinct clusters. The alternative hypothesis is a single regius with some subaks as outliers, dramatically reducing the PCA's power. Using information theory, as explained below, we characterize these clusters as subak-level regions and analyze their differences. To explain these differences between subaks, we created a model (Table 2).

LANSING ET AL. STEERING CAPACITY APPLIED TO SUBAKS

For subaks to sustain their steering capacity, the self-interested competition must give way to strategic collective action. That indicates that pro-social behavior is sustainable, and we can suppress the obstacles to effective collective decision-making (steering capacity) as threats to the resources shared by the

group increase. The model is general but requires principal component analysis and a proper survey of stakeholders, and its components of the model are as follows:

SC, Steering capacity

T, Threats: the magnitude and proximity of perceived threats to the shared resource

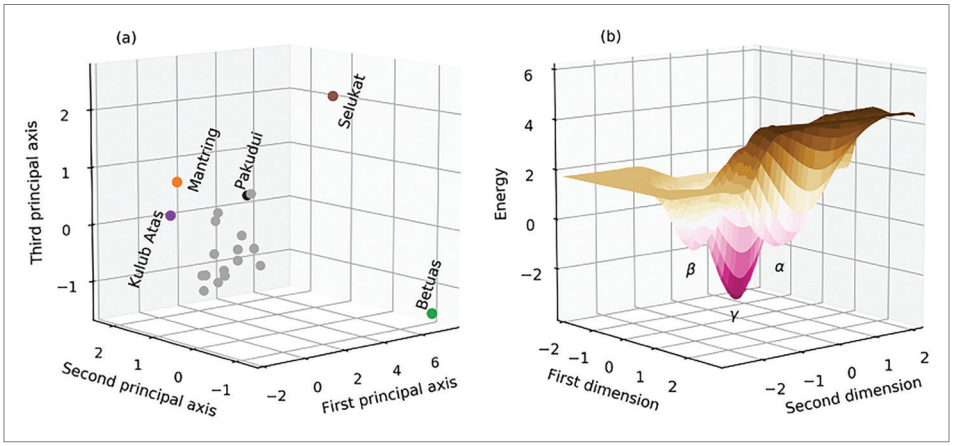
D, Dominance: departures from mandated pro-social behavior

B, Breakdowns: breakdowns in rule-following by members

The equation for the model is:

$$SC = f(T, -D, -B) \quad (46)$$

Figure 3: Analysis of the survey results: source (Lansing et al., 2021)



The survey results show that survey responses cluster at the subak level, indicating that certain combinations of attitudes are common. (a) PCA at the level of subaks rather than individual farmers shows one large cluster (grey) and five subaks that are outliers. 19 descriptors account for most of the variance (PC1= 38%, PC2 = 24%, PC3 = 9.6%.). (b) Energy landscape analysis based on Fisher Information at the subak scale shows three attractors corresponding to the PCA clusters. The more cohesive the descriptors within a cluster, the denser the state and the greater the depth.

TESTS OF THE LANSING ET AL. MODEL

As predicted by the above Equation, when threats to the shared resources managed by Subaks increase, farmers suppress obstacles to effective collective decision-making (steering capacity). Within each attractor, the responses of the farmers are closely correlated. The largest cluster contains 16 Subaks. We label it Attractor (γ). It is tightly grouped and shows the greatest uniformity in variables related to cooperation, including synchronized cropping, participation in Subak settings, and maintenance of the irrigation works and subak rituals. Less cooperative Subaks are distributed in Attractor (α) (Subaks Betuas and Selukat) and Attractor (β) (Mantring and Kulub Atas). The patterns of correlations are nearly linear in each attractor but different between attractors.

To evaluate the strength of the attractors for the principal components of the 3 clusters of Subaks, they used Fisher Information (FI), which, unlike PCA, does not assume that correlations are linear. (FI) measures the amount of information that an observable random variable (X) carries about an unknown parameter of a distribution that models (X). It describes the probability of observing a given sample (X), given a known value of (θ). The combination of (PCA) and Fisher Information produces a Fisher Information landscape, which gives a visual perspective of the regimes of stability of the dynamical system of interest.

We can calculate The strength of each attractor for a given configuration of PCs in clusters of subaks by their densities on a Fisher information landscape, represented by depth: the more cohesive and influential the descriptors, the denser the state and the greater the depth. That facilitates comparisons between attractors. We find that Subaks form distinct clusters according to their survey responses, indicating that combinations of attitudes vary systematically between attractors and are thus meaningful differences. Attractor α has the greatest variation in descriptors that are either correlated or anti-correlated with cooperativity, such as water shortages and fines. These Subaks, Betuas, and Selukat are located near the sea, near the terminus of their irrigation systems, but have abundant water thanks to eleven natural springs. Indeed, these two subaks scored highest in satisfaction with water availability.

2002, a planned coastal highway was announced to go through their land. Speculators bought up subak land in anticipation of its construction. After its completion, many farmers leased their land back from speculators to become sharecroppers, including the highway bisected subaks, whose condition was

described by farmers as poor (2.85) and fair (3.29). The mean response was 3.82. Threats to subaks are extrinsic, beyond their control, and unrelated to internal conflicts or mismanagement. As a result, the subak witnessed a collapsing tragedy, with the erosion of prosocial behavior within the Subaks. Some of the main irrigation canals needed repair, water shortages were frequent, and the subak head became unpopular. Rating the overall condition at 3.64 by farmers reflected continuing faith in the subak steering capacity despite severe environmental problems. The lowest harvest of the 20 Subaks scored low for satisfaction with harvests, social problems, frequent water theft, irrigation canals in poor repair, and poorly synchronized irrigation schedules. However, the farmers rated the overall condition of their subak at 3.70 (slightly below average). The model predicted that the farmers would respond by attempting to sustain the steering capacity of their subak.

While most of the 16 subaks included in the study show impressive homogeneity, others exhibit some variability. One subak suffers from Breakdown issues. Another was more adversely affected by poor environmental conditions relative to the other cooperative subaks. Both of them face the social problem of frequent water thefts. Their farmers in the two subaks describe the role of democracy in the governance of their subak as a *veneer* rather than an *actuality*, at relatively higher rates than other subaks. A subak located on the energy landscape, not plagued by environmental threats, and with greater steering capacity, was more resilient.

Some subaks were affected by caste problems. There has been a long-standing dispute between two groups in the village about their caste prerogatives. Such severe social conflicts did not cause the subak to become dysfunctional, keeping the flow of benefits from the subak intact.

Institutional governance functions independently from threats to shared resources. Environmental threats are low, but cooperation has broken down as subaks because it is no longer viable for extrinsic reasons.

Balinese farmers and subaks actively cooperate to minimize losses from pests and water shortages by fine-tuning their irrigation schedules. By balancing optimization for pest control versus water sharing, subaks evolve toward an optimal state where farmers maximize total harvests, and the system approaches Pareto optimality. Multispectral image analysis of collective crop management by the subaks – observable in Google Earth – closely matches

the model's predictions (Lansing et al., 2017). Counterintuitively, the threat of pests in the fields promotes cooperation because they need to reduce their numbers by synchronizing harvests and temporarily removing their preferred habitat. This result- an adaptive process triggering a phase transition – has been generalized. (Gandica et al., 2021)

Nevertheless, this model of adaptive self-organization does not address how cooperation is achieved or sustained; instead, it shows how the observed spatial patterning of cooperation can emerge if farmers seek to optimize their harvests. In this paper, we have turned our attention to the social dynamics. By comparing the Fisher information in the three attractors, we show that the most stable attractor is ongoing pro-social behavior and rule-following, apparently sustained by the ever-present threat of harvest losses if collective management begins to falter. That explains the avoidance of evolutionary suicide, the persistence of the subak system since its invention a thousand years ago, and the occasional collapses. Using Fisher Information to characterize the patterning of survey responses within the regions makes it possible to observe the critical differences in their social dynamics and the depth and stability of the resulting patterns. Finally, the energy landscape analysis (Figure 8) facilitates visualization and analysis of probable transition paths towards or away from evolutionary suicide, suggesting possibilities for future comparative research.

Exploring case studies from a comparative perspective requires theory and methods that can account for differences between regions. That opens the door to a comparative quantitative analysis of the sustainability of the commons. In the twenty cases analyzed here, steering capacity varies in response to threats to the collective.

TARIQQULLAH KHAN SCHOOL OF SUSTAINABILITY

Prof Tariqullah of INCEIF, Malayai, has taken it upon himself to raise a Muslim red flag against environmental destruction. He directs his noble message to all humanity, Muslim and non-Muslim. He provides creative behavioral rules for environment-friendly applications of Islamic economics and finance. We could not be happier with this timely development. We hope Tariqullah's sustainability school of thought will gain more followers, and his attempts to provide more means to instill sustainability in Islamic economics will bear more fruit.

CHAPTER V:

THE RISE OF MACROECONOMICS

THE RISE OF MACROECONOMICS

WHAT IS MACROECONOMICS

"Macroeconomics" studies economic problems from the point of view of the entire economy, e.g., aggregate consumption, aggregate employment, national income, general price level, etc. *Macroeconomics* is, therefore, concerned with the economy as a whole or a large segment of it. In macroeconomics, attention focuses on such problems as unemployment, the rate of inflation, the nation's total output, and other matters of economy-wide significance.

NEOCLASSICAL REDUCTIONISM

Regarding the relationship between microeconomics and macroeconomics, Neoclassical economists allege that macroeconomics requires microfoundations, i.e., "*a strong eliminativist reductionism*" (Hoover 2015). Microfoundations aims to recover *intentionality*. They typically employ a *representative-agent* model, in which a single agent solves the microeconomic optimization problem for the whole economy, thereby fulfilling the micro-foundations requirements. The characteristic argument for the representative-agent model holds that the possibility of the sequential elaboration of the model to cover any number of individual agents justifies treating the policy conclusions of the single-agent model as practically relevant. This eschatological justification is examined below and rejected.

REDUCTIONISM AND PRACTICE

Hoover (2013, 2012) uses the philosophy of science to critically consider the nature of some practices of macroeconomists. He recalls the philosopher John Dewey's (1925/1958, chap. 1) comparison of the best practices of science with the typical practices of the philosophy of his day. Science, Dewy argues, begins in experience conceived as ordinary human interactions with the world, which science tries to account for through a process of deduction: "*abstraction and creation of theories, or the refined, derived objects of reflection*." Those theories provide mastery over the original experience, with some level of understanding and some control instruments (Godfrey-Smith 2007). Dewey's criticism of the practice of philosophy was that it took the first step—it moved from experience to the refined objects of reflection—but too rarely took the second step of bringing its theoretical constructs back in contact with experience. Too often, philosophy ended up assigning a superior reality to its constructions and explaining away, rather than explaining, the experience from which it started.

EARLY HARBINGERS OF MACROECONOMICS

Al-Shaybani, 749-804 AD, in his treatise on al-Kasb (1997)' identified earning a living through three main ways: hiring out one's assets, including labor, trading, agriculture, and industry. He described a good Muslim's consumption behavior and emphasized the desirability of charitable giving and the undesirability of begging. Each must earn enough to meet his/her own needs in moderation and those of his/her spouse and children. His book and other later authors described certain finance transactions, like Bai'' al-Salam, Musharaka (partnership), Mudaraba or Qirad, etc. However, al-Shaybani focused on individual economic behavior (Borhan, 1999). That was a good start with the principles of microeconomics. It also anticipated the consumption function in macroeconomics.

Abu-Yusuf[75] (731 - 798 AD) issued a treatise that is wholly dedicated to economic policy under the naus of Kitab al-Kharaj[76] (translation of 1979) at the

75 Abu Yusuf Ya'qub ibn Ibrihim (113 -182 AH /).

76 Manual on land-tax.

request of Harun al-Rashid (d. 193 AH/809 AD)[77]. Other authors followed with works on public finance dealing with tax equity, land ownership, and price regulation, calling for officials' accountability for public revenues and expenditures.

Abu-Yusuf demonstrated the superiority of proportional over lump-sum land tax, considering both revenue and equity. Principles derived by Abu-Yusuf have been adopted in modern times by tax laws. Abu-Yusuf strongly opposed a tax on farming and suggested that salaried staff acting as tax collectors should be under strict supervision to prevent corrupt and oppressive practices. He urged the ruler to take measures towards infrastructure enhancement to support the development of agriculture, such as building roads and bridges and digging canals for irrigation. Furthermore, Abu-Yusuf advised against price controls. Markets must be free from monopoly (Ihtikar) and other practices limiting their access. Once we do this, market forces should decide on price (Borhan, 1999).

Al-Shatibi (d. 1396) discussed consumption behavior and others (Al-Shaybani, Al-Ghazali, 1937; Al-Shatibi, 1997, and Al-Raysuny, 2013). Their consumption analysis covered three aspects. The First is how to acquire Shari'ah-compliant consumption baskets. The Second is the guidelines on how to reach such baskets. The third is the state's responsibility to provide for the consumption needs of the poor. Consuming what is only permissible in moderation and the state guaranteeing necessities to the poor through Zakah later became a significant thesis within Islamic economics (Borhan, 1999).

Abu al-Hasan Al-Mawardi (d. 1058 AD), book al-Ahkam al-Sultaniyyah (1958), deals with the ruler's duties, public revenue and expenditure, public lands, common lands, and the state's authority to make land grants to bring more land into the production process, and supervise the market. The market is to be supervised and managed by al-Muhtasib to ensure the correctness of weights and measures, protect buyers against deceit and fraud, and ensure that all traders and craftsmen comply with Shari'ah transaction rules (Borhan, 1999). The role of al-Muhtasib is similar to that of consumer protection.

Al-Mawardi, in "Kitab Adab al-Din wa al-Donya" (2013), studies behavior by searching for the virtues and attributes of a good Muslim while he discusses

77 (113 -182 AH)

what he considers to be the main economic activities: agriculture, animal husbandry, trade, and industry. He offers some approaches to earning more than needs to spend on good causes.

As a part of his comparative study of various Shari'ah schools of thought, he wrote a volume on Mudaraba. Against the opinions of many scholars, Al-Mawardi disallowed Mudaraba. We have pointed out in the first volume that Mudaraba includes a heavy dose of information asymmetry, which would require special arrangements, including safeguards to rebalance the interests of Mudareb and rabbulmal (Borhan, 1999).

Ibn-Miskawayh approached the role of money in Tahdhib al-Akhlaq (1900) while discussing justice and the role of money in economic activities. He observed that monetary exchanges in the market produce prices that reflect the quality differentials between commodities.

Ibn Miskawayh warns about the imperfection of money as a standard of value. Without being explicit, he alludes to regulating monetary transactions to ensure justice between exchange partners. He suggests that gold should be the medium of exchange based on its general acceptability. However, he relates such acceptability to the intrinsic qualities of gold: durability, convenience in carrying, incorruptibility, and desirability by people (Borhan, 1999). He stops only a few steps away from giving general acceptability a more general meaning independent of money's physical qualities.

The second phase of the development of Islamic economic thought started with a rich intellectual heritage upon which the Muslim scholars of this period could draw, besides being inspired directly by the al-Qur'an and al-Sunnah. In this period, the realm of Islam extended from Morocco and Spain in the west to India and China in the east. Each region had several centers of intellectual activity, especially in Islamic economic thought. In this connection, we will present only three central figures and their contributions in this field, which represent this phase and their respective regions: al-Ghazali, born in Khurasan in the east; Ibn Taymiyyah, from Damascus, and Ibn Khaldun, from the Maghreb.

AL-GHAZALI

Al-Ghazali's (450 - 505 AH / 1058 -1111 AD) Ihya' 'Ulum al-Din (2005), al-Mustasfa (2009), Mizan al-'Amal (1963), and al-Tibr al-Masbuk fi Nasihat al-Mulook (1988) discuss several economic concepts. In the chapter on Shukr (gratefulness to Allah SWT), he discusses the disadvantages of barter and the importance of money and its functions as a medium of exchange and a standard measure of value. Money was not to be demanded for its own sake but to acquire other objects of desire. Al-Ghazali believes that hoarding is a misuse of money and is a factor responsible for preventing money from performing its proper functions in society. He looks upon economic activity, the search for profit, trade, and production for the market with favor.

IBN KHALDUN, THE STATE AND THE ECONOMY

We declared in the first volume Al-Shaybani (749-804) as the father of economics, as he was the first to boldly cross the Greek boundaries of house economics to study the economic behavior of the micro-unit. We also crowned Ibn Khaldun (1332-1406)[78] as the father of analytical economics. Ibn Khaldun gets a single honorable mention by Joseph A Schumpeter (1954, p. 132). Schumpeter scribed an implicitly apologetic admission of his and Western ignorance of Ibn Khaldun. That was inevitable as Western intellectuals took a truncated start with Greek philosophy, ignoring the ancient Egyptian heritage and forgetting that Herodotus sold oil in Alexandria to earn a living as a student there. Westerners then made a horrific jump over the Islamic period, ignoring the enormous intellectual contribution of Muslims, which influenced their rebirth from the Dark Middle Ages.

We must admit that by ignoring the vast Muslim contribution to human civilization and Latinizing the names of Muslim scholars, they have succeeded in distancing themselves from the Islamic moral values, particularly Tawheed, which is a significant threat to the Judeo-Christian beliefs of the Chosen nation on the side of the Jews and Trinity on the side of Christians. Furthermore,

78 Muslim intellectuals have generally been ignored by Western Specialists in the history of economic thought particularly, Schumpeter (1954). When occasionally mentioned in Western literature, the names of Muslim intellectuals have been Latinized. In this volume, we will ignore the latininzed names and stick to the proper names. It is about time that Western intellectuals get used to the proper names of Muslim intellectuals and stop viewing everything in the East through latinizing glasses.

it kept a wide hiatus between the East and the West and facilitated the stereotyping of the East as backward and worthy of colonialism.

Ibn Khaldun can be called a pioneer of history and sociology. His meticulous study of historical events has influenced him. His contribution to economic thought influenced and supported his belief that economic behavior and activities were a product of man's social environment, paying particular attention to the effects of geographic location and resources on economic activities. He employed Ibn Rushd's[79] scientific approach to derive general rules and principles based on axioms, definitions, assumptions, deduction, and induction. Yusri (2006) identifies such a theoretical approach as pivotal in Ibn Khaldun's thinking. As would be expected, based on his intellectual background, Ibn Khaldun became the first analytical economist. His pioneering analysis anticipated the works of classical and neoclassical economists. His care to bridge economic and social relations anticipated the Marxian approach.

Ibn Khaldun related the price differences between countries to differences in transport costs. He pioneered a discourse on the factors behind economic development, particularly the role of population growth (Yusri, 2006). He correctly described the production process as a chain of joint processes that required human cooperation. The role of cooperation in production had been described before by Ibn Sina (980-1037). In this connection, he used the modern expression of the "allocation of labor," indicating the same meaning.

Yusri (2006) lists four ways Ibn Khaldun used his economic analysis. First, he studied socioeconomic and political events historically to identify patterns in their interrelationship. Second, he attempted to show the effects of the social environment on human economic behavior and activities. Third, he attempted to show the effects of the geographic environment on human economic behavior, anticipating Marx's Capital (1867, 1885). Fourth, based on his definitions, he used logic to derive general principles through deduction or observation. Such principles formed the essence of his economic analysis.

Ibn Khaldun starts with human needs, including necessities (food, clothes, shelter, etc.) and the commodities required for their production (Yusri, 2006).

79 Although the scientific method of Ibn Rushd has influenced research and education allover the world, Ibn Rushd himself has been mostly ignored by Western thought. In the rare incidents of his mention, Westerners used his *latinized* name.

He notes that the circle of necessities widens with economic and social development. He indicates that the size of the population is critical in setting necessities.

Ibn Khaldun then clearly explained the division of labor through which society produces its necessities. He reasoned that production is composed of *overlapping* and *interconnected* processes. Such a nature of production requires human cooperation in the form of the *division of labor*. Ibn Sina (980-1037) had anticipated Ibn Khaldun's idea of the division of labor. Al-Ghazali even presented it with more details. However, ibn Khaldun dressed it in social garb, emphasizing the need for human cooperation as a rationale for the division of labor.

Ibn Khaldun further shows that when a group of individuals cooperates, they will produce, over their needs, a surplus. Compared with his predecessor, Aristotle, Aristotle stressed differences in natural talents as a basis for the division of labor, as each individual should not (morally) engage in work that does not suit his/her talent. Meanwhile, Ibn Khaldun brought about the acquired talents through education and experience. Adam Smith's claim that the division of labor depends on the market size is like Ibn Khaldun's claim that it depends on the population size.

Ibn Khaldun defined labor as man's physical, intellectual, and mental abilities while considering it the most essential factor of production. He claimed that capital is also a factor in production that can be created only through labor. He adds natural resources as a third factor, claiming they are created for all humankind and not for one specific group. That raises the concept of *sustainability*, as humanity is responsible for preserving natural resources.

Ibn Khaldun paid attention to the concept of income (Kasb) to be earned and then spent, using the same term adopted by Al-Shaybani. He pointed out how income is earned in monetary terms to be used later in the exchange. He pointed out that income splits between living expenses (consumption requirements) and savings. He then identified the different types of economic activities, including government, agriculture, industry, and commerce. While considering government as an economic activity enabling tax collection from people, Ibn Khaldun *dismissed it as a natural way of earning*, focusing on other economic activities.

Ibn Khaldun related international trade profits to absolute price differences or absolute advantages. That describes trade during his time and until the Middle Ages when international transportation was the main obstacle to trade. When sea and train transport developed, David Ricardo (1817) presented his theory of comparative advantage, which suited the then-prevalent technology.

Ibn Khaldun distinguishes between productive economic activities, which are necessary for people's living, like agriculture, industry, and trade, and *unproductive activities*, like those undertaken by the government. The latter is associated with involuntary tax collection. While Ibn Khaldun did not object to government employees' salaries, he insisted their *activities were unproductive* (Yusri, 2006). That was like what Adam Smith claimed regarding government activities. However, Ibn Khaldun did not go as far as Smith in including teachers, preachers, and others in the service sector as embarking on unproductive activities. Ibn Khaldun included them as professionals who demand and supply determine their wages by demand and supply (Yusri, 2006).

Ibn Khaldun also provided two theories of economic development. The first depended on the geographic environment as a factor determining economic development. The second theory identified several stages of economic development that depended on the social and political evolution of the state. He discussed both theories in a framework of macroeconomic analysis.

Another vital aspect of Ibn Khaldun's analysis is related to the economic role of the government. He viewed the government as ill-positioned for investment, production, and trade activities. Its executive powers would enable it to crowd out the private sector (Homaiyish, 2006). Ibn Khaldun argued that the government should be kept from economic activities while enforcing property rights and protecting private enterprises. He considered government economic activities as necessarily monopolist, which would introduce an element of unfair competition to the economy. He took a strong stand against taxation. He considered it a severe hindrance to growth and development.

He explicitly argued that overtaxing leads to recession and motivates tax evasion. When taxes are low and moderate, the economy is liable to flourish, and economic activities expand. However, this may result in reduced tax

proceeds and the government's inability to cover expenditures[80]. He is, therefore, known to discourage government involvement in production and trade. Such involvement, he claimed, leads to unemployment and the running away of investors (Homiyish, 2006[81]).

Therefore, Ibn Khaldun took up some central economic problems and applied a deductive and inductive analytical method in their treatment. As a pioneer, he deserves recognition. As an analytical economist, his method may have served as a guide to contemporary economists.

80 We will show later in this volume that the application of the Islamic macroeconomic model in the field of money and finance would render significant seigniorage that would reduce if not eliminate the government need to tax.

81 Such opionios have lead some economists to argue tha Ibn Khaldun stood for libralism.

CHAPTER VI:

CONTEMPORARY MACROECONOMICS

CONTEMPORARY MACROECONOMICS

AGGREGATION IN ECONOMICS: SINGLE VERSUS MULTIPLE DECISION-MAKERS

Should we follow the neoclassical assumption of extreme rationality, each economic agent would maximize a utility function subject to an income constraint. In such a case, aggregation would be over the decision-making processes of the individuals included.

The neoclassics, being utilitarians, insisted on assuming the individual in their analysis to possess extreme rationality. That justifies mathematically expressing the economic problem for the consumer as the maximization of a utility function subject to a budget constraint. Similarly, the producer's economic problem is maximizing profit function subject to resource and commodity prices. One can sense the pride of neoclassical economists with their mathematical formulation. They are becoming like physicists who developed their applied mathematics. Aggregation would a priori assume some decision-making on the part of a group. However, whether group decision-making occurs through automatic harmony, leadership, or coordination is not apparent. Economists have ignored this issue under the guise of simplicity. The aggregation hurdle arose in microeconomics by aggregating individual demand

and supply curves into market demand and supply schedules. Textbooks written in the neoclassical traditions argue for their horizontal summation.

The SMD conditions required for proper aggregation are that preferences should be similar and commodities should be homothetic. The conditions admitted that a single consumer's demand curve can be downward sloping. However, they doubted that the *market* demand curve derived from the same consumers' preferences would obey the Law of Demand. Such a market demand curve can take any shape at all. Like many neoclassical *faux pas*, the literature has ignored this point. It can be explained only by the existence of some unconscious collusion. A broad recognition of the SMD condition and its consequences would render the Marshallian cross of demand and supply meaningless as it would render multiple equilibria and instability, tarnishing market capitalism. In the first volume of our book, we provided an alternative framework of demand and supply (Al-Jarhi, 2021).

In macroeconomics, the neoclassics resorted to the typical consumer model. Ignoring the complications caused by aggregation is necessary to justify their focus on other issues. A better alternative is to embed a mechanism in the model implicit in the behavior of individuals that would justify claiming a reachable equilibrium.

Lewbel (1989) argues that using a representative consumer in most macro work is improper. It ignores valid aggregation concerns. However, the representative consumer framework vastly simplifies much macro work and thought and is not likely to be abandoned. Reconsidering aggregation exposes the falsehood of some neoclassical theories. Our focus on the theories of the interest rate is an example.

Lewbel (1989) proposes a solution to discover what assumptions regarding both functional forms of demands and distributions of agents are required to make the demand equations arising from exact aggregation equal to those arising from utility maximization by a representative agent. As an alternative to assuming a representative consumer, a macroeconomist may explicitly deal with the aggregation problem by assuming his suggested demand system and mean-scaled income distribution. This way, one can deal explicitly with aggregation and have a representative consensus model. More generally, any demands proposed by Lewbel (1980) may be assumed as long as a parameter



that depends on distributions stays in the resulting macro model. In either case, we have considered aggregation and replaced an untestable representative consumer assumption with testable assumptions regarding distributions of individuals and functional forms of micromodels.

The keen neoclassical desire to express the economic problem in mathematical terms has been the central element behind their efforts to make their functions well-behaving so that their equation system becomes solvable.

A group, a family, a firm, a market, or a national economy make several economic decisions. The standard unit of analysis, specifically the highly rational homoeconomicus in the neoclassical theory or the boundedly rational homoordinarius in our analysis, must be extended to account for the multiperson nature of the decision process. The same remark applies to committees, clubs, villages, and other local organizations, which have also attracted much interest. Even standard micro demand analysis, although it routinely uses the tools of consumer theory, exploits data on households or families, which generally gather several individuals. Partial equilibrium analysis relies on aggregate demand or supply functions. Quite obviously, macroeconomics concentrates on the aggregate behavior of vast classes of agents (households, firms, etc.), which we reduced to a single decision-maker.

In all these cases, aggregation issues arise, at least implicitly. How can a multiperson entity be treated as a single decision-maker? Is the existence of intentional decisions by a group necessary for theoretical validity? The neoclassical theory uses the concept of a representative agent. What data are needed to summarize the situation of a group comprehensively? Where do we start with an individual decision maker, as in microeconomics, to sum the behavior of several individuals later? Or shall we extract the results of group behavior from the relevant data available, presuming that group behavior appears through a pattern implicit in the data? Would the first approach of summing behavior be hindered by the impossibility of fulfilling the SMD conditions known in the case of market demand and supply?

Are there testable aggregate behavior restrictions stemming from each member's utility- or profit-maximizing actions? Would our rejection of utility or profit maximization in Islamic economics reduce the effects of aggregation problems? Would our approach, being devoid of extreme rationalism, facilitate

the formulation of welfare evaluations at the aggregate level, or would this be considered ultimately irrelevant? To what extent does the sole observation of aggregate behavior reflect the individual level information (e.g., preferences, resources) or the intragroup decision process?

To deal with the above questions seriously, we must remember that macro models typically assume the existence of a *representative agent*. We intend to provide some serious discussion of the prerequisites for this assumption and its implications. We will start by considering the theoretical investigations of the aggregation issues above, relying on the aggregation theory. We will start with the main features of the traditional aggregation theory, developed during the late 1970s and early 1960s. (Chiappori and Ekeland 2009).

THE STANDARD AGGREGATION THEORY

As a first step, it is helpful to briefly reconsider some crucial aspects of aggregation theory as it has developed up until the early 1980s. Our goal here is not to provide a survey; the interested reader can refer to, for instance, Deaton & Muelbauer (1980) and Shafer & Sonnenschein (1982) for that purpose. Instead, we want to briefly recall the main features of this literature, particularly the questions it asked and the answers it provided. The general notion of aggregation theory gathers a host of different and related approaches. To provide an overview, we find it convenient to distinguish between two core approaches: one in which the group is a (mainly exchange) economy and a more general perspective that allows for richer interactions such as public consumption or intragroup production.

GROUPS AS MARKET ECONOMIES

Let us *rule out* public goods and all externalities and ignore intragroup production. Let us also consider the following crucial questions.

The first question is about the conditions under which we can describe the aggregate behavior of a group. The first version, known since 1886, assumes that we distribute a sum of total income Y between H individuals, each freely spending his share on several commodities. To express the group's aggregate demand for each good as a function of Y alone, ignoring how Y we distribute Y within the group, we must assume that transferring a dollar from one



group member to another does not change total consumption. That implies the marginal propensity to consume (MPC); each good must be the same for all agents, irrespective of their incomes. At the level of aggregating individual demand curves, the assumption of similar MPC is *equivalent to assuming homothetic goods*. We can restate it as two hypotheses. First, each agent's MPC is independent of the agent's income (constant MPC). Second, the constant MPCs are identical across agents. In other words, individual Engel curves must be linear or affine (parallel), and all individuals must have the same income coefficients. That is reminiscent of the SMD conditions, which attempt to show when the resulting market demand is compatible with utility maximization[82].

It implies that, under the assumption of utility maximization, *a group cannot* behave like a single individual unless they have similar preferences. Empirically, cross-section consumer expenditure data provide strong evidence against the two hypotheses. This pessimistic conclusion has motivated rephrasing the question along a slightly different line, usually called the *exact nonlinear aggregation*.

NATIONAL INCOME AND PRODUCT ACCOUNTS

Before World War, individual investigators who wished to investigate particular questions prepared national accounts for only a few countries. Some of the issues of concern included understanding the effects of government budgetary actions. During the interwar period, governments became increasingly involved in preparing national economic accounts. Governments had a comparative advantage due to their relatively inexpensive access to data such as tax returns and other documents that individuals and firms were required to file. A growing interest in using government fiscal actions to influence national economic performance increased the demand for detailed information on the current state of the economy. The Commerce Department first prepared national income estimates in the US in the early 1930s; national product estimates followed in the early forties. These estimates played an essential role in economic planning in the United States during World War II. The widespread intellectual acceptance of John Maynard Keynes's *The General The-*

82 Obviously, such condition, which is an obvious way to make aggregation unnecessary, shows that under utility maximization (which is one of the neoclassical assumption to which we object) conflicts can only be acceptable in the world of Ibn Tufail, where no aggregation is necessary.

ory of Employment, Interest, and Money stimulated interest in the accounts. Keynes emphasized macroeconomic relationships and advocated anticyclical and growth-stimulating national fiscal policy. Income and product accounts helped to appraise current conditions, analyze fiscal policy, forecast economic activities, and test the relations of macroeconomic aggregates. Many non-Keynesians have become regular users of national accounts.

Macroeconomics defines the major macroaggregates of the national economy, which are collected and published by national statistical institutions[83], including the gross domestic product (GDP), personal income, corporate profits, and government spending in their National Income and Product Accounts (NIPAs).

NATIONAL INCOME & PRODUCT ACCOUNTS, US-BEA

Sparce and sometimes conflicting American economic statistics existed before the third decade of the nineteenth century. Developing policies to combat the Great Depression met severe information handicaps. The U.S. Department of Commerce commissioned the later Nobel Laureate *Simon Kuznets* to develop estimates of national income to serve as an indicator of U.S. income and output. Kuznets worked with the National Bureau of Economic Research, NBER, and the Commerce Department researchers. Initial estimates appeared in a 1934 report to the U.S. Senate[84]. The NBER began later to produce monthly measures tracking income developments. These measures of income payments to individuals were first published in 1938 and were the predecessor of the Bureau of Economic Analysis, BEA's income estimates. Their usefulness became immediately apparent. They revealed that incomes had dropped 11 percent from a post-Great Depression peak in August 1937 to the recession trough in March 1938. Annual statistics could not track such developments. Other countries suffering from the Great Depression followed suit.

The League of Nations held the International Conference on Economic Statistics in 1928, encouraging countries to develop their economic statistics. The Great Depression emphasized the urgency of such an endeavor. The League of Nations published 1939 a collection of the national income estimates of

83 Examples include the Bureau of Economic Analysis (BEA) of the United States Department of Commerce, the Turkish Statisticl Institute, Turkey, and the Central Institute for Mobilization and Statistics, Egypt.

84 National Income, 1929–32.



26 countries. The USA sought a measure of national production to determine the tradeoffs associated with mobilizing for war and planning for a wartime economy in the early 1940s.

Annual estimates of "gross domestic expenditure," GDE, appeared early in 1942 to provide estimates of significant categories of expenditures in the economy. The income and expenditure measures were later refined and expanded. The first U.S. national income and product statistics appeared as part of a complete and consistent double-entry accounting system in the summer of 1947. The accounting system offered a framework for classifying and recording economic transactions among households, businesses, governments, and the rest of the world. Ultimately, the accounting system placed the GNP statistics in the broader context of the economy as a whole. It provided a more complete picture of how the economy works.

Under the umbrella of the Arab League, this author worked in the Arab Monetary Fund AMF, starting in 1978. At such time, the Arab Monetary Fund, AMF, has included a chapter on international economic developments in its annual report. The author succeeded in convincing the AMF management to replace such a chapter with another on the economies of the Arab countries. That required the severe challenge of providing reliable estimates of the national accounts of the member countries of the Arab League. In response, the author worked on such estimates, which the AMF later published[85]. A special technical committee under the author's chairmanship later updated the time series was later updated by and used as a basis of the *Joint Arab Economic Report*. Such statistics followed the Kuznet traditions to maintain international comparability.

The USA Bureau of Economic Analysis, BEA, formerly the National Bureau of Economic Research, NBER, sets the main concepts for the national income and product accounts, NIPAs, to present the value and composition of national output and the types of incomes generated in its production. (USA Bureau of Economic Analysis, BEA, Chapter 2; 2021).

The NIPAs provide information to help answer three basic questions. First, they include the size, the composition, and the use of the national product. Second, the sources and uses of national income. Third, the sources of savings

85 The National Accounts of the Arab Countries, Compact Edition, AMF, 1980.

provide for investment in future production. The conceptual framework contains seven summary accounts. Detailed estimates contain around 300 supporting NIPA tables. They are supplemented by a set of fixed-asset accounts.

National accounts influence the decisions made by government officials, businesses, and households. GDP is the most widely recognized measure of the national product. The quarterly estimates of GDP adjusted by the GDP deflator provide a comprehensive picture of current economic conditions. Additional critical estimates comprise the monthly estimates of personal income and outlay, estimates of corporate profits,

THREE WAYS TO MEASURE GDP

The NIPAs define GDP as the market value of the economy's goods, services, and structures in a given period. We can calculate it by three separate means:

- the sum of goods and services sold to final users,
- the sum of income payments and other costs incurred in the production of goods and services,
- the sum of the value added at each production stage (figure 4).

The three ways of measuring GDP are conceptually the same. However, they may not result in identical estimates in data sources, timing, and estimation techniques.

THE EXPENDITURES APPROACH: THE SUM OF GOODS AND SERVICES SOLD TO FINAL USERS

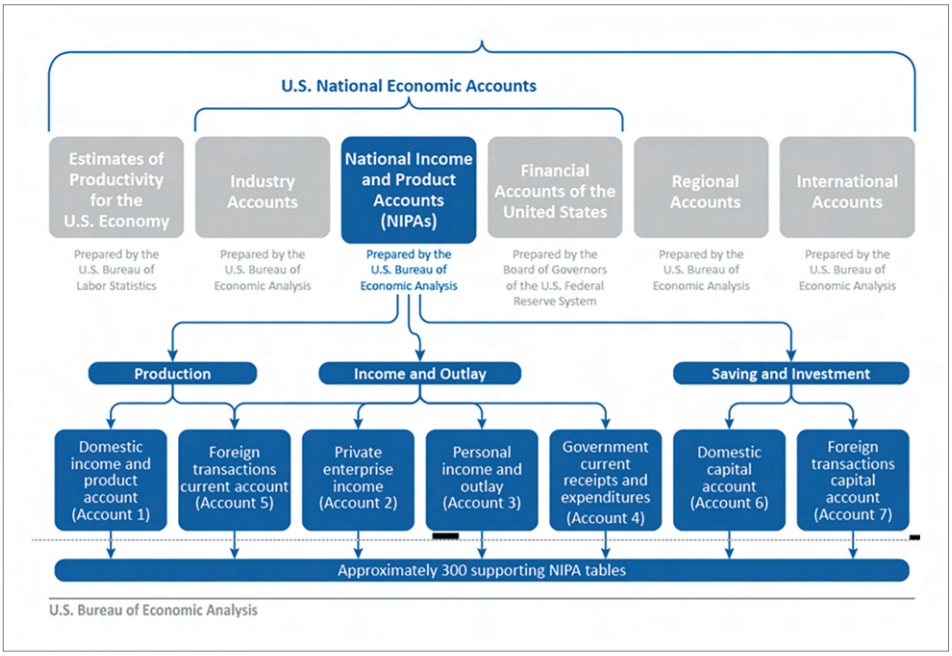
The goods and services purchased by persons, businesses, governments, and foreigners equal the sum of the following items.

- Personal consumption expenditures: the value of the goods and services purchased by, or on behalf of, persons (households, nonprofit institutions serving households, private noninsured welfare funds, and private trust funds).
- Gross private fixed investment: The additions and replacements to the stock of private fixed assets without depreciation deduction[86]

86 Nonresidential fixed investment measures investment by businesses and nonprofit institutions in nonresidential structures, equipment, and intellectual property products.

- Change in private inventories[87],
- Net exports of goods and services equals exports minus imports.[88]
- Government consumption expenditures and gross investment[89],

Figure 4: The System Of U.S. Economic Accounts



Residential fixed investment measures investment by businesses and households in residential structures and equipment, primarily new construction of single- family and multifamily units.

87 Measures the value of the change in the physical volume of inventories owned by private business over a specified period, valued in the average prices of that period.

88 Exports consist of goods and services that are sold, given away, or otherwise transferred by U.S. residents to foreign residents. Imports consist of goods and services that are sold, given away, or otherwise transferred by foreign residents to U.S. residents.

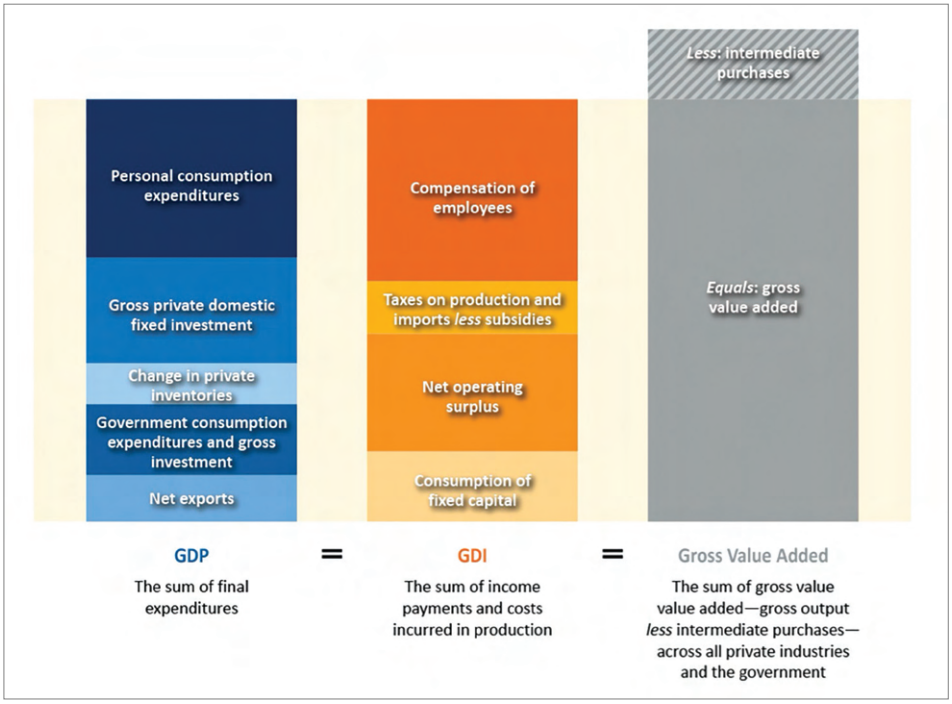
89 Current consumption expenditures consists of the spending by general government in order to produce and provide goods and services to the public. Gross investment consists of spending by both general government and government enterprises for fixed assets (structures, equipment, and intellectual property products) that benefit the public or that assist government agencies in their productive activities.

Thus, GDP equals personal consumption expenditures (PCE) plus gross private domestic fixed investment plus the change in private inventories plus government consumption expenditures and gross investment plus exports minus imports[90].

THE INCOME APPROACH: THE SUM OF INCOME PAYMENTS AND OTHER COSTS INCURRED IN THE PRODUCTION OF GOODS AND SERVICES

This measure examines households' purchasing power and businesses' financial status. The aggregate measure, GDI, is derived by summing the following components.

Figure 5: Components of the GDI



90 In this calculation, imports offset the non-U.S. production that is included in the other final- expenditure components. For example, PCE includes expenditures on imported cars as well on domestically produced cars; thus, in order to properly measure domestic production, the sales of foreign-produced cars that are included in PCE are offset by a comparable entry in the imports of these cars.



Compensation of employees[91],

Taxes on production and imports[92],

Subsidies[93],

Net operating surplus is a profits-like measure that shows the incomes earned by private and government enterprises from current production before deducting any explicit or implicit interest charges, rent, or other property incomes payable on financial assets, land, or other natural resources required to carry out production. Net operating surplus plus the consumption of fixed capital is equal to gross operating surplus.

Consumption of fixed capital, which is the NIPA measure of economic depreciation[94],

A. THE VALUE-ADDED, OR PRODUCTION, APPROACH: THE SUM OF "VALUE ADDED" BY ALL INDUSTRIES IN THE ECONOMY

The added value is helpful for analyzing the industrial composition of U.S. output. In the input/output (We/O) accounts, value added is the difference between an industry's gross output (sales or receipts plus other operating income and inventory change) and its intermediate inputs (goods and services used in production). When aggregated across all industries in the economy,

91 The total of employee remuneration, in return for their work. It consists of monetary remuneration including wages and salaries and supplements (employer contributions for employee pension and insurance funds and employer contributions for government social insurance).

92 It consists of taxes payable on products when they are produced, delivered, sold, transferred, or otherwise disposed of by their producers (including federal excise taxes, custom duties, and state and local sales taxes) and of other taxes on production, such as taxes on ownership of assets used in production (including local real estate taxes). These taxes do not include taxes on income.

93 Which are subtracted in the calculation of GDI, are payments by government agencies to private business (for example, federal subsidies to farmers) and to government enterprises (for example, federal subsidies to state and local public housing authorities) to support their current operations.

94 The decline in the value of the stock of assets due to physical deterioration, normal obsolescence, and accidental damage except that caused by a catastrophic event.

industry sales to and purchases from each other, interindustry transactions cancel out, and the remainder is industry sales to final users or GDP[95].

The I-O accounts focus on gross output because they measure the productive activities and interrelationships of all industries, regardless of whether the goods and services produced by these industries are for intermediate or final use.

Thus, gross output is sometimes called "*gross duplicated domestic output*" because it double-counts the industry output purchased by other industries and used as inputs for their production. Because GDP counts only industry sales to final users, it is sometimes referred to as a "*nonduplicative*" measure of production in the economy.

For example, a new passenger plane arrives on a maiden flight from a plane assembly plant to the hangar of an airline company at an airport. Its price reflects its *production costs, the profit until final assembly, and* the costs and the profit related to all stages leading to the final assembly. The jet engines, the landing gear, seats, and other furnishings as the output of their respective plants reflected the costs and profit of their manufacture. *Gross output* counts the value of the engine and the furnishings twice—once in the value of the plane's manufacturer's output and once in the value of the engine and furnishings manufacturer's output. Including the value of the raw materials shipped to the engine and furnishing plants in gross output would constitute triple counting. The passenger-plane industry value added to the value of the engine and furnishings shipped to the assembly plant represents an intermediate input and so is subtracted from the value of the shipments of completed planes from the assembly plant.

Because the nation's total *value added* is equal to its GDP, and the nation's *total gross output* is equal to its GDP plus its total intermediate inputs, *total gross output exceeds GDP*. For example, U.S. gross output was $29.2 trillion in 2012, while GDP was $16.3 trillion. The difference represents the double counting of intermediate inputs.

95 In the We-O accounts, "all industries" includes government industries, such as government postal Service) and certain "special industries" (such as owner-occupied housing) (Rassier, 2012)).

MAJOR NIPA AGGREGATES

In the NIPAs, domestic production is derived from the sum of the final expenditure components, referred to as *GDP*. T*he sum of the income payments and the costs incurred in production* is *GDI*. These two measures and their components comprise the first of the summary NIPA accounts, "*Dousstic Income and Product Account*[96]. The *expenditures components* are considered generally viewed as more reliable than the *income components*. The difference between the two measures is called the "statistical discrepancy."

BEA also provides the equally weighted mathematical average of GDP and GDI, as several reliability studies concluded that the average of these measures would better reflect the *economic growth* in a particular period by diminishing the known measurement inconsistencies between the two statistics, such as timing differences, gaps in underlying source data, and survey measurement errors.

The averages of GDP and GDI are macroeconomic indicators used by the NBER's business cycle dating commission to identify the turning points in the U.S. business cycle. These measures are distinguished by whether they are "product" or "income," "gross" or "net," and "domestic" or "national." In general, one move:

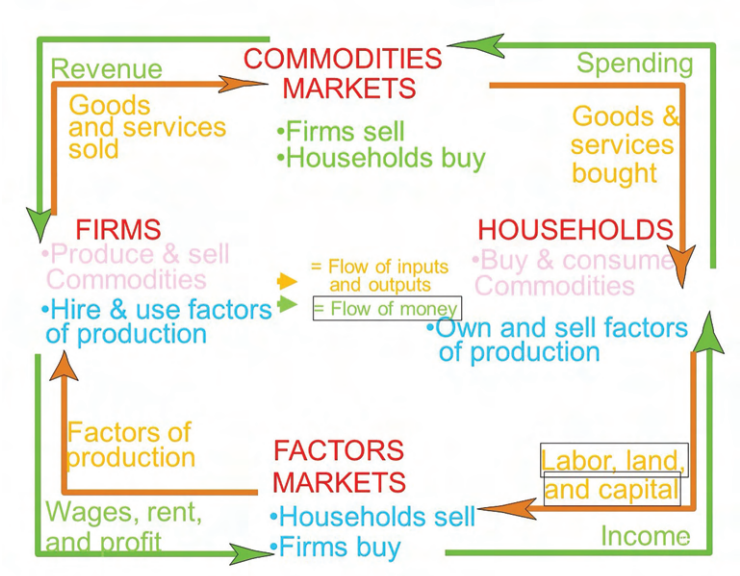
From a "product" measure to an "income" measure by subtracting the statistical discrepancy,

From a "gross" measure to a "net" measure by subtracting consumption of fixed capital (CFC) and From a "domestic" measure to a "national" measure by subtracting net income payments to the rest of the world (or equivalently, by adding net income receipts from the rest of the world).

96 See the section "Accounting Framework."

THE CIRCULAR FLOW

Figure 6: The Circular Flow



The circular flow is a pedagogic tool to explain how money, goods, and services flow in the economy. First, we divide the national economy into two sectors, households and firms, and two markets: commodity market and factor market.

In the factors market, firms buy/hire factors of production and raw materials to produce commodities in return for rental payments to factor owners. When their production of commodities is ready, they trade in the commodities market, where households purchase the produced commodities, using revenues they received for selling and renting the factors.

We can finally note that the flows of inputs and outputs take the form of money. That is why money is necessary for smooth circular flows. The flows reflect the transactions involved in investment, production, and consumption.

CHAPTER VII:



THE CLASSICAL MACROMODEL

THE CLASSICAL MACROMODEL

I. THE CLASSICS

According to Gardner Ackley (1961), the classical model is composed of the following components:

A. THE PRODUCTION FUNCTION

Production is the central focus of the classical model. Inputs in the forms of labor and capital are combined to produce output. The labor input (in workers/hours) is along the horizontal axis; the output (the economy's real GDP) is along the vertical axis. The given capital input determines the shape and location of the production function. The classics (as well as neoclassics) have a preconceived idea about factory design. They assume that engineers design them with a fixed capacity. The application of variable labor to such factories must render diminishing returns. The first volume argued against such an idea and gave reasons to reject the law of diminishing returns.

The production function shows how much output can be produced by any specific level of labor input. Up to a point, an increase in labor input results in an increase in output. The slope of the production function is (by definition) the marginal productivity of labor, the MPL. At some level of labor input, the MPL is zero, and beyond that level, it goes negative.

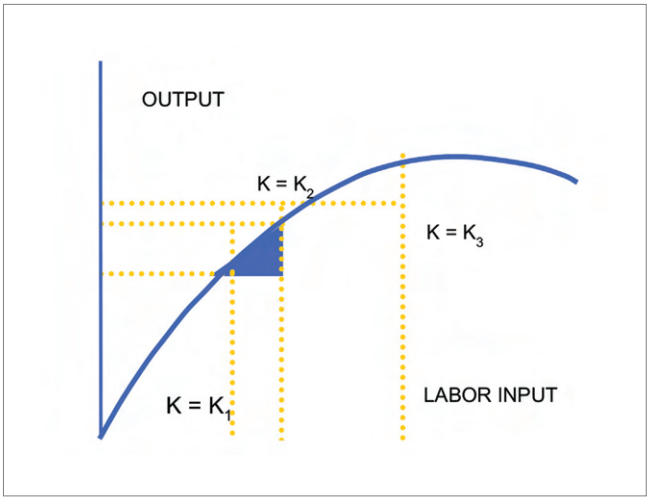


Figure 7:
The Classical Model: The Production Function

B. THE LABOR MARKET

Worker hours trade in a competitive, perfect price-takers market). Workers and employers base their labor-market decisions on the real wage rate—measured in purchasing power. The upward-sloping supply curve reflects the workers' preferred tradeoff between labor and leisure. The downward-sloping demand is a derived demand (derived from the demand schedule of the produced commodity). It reflects labor's declining marginal productivity, as gauged by the employers. The equilibrium real wage rate established by market forces ensures full employment.

Production is the central focus of the classical model. Inputs in the forms of labor and capital are combined to produce output. The labor input (in workers/hours) is on the horizontal axis; the output (the economy's real GDP) is along the vertical axis. The given capital input determines the shape and location of the production function. The production function shows how much output can be produced by any specific level of labor input. Up to a point, an increase in labor input results in an increase in output. The slope of the production function, i.e., the increase in output divided by the increase in the labor input, is (by definition) the marginal productivity of labor, the MPL. At some level of labor input, the MPL is zero, and beyond that level, it goes negative.

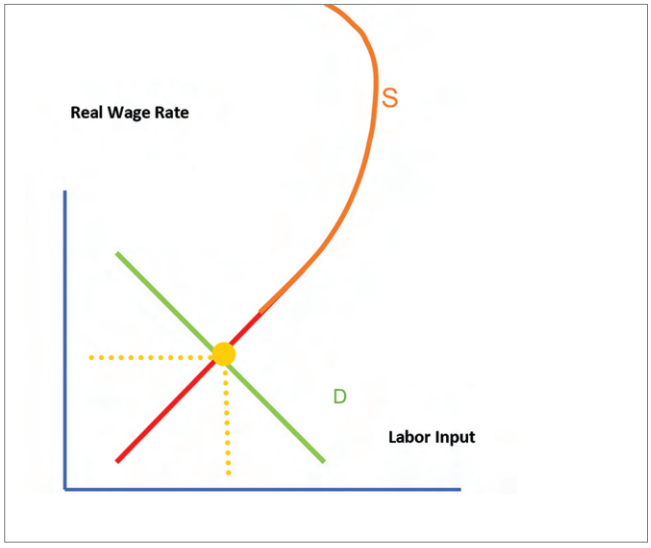


Figure 8:
The Labor Market

The labor supply curve steepens at some real wage rates because population growth limits the potential workforce. The supply curve may be backward-bending at a higher real wage rate as high-income workers still prefer leisure time to spend their incomes more. However, in virtually all macroeconomic frameworks, the market-clearing real wage rate is assumed to occur in the upward-sloping segment of the labor supply curve.

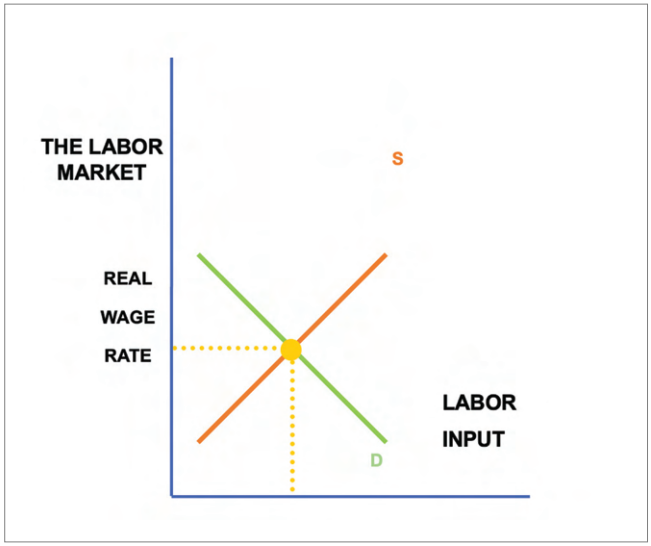


Figure 9:
The Labor Market

THE REAL ECONOMY

With supply and demand determining the level of labor input, the production function indicates the output level. When the demand curve extends to the horizontal axis (where the demand price of labor is zero), the labor marginal productivity is also zero.

The economy's output, which includes consumer and producer goods, is sold at competitive prices, generating revenue to pay the incomes of laborers and capitalists. Those incomes are precisely enough to buy the economy's output.

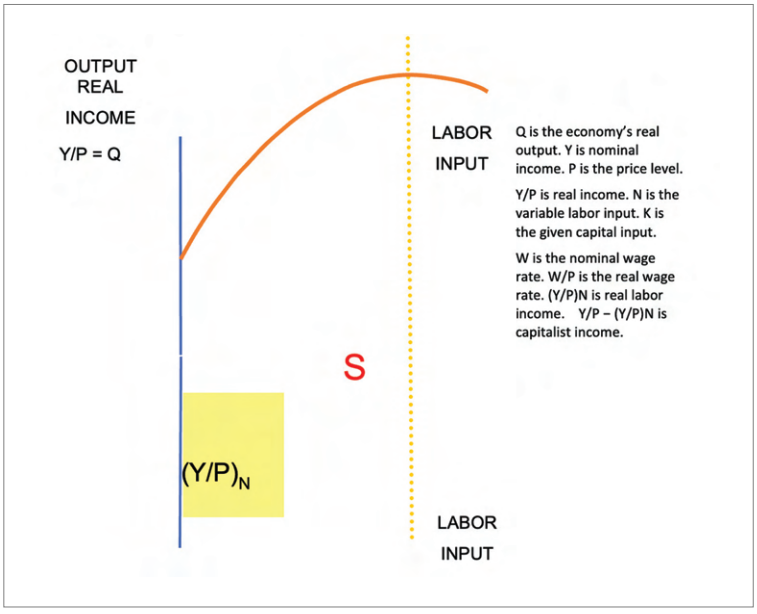


Figure 10: The Classical Macro Model

II. SOME APPLICATIONS OF THE CLASSICAL MODEL

A. A REAL WAGE RATE STUCK TOO HIGH

Suppose the real wage rate became stuck above the *market-clearing* level. The labor input would be *demand-constrained*; total income to labor may rise, fall, or remain unchanged, depending on the demand elasticity for labor. The resulting unemployment is measured by the discrepancy between the quantity of labor supplied and the quantity demanded at the excessively high real wage rate. The economy's real output, is the same as the real income paid to all the factors of production (labor and capital), declines.

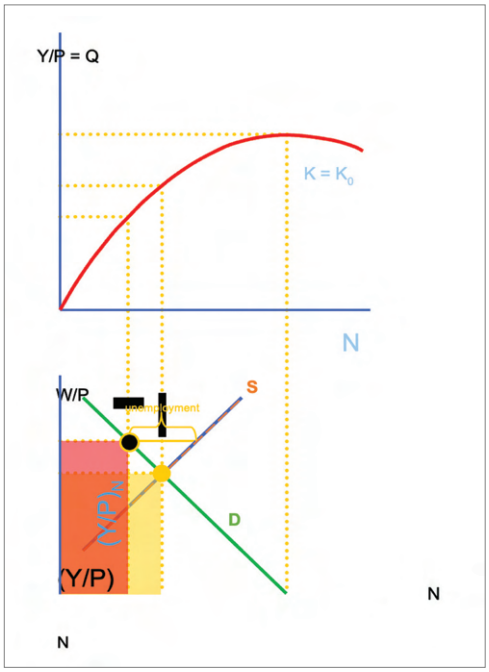


Figure 11:
A Change in the Labor-Leisure Tradeoff

C. A CHANGE IN THE LABOR-LEISURE TRADEOFF

The classical theory derives the labor supply through a fanciful process of wealth maximization by each laborer. Such a process involves work-leisure preferences. The construction of the market supply schedule for labor is only possible with the SMD conditions. Most importantly, the similarity of labor leisure preferences and the homotheticity of commodities would be a requirement. Ignoring such critical requirements, as the classics did ignore them, let us suppose that people's preferred labor-leisure tradeoff changes in the direction of less leisure, causing the labor supply to shift rightward.

The number of worker-hours supplied and demanded increases, and the real wage rate declines. The real income paid to the workforce rises, falls, or remains unchanged, depending upon the elasticity of the demand for labor. The economy's real output, which is the same as the real income paid to all the factors of production (labor and capital), unambiguously rises.

The classical analysis assumes that the change in the labor-leisure tradeoff is the same for every laborer. That is another heroic assumption that reduces the generality of their theory.

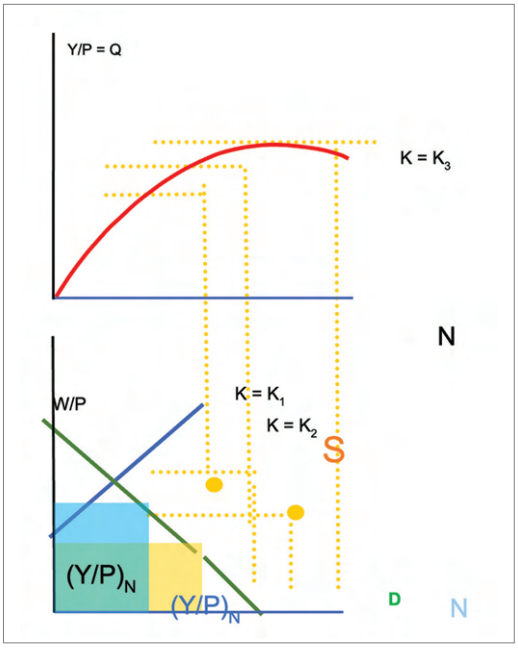


Figure 12:
An Increase In Labor-Using Capital

III. KEYNES REVOLUTION

IV. THE NEOCLASSICAL COUNTERREVOLUTION

A. NEOCLASSICAL ASSUMPTIONS

I. Unbounded Rationality

Neoclassical macroeconomics builds upon the homoeconomicus, unboundedly rational, extremely calculative, and materialistically hedonistic, seeking profit or utility maximization. Such an extremely rational household gathers all necessary information and lays down all possible options before making a choice. We have dealt with this issue in the first volume, Chapter V. There, and found that such a household started as a maximizer of a cardinal utility function. Since utility measurement is complex to perceive in economics (it could be more perceivable in psychology), neoclassical economists attempted to save their theory by switching to revealed preferences. They replaced cardinal utility with a preference ordering of specific characteristics as initially developed by Samuelson (1938, 1948), based on four axioms: completeness, transitivity, non-satiation, and convexity. If we examine each singly, it is easy to show that it would have no logical support.



Completeness implies the household's ability to identify its preferences for almost every consumable object and any combination thereof within its budget constraint. Facts run contrary to this postulate. No single household is interested in everything, nor can it express its preferences on each item included in the consumables' universe. Since the number of combinations of such a universe would be much larger, defining one's preferences for each combination relative to any other would be daunting. We can alternatively assume that each household has its own consumables universe with a limited number. The items in such a universe would differ from those in others. They would depend on tastes, income levels, cultural and social habits, etc. By this logic, we can safely consider that our households in any economy are heterogeneous.

Transitivity means that each household would express its preferences as precisely and sincerely as possible. Expression of preference ordering must be consistent. If (A) is preferred to (B) and (B) is preferred to (C), then (A) must be preferred to (C). That, of course, sounds logical, but it may not sound human. Some households prefer lamb cubes to barbeque Kufta (meatballs), while others prefer chicken cubes. It may not necessarily be true that barbeque lamb cubes must be preferred to barbeque chicken cubes, especially when we add different marination methods and choices of spices. If preferences were to be subjective, they cannot also be consistent.

None-satiation implies that the household never tires of consuming any commodity. It would always prefer more to less. That contradicts human nature is not an intuitively acceptable axiom. Therefore, we can conclude that the four so-called axioms are solid statements and testable hypotheses.

Convexity is the most complex property that underlies the diminishing marginal utility concept. To simplify, with two very different shopping trolleys, A and B, any linear combination of the contents of these two trolleys should be preferred to each of the trolleys themselves. Assures that trolley (A) contains five one-liter bottles of Turkish extra virgin olive oil and trolley (B) contains five packs of Turkish white cheese. We can have Five more shopping trolleys by swapping one bottle of Turkish olive oil with one pack of Turkish white cheese. Each new trolley would be more desirable than the original trolley (A) and (B). The apparent reason is variety, which can be arguably desirable

sometimes but not always. This assumption is one of convenience, as it facilitates proving the existence of equilibrium. Neoclassical economics required their functions to be so well-behaving to justify the myth of equilibrium, for which they offer no explicit market mechanism. Once established through convexity, it becomes simple to show stability. Empirically, we realize that equilibrium and stability are unrealizable dreams by just noticing the repetitive crises through which market capitalism passes. Realistically, convex preferences would require highly calculative consumers willing to keep their marginal substitution rates among commodity bundles declining. It is, therefore, an assumption that comes as a corollary of extreme rationality. Joan Robinson insisted that classical and neoclassical economics had no mechanism for reaching equilibrium. We will call this the "Robinson's Paradox."

II. Reductionism

The neoclassical macroeconomics adheres to solid reductionism. That means the larger macroeconomy is a well-defined sum of its micro units. The neoclassics consider searching for microfoundations necessary to accept any macroeconomic theory[97]. Neoclassics consider microfoundations to be evidence of human intention behind any macroeconomic figure.

At this juncture, astronomers in the nineteenth century accepted extreme reductionism. Steve Keen (2011) tells us that ignoring the universe's complexity and focusing on small components, each isolated from the other, has helped humanity accomplish intellectual breakthroughs. After envisioning the physical world of the ancient generations as composed of four elements, earth, water, air, and fire, we finally reached the modern periodic table and the underlying quantum factors, thanks to ignoring the overall complexity of the universe and focusing on its components, in isolation from all others. This approach of 'reductionism' encouraged a hierarchical ranking of sciences, in which more complex areas were simplified manifestations of the underlying fundamental determinants. Henri Poincaré advocated strong reductionism and provided a basis for reducing all sciences to physics. He claimed that we will eventually find the the ultimate building blocks in the majestic simplicity of celestial mechanics. (Poincaré 1956 [1905]: 166)

97 This was the major response of the neoclassics to Keynes revolution.



Strong reductionism is understanding complex systems by working from their components. We should, therefore, build macroeconomics from microeconomics. That has become the dominant belief and the standard neoclassical response to the publication of Keynes's General Theory. It transformed neoclassical macroeconomics into applied microeconomics. Poincaré, who initially advocated this approach, found later in his research severe limits to reductionism in 1899. He showed that a gravitational system with two celestial bodies (one sun and one planet) was predictable. However, the behavior of a solar system with more than one planet was hardly predictable. Such limits became apparent with the advent of computers seventy years later. Before computing, researchers' ability to analyze nonlinear relationships between variables was almost impossible. This obstacle was surmountable using the ability of computers to solve systems with nonlinear relations, like Lorenz's weather model and other systems in which variables interact in nonlinear ways. In such models, the whole is not equal to the simple sum but more than the sum of its parts due to the interaction among components or the emergent properties. The simple sum cannot account for the results of the interaction between the components or what we call the *emergent phenomenon*.

While reductionism maintains some value, understanding a system by considering it from the bottom up is invalid. Physics Nobel laureate Philip Anderson called this fallacy *constructionism*, manifested in two ways.

A reductionist vision of a particular system can be correct, but we cannot adequately understand it by constructing it from its constituent parts. Accordingly, the reductionist hypothesis does not imply a constructionist hypothesis. In other words, reducing everything to simple fundamental laws does not imply the ability to start from those laws and reconstruct the universe. Consequently, the fundamental laws of elementary particle physics and society are not relevant to the rest of the science. (Anderson, 1972: 393).

Larger systems have behaviors unique to their scale. In other words, scale results in a new behavior that is independent of the behavior of the isolated system components. We cannot extrapolate Large and complex aggregates of elementary particles from the properties of a few particles. Entirely new properties develop at each level of complexity. (Anderson, 1972: 393). While Anderson was ready to accept a hierarchy to science, he rejected the idea that

any science in one level of the hierarchy could be an applied version of another science at a lower level. For example, psychology is not applied biology, nor is biology applied chemistry, and so on (Anderson, 1972: 393).

Islamic economics must, therefore, ignore extreme reductionism and its resulting constructionism. We should construct macroeconomic relationships independently of microeconomic relationships, even when some interrelationships are apparent. For example, a consumption function (designed after Keynes) cannot aggregate market demand schedules for consumer goods. We cannot construct a market demand schedule from aggregating individual demand schedules. It would, therefore, be folly to construct a consumption function from the aggregation of market demand curves, whose existence is questionable per se.

In contrast, as explained in Voluus I, we base our micromodels of consumers' and producers' behavior on a homoordinarius with narrowly bounded rationality. Its ability to calculate is much more modest than that of the homoeconomicus. The homo ordinarius does not spend his limited resources to define its preferences over all possible combinations of commodities, nor is it capable or interested in considering all options. Its objectives are a mix of selfish and altruistic targets. We replace maximization with sufficing, which is more consistent with realism.

III. Wealth Maximization

Wealth maximization is a natural accompaniment of assuming unbounded rationality, with utility and profit maximization.

ASSUMPTION EVALUATION AND TESTS

I. LOGICAL EVALUATION: ALLEN MUSGRAVE'S TAXONOMY

Logically, scholars tend to make theories that describe reality to reach policy recommendations capable of dealing with real situations. However, the neoclassical theory pays little attention to realism. Friedman's instrumentalism (dubbed by Samuelson (1963) as the F-Twist) claims that assumptions can be unrealistic if the theory has *a predictive power*. That can be superficially appealing and does not require theories to describe reality. In addition, some claim that intellectuals should have a healthy dose of theoretical agnosticism



to detach themselves from] their theories. Alan Musgrave (1981) provides an objective resolution of this issue. He divided assumptions into three classes to show that Friedman's instrumentalism is not generally acceptable.

The first type à la Musgrave is *Negligibility, when assumptions* exclude whatever has little or no effect on the subject matter. For example, we can ignore sunspots as irrelevant to the subject when studying business cycles. More critical are *domain assumptions*, which specify the conditions under which a particular theory will apply. When the domain conditions are absent, the theory does not hold. An example is when risk acts as a proxy for uncertainty. Risk is measurable, where past events can be relied upon to predict future events. When we toss an unbiased coin, it lands, showing heads 50 percent of the time. One can rely on this fact to make a safe bet. Therefore, a risky event has a probability distribution with a variance that can be statistically estimated. In contrast, uncertainty is a situation where the past provides no reliable guide to future events. Some economists mistakenly use the *quantifiable* concept of risk instead of the *unquantifiable* concept of uncertainty.

A practical example is a new business investment whose future success cannot be measured by referring to the success of similar past and future investments. Past successes do not predict future performance. When evaluating an investment, risk is not a proxy for uncertainty. It would be an unrealistic assumption. The applicability domain of a theory based on an unrealistic assumption is nowhere. Assumptions of this type are common in neoclassical economics, as well as in the work of Milton Friedman.

The third type of assumption proposed by Alan Musgrave is the *heuristic assumption, which is known to be false but* made as a first step towards a more general theory. Heuristic assumptions made while developing a theory are factually false and later dropped. Their abandoning leads to a better theory.

Musgrave's distinction between three classes of assumptions is a brilliant addition to the assumption debate. However, it does not refute Friedman's position, as it fails to show why seemingly implausible heuristic assumptions, such as the rationality assumption, are always nothing but errors of a theory.

Deichsel and Pyka (2009) admit that economists use heuristic assumptions to simplify a research program's focus. They cannot be judged unrealistic before seeing whether they can generate f*ruitful lines of research*. It is what Fried-

man characterized as *being able to predict*. In this regard, we can safely make a sweeping generalization about neoclassical economics in general that *it has not predicted anything*. All the crises experienced by market Capitalism, both big and small, have come to neoclassical economics *not only as a surprise but also contrary to their model,* which predicts stable equilibria. When surprised, neoclassical policymakers temporarily set aside their failed doctrine and searched the coffers of Keynes for a policy. Once they reach some relief, they revert to their doctrine. Their methodology, ignoring realism under the guise of simplification, has dealt with their theories' ability to predict or counter the crises with a decisive blow.

The experience with the neoclassical methodology dictates that theories can be judged by their assumptions, especially if they fail to predict, shield the economy from crises, or even counteract them. Alan Musgrave's taxonomy of assumptions can effectively clarify the importance of realism. Unrealistic assumptions can be helpful if they assert that some factors are unimportant in determining the phenomenon under investigation without falling into the domain of the theory beyond which the real world lies. We can justify such assumptions as *heuristic* or *exploratory tools* to simplify and finally succeed in reaching more generality.

Musgrave also points out that most scientists reject an instrumental view of science in favor of 'scientific realism' – the belief that scientific theories should not merely predict reality but should, in some sense, represent it. Ironically, this is the belief that most economists have about economic theory. Friedman's instrumentalism is little more than a smokescreen behind which to hide when one wishes to quell a budding rebellion. It is often evident to the student objector that, though professing that the assumptions do not matter, his teachers of neoclassical economics continue to use the same small class of assumptions over and over again: rational utility-maximizing individuals, profit-maximizing firms, and a plethora of ancillary assumptions built on these foundations.

Economists use these assumptions because they believe they capture essential elements of reality and regard any theory that does not use these building blocks as 'unrealistic.' We can see this belief most clearly in how the 'bibles' of economics, its academic journals, filter out papers that do not make this core set of assumptions.



Assumptions do matter – to economics. The proposition that assumptions do not matter implies that economists would be pretty willing to accept a theory that assumes irrational behavior if the model generates results that follow observation. It also implies that the development of economic theory would be driven primarily by the desire to produce theories that provide a closer fit to observed data. Both these implications are firmly at variance with reality.

As any non-orthodox economist knows, it is almost impossible to have an article accepted into one of the mainstream academic economic journals unless it has the full panoply of economic assumptions: rational behavior (according to the economic definition), markets that are always in equilibrium, risk as an acceptable proxy for uncertainty, and so on. Macroeconomics, when it first began, bore little resemblance to microeconomics. Fifty years later, macroeconomics is effectively a branch of microeconomics. The desire to make every aspect of macroeconomics conform to the preferred microeconomic model. It propelled the development of economic theory over time, the preferred economic model. Macroeconomics, when it first began, bore little resemblance to microeconomics. Fifty years later, neoclassical macroeconomics is effectively a branch of microeconomics. As we outline in Chapter 10, a significant factor behind this tribal coup was the belief that, regardless of its predictive validity, macroeconomics was unsound because its assumptions did not accord with those of microeconomics. It was, therefore, extensively revised, especially during the 1970s and 1980s, so that macroeconomic theory was more consistent with microeconomic assumptions. Far from assumptions, which do not matter to economists, assumptions drove the development of economic theory.

Assumptions can be logically incoherent. For example, the economic model of the firm is internally contradictory. A theory that contains inconsistent assumptions will be flawed – and, as this book shows, economics is replete with logical inconsistencies. Is this a science? The behavior of economists hardly fits the stereotype of scientists as dispassionate seekers of truth. However, their behavior fits modern sociological theories of how scientists behave.

Briefly, these theories argue that each 'science' is as much a society as it is an intellectual discipline. A collection of scholars in a science field will share a perspective of what defines their discipline and what constitutes scientific

behavior. This shared mindset includes core beliefs, which one cannot challenge without threatening one's membership with the group (and hence one's status as a scientist), ancillary beliefs, which are somewhat malleable, a set of analytic techniques and as yet unsolved problems to which these techniques everyone should apply. The core beliefs are known as the 'hardcore' – since we cannot alter them without rejecting, in some crucial sense, the very foundations of the science -. The ancillary beliefs are known as the 'protective belt' - since their function is to protect the core beliefs from attack -.

Scholars expect that their beliefs and techniques will be able to solve outstanding problems, thus increasing the explanatory power of their science. If they fail, the first response is to adjust the ancillary beliefs rather than the core propositions. Only when the problem proves both intractable and crucial is there any possibility that members of the science will abandon their core beliefs, leading to the formation of a new school of thought – or the ascendancy of an existing rival school. While a school of thought is expanding the range of phenomena, it can explain using its core beliefs – by experiences that confirm its predictions or extensions of its theories to novel areas – then it is said to be a '*progressive*' scientific research program which manifests a '*positive heuristic*.' If, instead, experimental results contradict its predictions, and its theories are adjusted to rationalize these failures, then it is said to be '*degenerative*' with a '*negative heuristic*.'

More than one such collection of scholars can exist in science at any time, so speaking of schools of thought within science makes sense. Each school of thought will compete, emphasizing their weaknesses and strengths.

This sociological description of science fits the historical record of economics. At the beginning of the third millennium, there were at least five schools of thought. The neoclassical school is dominant, but there are several other competing schools – particularly the post-Keynesian, Austrian, evolutionary schools of economics, and recently Islamic economics. Each is developing its approach to explaining similar phenomena, and there is a rivalry between the minority schools and neoclassical economics – the other schools criticize neoclassical economics while it largely ignores its rivals.

However, some might think this provides a reasonably demeaning perspective on science. Indeed, this behavior is aberrant, and true sciences are beyond this



petty bickering. No, strange as it may seem, a similar picture can be painted even of the queen of sciences, *viz*, physics.

Quantum uncertainty? In order to comprehend some of the bizarre results of experimental particle physics, most physicists argue that matter is in some sense '*probabilistic*' and that the observer fundamentally affects reality. If an observer tries to 'tie down' one aspect of a particle – say, its location – then another aspect becomes fundamentally unknowable. Physicists say that an elementary particle is always in a 'superposition' of both states and testing for one state randomly leads to the other state resolving itself. Observing a particle thus *directly*– but *unpredictably* – alters its state. That is not because of any statistical properties of large numbers of electrons but because *randomness is an inherent feature of fundamental particles*.

Two crucial aspects of this '*Copenhagen school*' interpretation of quantum reality are (a) that particles can be treated as 'wave functions' in what is known as the wave-particle duality so that we can completely represent a fundamental particle by its wave function; and (b) that there are t*wo sets of physical laws*, one which applies when there is *no observer ('superposition')* and one which exists when there is an observer.

The most famous popular representation of what this means, in terms of everyday objects, is 'Schrodinger's cat.' That is a thought experiment in which a box contains a cat, a radioactive element, and a vial of poison. If the radioactive element emits a particle, the vial opens, and the cat dies. If it doesn't, the cat lives. What state is the cat in before an experimenter opens the lid to see whether it is alive or dead? Schrodinger's experiment superimposes the cat as alive and dead in the Copenhagen school interpretation. The act of the observer opening the box resolves the cat into one or another state.

However, this is not the only way to make sense of the experimental data. A rival interpretation, established by *David Bohm*, provides a completely deterministic interpretation with none of the 'quantum uncertainty' of the Copenhagen school. It can explain the same experimental results as the Copenhagen school – and some which cannot be explained – without resorting to the metaphysical position that the observer somehow affects reality at the quantum level. In Bohm's theory, *Schrodinger's cat is either alive and well* if the radioactive element has not emitted a particle or dead if it has, *independent of the human observer* who eventually opens the box to check.

How have physicists reacted to this coexistence of two rival explanations of reality? As the physicist David Albert sees it, in much the same way that economists have reacted to alternative schools of thought – by refusing to take them seriously. It is worth citing Albert at some length to show that, quite possibly, scientists in other disciplines are no different from economists when it comes to their reaction to intellectual challenges to accepted dogma:

Despite all the rather spectacular advantages of Bohm's theory, an almost universal refusal to consider it and an almost universal allegiance to the standard formulation of quantum mechanics has persisted in physics, astonishingly, throughout most of the past 40 years. Many researchers have perennially dismissed Bohm's theory because it granted a *privileged mathematical role to particles*. The complaint was that this assignment would ruin the symmetry between position and momentum as if ruining that symustry, which amounted to a more severe affront to scientific reason than the radical undermining of the idea of objective reality in the Copenhagen formulation. Others dismissed Bohm's theory because it made *no empirical predictions (no obvious ones) that differed from those of the standard interpretation* – as if the fact that those two formulations had much in common on that score somehow transparently favored one of them over the other. Still, others cited 'proofs' in the literature that *no deterministic replacement for quantum mechanics that Bohm had already accomplished was possible*. (Albert 1994)

Several physicists criticized Bohm's theory after the first edition published the above. However, the relevance of his theory in the context of this chapter was the alleged behavior of physicists in rejecting this alternative perspective in the manner described by Albert. At this sociological level, economics appears to have some similarities to the physical sciences – though *the extent to which economists suppress alternative perspectives is far greater than in physics.*

Economists' similar, yet not so pronounced, position against Islamic economics may be foreseeable. Islamic economics calls for the prohibition of specific transactions, either of trading particular objects, like alcoholic beverages, tobacco, pork, or products containing life-threatening or degrading elements. Economists can view that as limiting social choice and thus reducing social welfare. Islamic economists would retort by showing that excluding certain transactions can enhance social welfare. An example is the exclusion of nominal transactions, as explained in the first volume.

Another contentious point is the prohibition of the interest rate on loans and the claim that it is hardly related to economic fundamentals. The neoclassics have not yet crystallized such an objection to the Islamic alternative to the classical loan contract, which neoclassical economists have not yet scrutinized. What complicates the picture is that some Islamic economists write outside the realm of economics on the one hand. On the other hand, neoclassical economics have not been interested in looking at the works of professional economists who follow the Islamic approach. Perhaps it is time before both sides decide to meet head-on.

There was a time when the neoclassical school of economics was progressive, while its main rival was degenerate. The preceding classical school was in crisis when the neoclassical school coalesced in the 1870s in the works of Jevons, Menger, and Walras. The classical school always had difficulty in explaining the relationship between what it called value and prices. Nevertheless, it insisted that value was in some way fundamental to price determination. The work of the final member of the classical school, Karl Marx, accentuated this problem.

At the same time, the neoclassical school was expanding its core belief that the desire to maximize utility drove human behavior. That had developed from a guiding principle introduced by Bentham to a coherent theory of consumer and producer behavior developed on the hands of Jevons and to an explanation for the overall coordination of a market economy in Walras. At the turn of the nineteenth century, neoclassical economists were confident that their science could continue expanding its explanation of the economy. It was then a progressive scientific research program.

Though most economists still believe this is the case today, there are signs that this is no longer true. Instead, *today ,the theory is degenerate: rather than expanding the range of phenomena it can explain, it adjusts* the protective belt of ancillary beliefs to defend the hard-core beliefs from attack. The leading edge of the theory is dominated by, For example, the Sonnenschein-Mantel-Debreu conditions (discussed in Chapter 3), which maintain the hard-core belief that utility maximization drives individual behavior despite proof that we commit aggregate individual preferences. The same interpretation could be obtained from responses of neoclassical economics to the many logical problems documented in this book.

Nevertheless, the problems with economics go beyond just this. If economics were as entirely a science as astronomy, its failures would eventually lead to at least a general acknowledgment of crisis.

The incredible inertness of economics What makes economics different from and inferior to other sciences is the irrational tenacity with which it holds to its core beliefs in the face of either contrary factual evidence or theoretical critiques that establish fundamental inconsistencies in its intellectual apparatus.

The discovery, for example, that firms believe they experience constant or falling marginal costs (Eiteman and Guthrie 1952) and generally set prices by placing a markup on an average cost led not to the abandonment of the economic theory of price-setting but to a welter of papers arguing that in a competitive market, the effect of markup pricing was the same as if firms did consciously equate marginal cost to marginal revenue (Langlois 1989). On the same note, the neoclassics ignored Sraffa's theoretical argument that diminishing marginal returns were unlikely to occur in practice.

As a result, students at the beginning of the twenty-first century receive much the same instruction about how firms set prices as their counterparts at the end of the nineteenth century.

Physical sciences hold on to their core beliefs with some tenacity, but nowhere near this much– even Albert's paper observes that 'serious students of the foundations of quantum mechanics rarely defend the standard formulation anymore' (Albert 1994). As a result, revolutions in physical sciences – where another replaces one dominant paradigm – occur much more frequently than in economics. Often, these revolutions outpace the popular understanding of science.

Astronomy provides an example of this. We expect that most lay people think that the dominant theory of how the universe came into being is the 'Big Bang.' In this theory, the universe originated in a 'quantum singularity' some 12–15 billion years ago. This explosion kick-started matter and time, leading to the immense universe I observe today. Back in the 1950s, this theory won out against its rival, that the universe had always been in a 'steady state' of expansion. The Big Bang was indeed the dominant theory for some time – until



it appeared that, according to quantum mechanics calculations, it would have resulted in a universe consisting of a mere handful of elementary particles.

A rival theory then developed, which argued that the laws of physics of the current universe did not apply for a substantial period. Matter, for example, could move much faster than the speed of light. This 'inflationary universe' theory has subsequently been embellished to predict that there are many universes – as opposed to the one universe postulated by the Big Bang.

The shifts from the Big Bang paradigm to the inflationary universe and to 'multiverses' are significant conceptually. The first envisages a single finite universe, while the last muses that ours may be only one of many universes, each with different 'fundamental' physical laws. Nevertheless, the science of astronomy made this move over about twenty years ago, and it continues to undergo development today. Even the discovery that the speed of expansion of the universe is increasing challenges the inflationary/multiverse theory.

Economics, in contrast, has had only one acknowledged revolutionary episode in the last century – the Keynesian revolution during the 1930s. Nevertheless, at the end of the twentieth century, the dominant school of thought in economics retained nothing from that revolution. It is, in fact, a direct descendant of pre-Keynesian neoclassical economics.

Islamic economics is the second revolutionary wave. It attempts to rebuild economic theory under alternative assumptions that do not ignore realism and consider equity and sustainability as fundamental objectives while introducing specific logically justifiable moral values into the analysis. We expect Islamic economics to evolve fast into a solid discipline associated with a novel economic system that impresses with equity, stability, sustainability, and growth. The arena of intellectual competition is wide open. It awaits creative intellectuals to dive in.

Think of the many revolutions in our understanding of the physical world in the twentieth century: from *Newtonian* to *Einsteinian* physics, from *Usndelian genetics* to *DNA* and *the human genus*, and from *determinism to chaos theory*. Any scientist from the nineteenth century would be bewildered by what is commonplace today in his discipline – save an economist. However, we expect Islamic economics to shake up this inertia.

Why is economics so resistant to change? Is it because everything economists believed at the end of the nineteenth century was correct? Hardly, as this book shows. Instead, to understand the incredible inertness of economics, we have to consider an essential difference between *social sciences* in general and the *physical sciences* and the thorny topic of *ideology*.

The kingdom for an experiment was in the nineteenth century; scientists and philosophers of science generally believed that what distinguished the social sciences from the physical sciences was that the latter *could undertake experiments* to test their theories, whereas the former could not. In the twentieth century, Popper instead argued that the distinction between a science – like physics – and a non-science – like astrology – was not that one could undertake experiments and the other could not, but that one made *falsifiable statements*, while the other did not. Popper's distinction between science and non-science was not wholly relevant to the 'experiments versus no experiments' distinction, but it did play down the importance of experimentation in deciding what was and what was not a science.

The history of economics implies that Popper's distinction does not give sufficient attention to whether or not experiments can falsify a statement. For example, Milton Friedman is famous as the father of the now-defunct subbranch of economics known as monetarism. One falsifiable statement he made was that inflation is caused by the government increasing the money supply more rapidly than the growing economy.

That implied that to reduce inflation, the government had to increase the money supply more slowly than the growing economy. It was the basis of Margaret Thatcher's economic policies. However, eventually this approach was abandoned. One reason was that the *government could never reach its targets for the money supply growth rate* – it might aim to increase it by, say, 6 percent, only to see it grow by 11 percent. Also, the relationship between the three crucial variables in Friedman's theory – the rate of inflation, the rate of growth of the economy, and the rate of growth of the money supply – required that the policymakers can readily estimate the rate of growth and continuously adjust the rate of monetary expansion to an equal value. However, money in market capitalism is lending-based, while the interest rate is an administered price, cutting it from real sector variations. Despite her ideological adherence

to Friedman's view, the Bank of England could not gauge the rate of monetary expansion to the real growth rate.

One could thus argue that Friedman's statement – that the government expanding the money supply faster than the rate of growth of the economy causes inflation –remains valid because the central bank failed to equate the rate of monetary expansion to the real rate of growth. No market-determined indicator is sufficiently related to the real sector to make estimating real growth easy. In our macroeconomic model, we have provided a market-determined indicator that is good to use to estimate the real rate of growth. We, therefore, expect any central bank to easily equate the rate of monetary expansion with the real growth rate.

Consequently, we have been careful when constructing the institutional structure of an Islamic economic system to provide a market-determined indicator that can be useful in estimating real growth. That was the RCDC. In addition, we replaced borrowing-based money with equity-based money. We also eliminated the classical loan contract and replaced it with twenty Islamic finance contracts.

Other factors can explain the failure of the monetarist rule in Britain. First, the interest rate has been held high as a monetary policy tool. However, we argue in Islamic economics that the interest rate is unrelated to fundamentals. Another factor is that the Bank of England has no market-determined anchor to use in monetary policy, which connects to the growth rate. Both factors hindered monetary policy and made it unreliable. Islamic economics provides a better market-determined anchor, leading to predictable policy results.

We can make the same observation about Marxist economists and their attitude toward the data on Marx's theory that the rate of profit would tend to fall, or the inevitability of Socialism. In other words, this is not just a disease of the political right but an endemic problem in economics. Without the ability to undertake controlled experiments, falsifiable statements could be falsified in practice. Economists of all persuasions are, therefore, liable to hang on to beliefs that they argue are scientific but which, in the end, are ideological.

The experience of another social science, psychology, supports the argument that the ability to undertake experiments is crucial to scientific progress. The

'behaviorist' school dominated psychology for much of the twentieth century. This school argued that an organism's behavior is a response to an external stimulus: it was 'unscientific' to postulate any unobservable mental processes of the organism that mediated between the stimulus and the response. To this school, complex behavior – such as playing a piano – had to be understood as a chain of stimuli and responses. However, experiments showed that even average pianists move their hands too quickly for the tactile information to pass along the sensory nerves to the central nervous system and for the command to move the hands to be sent to the motor nerves [...] *Therefore, the behaviorist hypothesis that each new action is a response to an external stimulus is implausible.* (Bond 2000)

That and several other experimental falsifications of behaviorism led to its demise and replacement by cognitive psychology, which accepts that 'there are cognitive processes that determine our behavior which psychologists must explain, even if they are not directly observable.' Thus, with the help of experiments, psychology was able to undergo a revolution from one dominant school to another – while economics continues to be dominated by the same school (which, ironically, has a very behaviorist view of human behavior). Unless it develops a means to undertake experiments to test rival theories, economics may be unable to break from the grip of ideology. Once we succeed in developing Islamic economics as a solid branch of economics with credible alternatives to the mainstream theory, such a requirement may not be necessary.

SIPPEL'S TEST OF RATIONALITY

Sippel (1997) tested the neoclassical concept of rationality using experiments to see whether people's choices among bundles of goods would follow the four axioms. He gave his students subjects eight commodities, a budget constraint, and a set of relative prices. Sippel repeated the experiment ten times, each with a different price and a budget constraint. The experiment allowed sufficient time for each subject. Eleven of the twelve subjects failed the test of rationality. When Sippel repeated the experiments with a larger group of thirty, twenty-two did not conform to 'rational' behavior according to the axioms of revealed preferences.



If obeying the four rules makes one rational, then most people must be irrational. The real-world consumers do not distinguish the utility they get from different bundles of goods. Sippel's experiments indicated that the indifference curves were 'thicker' than the neoclassicals envisioned. Such thickness would reduce the number of violations. A random choice appeared more rational than the consumption decisions by Sippel's subjects—no evidence to support the assumption of rationality nor utility maximization, placing doubt around the maximizing principle.

In reaction, Keen claims that Sippel subjects were behaving rationally (2011) in the face of a real-world phenomenon of which armchair economic theorists are unaware. He argues that Sippel did not choose his subjects randomly. Each showed a marked preference for some goods; others were not chosen at all, even at low prices. Some subjects' demand was quite price-inelastic. Others substituted cheaper goods for more expensive counterparts, e.g., Coke for orange juice,

Sippel's subjects had to choose between eight different commodities within their budget. They faced an infinite number of shopping bundles as they considered continuous units. When discrete units were allowed to consider eight different quantities for each of the eight, the number of combinations equals one plus the number of units that any could buy of each commodity raised to the power of the number of commodities one is considering. With eight commodities and eight units to buy from each, the number of options would be one plus eight, raised to the power of eight. Or approximately 16.7 million bundles with different combinations of eight goods. Should the budget constraint have ruled out 99.99 percent of the options, there would remained over 1,600 different options left for Sippel's subjects (Keen, 2011). With many goods much smaller than found in reality, neoclassical rationality requires many available options beyond the ability of the ordinary consumer.

If the consumer were to consider two different commodities, with discrete quantities between zero and ten units of each good, then eleven would be raised to the power of two or 121 optional combinations from which to choose. A complete set of preferences available to a standard supermarket shopper exceeds any mental or physical data storage media. Such a set of preferences would be impossible to conform to the neoclassical rules of Transitivity, Convexity, and Non-satiation. We cannot, therefore, accept the rationality axioms.

Shoppers constitute a *manageable set of options* as a guide to follow during their available but limited shopping time. They could partition choices into valuable habits. For example, they can shop for fruit and vegetables from the weak farmer's market, detergents from the Neighborhood Supermarket, clothes during seasonal discounts at department stores, etc. That would help guide them in reducing the number of options and facilitating decision-making in a finite amount of time. Furthermore, the Laws of *Computational Theory* show that the number of potential solutions to most real-world problems is so enormous that an optimum does not exist. A rational and highly calculative individual of the neoclassical type would be at a loss when confronted with many potential solutions.

The problem of choice entertained by the neoclassical theory confronts two dilemmas. First, households, even when equipped with supercomputers, are *incapable of computing,* as the theory assumes, as *most logical problems are beyond the capability of computer programs.* Second, when available, computing is costly for problems that are too expensive to compute (Ballard 2000: 6), as the '*Curse of Diusnsionality'* indicates. *Regardless of the computing power, an optimum solution does not exist in a finite time*. Ironically, Computer scientists are more skeptical than neoclassical economists about machines' ability to solve even the most straightforward problems. It would be more realistic to assume satisficing, following Herbert Simon (1996). Satisficing or bounded rationality is qualified to replace the rational behavior neoclassical model.

II. GRÜNE AND PREFERENCES TEST

Another group of tests relies on *methodological behaviorism*. They infer preferences from observed behavior from available data, which they consider a source of information on the subject matter while relying on revealed preferences (Grüne, 2004). Such tests claim that the satisfaction of certain axioms over an agent's choices is equivalent to the existence of a preference ordering that rationalizes actual choices. Based on this clause equivalence, neoclassical economists argue that

We can infer the preference ordering from the observed choices if the data reflects the choice axioms,

The preference ordering turns irrational if the choice subjects violate the axioms.

Grüne (2004) argues that the neoclassical claims regarding the alleged equivalence are unfounded. He finally concludes that *revealed preference theory is a tool of limited use*.

Grüne (2004) points out that the revealed preference theory specifies axiomatic constraints over choice data and preferences. It then shows the equivalence between some of these axiomatic constellations. According to him, a revealed preference relation is an arbitrarily constructed relation between alternatives chosen under different conditions. Some neoclassical economists claim it is identical to the relevant preference ordering under certain conditions. *This claim has no substantial proof*.

When a choice axiom is satisfied, it implies a preference relation that satisfies the axioms and rationalizes the given choice data (relative to some notion of optimization). Meanwhile, if the preference ordering satisfied the axiom, it would rationalize the choices (given a notion of optimization) that satisfy the respective choice axiom. However, *the theory of revealed preference cannot convincingly show that the preference relation, implied by the choice axiom, is the right preference ordering*, i.e., the one used by the agent. Grüne directs his criticism to how some economists have understood and used the formal results, not the formal results themselves. We highlight Three aspects of such interpretation. First, eliminating *the language of preference* and other motivational states cannot cover the subject of theory. Second, *trying to estimate the form of a preference ordering from an agent's observed choices cannot be validated. Third, testing the validity of the preference axioms cannot be done by testing for violation of the choice axioms.*

III. PARAMETRIC TESTS

Parametric tests estimate a preference ordering from the choice date, including available price, environmental, and behavioral data. Data presumably has a distribution that the usual statistical parameters can represent. Estimates aim at the preferences over consumer goods, investment decisions, and urban living locations[98].

98 Kahn (1995), for example, estimated the quality of life rankings of US cities in terms of people's choices of where to live. He started with estimating hypothetical wages and rents for all cities, which constitute the 'price vector' for each city. Then, he interpreted people's decision to stay in a city even as their locational preference His method ranked LA, San Francisco and NYC over Houston and Chicago.

Parametric tests simultaneously target two things. First, *a preference relation* that satisfies certain axioms and is *a basis for maximizing*. Second, the form of this preference relation. We cannot simultaneously test both aspects. Based on this postulation, this amounts to the parametric approach postulating the satisfaction of the preference axioms and estimates the form of the preference relation.

NON-PARAMETRIC TESTS

In contrast, *non-parametric tests* examine the individual demand data to check if it satisfies the choice axioms to test the validity of the preference axioms. Relying on the *presumed equalities between choice and preference axioms*, the revealed preference theory judges whether they are satisfied and then claims that it has derived empirically founded judgments. Interpretations of test results suffer from the problem of *preference instability*. Preferences may have changed during the observation period. While the choices based on an inconsistent preference ordering may not violate the respective choice axiom, the choices based on a consistent preference ordering may violate the respective choice axiom. The observed choices often stretch over time long enough to accommodate one or more preference changes, as expected when using panel data.

LABORATORY EXPERIMENTS

Economists have used lab experiments to avoid this kind of ambiguity. Examples include the period during which subjects make their choices and the control of external shocks (like changes in income, influx of information, and observation of other consumers' behavior) during the experiment period. This way, the possibility of preference instabilities is reduced and can–so the authors claim—be excluded as an interpretation of choice axiom violation.

Such experiments have a standard design. Subjects make hypothetical choices between some consumption goods. The experiment offers Different price sets. Sometimes, price changes are compensated for by income adjustments. Subjects receive one of the chosen bundles after the experiment and are to be randomly selected. The experiment allowed subjects less than one hour to make their choices.

Let us recall the three axioms of revealed preference. The Weak Axiom of Revealed Preference (WARP): given incomes and prices, *consumers will always*



make the same choice if one product or service is purchased instead of another. If we buy one product, we will never buy a different product or brand unless it is less expensive, offers increased convenience, or is of better quality. The Strong Axiom of Revealed Preference (SARP): in a world of two goods from which to choose, the strong and weak actions are equivalent.

The Generalized Axiom of Revealed Preference (GARP): when, for a given level of income and or price, I get the same benefit from more than one consumption bundle, i.e., no unique bundle that maximizes utility exists.

All experiments show high violation rates. One-quarter to two-thirds of the test persons violated GARP, and between 73% and 90% violated SARP violations. Based on these results, Sippel (1997) declared that his results contradict the neoclassical theory of the consumer maximizing utility subject to a given budget constraint. Furthermore, Mattei (2000) claimed that the behavior of many individual consumers is inconsistent with the neoclassical model.

In response, Grüne (2004) argued that one cannot test the validity of the preference axioms or the hypothesis of the maximizing consumer by testing the validity of the choice axioms. In particular, he cautions against embracing the results of economic experiments, as their claims are theoretically unfounded.

VERDICT ON NEOCLASSICAL THEORY

Since Samuelson's contribution in 1947, seventy-three years of work have produced no firm empirical foundation to support the *theory of revealed preferences*. The unsuccessful revealed-preference framework attempted to strengthen neoclassical economics. However, parametric and non-parametric tests and experimental studies showed that Neoclassics operate with theoretical concepts that we can never fully define regarding observable parameters. At the same time, similar concepts exist in other sciences, like the gene in biology and the inter-atomic bond in chemistry. Nonetheless, respectable theoretical work supports them.

EQUILIBRIUM: FEUDALISM AGAINST MERCANTILE CAPITALISM

Modern Western Economics dawned as a discipline when the English were at the final stage of relieving their mercantile Capitalism from the remaining

restrictions of feudalism, which had found support in the king's divine rights, that fulfills the need to ensure order. *Political economy* argued that no system of government was required to establish order, as the market system would establish a social order in which everyone followed his self-interest. Smith's notion of *the invisible hand* played a vital role in the sociopolitical evolvement of the late 18th and early 19th centuries. Equilibrium was the essential element of such order.

Reaching equilibrium was an emphasized advantage of market Capitalism over any system of administered prices. It is an essential part of the defense of Capitalism. While equilibrium ensures the highest welfare for all, individual welfare would be proportional to the individual's contribution to society: people would enjoy the lifestyle for which they toiled. The transition to Capitalism was complete in the middle of the 19th century. Instead of equilibrium, nineteenth-century Capitalism suffered from cycles, as it witnessed a significant depression roughly every 20 years and widening wealth disparities, as workers' conditions and prices widely fluctuated, banks expanded, and then collapsed. Capitalist barons replaced feudalist barons. The aristocratic equilibrium turned into an unbalanced chaos, giving way to Socialism.

Neoclassical economics rose to defend market Capitalism against Socialism. The neoclassical economists of the late 19th century provided a substantial mathematical analysis of how an idealized market economy could achieve an equilibrium that is fair to all. It gave way to the academic discipline of economics. While economics had little impact on Capitalism, defending Capitalism strongly impacted economic theory. Being apologetic to Capitalism made equilibrium a core belief of economic theory. While Feudalism is long dead, capitalism lives on and has almost no practical existence. However, neoclassical economists still use *positive economics* against *normative economics,* where the positive is considered superior to the normative.

The core belief in equilibrium kept ideology innately lurking within *positive economics.* Every criticism directed at economics invariably calls for abandoning the concept of equilibrium. In defense of this core belief against Sraffa's critique, the calamity of both the Great Depression and the Great Recession, Keynes's revolution, the modern science of complexity – has been repulsed, ignored, or belittled.



Economists tend to be highly conservative on primary policy debates, claiming they are non-ideological but motivated by knowledge rather than bias. Their firm belief is that a free market system tends towards equilibrium; equilibrium maximizes welfare for everyone. At the same time, they cast an equally strong belief that any other economic system will produce disequilibrium and reduce welfare. On the one hand, believers would oppose minimum wage legislation, social security payments, and price controls (as they are sources of disequilibrium in the labor and product markets). They will support the private provision of services, like education, health, welfare, and police, based on the claim that supply and demand do not discipline the government. On the other hand, they would support anti-monopoly laws and fend off bad monopolies and anti-union laws, as collective bargaining distorts labor market outcomes.

Economists take such policy positions strongly, believing scientific knowledge justifies them, not personal bias or dogma. Economists often act against their self-interest. For example, they would not support academic unions. That is why they are the least unionized of academics. However, non-partisan in self-belief does not mean non-partisan. Economists' devotion to equilibrium forces them into *politically reactionary* and *intellectually contradictory* positions.

CLASSICAL MACROECONOMICS

Before the *General Theory*, there was a body of thought (O'Brien, 1975) without a unified or formalized theory of aggregate employment. The nature and origin of the business cycle were more of a mystery than a subject of agreement (Haberler, 1963). For Keynes, the classics included Adam Smith, David Ricardo, and John Stuart Mill, as well as Ricardian economists (Snowdon and Vane, 2005; p. 36). Keynes excluded Alfred Marshall and Pigou from the classical school. The structure of classical macroeconomics mainly emerged after 1936, offered by a school of thought with belief in a stable equilibrium at the macro level.

No integrated classical theory can exist in the writings of any classical economist. Classical economics is only a synthesis of the pre-Keynes literature that attempts to cast classical thought as a coherent story with clearly identifiable

building blocks. The synthesis of classical theory can help understand the post-1936 developments in macroeconomic theory.

The classical belief in stable equilibrium did not exclude the possibility of short-run deviation from equilibrium, which, as they liked to think, the market mechanism would quickly and efficiently restore complete employment equilibrium. Government intervention with stabilization policies would not be necessary. They would also be undesirable as they would contribute to instability. Because of their unshaken faith in stable equilibrium, they paid little attention to stabilization policies. The mass unemployment in major capitalist economies of 1938 was the most robust empirical evidence against the belief in stable equilibrium, which motivated Keynes to launch his revolution.

Snowdon and Vane (2005; p. 38) summarize Akley's 'stylized' version of the classical model, which would represent their perception of the determinants of national real output (Y), the real wage (W/P), the nominal wages (W), the price level (P) and the real rate of interest (r) (Ackley, 1966).

I. ASSUMPTIONS

The classical theory starts with the following assumptions:

Economic agents (firms and households) are rational, which means they are calculative, with comprehensively defined preference ordering, considering and comparing all possible options at the margin and aiming at the maximization of households' utility maximization and firms' profit maximization. It is the same as the neoclassical unbounded rationality

- Agents enjoy perfect knowledge of market conditions and prices before and during trade;
- All agents' decisions depend on *real* not *nominal* values, which implies freedom from *money illusion*[99].
- Perfect competition rules in all markets, in which all agents are price-takers and prices are perfectly flexible;

99 The belief that money has a fixed value in terms of its purchasing power, so that, for example, changes in prices represent real gains and losses, regardless of the change in the money supply.



- Exchanges take place only at market-clearing prices. We can illustrate it by a fictional Walrasian auctioneer who presides over all exchanges carried out in a centralized exchange. This mythical view is one (perhaps unrealistic) way to prevent false trading or trading at non-equilibrium prices.

We emphasize that the classical theory did not specify the mechanism through which the economy reaches equilibrium in market capitalism, nor did it provide a mechanism to avoid false trading. Instead, it relied on the concept of perfect information and price-taking that underlies perfect competition. When perfectly informed, traders know the equilibrium prices and will trade only with them. There is no way to know why they ignore non-equilibrium prices while having no a priori evidence that it would be to their advantage.

The assumption of perfect information also implies zero transactions and transportation costs. It describes a world similar to the Islamic paradise. Such is a place for reward and not for testing. Scarcity would not be present, and all desires would be fulfilled. Such an impossible assumption is necessary for the working of market capitalism. Nonetheless, there is no practical way to establish it institutionally. This extreme degree of unrealism does not concern economists as long as they accept the F-Twist.

- Expectations are stable.

II. CLASSICAL ECONOMICS

Keynes's construction of macroeconomics came after the classics. The Keynesian school of thought (occasionally distinguished from that of Keynes himself, (Leijonhufvud, 1968)) believed in the Government's ability to manage the economy through fiscal and monetary fine-tuning. This belief was opposed to the classical doctrine, which we understand from the writings of Adam Smith (1723 – 1790), 1776; David Ricardo (1772 – 1823), On the Principles of Political Economy and Taxation, 1817; and John Stuart Mill (1806 – 1873); Principles of Political Economy, 1848.

The classical model implies a dichotomy between the real and the financial sector. It emanates from the institutional structure of market capitalism, where the finance process focuses on trading present for future money using the classical loan contract. The finance sector is entirely separate from the real sector. Banks, commonly commercial and rarely universal, are not directly

involved in investment, production, or trade. Under such division, the neoclassics assumed that the model has an equilibrium real values, including employment and output, without specifying any mechanism. Say's law expresses All markets' coordinated and simultaneous clearance. Naturally, the general equilibrium in the model must produce a volume of transactions (the sum of the output of each commodity multiplied by its price) equal to the money supply multiplied by the velocity of money. That is what came to be known as the quantity theory of money. It is a precise expression of the dichotomy between the real and the nominal and the neutrality of money that is a logical conclusion of the classical assumptions. Changes in the quantity of money in this model only affect prices, with no effects on quantities.

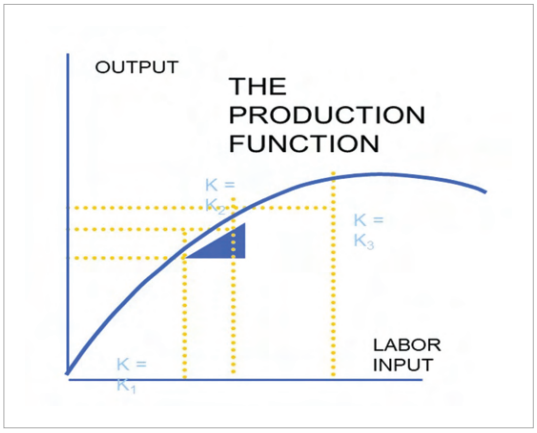
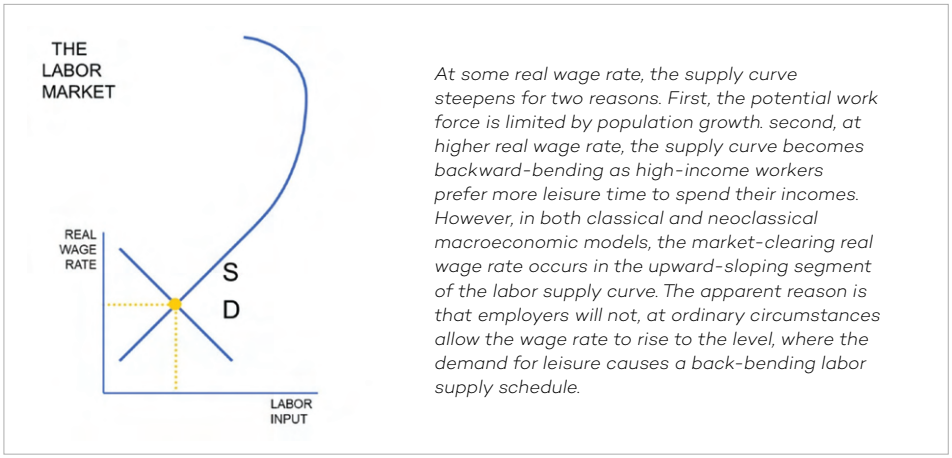


Figure 13:
The Classical Macro Model: The Production Function

Figure 14: The Classical Macro Model: The Labor Market



At some real wage rate, the supply curve steepens for two reasons. First, the potential work force is limited by population growth. second, at higher real wage rate, the supply curve becomes backward-bending as high-income workers prefer more leisure time to spend their incomes. However, in both classical and neoclassical macroeconomic models, the market-clearing real wage rate occurs in the upward-sloping segment of the labor supply curve. The apparent reason is that employers will not, at ordinary circumstances allow the wage rate to rise to the level, where the demand for leisure causes a back-bending labor supply schedule.

THE CLASSICAL MACROMODEL

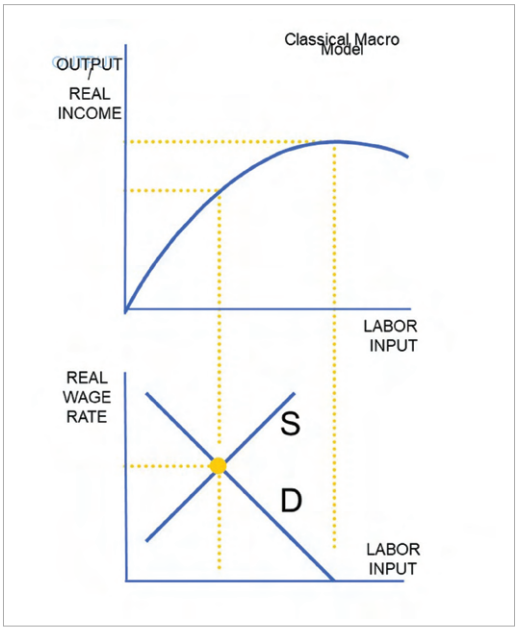


Figure 15:
The Classical Macro Model: The Labor Market

The classical model focuses its attention on Production. The industry is probably composed of factories with a fixed capital input (number of machines) and a maximum production capacity. Inputs in the form of labor are applied to produce output. The labor input (in worker hours) is along the horizontal axis; the output (the economy's real GDP) is along the vertical axis. The *given capital input* determines the shape and location of the production function. The production function shows how much output can be produced by any specific level of labor input. Up to a point, an increase in labor input results in an increase in output. The slope of the production function, i.e., the increase in output divided by the increase in the labor input, is (by definition) the marginal productivity of labor, the MPL. At some level of labor input, the MPL is zero, and beyond that level, it goes negative. All this is due to the critical assumption of fixed capacity (fixed number of machines). The upward-sloping supply curve reflects the workers' preferred tradeoff between labor and leisure[100].

100 In the first volume of this book, we pointed out the major objectio of Sraffa to designing factories with fixed capital.

THE LABOR MARKET

Worker hours are bought and sold in a competitive market, presumably for different skills and working conditions. Both workers and employers base their labor-market decisions on the real wage rate—the wage rate measured in terms of its purchasing power. It means that *price illusion is absent* from the classical model (because of assuming perfect information). We have pointed out in Volume I that the horizontal summation of individual demand curves into a market demand curve boils down to an economy of one person and one commodity. That implies that the classical model suffers from *a severe aggregation problem*. Accepting that equilibrium happens without specifying its mechanism (Robinson's Paradox), the equilibrium real wage rate established by market forces ensures full employment.

With supply and demand determining the level of labor input, the production function indicates the corresponding output level. Note that when the demand curve extends to the horizontal axis (at which point the demand price of labor is zero), the marginal productivity of labor is also zero. The economy's output, which includes consumer and producer goods, is sold at competitive prices, generating the revenue to pay the incomes of laborers and capitalists. Those incomes are precisely enough to buy the economy's output.

Q is the economy's real output. Y is nominal income. P is the price level. Y/P is real income. N is the variable labor input. K is the given capital input. W is the nominal wage rate. W/P is the real wage rate. (Y/P)N is real labor income. Y/P – (Y/P)N is capitalist income.

EXCEPTIONAL CASES: (A) REAL WAGE RATE STUCK TOO HIGH

Suppose that, for some reason (Remember that the real wage is an endogenous variable. An experiment should not start by assuming a change in an endogenous variable), the real wage rate was above the market-clearing level. The labor input would be demand-constrained; total income to labor may rise, fall, or remain unchanged, depending on the demand elasticity. We measure the resulting unemployment by the discrepancy between the labor supply and labor demand at the excessively high real wage rate. The economy's real

output, which is *the same as the real income paid to all the factors of production* (labor and capital), finally declines.

EXCEPTIONAL CASES: (B) A CHANGE IN THE LABOR-LEISURE TRADEOFF

Suppose that people's preferred labor-leisure tradeoff changes in the direction of less leisure[101], causing the labor supply to shift rightward. The number of worker-hours supplied and demanded increases, and the natural wage rate declines. The actual income paid to the workforce rises, falls, or remains unchanged, depending upon the elasticity of the demand for labor.

The economy's real output, which is the same as the real income paid to all the factors of production (labor and capital), unambiguously rises.

101 This assumes strict substitutability between income and leisure. We have explained above that some complementarity is more likely.

CHAPTER VIII:

THE CLASSICAL MACROMODEL

THE NEOCLASSICAL MODEL

Macroeconomics has witnessed a history of revolutions and counter-revolutions. The counterrevolution came with the resurgence of the 'New Neoclassical Synthesis' or 'New Consensus' in macroeconomics. That has been documented in the literature by Clarida *et al.* (1999) and Woodford (2003). In its simplest form, the New Consensus is a three-equation model consisting of an *IS* curve, an accelerationist Phillips curve, and a Taylor rule. It is this last feature that points to the key innovation of the New Consensus,

Modern monetary macroeconomics comprises what is increasingly known as *the 3-equation New Keynesian model*: IS curve, Phillips curve, and interest rate-based monetary policy rule (*IS- PC-MR*). It is the primary analytical structure offered by Woodford's book (2003) and other contributions, particularly Clarida *et al.* (1999) and Goodfriend and King (1997). Being firm believers in reductionism and devoted to microfoundations, these authors are careful to show how the equations can be derived from explicit *optimizing behavior on the part of the monetary authority as a price-setter and households* in the presence of some nominal imperfections. Many econometric models take the same approach for policy simulations within central banks or international institutions" (Woodford, 2003, p. 237).

In order to provide an integrated body of these contributions and others made under what came to be known as the neoclassic consensus, we will attempt to provide textual and graphic explanations drawn from the relevant literature.

ASSUMPTIONS & CONSENSUS

The Neoclassical Synthesis, or the New Consensus in macroeconomics, can comprise statements in Clarida et al. (1999) and Woodford (2003). In its simplest form, the New Consensus is a *three-equation model* consisting of an IS curve, an accelerationist Phillips curve, and a Taylor rule. This last feature points to the key innovation of the New Consensus, mainly because it practices macroeconomics without the LM curve (Rousr, 2000). Hence, in IS-LM analysis, which has been the workhorse teaching model in undergraduate textbooks for several decades, one of the foundations of the LM curve is an exogenously given quantity of money in circulation determined by the central bank. However, the interest rate is the monetary policy instrument in the New Consensus. As the central bank manipulates the interest rate, the quantity of money in circulation is an endogenous residual. Two alternative formulations of the consensus emerge from one framework of analysis. One assumes that the central bank chooses to make the interest rate the monetary policy instrument. Another chooses the monetary base), as in the work of Poole (1970). That brings to memory a history of endogenous money theory in macroeconomics (see, for a classic statement, Moore, 1988). the New Consensus has already begun to influence the content of macroeconomics textbooks, as evidenced by Sørensen and Whitta-Jacobsen (2005), Carlin and Soskice (2006), DeLong and Olney (2006), and Jones (2008).

In light of all this, a debate has recently emerged regarding the extent to which current undergraduate macroeconomics teaching models are well-grounded and adequately reflect the latest developments in the field. Several well-known and widely cited papers – including those by Allsopp and Vines (2000), Rousr (2000), Taylor (2000), Walsh (2002), Carlin and Soskice (2005), Bofinger, Mayer and Wollusrhäuser (2006), and Turner (2006) – have already attempted to 'translate' the New Consensus into forms suitable for presentation to under- graduates at either the introductory or intermediate levels. Indeed, the New Consensus has already begun to influence the content of macroeconomics textbooks, as evidenced by Sørensen and Whitta-Jacobsen (2005), Carlin and Soskice (2006), DeLong and Olney (2006), and Jones (2008).



Not surprisingly, much of this book concerns the presentation, further development, and critique of the 3-Equation New Consensus macroeconomic model. Part I begins with an aptly-titled chapter by Wendy Carlin and David Soskice, showing how the central ideas of the New Consensus have a form accessible to an undergraduate audience. Drawing on their recent works (2005, 2006), the authors provide a simplified diagrammatical exposition of the 3-Equation New Consensus model. They show how this model can analyze various phenomena, including current commodity price shocks. In so doing, they draw attention to two critical features of the New Consensus. First, it emphasizes the forward-looking behavior of the central bank. Second, it is necessary to appeal to underlying behavioral relations when using the model for comparative static exercises. The latter is considered a significant pedagogical advantage of the model relative to its IS–LM-based predecessor.

In Chapter II, Simon Wren-Lewis builds on the diagrammatical exposition of the 3-Equation New Consensus model of Carlin and Soskice. He argues that current undergraduate macroeconomics can and should be updated: central to this project is expunging the LM curve from teaching models and re-focusing the discussion of monetary policy on manipulating the interest rate. The author shows that the resulting model permits a more intuitive discussion of macroeconomic outcomes and policy interventions in conjunction with an updated presentation of the IS curve and an expectations-augmented Phillips curve. The result is an approach that modernizes undergraduate macroeconomics and makes teaching macroeconomics easier and more effective.

SOME OBJECTIONS TO THE CLASSICS AND THE NEOCLASSICS

AGGREGATION PROBLEMS: MARKET DEMAND AND THEORY OF PRODUCTION

I. AGGREGATING BEHAVIORAL FUNCTIONS

We must aggregate some behavioral functions at the aggregate level, like market demand, supply, consumption, and investment. The aggregation theory allows only aggregating functions *with high similarity across individuals*. The SMD conditions have brought us disappointing news regarding the aggrega-

tion of demand and supply curves. That shattered our hopes for an equilibrium that is unique and stable. Marginalism has, therefore, been unable to show that the economy can autonomously move towards a stable equilibrium. Neoclassical economics pay little attention to this problem, risking to provide a model with severe instabilities.

II. THE THEORY OF PRODUCTION

An essential part of both classical and neoclassical analysis is the production function, which remains the core of their theory of production. The production function relates the quantity of output to the quantities of inputs used, often defined as capital and labor, and sometimes management and technology are added. The prominent pioneer in this field was Cobb-Douglas (1928), who proposed an aggregate production function in which the quantities of physical outputs and inputs are proxied by their values. Early reactions to the estimations of Cobb-Douglas (C-D) production function focused on the interpretation of coefficients (Mendershausen, 1938 and Tinbergen, 1942)

Joan Robinson (1953-54) was one of the earliest fundamental critics of the production function. She pointed to the imprecision with which economists have defined the output, labor, and capital units. It implicitly raised two questions, one of the homogeneities of physical units at the level of the firm and another of aggregation at the macro level. Robinson's comments triggered the *Cambridge Capital Controversy*, which the economic academia has forgotten today. It tries to resolve capital measurement anomalies in aggregate production function models. Neoclassical economists judged that it had an impact on their marginal productivity theory. When the aggregate production function surfaced again in the 1980s to support endogenous growth theories and real business cycles, the Cambridge controversy, especially the opinions initially rising on the British Islands (Robinson, Pasinetti, and Sraffa), never existed. In other words, *the neoclassics considered themselves victorious over their British counterparts*.

Since aggregation is one of the hurdles, neoclassical economists came forward to set the conditions under which we can surmount such hurdles. Lawrence Klein (1946) attempted to set conditions under which we can aggregate firms' production functions into an economy-wide production function. He advanced two criteria:



First, suppose a production function expressing the relationship between output and inputs, both in physical units for each firm in the economy existed. In that case, a production function should express the exact relationship between aggregate output and aggregate input in physical units for the whole economy. That means that output must be independent of the distribution of the various inputs in the aggregate. In other words, aggregate output depends on aggregate factors of production but not on how such factors are allocated among firms (Pu, 1946)[102]. we notice here that the aggregate production function must include some aggregation of the output of different commodities as the endogenous variable and the aggregation of inputs (capital, labor, technology, and entrepreneurship) as the exogenous variable. This condition ignores how we make such aggregation. Whether we can replace the physical quantities of the variables involved with monetary values (quantities times prices) has been ignored.

Second, If profits were maximized by the individual firms under the neoclassical conditions of perfect competition so that the marginal productivity of each labor category is equal to its real wage and the marginal value product of each category of capital is equal to its capital service price, then the marginal value product of labor at the aggregate must equal the real wage rate and the marginal value product of capital at the aggregate must equal the capital service real price at the aggregate. That means if the individual firms maximized profits in a neoclassical, perfectly competitive environment, the marginal-productivity equations would hold at the firm level. Then, the same equations would hold for the aggregate economy.

One possibility under *Klein's first condition* is that we can find no aggregate to satisfy the first condition. Another possibility is that if such a condition were, in fact, satisfied, someone has manipulated the aggregates so that they became meaningless.

Pu (1946) claims that Klein's second condition that output should be independent of allocating inputs among firms and categories may be sufficient but not necessary *for a unique aggregate production function.* Instead, to determine the aggregate output, it is sufficient to assume that equilibrium allocates inputs

102 This sounds like an optimal equilibrium condition. At such an equilibrium, reallocation of factors of production among firms would not increase output.

between firms' and inter-firms' categories in *a definite way.* A definite pattern of distribution is, therefore, sufficient to guarantee the existence of a unique aggregate production function. Pu's relaxing of Klein's second assumption *ignores the aggregation problem*.

In addition to Klein's two conditions, we find the *Zarembka condition* (1968) that such aggregation would be possible and meaningful under the prevalence of constant returns to scale while each firm experiences external economies or diseconomies under perfectly competitive equilibrium. Under such conditions, Zarembka claims that the aggregate production function for the industry will be a consistent aggregation of the micro-production functions and will be homogeneous to a degree other than one. We notice in this regard the convenience of assuming perfect competition and how this, with constant returns, justifies aggregation. The heterogeneity of input and output units would be absent. In other words, aggregation is over homogeneous input and output units. Zarembka has been clever enough to have assumed what he had wanted to prove. The aggregation of homogenous units is trivial, as it returns us to the position of one firm.

We can admit that physical output comprises heterogeneous units that we cannot aggregate. In firms with only one product and inputs all measurable in homogeneous physical units, the perception of a functional relationship between inputs, i.e., units of labor, capital, management, and technology, and output, also measured in physical units, would be justifiable. However, there is no way to aggregate such micro-production functions over the whole economy because of the *heterogeneity of physical units*. Using values of inputs and outputs would not be valid in principle. Notwithstanding, we must ask why using aggregate values instead of physical units would be wrong.

The similarity between how neoclassical economists confronted the aggregation problem of the production function and how they treated the aggregation problem of demand and supply functions is striking. In both cases, they tried to set conditions under which *the aggregation of the non-aggregatable* can be valid. We have dealt with the case of demand and supply in Volume I, where the famous Sonnenschein-Mantel-Debreu SMD put their condition forward as a solution, which amounted to no aggregation.

Paul Samuelson [1979] expressed profound skepticism regarding the empirical significance of the Cobb-Douglas production function and the associated marginal productivities. Samuelson suspected the parameters derived from its estimation as an outcome of an income distribution identity. Well before Samuelson, other scholars, including *Phelps Brown [1957], Simon and Evy [1963], and Shaikh [1974], expressed the same suspicion. Moreover, Simon [1979] considered the argument so crucial that he discussed it in his Nobel Lecture.*[103]

III. THE NEOCLASSICAL CONCEPT OF CAPITAL

Economists use the term *capital* to indicate two different meanings

1. a sum of money,
2. a collection of machinery.

Contrary to the common belief among neoclassical economists, the two meanings are not equivalent. Expressly, the monetary value of machines does not qualify as a proxy for the amount of machinery used in production. Naturally, neoclassics commit that mistake to avoid the complexity of using heterogeneous units of machines of different types. The behavior of the term *capital* is a hypothetic generic substance capable of producing cars, computers, and jets would not be the same as the behavior of machines of different varieties. In particular, the monetary value of the machines cannot replace the machines themselves in the production process, nor can the amount of machinery used in production (Keen, 2011; 160). Capital as machinery covers machines, buildings, trucks, ships, and other types of transport, such as oil wells, steel works, power stations, etc. Each component comprises numerous other sub-items (Keen, 2011; 171).

In addition to the heterogeneity of capital units, which cannot be proxied by monetary values, we can add Sraffa's observation (1926) that if we group firms into industries, such industries will become interdependent by nature. It is not uncommon to find that *each industry uses the products of other industries* as inputs and provides o*utput usable by other industries*. Therefore, changes in the output of one industry are not independent from other industries.

103 Shaikh [1980] provides one of the most comprehensive treatments of the early discussions of the argument. More recent discussions and extensions are provided by Felipe and McCombie in several citations listed in References.

As neoclassical economics explains wages, the payment to capital represents its marginal productivity. A profit-maximizing firm will hire capital up to the point that its marginal contribution to output equals the cost of hiring it. The cost of hiring it, to the neoclassics, is the interest rate, while its marginal contribution is the rate of profit. The two are equal in equilibrium, so the demand curve for capital slopes downwards – just like all other demand curves – reflecting rising demand for capital as the cost of capital falls.

The sum of all the individual demand curves for capital gives the market demand curve. In contrast, the supply curve – the willingness of households to supply capital, which is often confused for present money – rises as the interest rate increases. The point of intersection of this downward-sloping demand curve with the upward-sloping supply curve yields the equilibrium rate of profit. Such perception can be perplexing, as the definition of input units is neither precise nor unchangeable.

Production is supposed to occur in the short run when we have fixed capital, while labor is variable. The argument put by Sraffa against *diminishing marginal productivity* can also be applied here in a simple and devastating critique, which was first put formally by Bhaduri in 1969. As with the labor market, the 'capital market' is a broadly defined 'industry' where we lump thousands of products into the general rubric of 'capital,' and no industry that does not use some 'capital' as an input. A change in the price of such an input would affect numerous industries and alter income distribution. That is a similar point to that made earlier for the labor market, but it can now be more explicit.

If we notionally divide all people into either workers or capitalists, then total income will be the sum of wages and profits. Profits, in turn, are the product of the rate of profit times the amount of capital hired. Applying this at the level of the single firm gives us the relationship that:

If we now consider changes in output to derive the marginal product of capital), then let us remember that the changes in output have to equal the changes in wages and profits. We can decompose the change in output into the change in profits into two bits: the rate of profit times the change in capital, and capital times the change in the rate of profit. It yields the relationship that Change in income equals

a) change in the wages bill (which we leave aggregated), plus

b) change in profit (which we disaggregate).

Disaggregating changes in profit leads to the statement that:

Change in income equals:

a) change in the wages bill, plus

b) the rate of profit multiplied by the change in capital plus

c) the amount of capital multiplied by the change in the rate of profit

At the level of the individual firm, economists assume that (a) and (c) are zero: a change in the firm's output level caused solely by hiring more capital has no impact on either the real wage or the rate of profit. Thus, we can reduce the relationship to:

Change in income equals

a) change in wages [zero], plus

b) the rate of profit multiplied by the change in capital, plus c) capital multiplied by the change in the rate of profit [zero]

Canceling out the terms we know are zero or one yields the desired relationship:

Change in output due to a change in capital (marginal product) equals the rate of profit.

However, while this is a reasonable approximation at the level of the individual firm, it is not true at the overall economy level. Here, any change in capital will have implications for the wage rate and the rate of profit. Therefore, the aggregate relationship is:

Change in output due to a change in capital (marginal product) equals

a) change in wages due to change in capital [non-zero], plus

b) the rate of profit, plus

c) the amount of capital multiplied by the change in the rate of profit due to the change in capital [non-zero]

BACK TO THE CAMBRIDGE CONTROVERSIES

The Klein-Pu-Zarembka (KPZ) conditions were guaranteed a fate like those of Sonnenschein-Mantel-Debreu (SMD) conditions. Both sets of conditions form an *impossibility theory* of its right. Each sets impossible conditions to justify aggregation. Neoclassical economic theory has *no valid claim to a downward-sloping aggregate demand curve nor an aggregate production function.* The failure of neoclassical economics to justify the aggregation of individual production functions into an economy-wide function did not bring the curtains down on the Cambridge controversies triggered by Joan Robinson. Cohen and Harcourt (2003). The controversies became the latest in a series of still-unresolved controversies over three deep issues. The *first* is *the meaning of a unit of capital* and, consequently, the *measurement of such a unit, which is inevitably required in growth, saving,* and accumulation theories. The *second* comes from the highly valuable but little-appreciated Joan Robinson, who said that equilibrium was not the outcome of an economic process or Robinson's p*aradox*. It contrasts with the neoclassical vision that market Capitalism *produces* a stable equilibrium. Suppose stable equilibrium, as has been shown by repeated economic crises of market Capitalism, is not a reachable reality. In that case, it, therefore, cannot be used to analyze processes of capital accumulation and growth. The *third* issue is how neoclassical ideology, as manifested in their absolute faith in their doctrine and vision, fueled the controversy even though the *neoclassical simple models are not robust*. Based on the above three reasons, Cohen and Harcourt (2003) claim that the Cambridge capital controversies are bound to stay and erupt occasionally.

SAMUELSON'S THREE NEOCLASSICAL PARABLES

1. The neoclassics start with the production function of a single firm producing one commodity by using capital and labor; all expressed in homogenous physical units. They add other typically neoclassical assumptions, including exogenously given resources and technology, constant returns to scale, diminishing marginal productivity, and competitive equilibrium; the single production function exhibits *Samuelson's three parables* (Samuelson, 1962).

2. **First,** the real return on capital, *defined here as the technical properties of the diminishing marginal productivity of capital, determines the interest*

rate[104]. **Second**, *as the quantity of capital increases, its marginal product and, thus, the interest rate decline, and vice versa*. The neoclassical postulated monotonic relation with the interest rate, the capital/output ratio, and sustainable consumption levels per head. **Third**, *they explained the income distribution between laborers and capitalists by relative factor supplies and marginal products.* The price of capital services (the interest rate again), the capital supply, and its marginal productivity in the aggregate determine the price of labor services (the real wage rate), determined by labor relative supply and marginal labor productivity. *The three parables in the neoclassical one-commodity model depend on perceiving capital and labor as homogeneous physical units* to postulate one-way causation: changes in the quantity supplied of any factor lead to inverse price changes.

3. *The central bank's role in administering the interest rate destroys a good part of the above chain. The claim that the interest rate is the price of capital becomes false and incapable of being adopted in decision-making*.

4. Firms apply capital and labor in the production process as *heterogeneous physical units.* Since heterogeneous capital and labor units cannot be measured and aggregated in physical units, the neoclassics resorted to measuring capital in value (Wicksell, 1911, 1934) volume I, p. 149). We can measure the value of capital at its cost of production (involving an element of time) or the present value of the future stream of capital service. As time is involved in both cases, we use a discount rate (the administered interest rate is unsuitable, but there is no alternative. (Our model has a market-determined equity-based rate, the RCDC). Remember now that in this model, financial economists claim that the relative supply of capital determines the interest rate. This *circularity*, or *interdependence*, causes the *Wicksell effects*. We can, therefore, perceive Wicksell price effects as the value of the capital stock being subject to inventory revaluation at a new price when interest rates change. We can also envisage *Wicksell's real effect* when the physical stock of capital changes.

104 We will return to discuss the question of defining the rate of return on capital as the rate of interest.

RESWITCHING AND CAPITAL REVERSING

Due to the Wicksell effects, the neoclassical parables confront the problems of *reswitching* and *capital-reversing*. Reswitching occurs when a production technique (a particular physical capital/labor ratio) appears better at two or more interest rates. At the same time, other techniques have an edge at intermediate rates. At lower values of the interest rate, the cost-minimizing technique "switches" from (a) to (b) and then ("switches") back to (a). The same physical technique is associated with two interest rates, violating the first and second neoclassical parables. With capital-reversing, a lower capital/labor ratio is associated with a lower interest rate. In comparing two steady-state equilibrium positions, one with a lower interest rate than the other, it appears as if capital services have a lower price when capital is *more scarce*. That implies that in the case of capital-reversing, the demand curve for capital does not always slope downward, violating the second and third parables.

5. Why do reswitching and capital-reversing occur? Samuelson (1966) uses the Austrian conception of capital as time. Capital productivity becomes the productivity of time. Consider two techniques of making Usditerranean salt-cured black olives. Assuus is a Turkish farmer residing next to an olive orchard, where he can collect ripe olives for free. He can place ripe olives mixed with salt in sacks, which he hangs on tree branches. When cured, he washes the olives, mixes them with olive oil, and sells them to grocery stores. Subprius olives are cured for one month. They would be slightly bitter and sell for TRY 100 per kg. Prime olives cured for two months would not taste bitter and sell for TRY 150 per kg. Curing olives requires the farmer's labor and time, as he gets both olives and salt for free.

6. The technique (a), 2.5 units of labor make 1 kg of surprise olives in one period, transforming into 1 unit of prime olives in another period. In technique (b), two labor units make 1 unit of subprius olives, which ripens into prime olives in another period. Then, three labor units produce 1 unit of prime olives packed in glass jars.

We can, therefore, say that according to Wicksell effects, when capital goods (or the output) are usually heterogeneous, the interest rate, as considered the return on capital, depends on the exogenous technical properties of capital as



well as the endogenously determined prices like the interest rate. The endogeneity of prices allows for multiple equilibria, thereby complicating the one-way parable explanations of income distribution. Differences in quantities no longer yield unambiguously signed price effects. The power and simplicity of one-commodity models emanate from eliminating these endogenous price effects and measurement problems (Cohen, 1989).

I. DOES PRODUCTIVITY DETERMINE THE REAL WAGE?

Is labor a commodity? Is it an ordinary commodity? Economic theory puts income and tastes as the main determinants of the demand for ordinary commodities whose supply is determined by the costs of production. In contrast, the demand for and supply of labor is treated differently. Ordinary commodities are either consuusd, if perishable, or their services are consuusd when durable.

In contrast, Firms use labor services instead to produce commodities. While commodities are produced for profit (and other purposes), households do not produce labor in factories according to demand.

Their decisions to hire workers to produce output for sale underline producers' demand for labor by their decisions to hire workers to produce output for sale. Meanwhile, based on their preferences for or tradeoffs between income and leisure, their decision of how long to work underlines consumers' labor supply. The insistence of the neoclassics upon treating labor in a market ruled by the Marshallian scissors of demand and supply faces many conceptual and practical problems.

II. MARGINALISTS TREATMENT OF LABOR

The neoclassical marginalists logic concludes that a worker would be hired only if he/she contributes to the firm's profit. Is hired; if not, the firm stops hiring. In the fanciful world of diminishing returns, hiring would have to eventually stop. In a price-takers world, or perfect competition, where each firm is infinitesimally small, the firm can hire any number of laborers at the current wage. With diminishing returns, hiring continues until the wage rate is equal to the marginal productivity of labor. The additional output resulting from additional workers, would be sold at the current price. The contribution of the last hired worker to the firm's revenue is equal to the marginal value product, or the marginal *physical* product of labor multiplied by the product price.

This, as viewed by the neoclassics, explains why some workers are paid higher wages than others. As the reader would guess, because the marginal revenue product of the worker is higher. Income disparities are finally interpreted as due purely usritocratic reasons against which no one could argue. Such a result is supported by the intersection between the aggregate demand and the aggregate supply of labor.

III. THE NEOCLASSICAL LABOR MARKET

The neoclassics aggregate their individual firms' demand curves for labor to form this industry's demand curve for labor. As workers would be employed in different industries to produce a broad spectrum of products, the industry demand curve for labor would be a small part of the economy-wide demand curve.

Similarly, the neoclassics sum individual firms' supply curves for each industry into an industry aggregate supply curve, which in turn, would be aggregated for the whole economy into an aggregate supply curve for labor.

The individual's choice between work and leisure is based on Bentham's calculus of hedonism, by which work is considered a "pain or a bad" while leisure is considered a "pleasure." Indifference curves are used to represent the choice between potential income as one good, and potential leisure time as the other. A budget line is added to represents the hourly wage rate. One end of the budget line is fixed at the maximum amount of leisure in a day, which is twenty-four hours. Its slope represents the hourly wage.

The individual supply curve of labor is derived by figuring out the amount of leisure and income that a consuusr will *consuus* at various wage rates.

The neoclassics sum up the individual supply curves of all workers to obtain the market supply curve. Finally, the neoclassical theory of labor arrives at a downward-sloping demand curve and an upward-sloping supply curve. Finally, the Marshallian scissors for the labor market is complete, producing the equilibrium real wage rate. The 'Totem of the Micro' is once again held erected.

The policy implication of the neoclassical model of the labor market is twofold. First, it is futile to impose a minimum wage legislation, as legislating a minimum wage, would inevitably result in unemployusnt. At any wage above



the equilibrium real wage the supply of labor hours would exceed the demand, leading the real wage to exceed the marginal value product of labor. The excess supply of labor represents involuntary unemployusnt.

The second policy implication of the neoclassical model of labor market is that demand manageusnt policies, and all attempts to interfere with the free working of the market uschanism would be futile. Attempts to stimulate aggregate demand through *demand manageusnt usasures* to increase the level of employment would fail. Since such actions could not change the marginal physical product of labor, they will usrely cause inflation, without affecting physical productivity.

According to the neoclassics, both income distribution and the rate of unemployusnt set by the market would be fair, as they will reflect individual productivity on the one hand, and the labor–leisure preferences of individuals on the other. In one phrase: the income distribution resulting from the market uschanism is usritocratic.

IV. IS INCOME DISTRIBUTION MERITOCRATIC?

A. Backward-Bending Supply Curves

According to the neoclassical theory of labor supply, based on hedonist calculus, the labor supply curve could be back-bending. A higher wage rate allows the laborer to earn the same wage income while enjoying more leisure and working *fewer* hours. The labor supply curve bends backward, indicating less labor supply as the wage rate rises. The impact of a higher wage rate comprises income and substitution effects. The substitution effect implies that at a higher wage rate, the cost of leisure increases, leading to more work. The income effect means that with a higher wage, a laborer can earn a higher income and work fewer hours.

Hicks offered his Hicksian compensated demand curve to settle the conflict between both effects in the case of the individual demand curve. Such maneuvering would not be possible in the case of labor. While one can change the income of the laborer by moving the income line up and down in a parallel fashion, moving the income line up or down also means adding or subtracting hours from a day, which is impossible. We cannot, therefore, split The impact of an increase in the wage rate into its substitution and income effects. In oth-

er words, the claimed result of the substitution effect that would increase the hours worked is irrelevant, as there are only twenty-four hours a day to divide between work and leisure.

Summing individual supply curves, each of which can take any shape whatsoever, could have any shape at all, would produce an aggregate supply curve that is also backbending. Ignoring the impossibility of fulfilling the SMD aggregation condition and assuming that we have a downward-sloped demand curve, we obtain multiple intersections of supply and demand. Multiple equilibrium wages indicate that the aggregate amount of labor that workers wish to supply at a specific wage rate cannot be unambiguously identified[105]. In other words, the neoclassical theory of labor fails to prove that employment is determined by supply and demand. The presence of involuntary unemployusnt cannot therefore be denied. A lower wage rate would not guarantee higher employment.

The neoclassics recognize the possibility of a backward-bending supply curve of labor before assuming it away, without theoretical or empirical justifications. The fact of the matter is that the neoclassical claim that minimum wage legislation leads to unemployusnt, or that demand manageusnt policies can't alter the rate of unemployusnt, depends in good part on the aggregate supply curve for labor being upward sloping. Worse still, if both the aggregate demand and supply curves for labor both sloped downwards, the neoclassical equilibrium could be unstable. A move of the wage rate below equilibrium leads to excess supply or runaway unemployusnt. A minimum wage could set a floor to this process and introduce an eleusnt of stability in the labor market while decreasing unemployusnt.

THE CONCEPT OF PERFECT COMPETITION

The claim to usritocratic income distribution, based on the claim that workers receive the value of their marginal product, depends upon the assumption that perfect competition rules in both the product and labor markets. I have explained in voluus I that the concept of perfect competition is based on confusing infinitessmal changes with zero. If demanders and suppliers were so small, the contribution of each would be infinitessmally small. Each singly

105 The situation becomes even worse, when we combine a demand curve with indifinte slope, with a backbending supply curve. The number of equilibria becomes larger and the identification of the equilibrium wage rate becomes even less precise.



would not be able to influence the price. However, does the same apply to a large number of demanders and suppliers? If each person of the 80 million citizens in Türkiye decided to increase his/her demand for olive oil by one kilogram per year, an infinitesimal quantity indeed, it would amount to Kg 80 million per year, which is a considerable amount to add to aggregate demand. The neoclassics, when they aggregated infinitessmal quantities over the whole market or economy, they assuusd each not to be so small, but to be zero. This is an apparent mathematical misunderstanding. I can therefore safely dismiss the concept of perfect competition.

If I were to accept our own alternative model, presented in Chapters X and XII in Voluus I, which is based on price-search behavior, both product and labor markets would not be perfectly competitive. Consequently, our alternative economic theory predicts that workers will not, in general, receive the value of their marginal contribution to production, conceding that both labor productivity and the relative bargaining power would together play a role in determining the distribution of income among the factors of production.

In our price-search model, firms have to reduce their selling price to sell more output, in addition to several other tactics that include establishusnt of new branches, providing more perks to custousrs and advertising. For such firms, the marginal revenue is below the price. The marginal revenue product of labor is equal to the marginal revenue multiplied by marginal productivity. Obviously, this falls below the marginal value product under the unrealistic assumption of perfect competition. Contrary to the neoclassical model, our theory would be in favor of unionization. As a way of strengthening the bargaining power of labor, unionization could help laborers bring their wage rate closer their marginal value product. Our model should be different from the case of as a single seller of labor, or monopsony. The bargaining power of unionized labor would be more capable of balancing that of a price searching firm, allowing higher wages without reaching the extreus position of monopsonists. The level of wages would be set by balancing out the bargaining power of the two sides.

LABOR AGGREGATION

If we were to aggregate the supply of labor over the whole economy, and if we were to accept the neoclassical claim that the supply curve of labor is its

marginal value product, which is equal to the price multiplied by the marginal product, then changes in labor supply would involve price changes and consequently have distributional effects, reflecting on the demand for labor. In other words, as Sraffa (1926) pointed out, labor demand and supply curves would not be independent.

The critique was that, with a broad definition of an industry, it is not feasible to draw independent demand and supply curves since any change in supply will have income distributional effects, which will alter demand. The neoclassical labor market model, having been corrected to count for such distributional effects, would have a different 'demand curve' for labor at every point along a labor supply curve. Inevitably, this implies multiple equilibria. The neoclassics would be surprised as their model would produce cases they would consider awkward, in which a higher wage rate implies a higher level of employment.

I. LABOR AND DECISION-MAKING

The neoclassical labor-market model gives the wrong impression that a worker can freely decide between work and leisure. That raises some basic questions. First, we cannot singly consume leisure. It can only be enjoyed jointly with other commodities (leisure complements), such as resort vacations. The neoclassical perception is that workers will accept a lower income when the wage rate falls, and engaging in leisure is impossible. Lower income means less availability of the commodities consumed jointly with leisure. In order to be able to acquire such commodities with leisure, workers must have another source of income, like capital or their means of production.

Workers with sufficient income to suppleusnt their leisure with complimentary commodities can reject working at lower wages. An example would be a teacher who can refuse to work at a low wage while relying on giving private lessons or tutoring. Some economists can refuse low wages and work as private consultants. The availability of human capital to such workers is what they rely upon when they reject lower wages. Most workers without capital resources may face bankruptcy or starvation by turning down lower wages. Another alternative is a social security system allowing workers to transition between work and leisure.

II. BANKERS AS A THIRD PARTY AND DEBT

Suppose we move from the neoclassical non-monetary model to a more realistic model with money. In such an economy, people use debt to finance transactions. Even money itself is created and allocated through debt[106]. Bankers' incomes depend on the level of debt, and if a Ponzi scheme develops[107], then the level of debt can escalate dramatically. That transfers income from *workers and capitalists* to bankers to the detriment of society since it also typically results in a lower level of real investment.

This issue might seem arcane now, but it has severe implications during a financial crisis, like the one experienced by market Capitalism in 2008. The neoclassics, in their efforts to handle the crisis, start behaving like their Keynesian opponents for some time but revert to their old habits. They infer from high unemployment that wages are too high and must become lower to reduce unemployment. Lowering the wage rate exacerbates debt deflation. By driving down the price level, the debt burden in real terms becomes heavier. Instead of lowering wages, they should think of lowering debt. We can only achieve that by *increasing* wages. Higher money wages during a depression, which would run against the neoclassics' advice, is more effective in causing inflation than printing money, ultimately reducing the real debt burden.

III. HOW THE NEOCLASSICS DISMISSED INCOME DISTRIBUTION

Neoclassical economists are usually fervently opposed to government-implemented redistribution based on their belief that the market mechanism would eventually produce a meritocratic income distribution, as explained but discredited above. Nonetheless, the neoclassical theory of demand and supply can be valid if, and only if, the initial conditions include a distribution of income that equates to the marginal utility of the last unit of wealth owned by everyone (Samuelson 1956: 21). The neoclassics assume that such an initial income distribution which a *benevolent dictator* implements (Mas-Colell

106 The monetary base is issued by the central bank. It is loaded to government and banks. It ends up in banks. Under the system of fractional reserves, banks issue more "credit money" to borrowers to finance their transactions. Since the financial market is a gambling casino with gambling instruments traded, such trading gets a share in finance through direct loans at purchasing at the margin. Finance of gambling transactions is sometimes termed Polnzi Scheme.

107 For financing trading of gambling financial instruments, like derivatives.

et al. 1995: 117). Such an approach reflects four contradictions. First, the neoclassics must have had an apparent doubt about whether the initial income redistribution should be biased towards a particular group. The market mechanism is incapable of correcting it. Second, their denial of the importance of an equitable income distribution is inconsistent with their initial equitable income distribution requirement. Third, their initial condition reflects some unexplainable preference for totalitarian political systems[108]. Starting with a dictatorial regime will not necessarily end with democracy. Egypt started with a military regime in 1952, which was impossible to dislodge. Dictatorships build an interest group that collects enormous rent that is unlikely to give up. Fourth, neoclassical economists postulate that market Capitalism maximizes social welfare. Meanwhile, it concludes that this can occur if a benevolent dictator institutes an optimal distribution of wealth that presumably maximizes social welfare before the start of market operations.

This awkward neoclassical reasoning in the Journal of Economic Literature under *Social indifference curves* (Samuelson 1956) reflects one of the negative images of neoclassical economics.

In general, neoclassical economists stand against *market interventions* including raising the wages of poor workers, while blatantly justifying enormous salaries for top executives on the basis their claim that the market uschanism establishes usritocratic distribution, ignoring that the widening disparity between incomes within market Capitalism reflects power rather than usrit. Unsound neoclassical economics involves neoclassical economists into proposing harmful and even destructive economic policies.

IV. SRAFFA'S USASUREUSNT OF CAPITAL

According to the neoclassical theory of income distribution, under diminishing returns, factors get paid their marginal value product. That raises the issue of defining the unit of capital and labor. Labor can be measured by standardized labor hours, using productivity as weights to sum up heterogeneous labor hours to count for higher productivity. We can do the same thing with land by adjusting the area of land by some weight reflecting its fertility or locational advantage. That cannot be used to aggregate different types of heterogeneous machines. Neoclassical economists aggregate machines using their monetary

108 Any system that justifies dictatorship is hardly worth of human intellectual support.

values[109]. That involves a large amount of circularity. The price of a machine is calculated as the discounted values of its future profits. Meanwhile, the machine's profit is taken as the profit ratio to price. While a unit of labor is one hour, and we measure the unit of land in square meters, the unit of capital is measured as unity (one machine).

Sraffa proposed an ingenious and logically sound method of aggregation: to reduce capital to dated inputs of labor. The previous linear relationship between the wage and the rate of profit was an essential element in his proposal.

According to Sraffa, capital units are produced by other units of capital and labor. Sraffa assumes an economy that has been in equilibrium for an indefinite past, somehing that sounds peculiar for a Cambridge economist who would supposedly deny the existence of equilibrium. Under this assumption, he proposes to measure a machine's value as equal to *the value of the machines used to produce it, plus the value of the labor involved times a rate of profit to reflect the passage of time*. Assuming that the period of production is equal to one year, then if the *equilibrium* rate of profit is 5 percent, the value of a machine's current value would be 1.05 times the value of the inputs (machines plus labor) used last year.

Repeating this process, i.e., reducing machinery inputs to the machinery and labor used to produce them successively each year, we obtain the labor component and a declining – *but never vanishing* – residual of machinery inputs. Each labor input is weighted by the wage and by $(1+p)^n$, where (p) is the rate of profit and (n) is equal to the number of years that have passed since we used the input.

While we do not accept Sraffa's ideas of measuring capital immediately, we must acknowledge its advantages.

First, Sraffa proposes a radically different way of thinking about capital as a factor of production. Neoclassical economists postulated that the rate of profit would decline with the amount of capital used in production, as they considered capital, like labor, to be subject to diminishing returns. Sraffa's usthod of

109 This implying a weighting system that assigns unity to each machine regardless of its type or function and giving it a weight equal to its price. As defined by the neoclassics, price is equal to the discounted values of its future income.

usasuring capital invalidates the allegedly uniform relationship between the rate of profit and the amount of capital used. In addition, it reverses the direction of causation between capital and profit, that has been claiusd by the neoclassics. According to Sraffa, the usasured amount of capital actually depended on the rate of profit and not the opposite as the neoclassics claiusd. Accepting Sraffa's measure of capital would invalidate the claim that the rate of profit is determined by the marginal productivity of capital. The usritocratic theory of income distribution collapses with respect to capital as it had collapsed with respect to labor. Reversing the relationship between capital and profit would have further effects on the theory of production. A rising rate of profit might for a while make one usthod of producing a commodity cheaper than alternatives, but then at a still higher rate of profit, it might make it more expensive.

Sraffa uses the example of wine[110] to illustrate his theory. Since wine is not considered *a good* by Muslims[111], I will use the example of aged (salt-cured) versus instant (lye-cured) olives[112]. The prices of two commodities (aged and instant Turkish olives) start out equal when the rate of profit is zero. As the rate of profit rises, the instant olives rise in price. As the rate of profit rises further, the aged olives becomes the more expensive. Instant olives have relatively more 'direct labor' applied to its production in the recent past.

Meanwhile, aged olives have more direct labor applied in the far distant past. The latter type of olives is relatively more aged for better taste and flavor. Aged olives are more *time intensive* (or labor intensive as farmers tend the olives

110 Alcohol is prohibited in Islam, based on the fact that its uncertain benefits exceed its certain harms. The claim that red wine benefits for containing resveratrol is countered by the fact that such substance exists in peanuts, pistachios, grapes, blueberries, cranberries, cocoa and dark chocolate. In addition, its effects on humans are still being researched. Other substances and actions, like smoking, gambling, vaping, etc. are prohibited by the same rule as alcohol.

111 Under Shari'ah rules, a bottle of liquor owned by a non-Muslim is a legitimate merchandize for non-Muslims. Meanwhile, it is not considered legitimate and can be subject to confiscation when owned by Muslims.

112 Olives in nature have a bitter taste. They can be cured by salt into Turkish-style, pleasant-tasting (Turkish) olives, which takes from three to six months. The longer are olives left in salt, the better they taste. Prime Turkish olives which have no bitter taste while being flavorful take the longest time in curing. Olives can also be cured using lye (sodium hydroxide) into bland-tasting olives, which takes about 4 days. Salt cured Turkish-style olives are considered a delicacy, while the lye-cured instant olives are less appreciated. We will compare the price of aged olives with the price of chemically cured or instant olives.



over 3-6 months by olive curers). Production of instant olives would eventually decline or even cease, since it would be uncompetitive with aged olive.

A further increase in the rate of profit, compounding the rate of profit on the aged olives makes it more expensive than its instant competitor. Mass production would take over again – I would switch back to the apparently more 'capital intensive' means of production of instant olives. When the profit rate reaches its maximum value and wages fall to zero, the cost of aged olives falls to simply the cost of raw olives, and the price of the two types of olives could again coincide.

Sraffa's building blocks demonstrate that a usthod of production could appear superior at a zero profit rate. The same usthod becomes relatively less attractive at a higher profit rate. Then, it regains its superiority at an even higher profit rate. Such *reswitching* nullifies the claim that the rate of return on capital represented the marginal value product of capital.

If switching and reswitching of the profitability were to be caused by parallel moveusnts in the marginal product of capital, this would instantly indicate the absence of well-behaved demand and supply functions. Most seriously, demand and supply functions would have undefined slopes, with no unique equilibrium position. The culprit is the fanciful perception of capital as a homogeneous substance, as well as the associated belief that capital intensity depends on the rate of profit. If the rate of profit were low, the labor embodied in one kilogram of aged olives would become of little consequence, and the process of aging olives would appear as labor intensive. But if the rate of profit were high, compounding it makes aged olives of great value made through a capital intensive process. The final conclusion is that the quantity of capital (usasured as embodied labor value) depends upon the rate of profit and *not* the other way around.

The processes of production generate many opportunities for factor returns to move one way and then the other as factor intensities rise, with no consistent relationship between factor productivity and factor incomes. In reality, income distribution is a social phenousnon that is largely independent of the system of production. Only if the ratio of capital to output was the same in all industries, I can expect income distribution to be founded on factor productivities and find that Marx's labor theory of value hold.

V. THE NEOCLASSICAL THEORY OF DISTRIBUTION

I have just argued above against the claim of the received doctrine that the rate of profit reflected the marginal productivity of capital is not a correct theoretical conclusion. I found instead that it reflected the relative power of social groups, the technical capabilities of factories embodied in their production methods, and how successful recent flows of investment have been.

Despite that, neoclassical economic theory continues to use the concepts we have shown above as invalid. In particular, the theory still treats capital as a formless mass capable of moving from any production activity to another at zero cost while consistently earning its marginal productivity. This mysterious material economists can aggregate by using its price times quantity[113].

CONVERGENCE TO A MACROECONOMIC THEORY

Macroeconomics witnessed serious battles during the seventies of the last century that were perceived by some (Blanchard, 2009) to have happened between three distinctive teams in the field: the new-classical, whom we prefer to call neoclassics, the new-Keynesians, and the new-growth theorists. Islamic economics had not yet sufficiently matured to participate in the intellectual battle. It is time to see the macroeconomic battlefield in the twenty-first century, with Islamic economics fielding its players, too.

The theme is that, after the explosion of the field in the seventies of the last century, Blanchard (2009) notes enormous progress to have followed and substantial convergence. After being a battlefield, with economists splitting in different directions, ignoring each other, or engaging in bitter fights and controversies, a broadly shared vision on fluctuations and of methodology has emerged. Blanchard admits that some knowledge has been destroyed after suffering from extremism, herding, and fashion, which he considers not deadly.

113 The way to visualize such amorphous material, named capital, is to imagine a three-dimensional printer, equipped with different materials used in manufacturing. The printer is of a size that is large enough to produce almost anything. A printing program would be capable of directing such printer to turn out, cars, planes, houses, etc. the programmed and fully equipped printer with manufacturing material matches the neoclassical concept of capital. Realistically, it can be used to produce simple products, like plastic toys. However, going beyond this would be a piece of science fiction.



The Locas-Sargent neoclassic attack on the Keynesian revolution was severe, coupled with their prediction of a lengthy reconstruction process. Blanchard argues that reconstruction will start with reopening fundamental issues, viewed since the thirties as "closed," and reevaluating every aspect of the institutional framework within which monetary and fiscal policy is formulated in the Western countries. From the vantage point of Islamic economics, we see that *Western economists have done almost nothing on the institutional side.* The institutional monetary and financial structure has remained intact. Even the Chicago plan that stirred water in the thirties of the last century has been ignored before its final burial. Any constructive thinking about institutional change now passes to Islamic economics. With the exception of the institutional side, for the next fifteen years or so, the field exploded. The three groups dominating the field, pursued three different agenda. In addition, Islamic economics, not yet recognized by the dominant journals, have stepped forward to build its analytical school and to offer an alternative that is a mix of a new heterodox theory and a novel institutional structure. No dialogue is expected soon with Islamic economics unless a severe shift takes place.

The neoclassicals embraced the Lucas-Sargent call for reconstruction. Soon, however, the *moderates* gave way to the *extremists*, and the research agenda became even more extreme. Under Prescott's leadership, the neoclassics ignored nominal rigidities, imperfect information, money, and the Phillips curve, removing them from their basic model while focusing on the stochastic properties of the Ramsey model (equivalently, a representative agent Arrow-Debreu economy), finally known as the *Real Business Cycle model*, or RBC. The Prescott's group insisted upon explicit micro-foundations (utility and profit maximization; general equilibrium). They explored as far as they could go with no or few imperfections.

The new Keynesians gave up on revolution and embraced reform. That reflects their new belief that the previous vision of macroeconomics was right. They accepted reductionism. Their research program examined, theoretically and empirically, several issues comprising the nature and the reality of various imperfections, from nominal rigidities to effciency wages to credit market constraints. They used partial equilibrium models, with occasionally trivial general equilibrium closure: It seemed too soon to embody each one in a standard general equilibrium structure.

The new-growth theorists abandoned the field of fluctuations, following Lucas' claim that thinking about growth leaves no room to think about something else. Growth theorists focused on determinants of growth rather than fluctuations and their small welfare implications. They used the *Ramsey growth model* as their neoclassical workhorse. They have done much work examining the implications of various imperfections, from the public good nature of knowledge and the nature of R&D to externalities in capital accumulation.

Relations between the three groups—or, more specifically, the first two, called by Hall *fresh water* and *salt water* respectively[114] (for the geographic location of

114 In economics, the freshwater school (or sometimes sweetwater school) comprises US-based macroeconomists who, in the early 1970s, challenged the prevailing consensus in macroeconomics research. A key element of their approach was the argument that macroeconomics had to be dynamic and based on how individuals and institutions interact in markets and make decisions under uncertainty.[1]

This new approach was centered in the faculties of the University of Chicago, Carnegie Mellon University, Cornell University, Northwestern University, the University of Minnesota, the University of Wisconsin-Madison and the University of Rochester. They were called the "freshwater school" because Chicago, Pittsburgh, Ithaca, Minneapolis, Madison, Rochester etc. are close to the North American Great Lakes.[1]

The established methodological approach to macroeconomic research was primarily defended by economists at the universities and other institutions near the east and west coasts of the United States. These included the University of California, Berkeley, University of California, Los Angeles, Brown University, Duke University, Harvard University, MIT, University of Pennsylvania, Princeton University, Columbia University, and Yale University. They were, therefore, often called "saltwater schools".

The terms "freshwater" and "saltwater" were first used by economists by Robert E. Hall in 1976 to contrast the views of these two groups on macroeconomic research.[1] More than anything else, it was a methodological disagreement about to what extent researchers should employ the theory of economic decision-making and how individuals and firms interact in markets when striving to account for aggregate ("macroeconomic") phenomena.

In many respects, the saltwater-freshwater dichotomy no longer holds true.[1][2][3] In his overview article from 2006, Greg Mankiw writes:

An old adage holds that science progresses funeral by funeral. Today, with the benefits of longer life expectancy, it would be more accurate (if less vivid) to say that science progresses retirement by retirement. In macroeconomics, as the older generation of protagonists has retired or neared retirement, it has been replaced by a younger generation of macroeconomists who have adopted a culture of greater civility. At the same time, a new consensus has emerged about the best way to understand economic fluctuations. [...] Like the neoclassical-Keynesian synthesis of an earlier generation, the new synthesis attempts to merge the strengths of the competing approaches that preceded it.

The differences in methodological approach to answering aggregate economic questions lead to different policy implications.

One of the main differences between so-called "freshwater economics" and "saltwater economics" were in their findings on the effects of and relative importance of structural and discretionary policies.

most of the new-classicals and most of the new-Keynesians)—were tense, and often unpleasant. The first accused the second of being wrong economists, clinging to obsolete beliefs and discredited theories. The second accused the first of ignoring basic facts and, in pursuing a beautiful but irrelevant model, of falling prey to a "scientific illusion."[115] One could reasonably despair of the future of macro (and, indeed, some of us came close (Blanchard 1992).

The new tools developed by the new classes came to dominate. The facts emphasized by *the new Keynesians forced imperfections back in the benchmark model*. A broadly shared vision has emerged.

Blanchard (2009) admits that shifts in the aggregate demand for goods affect output substantially more than we would expect in a perfectly competitive economy. More optimistic consumers buy more goods, and the increase in demand leads to more output and more employment. He claims that changes in the federal funds rate have major effects on real asset prices, from bond to stock prices, and, in turn, on activity. Our fundamental theory does not find a traceable relationship between interest rates and economic activities.

ddddddddddddddddddddddddddddddddddd that the government has an important role to play in order to actively and discretionarily stabilize the economy over the business cycle through striving to fine-tune "aggregate demand".

Researchers associated with the "freshwater school" found that government economic policies are of utmost importance for both the economy's abilities to respond to shocks and for its long-term potential to provide welfare to its citizens. These economic policies are the rules and structure of the economy. They might be how markets are regulated, what government insurance programs are provided, the tax system, and the degree of redistribution, etc. Most researchers that have been associated with the "freshwater school" have, however, found it hard to identify mechanisms through which it is possible for governments to actively stabilize the economy through discretionary changes in aggregate public spending.

Another important difference between so-called "freshwater economics" and "saltwater economics" is what is required from an economic model and, in particular, about the internal consistency of the economic model.

"Saltwater economists" generally insist less on internal model consistency than freshwater economists. They typically find "examples of irrational behavior interesting and important"[6]. Like behavioral psychologists, they tend to be interested in situations where individuals and groups behave seemingly rationally.

In contrast, freshwater economists have in general, been interested in accounting for the behavior of large groups of people interacting in markets and believe that understanding market failures requires framing problems that way.

115 See the debate between Prescott and Summers (1986).

Blanchard further (2009) admits that explaining the effects of aggregate demand shifts within a perfectly competitive flexible-price macro model *is not easy*. In such a model, we find it more consistent that more optimistic consumers consume more and work less, not the opposite. Monetary policy should be reflected primarily in commodity prices, not through a strong reaction of Wall Street to an unexpected minor change in the federal funds rate.

Attempts to explain the aggregate demand effects through exotic preferences or exotic segmented-market effects of open market operations while maintaining the assumption of perfectly competitive markets and flexible prices sound contradictory and unconvincing[116]. That has led even the most obstinate neoclassical to explore the possibility that nominal rigidities matter. With nominal rigidities, movements in nominal money lead to movements in real money, further leading to movements in demand for commodities and output. Under nominal rigidities, movements in aggregate demand are not automatically offset by movements in the interest rate and thus can translate into movements in output.

One of the hot topics of exciting macroeconomics research is the study of nominal price and wage setting. It has newly available micro data sets on prices, either from CPI databases or large distributors themselves (see the survey by Ma´ckowiak and Susts (2008)). It faces delicate aggregation issues: Depending on the specific way we set prices, individual stickiness may build up or instead disappear as we look at more aggregate price indexes. The cast of characters involved in that research nicely makes the point that the old freshwater/saltwater distinction has mainly become irrelevant: While research on the topic started with new Keynesians, an article by Golosov and Lucas (2007) essentially triggered recent research itself building on earlier work on aggregation of state-dependent rules by Caplin and by Caballero, among others.

THE NEOCLASSICAL CONSENSUS

The new consensus, according to Blinder (1997), is the algebraic (neoclassical counterrevolutionary interpretation of Keynes's (1936) General Theory by Hicks's (1937) IS-LM framework. Economists have Considerably devoted less attention to James Meade's (1937) contemporaneous attempt to formal-

116 Market segmentation is unlikely under perfect information.



ize the General Theory model, although it possesses some attractive features that merit highlighting. A notable exception is the discussion in MacKay and Waud (1975). They detected strong similarities between their explication of a two-sector Keynesian system and Meade's earlier work. However, MacKay and Waud's (1975) observations are the exception. Generally, Meade's pioneering formalization has fallen into undeserved neglect. Even writers who have debated whether we should enterpret the the General Theory as a one- or two-sector construction (Leijonhufvud, 1968; Froyen, 1976) have *bypassed Meade's contribution*.

The neoclassical attachment to reductionism is evident as it includes the central bank's forward-looking optimization behavior. Monetary policy makers must diagnose the nature of shocks affecting the economy and forecast their impact. In sections 1 and 2, the fundamental graphical analysis for doing this in the IS-PC-MR model set this out. The so-called Taylor rule summarizes how central banks adjust the interest rate in response to current information about inflation and output. A significant pre-occupation in monetary macroeconomics in the past twenty years has been the design of a policy framework to ensure that policy is "time consistent," i.e., that the policymaker will not have the incentive to deviate from the optimal policy after private sector agents have made commitments based on the assumption that the central bank will stick to its rule. We will illustrate the logic of the time inconsistency problem and the associated problem of inflation bias later.

To introduce the graphical *IS-PC-MR* model, We are using a standard *IS* curve without a forward-looking component and a simple 'backward-looking' Phillips curve. I then explain how forward-looking household behavior alters the traditional interpretation of the *IS* curve by including expected future excess demand in the *IS* equation (e.g., McCallum and Nelson, 1999). We show how a forward-looking *IS* curve, when combined with a monetary policy rule, dampens the economy's response to shocks. We will discuss agent optimization in the Phillips curve later.

In contrast with the central bank and household behavior, the Phillips curve remains the subject of sharp disagreements in the literature. The reason is that the neoclassics found it challenging to explain why inflation has been consistent with optimizing agents, even in the presence of sticky prices (e.g.,

Ball, 1994; Fuhrer and Moore, 1995; Nelson, 1998 and Estrella and Fuhrer, 2002). Walsh summarizes the nature of the inflation persistence issue: "In response to serially uncorrelated monetary policy shocks (usasured by money growth rates or interest rate movements), the response of inflation appears to follow a highly serially correlated pattern." (2003, p.223).

Staiger, Stock, and Watson (1997), Mankiw (2001), and Eller and Gordon (2003) provide some evaluation and interpretation of the evidence. There are two main contending theories of the Phillips curve based on optimizing behavior: the so-called New Keynesian Phillips curve (Clarida et al., 1999), where sticky prices constrain price-setters, and the Sticky Information Phillips curve (Mankiw and Reis, 2002), where sticky information constrained them. We will present some graphical analysis and simplified mathematics later to explain both. We will compare the model when modified using a forward-looking IS curve or a rational expectations-based Phillips curve with price or information stickiness and the baseline IS-PC-MR model with the model.

THE IS CURVE

The *IS* curve is a functional relationship between real output and the *real* interest rate derived from the behavioral determinants of total spending, such as income, wealth, interest rates, the government budget, and so on. Here, however, we immediately encounter a bit of an embarrassment. Various theories, some of which have seemingly sturdy microeconomic foundations, point to *fixed investment in business as the principal source of interest elasticity of spending*. However, *the empirical evidence on the sensitivity of investment to interest rates is, at best, equivocal*. It is hardly surprising. Our fundamental theory of Islamic economics finds the relationship between the (central bank) administered interest rate and any uncertain economic fundamentals.

It brings up the conclusions of our Fundausntal Theory of Islamic Economics. The popular theories of interest rates would have us believe that demand for and the supply of either money or liquidity in an intertemporal choice based on a preference set and an income constraint somehow determined the interest rate. The alleged equilibrium rate would be equal to a rate of time preference that is possible to calculate as a weighted average of the rates of time preference for all commodities by all individuals. Our fundamental theory finds the link between time preference and interest rate missing. The missing



link is somehow disguised by the central bank imposing a rate of interest as an administered rate.

Hicks (1937) and Usade (1937) postulate a functional relationship between saving/investment interaction and the interest rate along the IS curve and between the interest rate and the demand for/supply of money along the LM curve. Having accepted the claim to the missing link, such curves would become horizontal lines, and the interpretation of Keynes' model evaporates. It means that the process of equilibrating the demand for and the supply of money expressed by the LM curve is non-existent. Similarly, equating savings and investment along the IS curve is unascertainable.

Nonetheless, historical observations and *some* empirical research support the notion that higher real interest rates lead to lower spending. A negatively sloped *IS* curve is central to the Federal Reserve's thinking about monetary policy. Thus, there is a paradox: while the interest-rate sensitivity of business investment spending is subject to doubt, the *IS* relationship between aggregate demand and interest rates appears to be there. This paradox is a significant motivation for the outpouring of research on the so-called *credit channel* for monetary policy. In practice, however, the slope of the *IS* curve may have more to do with housebuilding and consumer durables (especially automobiles) than with business investment. In a word, decades after Hicks, *the IS curve still needs more work*.

Our interpretation of this dilemma is the general impression created by the central bank administering the interest rate. As explained above, although administering the interest rate disconnects it from major economic fundamentals, its mere existence creates a hiatus between present and future values. That corrupts the decision-making process, as some would consider the movements of the administered rate of interest indicative of something that deserves consideration when setting up present versus future expenditures. Hence, we can imagine a hazily defined credit channel. However, the transmission mechanism is neither well-defined nor specific. *Policies based on the interest rate would, therefore, have unpredictable results.*

THE LM CURVE

Textbook descriptions typically pair the *downward-sloping IS curve* with a*n upward-sloping LM curve* relating real output to the *nominal* interest rate. Un-

fortunately, there is a solid professional consensus that *the once-reliable LM curve fell prey years ago to ferocious instabilities in both money demand and money supply*, the product of rapid and ongoing financial innovation. Hence, *the LM curve no longer plays any role in serious policy analysis*, supplanted by the assumption that the central bank controls the short-term nominal interest rate. It is high time I stopped relying on unproven claims.

Notice, however, that while the central bank controls the nominal short-term interest rate, the real long-term rate presumably matters most for spending. The distinctions between *long and short rates* and between *real and nominal rates* are crucial both in principle and in practice. We will return to them later.

AGGREGATE DEMAND AND AGGREGATE SUPPLY

Ignoring these distinctions for the moment, specifying the interest rate as a policy instrument turns the *IS* curve into an aggregate demand curve. Many textbook expositions then add an aggregate supply curve to the picture and portray a short-run macroeconomic equilibrium defined by their intersection. The price level is presumed to adjust rapidly to equate aggregate demand and supply while wages are rigid. They provide *no underlying mechanism* is usually provided for such equilibrium. It would be difficult and may be counterintuitive to specify the precise channels through which such an equilibrium takes place to balance demand and supply in all markets simultaneously.

This sharp dichotomy between rapid *price adjustment* and sluggish *wage adjustment* has no empirical basis. *Both prices and wages appear to be extremely sticky*. Furthermore, practical models used for short-run policy analysis have no upward-sloping aggregate supply function. They do not solve for a market-clearing price level. Wages and prices are predetermined primarily in the short run. Dynamic adjustment equations (*Phillips curve*) describe their evolution over time. We can configure Output by plugging the predetermined price and (if relevant) wage levels into the aggregate demand equation.

This set of *core beliefs* begs a central question in macroeconomic theory: *why are wages and prices so sticky*? Such a question brings up a state of price rigidity that contradicts the assumption of perfect competition. No answer has yet to gain consensus. Suppose we were to answer this while ignoring the prevalent doctrine. In that case, we must admit that the institutional arrangements



of market capitalism is far from perfect competition, without which price and wage flexibility would not be possible.

REMAINS OF KEYNES'S REVOLUTION

The post-Great Depression battles have finally reduced Keynes's revolution has finally been reduced to:

- An equilibrium static model of IS-LM
- A mistaken interpretation of the Phillips curve as an inflation-unemployment trade-off

Contemporary economists have successfully recast Keynes's verbal disequilibrium model into a neoclassical structure devoid of disequilibrium and instability. Therefore, Keynes's revolution has been suffocated and committed to final burial. Like the first and last freely elected President of Egypt, Dr. Mohamed Morsi's burial was non-ceremonial.

THE REVOLUTIONARY KEYNES CONFRONTS HIS ENEMIES

In the 1930s, Keynes confronted the earlier version of the currently prevalent neoclassical doctrine Skidelsky (1983, 1992, 2001). At the time, it maintained its four distinctive pillars.

1. A perfectly informed homoeconomicus.
2. Market capitalism left alone, converges to a full-employment equilibrium with self-equilibrating mechanisms.
3. Money and monetary policy are long-run neutral.
4. Supply creates its demand or Say's Law.
5. The neoclassics reincarnated Say's Law in the real business cycle, which is implied in the real business cycle theory, RBT.

The RBC theory stresses productivity shocks in long-term growth and cyclical movements but ignores the fluctuations in aggregate demand. Only exogenous changes in consumer preferences are admitted. The theory explains only output fluctuations due to unpredictable shocks. Economists who have not

learned from history are doomed to repeat it. Turning to the old Keynes may be one way out for Western economists.

- However, Keynes ignored the institutional weakness of market capitalism, especially:
  - Debt money
  - Dominance of nominal transactions
  - Especially Debt and pure-risk trading
  - Placing an administered price on money, resulting in Samuelson-Friedman and Hosios inefficiencies
  - separating equity from efficiency.
  - We must consider the reform of both theory and economic system simultaneously.
- That is what we try to do in I economics.

KEYNES (1921) AND KNIGHT (1921): RISK VS. UNCERTAINTY

Uncertainty: Total ignorance about the future, with groundless optimistic or pessimistic beliefs, which have a self-fulfilling nature

Risk, in Dynamic stochastic general equilibrium models, DSGE:

Know the future shocks statistical distributions, which is a neoclassical fanciful reality void of the essence of the economics of Keynes.

SKIDELSKY'S EMPIRICAL TEST: NEOCLASSICAL VS. KEYNES'S POLICIES

To judge the effectiveness of Keynes's against neoclassical economic policies, Skidelsky (1983, 1992, 2001) splits the post-war period into

(i) the Keynesian Bretton Woods period of 1951–73

(ii) the Washington Consensus period of 1980–2009.

Skidelsky finds that output growth was higher during the first period.



Inflation and unemployment were higher in the second period

The same is true with volatility (output growth and exchange rates).

The Keynes's Bretton Woods period wins.

De Grauwe (2010) warns that

- Higher growth in (i): due to reconstruction after WW II
- low growth & high inflation in (ii): due to the oil shock,

THE IS-LM IS TRULY NEOCLASSIC

The IS-LM proposed by Hicks (1937) and Mead (1937) proposed the truly neoclassical apparatus. It was Modified by Franco Modigliani (1944) and popularized by Alvin Hansen (1953), after which it became the standard macroeconomic model. Textbooks in macroeconomics consider it Keynesian. Due to the Hicks's and Usad's deception

The confusion between the IS-LM and Keynes's legacy is a severe misunderstanding of Keynes. It is a manifestation of the neoclassical triumph of their counterrevolution. However, it is valuable as a tool of economic analysis. It has proven itself as a pedagogical tool to teach macroeconomics. However, we must rehabilitate it to eliminate the financial and real sector dichotomy. We will, therefore, use it to investigate the equilibrium of our model, paying due attention to the fact that such a dichotomy no longer exists in the structure I offer for an Islamic economic system.

THE SHORTCOMINGS OF THE IS-LM MODEL

The IS-LM model Ignores the central notions of Keynes, including involuntary unemployment and full employment. As a static model, the values of past and present variables were later added to proxy uncertainty while they represented risk. One of the fundamental defects of market capitalism is the dichotomy between the real and financial sectors. The IS-LM maintains this defect in the absence of sectoral interdependence.

Despite its shortcomings, it remained at the core of undergraduate textbooks and the conceptual core of most government and central banks' macroeconometric models.

THE PHILLIPS CURVE

New Zealand-born engineer-turned-economist A. W. Phillips invited economists to adopt dynamic analysis. The Phillips curve comes from his study of the relationship between wage changes and unemployment in the UK from 1861-1957 (Phillips 1958). The neoclassical consensus misinterpreted it as representing a tradeoff between unemployment and inflation, as Samuelson and Robert Solow (1960) suggested.

The Phillips curve mistakenly expresses an idea of the New Zealand economist as an empirical relationship that relates wages or price inflation to the level of resource utilization. While the LM curve has collapsed in recent years, and critical aspects of the IS curve are still in dispute, *the empirical Phillips curve* has worked amazingly well for decades only in the United States (Robert Gordon, 1997). That is the "clean little secret" of macroeconometrics. What appeared to be a reliable Phillips curve displayed a high degree of inertia empirically, translated into long lags. Meanwhile, it is vertical in the long run. Because it worked so well empirically, it occupied a prominent place in the neoclassical core model.

Phillips LSE study (1958) attempted to determine the tradeoffs facing a central bank. He documented a robust negative relationship between wage inflation and unemployment. In other words, low unemployment accompanied inflation. Economists justified the Phillips curve theoretically by arguing that tight labor markets stimulated wage inflation. A 1960 study by MIT economists Solow and Samuelson replicated these findings for the US, emphasizing that the relationship also worked for price inflation. The Phillips curve tradeoff quickly became the basis for the discussion of macroeconomic policy, which many thought to have faced a tradeoff. An economy can achieve lower unemployment, but only at the cost of higher inflation.

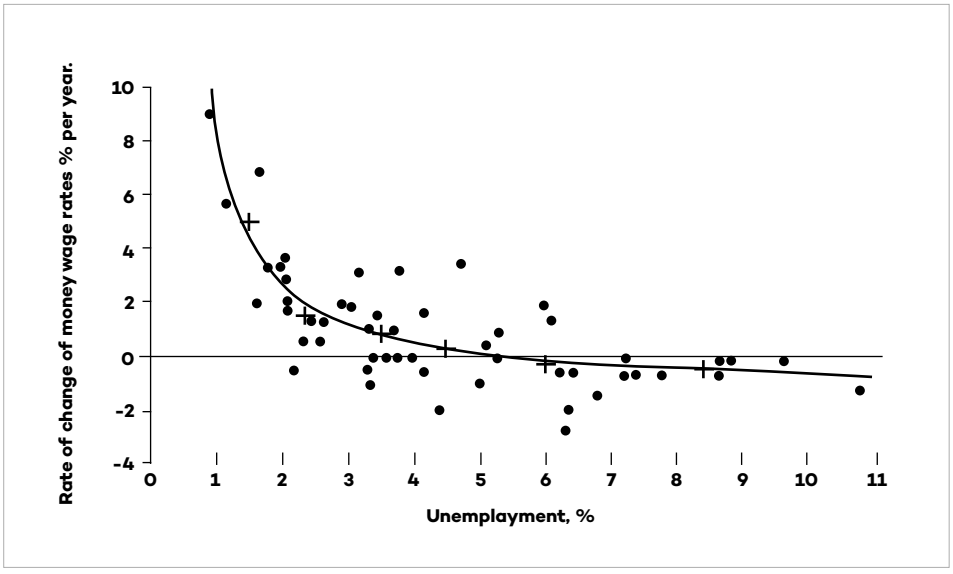
OKUN'S LAW

Okun's Law offered another empirical regularity. Okun's Law represents a simple linear relationship between the percentage change in output and the absolute change in the unemployment rate, which presumably embodies productivity, labor-force participation, and production-function considerations.

It seems to contradict the concavity of the production function. However, it closes the loop between real output growth and changes in unemployment with high reliability. Okun's law points towards a core macroeconomic model with four main components. First, prices and wages are predetermined mainly in the short run and evolve according to Phillips-type equations. Second, output is *demand determined* in the short run. Third, aggregate demand responds directly to fiscal policy and is interest-sensitive, thus responsive to monetary policy, *which sets short-term interest rates*. Fourth, Okun's law links output growth to changes in the unemployment rate.

Economists have exposed Okun's Law as merely *a core set of beliefs* rather than well-established empirical regularities. There are two elements in each argument. First, there is a question about bridging the gap between the nominal short-term interest rate administered by the monetary authority and the real long-term rates presumably influencing aggregate demand. Our Fundausntal theory denies any link between the (long- or short-run) interest rate and aggregate demand. Once the central bank sets an interest rate, it rules in the market as a short-term rate until the central bank sets a new rate. Long rates would be just the expectations built around the central bank's behavior. Second, we need to scrutinize the components of the model.

Figure 16: Philips Curve 1861-1913



SOLOW AND SAMUELSON'S DESCRIPTION OF THE PHILLIPS CURVE

Expectations entered the Phillips Curve through Friedman's claim that expected real wages affected wage bargaining. Admittedly, low unemployment means workers have a strong bargaining position; workers would not be satisfied with high nominal wage inflation; being rational, they would demand that the nominal wage inflation be more significant than price inflation.

Milton Friedman's 1968 presidential address to the American Economic Association gave a timely and influential critique of the thinking underlying the Phillips Curve. Friedman argued that if policymakers tried to exploit an apparent Phillips curve tradeoff, the public would get used to high inflation and expect it. *Inflation expectations would increase, and the previously existing tradeoff between inflation and output would disappear*. Friedman proposed the idea that there was a natural rate of unemployment. Attempts to keep unemployment below its natural rate would not work in the long run.

PHILLIPS CURVE: THE SURROUNDING ENVIRONMENT

Monetary and fiscal policy in the 1960's was very expansionary worldwide. By the late 1960s, inflation continued to rise while unemployment continued to increase. The *stagflation* combination of high inflation and unemployment worsened in the 1970's. That was what Friedman predicted would happen.

Today, the data no longer show any sign of a negative relationship between inflation and unemployment. The correlation is positive: This contradicts the original formulation of the Phillips curve. However, Phillips's ideas deserve deeper consideration.

UNDERSTANDING PHILLIPS

In 1958, New Zealand economist A. W. Bill Phillips showed what was initially and mistakenly interpreted as an empirical inverse relation between the unemployment rate and the changes in money wages (Phillips, 1958). Further studies by Phillips (2000) and Lipsey(1960) increased the confidence in the alleged relation. The work of Samuelson and Solow (1960) shows a similar empirical relation between the unemployment rate and the changes in price level. Since then, this relation has been called the *Phillips Curve*.



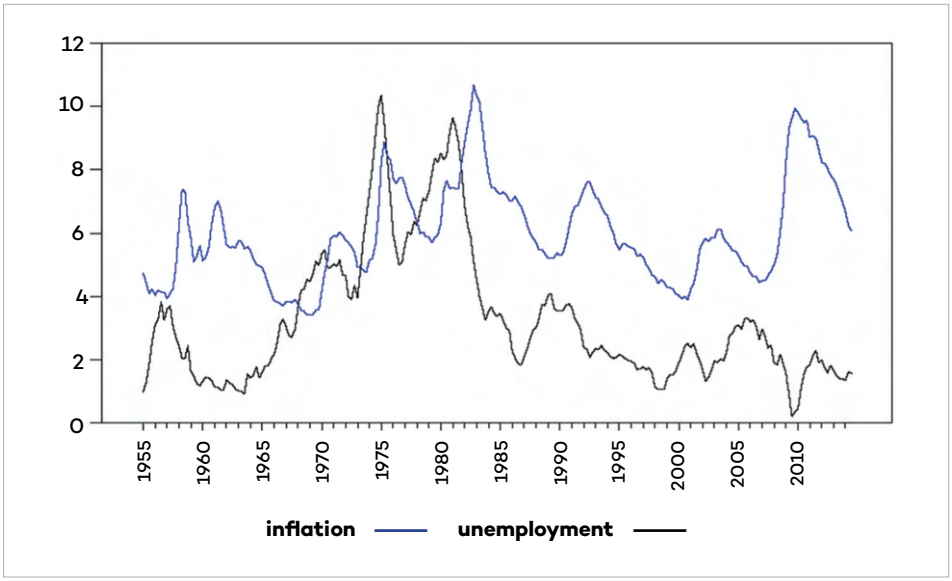
After the criticism of Phelps (1967) and Friedman (1968), economists added a variable representing expectations to the equation, where expected inflation is formulated based on past values. Accordingly, lower unemployment can be associated with higher or even increasing inflation. The studies of Sargent (1971) and Lucas (1972; 1976) provided the rationale for adding the expectations assumption into macroeconomics, and after the study of Calvo (1983), a *New Keynesian version of the Phillips Curve* (NKPC) gradually became the consensus model.

The original Phillips Curve appeared in a study of Phillips in 1958. It was about the inverse relation between the unemployment rate and wage inflation, with the assumption that wage changes will pass on to prices. It brings us back to interpreting the relationship as a trade-off between inflation and the unemployment rate. Such trade-off interpretation enabled the governments to buy lower unemployment at the cost of higher inflation. The main question became what the optimal trade-off would be.

According to Lipsey (2000), Phillips' Essay on wages and unemployment (Phillips,1950) is "one of the seminal articles of the last half of the twentieth century." However, the trade-off interpretation of the relation was incorrect (Leeson, 1997). The study of Lipsey (2000) had similar arguments regarding misinterpretation. One of the reasons for this misinterpretation is that, unlike the proceeding versions, the original Phillips Curve was ultimately a disequilibrium phenomenon.

We agree with Lipsey's (2000) and Leeson (1997) misinterpretation arguments. Phillips's contribution deserves further modeling to emphasize the disequilibrium nature of the original Phillips Curve, constructed by using system dynamics methodology for modeling and simulation. As a genius economist, Phillips was not the only one misunderstood and misinterpreted. The fondness of the neoclassical and Keynesian economists for the idea of a negative relationship between inflation and employment placed Phillip's contribution on the wrong forum and caused his theory to be ignored despite its intellectual value. We will attempt to redress this mistake by explaining his model in order to reach out to the message he intended.

Figure 17: U.S. Inflation & Unemployment 1955-2014



PHILLIPS SYSTEM DYNAMICS

Sansarcı et al. (2014) explain and simplify Phillips's ideas using system dynamics. According to Michael Radzicki (2008), system dynamics is a computer simulation modeling technique created in 1956 to help corporate managers improve their understanding and control of industrial systems. It proved helpful in dealing with social systems problems like the transition from fossil fuels to alternative sources of energy in the US, the growth and the decline of cities, the causes of worker burnout, the cost and schedule overruns in R&D projects, and the diffusion of new medical technologies, (Radzicki, 2008). It is a simulation technique to analyze complex nonlinear dynamic feedback systems for generating insight and designing policies to improve performance.

System dynamics models start with identifying and linking the relevant pieces of a system's structure and simulating the behavior generated by that structure. An iterative process of structure identification, mapping, and simulation produces a model that can explain (mimic) a system's problematic behavior and serve as a policy design and testing vehicle. Sansarcı

From a system dynamics perspective, a system's structure consists of stocks, flows, feedback loops, and limiting factors. Stocks are like bathtubs that ac-



cumulate/decumulate flows over time. Flows are like faucet assemblies that fill or drain stocks. Mathematically, the process of flows accumulating/decumulating in stocks is called *integration*. The integration process creates all dynamic behavior in the world in physical, biological, or socioeconomic systems. Examples of stocks and flows in economic systems include a stock of inventory and its inflow of production and its outflow of sales, a stock of the book value of a firm's capital and its inflow of investment spending and its outflow of depreciation, and a stock of employed labor and its inflow of hiring and its outflow of labor separations. The simplest form of stock-flow representation includes one stock, one inflow, and one outflow.

Forrester (1961, 1969, 1971) defined the principles of system dynamics methodology and undertook the first studies. Since economic systems are very complex, they can exhibit counterintuitive behavior (Anderson et al., 1988). Aggregate behavior, feedback mechanisms, and time delays make economic systems suitable for the system dynamics approach. Studies by Forrester (1980), Atkinson (2004), Yamaguchi (2010), and Radzicki (2011) are some examples of economic modeling with system dynamics.

A system dynamics economic model requires relevant economic information. When the information is unsuitable for feedback analysis, the information must be logically interpreted and restructured.

Economic information may not be suitable for feedback analysis, for it is usually defined under equilibrium conditions, while system dynamics models are out-of-equilibrium models. We must recast the information related to the causal structure underlying the equilibrium framework into disequilibrium information before its use in modeling.

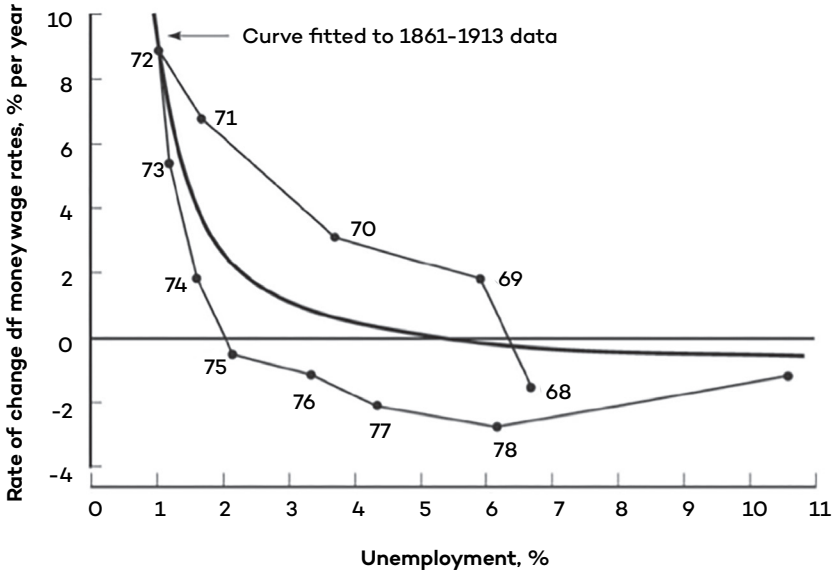
Economists interpreted the original Phillips Curve as a trade-off between inflation and unemployment to guide policy. After years of boosting inflation to lower unemployment, unemployment reverted to normal levels, while inflation did not. The expectations factor entered the theory of inflation. Econometric studies showed profound parameter shifts of the Phillips Curve, leading to Lucas's Critique and rational expectations becoming the backbone of the neoclassical theory of inflation[117].

117 See Gordon (2011) for the history and different interpretations of Phillips Curve.

At the center of the critics of the Phillips Curve during this historical evolution is the list of alternative interpretations of the original empirical relationship. Sansarcı *et al.* (2014) argue that the interpretation of the Phillips Curve was a misinterpretation. "*For the menu of choice interpretation to hold, each point along a Phillips curve must represent either an equilibrium position or must incorporate some mechanism for perpetuating the disequilibrium in a predictable and non-pernicious manner*" (Leeson, 1997). We agree with this assessment.

The cyclical nature of the data rules out the perpetuating mechanism of either equilibrium or disequilibrium. Fig. 2, taken from Phillips (1958), clearly shows that the unemployment-wage inflation pairs in the data move around the fitted curve, generating a cycle. We observe a similar pattern for different cyclical periods. The economy does not rest at the same point as if it perpetuates the exact trade-off mechanism. Other than that, the points along the curve do not represent equilibrium positions either.

Figure 18: Wage Inflation – Unemployment Relation During A Cycle



Source: Phillips, 1958



Phillips Curve versions after Friedman (1968), including the new Keynesian version of the Phillips Curve, or the NKPC version, are based on equilibrium analysis, while the original Phillips Curve was ultimately a disequilibrium concept. That further supports our conclusion that economists misunderstood the menu of choice interpretation of the original Phillips Curve.

Economists often ignored the disequilibrium nature of the empirical Phillips Curve. Richard Lipsey (Lipsey, 1960) reported that when he thought of a market-clearing interpretation (each point on the curve was generated by the intersection of relevant demand and supply curves), Phillips protested that it was wrong as his curve was a disequilibrium phenomenon (Lipsey, 2000).

In describing his hypothesis, Phillips emphasized that when there is an excess demand for a commodity, its price will rise at a rate that varies directly with excess demand. When there is an excess supply, the rate at which the price falls would vary directly with the size of the excess supply. This principle is one of the determining factors in the rate of change of money wage rates (the price of labor services). With a high demand for labor and very few unemployed, employers will raise wage rates quite rapidly, each offering little above the prevailing rates. When workers are reluctant to offer their services at less than the prevailing rates, with low demand for labor and high unemployment, wage rates fall very slowly. Phillips argues that the relationship between high unemployment and the rate of change in wage rates would become highly non-linear (Phillips, 1958).

While the original Phillips Curve article was an empirical study, it starts with explaining its underlying theory. Phillips argues that the disequilibrium in the labor market creates wage inflation. When firms increase their hiring, the unemployment rate falls, and the wage rates increase.

The disequilibrium nature of Phillips's theory of macroeconomic disequilibrium resonates with other articles. He introduced a physical analog computer, which was later called the *Phillips Machine* (Phillips, 1950). The theoretical model behind the Phillips Machine is an out-of-equilibrium stock-flow model.

Phillips adopted a continuous-time dynamic methodology in his papers and focused on stabilization issues and the related time lags (Phillips, 1954, 1957). These two articles are theoretical complements of the empirical paper and,

according to Lipsey (2000), "those who interpret Phillips Curve based on this article alone often fail to read the earlier two pieces on stabilization policy, although we should take all three articles as a unit.

In the same year as the empirical study, Phillips wrote another paper titled Cybernetics and the Regulation of Economic Systems (Phillips, 2000b), in which he clearly rejects the equilibrium view of economic systems. Looking at these studies from 1950 to 1958, we see a line of continuity. These studies reflect Phillips's ideas about how the economic system works. There is no reason that we do not expect the continuity of his beliefs in his empirical studies about wage inflation and unemployment.

Phillips has no static equilibrium model in his mind. He dismisses the claim that the economic system maintains stability on its own. He thought that the change in the money wage rate might be the change in the demand for labor and unemployment. Thus, in a year of rising business activity, with the demand for labor increasing and the percentage of unemployment decreasing, employers bid more vigorously for the services of labor than they would in a year during which the average percentage of unemployment was the same. However, the demand for labor was not increasing. Conversely, in a year of falling business activity, employers will be less inclined to grant wage increases with the decrease in demand for labor and the increase in unemployment. Workers will be in a weaker position to press for them than in a year during which the average percentage unemployment was the same, but the demand for labor was not decreasing" (Phillips, 1958).

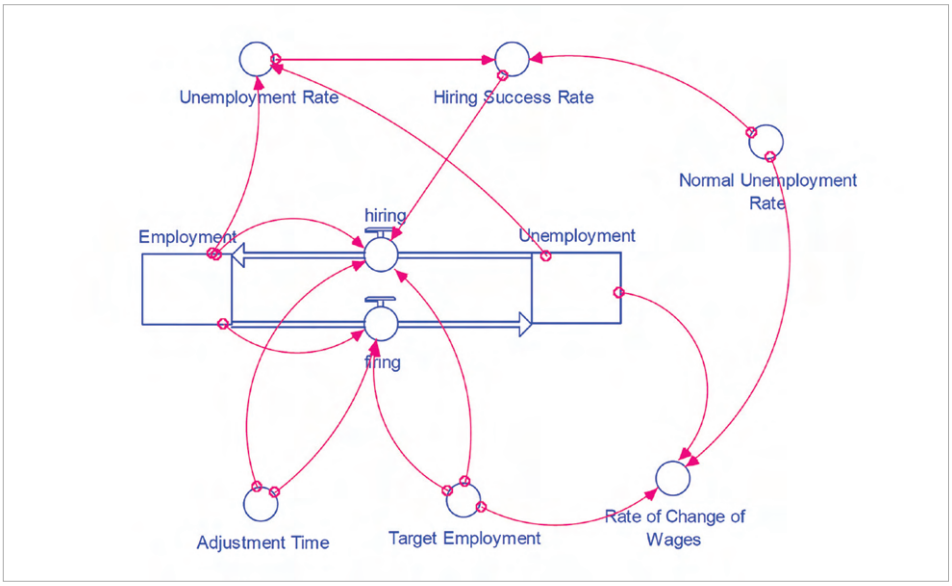
Hence, the observed inverse relation between wage inflation and the unemployment rate does not result from the equilibrium mechanism. It is a causal relation when the economy is on an out-of-equilibrium transition. Phillips offers a system-dynamics model to explain this relation.

MORE ON PHILLIPS SYSTEM-DYNAMICS

System dynamics models usually combine stocks, flows, and auxiliary variables. Stock variables accumulate the flow variables connected to them. Flow variables have a time component in their units. Stocks guide their values in continuous time. Auxiliary variables, on the other hand, are just converters of other stock and flow variables and are used to increase the readability of the model.

The following figure gives the system dynamics model proposed by Sansarcı *et al.* (2014). Accordingly, there are two stock variables called employment and unemployment. Two flow variables, hiring, and firing, represent the flows of the workforce between stocks. Target employment: *the workforce demanded by employers* guides these flows. Whenever target employment is higher (lower) than actual employment, hiring (firing) eliminates the gap.

Figure 19: Phillips System Dynamics



Using the language of differential equations, Mankiw and Reis (2002) represent the model in terms of employment (E), unemployment (U), hiring (h), firing (f), hiring success rate (s), unemployment rate (u), adjustment time (a), target employment (E), normal unemployment rate (n) and rate of change of wages (dw/dt) as follows:

$$E = E_o + \int (h - f)^* \, dt \qquad (47)$$

$$U = U_{o+} \int (f - h)^* \qquad (48)$$

$$h = Max\,(0, (\overline{E} - E)^{*} \quad (49)$$

$$f = Max\,(0, (E - \overline{E})/a) \quad (50)$$

$$s = 1 - e^{(-u/n)} \quad (51)$$

$$u = U/(U + E) \quad (52)$$

$$\frac{dw}{dt} = (\frac{\overline{E}}{U} - (1 - n)/n) \quad (53)$$

The model treats adjustment time and the normal unemployment rate as constants with two-year and one-year values, respectively. Equation 6 defines the unemployment rate.

Equation (3) sets the hiring rate at any time proportional to the difference between target and actual employment. Adjustment time determines the speed of convergence, which provides a continuous-time delay for employment adjustment rather than a discrete-time lag. Hiring is proportional to the hiring success rate, assumed as an increasing function of the unemployment rate. Thus, firms may or may not hire enough labor for a given period, even if desired. Equation (4) expresses the ability of firms to fire as many workers as they desire without a legal constraint, and firing is unaffected by the unemployment rate.

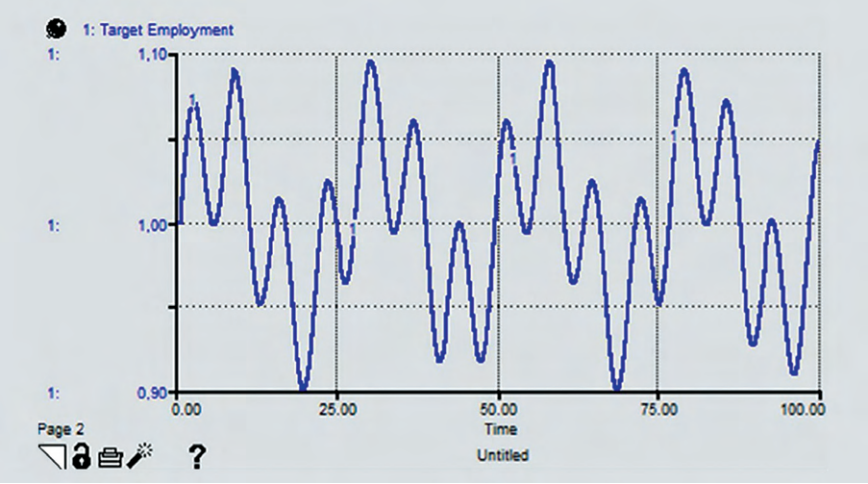
Equation (53) relates the hiring success rate to the unemployment rate. As the unemployment rate decreases, the hiring success rate asymptotically converges to zero. Intuitively, the chance of finding the required number of workers improves with a higher unemployment rate. When the unemployment rate is lower, firms may not be able to find the required labor they desire to employ, or the workers suitable for their available vacancies would be working for other firms. Therefore, any new hiring will not change the aggregate level of employment.

According to equation (7), which explains our key variable (the rate of change of wage rates), wage inflation is directly related to workers' bargaining power (assumed to be proportional to target employment) and inversely related to

the bargaining power of firms. Firms bargaining power is assumed to be proportional to the level of unemployment. The greater the number of workers looking for a job, the more hiring alternatives the firms would have. As a result, wage increase is proportional to the ratio of target employment to unemployment, being zero when the ratio is equal to some constant.

The formulation of target employment is not given as a differential equation because it is assumed to follow an exogenous cyclical pattern. Unfortunately, Sansarcı *et al.* do not explain the reasons for embedding cyclical changes in unemployment. Of course, this is due to *the nature of market capitalism*, which is prone to crises. We might accept both trade and pure risk trading tasoone Still, there is a need to be more specific about the instability of market capitalism. The model generates the exogenous cyclical pattern for target employment in a rather unconventional way. Two different business cycles are assumed to exist in the economic system with different frequencies. The first is a shorter cycle of 7 years, and the second is a longer cycle of 25 years. We choose the numbers to sound reasonable and be relatively precise. Each cycle creates a maximum of 5% deviation from the baseline. With two different cycles having frequencies of relatively *prime numbers*, we can generate 7 x 25 years of non-repeating pseudo-data. Business cycles virtually arise with sinus waves. The following figure gives Target employment generated according to the pseudo-cycles.

Figure 20: Target employment for 100 years

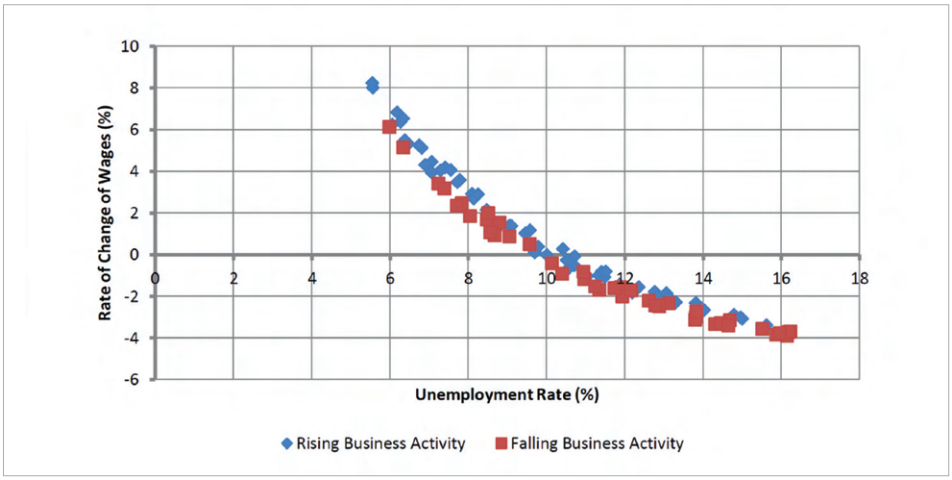


The initial values for employment and unemployment are 1 and 1/9, respectively. These initial values are consistent with 10% of the unemployment rate. That is the standard unemployment rate, making *wage inflation equal to zero when sustained.*

PHILLIPS MODEL SIMULATION

The model introduced in the previous section gives a simulation of 100 years. That is approximately the timespan in the original Phillips Curve article (Phillips, 1958). The following figure shows the relationship between the unemployment rate and the rate of change in wages in the simulation result.

Figure 21: Relation Between Unemployment Rate And Rate Of Change Of Wages In The Simulation Results



The above figure shows a simulated Phillips Curve resembling the empirical one. The similarity requires t*hree essential properties*. First, it is an inverse relation parallel to the stylized fact. Whenever the unemployment rate decreases, the rate of change of wages increases. Secondly, there is an apparent nonlinearity in the simulated relation similar to the original curve. That is apparent in Phillips's scatter diagram (1958) and his interpretations. In other words, wages rise faster than they fall. The stock-flow structure in his diagram explicitly gives rise to this nonlinear behavior due to the underlying causality.

Finally, and most importantly, the relation is asymmetric. Data points associated with years of rising business activity are above the ones associated with



years of falling business activity. It shows that *the rate of change in wages depends not only on the unemployment rate but also on the change in the unemployment rate*. As a result, the points along the curve do not represent equilibrium positions but are observations along an out-of-equilibrium transition.

Asymmetry in the relation is also evident in Phillips (1958). His diagram shows that yearly data moves around the curve during a cycle. Similar cyclical patterns exist for other periods as well. In each cycle, unemployment-wage increase pairs are above the average when the unemployment rate is decreasing and below the average when the unemployment rate is increasing. Simulation results of the model exhibit the same type of behavior along a cycle, and we will provide a diagram representing one of them.

Let us consider the following equation:

$$y_t = \alpha + \beta x_t \quad (54)$$

Where, The and , are the economic *variables* I am interested in, e.g., inflation and unemployment. To describe how our variables will change over time, we use an equation like:

$$Y_t = \beta\, Y_{t-1} + \gamma X_t \quad (55)$$

The above equation says that the value of Y at time t will depend on the value of X at time t and on the value Y took in the previous period, i.e., $t - 1$. The equation holds in every period. In other words, in period 2, Y depends on the value that X takes in period two and the value Y took in period 1. Similarly, in period 3, Y depends on the value that X takes in period 3 and the value that Y took in period 2. And so on.

There is a variable written as t, which indicates time. In the model, π_t^e Represents the public expectation of inflation at time t.

THE NEOCLASSICAL MODEL ELEUSNTS

ELEUSNT ONE: THE PHILLIPS MODEL

The Phillips curve can take the following form:

$$\pi_t = \pi_e + \gamma\,(Y_t - Y^*) + E_t^{\pi} \quad (56)$$

Here π represents inflation and indicates inflation at time *t*. equation (3) states that inflation depends on three factors. First, Inflation Expectations, given by the term (π_e), which represents the public's inflation expectations at time t. A one-point increase in inflation expectations raises inflation by an equal amount. People bargain over real wages and higher expected inflation translates one-for-one into their wage bargaining, which in turn is passed into price inflation.

I. THE OUTPUT GAP:

This is, $Y_t - Y^*$, the gap between (GDP at time *t*) and (the "natural" level of output, which is the level consistent with the natural rate of unemployusnt). The coefficient describes exactly how much inflation is generated by a 1 percent increase in the gap between output and its natural rate.

II. INFLATIONARY SHOCKS:

E^{π} captures all factors beyond inflation expectations and the output gap that drive up inflation. For example, "supply shocks" like a temporary increase in the price of some import (like wheat) can drive up inflation for a while. To capture these kinds of temporary factors, I include an inflationary "shock" term, *E*. The superscript π indicates that this is an inflationary shock and the *t* subscript indicates that these shocks change over time.

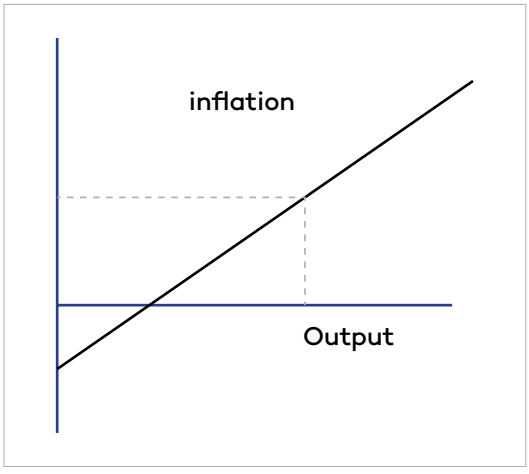


Figure 22:
The Phillips Curve Graph With $E\pi = 0$

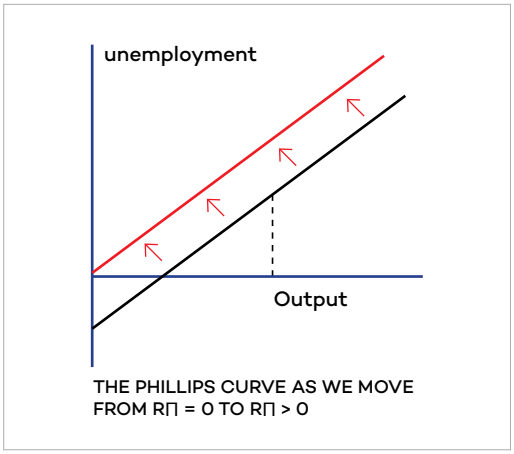


Figure 23:
The Phillips curve as we move from RΠ = 0 TO RΠ > 0 (an aggregate supply shock)

THE SECOND ELEMENT, THE (IS) CURVE

The second eleusnt of the model is an IS curve relating output to interest rates. The higher interest rates are, the lower output is. The IS relationship is between output and real interest rates, not nominal rates. Real interest rates adjust the headline (nominal) interest rate by subtracting off inflation. Suppose the interest rate was 10 percent. Is this a high or low? It depends on inflation. Consider a person's decision to save. If the interest rate if 5% but inflation is 2%, then you can buy 3% more stuff next year because you saved.

In contrast, if the interest rate if 5% but inflation is 8%, you can buy 3% less stuff next year even though you have saved. Similar for firms considering borrowing. If inflation is 10%, then a firm can expect that its prices will increase by that much over the next year and a 10% interest rate won't seem so high. But if prices are falling, then a 10% interest rate on borrowings will seem very high.

Our version of the IS curve will be the following:

$$(Y_t - Y_*) = \alpha (i_t - \pi_t - r_*) + EY \qquad 57$$

In other words, the gap between output and its natural rate *yt* − *y* ∗ depends on two factors:

A. THE REAL INTEREST RATE:

The nominal interest rate at time *t* is , so the real interest rate is ($i_t - \pi_t$).

The real interest rate is the rate at which output will, on average, equal its natural rate. This is denoted by ($r*$). This is known as the *natural rate of interest*. When $Ey = 0$, a real interest rate of ($r*$) will imply ($yt = y*$). Our version of the IS curve will be the following:

$$yt = y* - \alpha(it - \pi t - r*) + Ey \quad (58)$$

In words, this equation states that the gap between output and its natural rate ($yt - y*$) depends on two factors:

1. Aggregate Demand Shocks, (Ey) :

* Many other factors beyond the real interest rate influence aggregate spending decisions.
* Fiscal policy, asset prices and consuusr and business sentiment.
* we model these as temporary deviations from zero of an aggregate demand "shock" – this is Ey.
* This shock has a superscript y to distinguish it from the "aggregate supply" shock Eπ that moves the Phillips curve up and down. Sansarcı

MONETARY POLICY: THE LM CURVE APPROACH

Inflation depends on output and output depends on interest rates. Complete the model by describing how interest rates are determined.

Traditionally, this is where the LM curve is introduced. Links demand for the real money stock with nominal interest rates and output:

$$M_t.P_t + \theta y_t = \delta\mu i_t \quad (59)$$

Implies a positive relationship between output and interest rates:

$$y_t = it— \delta + \mu i_t \quad (60)$$

Combined with the negative relationship between these variables in the IS curve to determine unique values for output and interest rates.

Illustrated with an upward-sloping LM curve and a downward-sloping IS curve. Central bank adjusts money supply *mt* to set the position of the LM curve.

The determination of prices is then described separately in an AS-AD model.

MONETARY POLICY: AN INTEREST-RATE RULE

Instead of the LM curve approach, we will model monetary policy by assuming the central bank sets nominal interest rates according to a particular rule. There are three reasons for this approach.

1. Realism 1: Modern central banks do not implement monetary policy by setting a specified monetary base level.
2. Realism 2: The traditional approach uses a separate AS-AD model to describe the determination of prices (and thus, implicitly, inflation) separate from interest rates. However, rather than being determined independently of inflation, most modern central banks set interest rates with a very close eye on inflationary developments.
3. Simplicity: In simplifying the determination of output, inflation, and interest rates down to a single model, this approach is more straightforward than one requiring two sets of graphs.

III. MODEL ELEMENT THREE: THE MONETARY POLICY RULE

We first consider a monetary policy rule of the form:

$$i_t = r^* + \pi^* + \beta\pi (\pi_t - \pi^*) \quad (61)$$

We assume $\beta\pi > 0$. Features of this rule:

The central bank adjusts *it* up when inflation, (π_t), goes up and down when inflation goes down.

When , real interest rates equal their natural level.

Why is a rule like this a good idea?

If the public understands the central bank's target inflation rate, we get on average.

In this case, the Phillips curve tells us that, on average, inflation will equal($\pi*$) provided we have. and IS curve telling us that, on average, we will have

$$y_t = y * i_t - \pi_t = r * \quad (62)$$

THE FULL MODEL

The full model consists of three equations.

A. THE PHILLIPS CURVE:

$$\boldsymbol{\pi_t = \pi_e + \gamma (y_t - y^*) + E\pi} \quad (63)$$

B. THE IS CURVE:

$$y_t = y * - \alpha (i_t - \pi_t - r *) + Ey \quad (64)$$

C. THE MONETARY POLICY RULE:

$$i_t = r * + \pi * + \beta\pi (\pi_t - \pi *) \quad (65)$$

This model is a system of three variables, which makes it hard to represent by a graph with two axes.

To make the model easier to analyze using graphs, we will reduce it to a system with two main variables (inflation and output).

Monetary policy rule makes interest rates a function of inflation, so we can substitute this rule into the IS curve to get a new relationship between output and inflation that we will call the IS-MP curve.



IV. THE IS-MP CURVES

If we replace the term (*it*) in the IS curve with the formula from the monetary policy rule, we get

$$y_t = y^* - \alpha [r^* + \pi^* + \beta\pi (\pi t - \pi^*)] + \alpha (\pi_t + r^*) + E_y \quad (66)$$

Now multiply out the terms in this equation to get

$$it = yt = y* - ar* - a\pi* - a\beta\pi (\pi t - \pi*) + a\pi t + ar* + Ey \quad (67)$$

Canceling terms and re-arranging, this simplifies to

$$yt = y* - a (\beta\pi - 1) (\pi t - \pi*) + Ey \quad (68)$$

That is the IS-MP curve. It combines the information in the IS curve and the MP curve into one relationship.

V. THE IS-MP CURVE GRAPH

The IS-MP curve is

$$yt = y* - a (\beta\pi - 1) (\pi t - \pi*) + Ey \quad (69)$$

How this curve looks in a graph depends significantly on the value of $\beta\pi$. An extra unit of inflation implies a change of $-\alpha (\beta\pi - 1)$ in output.

Is this positive or negative? We are assuming that $\alpha > 0$, so this combined coefficient will be negative if $\beta\pi - 1 > 0$, i.e., the IS-MP curve will slope downwards if $\beta\pi > 1$ and upwards if $\beta\pi < 1$.

Explanation: An increase in inflation of x will lead to an increase in nominal interest rates of $\beta\pi x$, so real interest rates change by $[(\beta\pi - 1) x]$. If $(\beta\pi > 1)$, then an increase in inflation leads to higher real interest rates and, via the IS curve relation, to lower output.

For now, we will assume that $\beta\pi > 1$ to have a downward-sloping curve, but we will revisit this later.

The IS-MP Curve with *Ey* = 0

Inflation Expectations:

This is given by the πe term which represents the public's inflation expectations at time t. A one-point increase in inflation expectations raises inflation by exactly one point. People bargain over real wages and higher expected inflation translates one-for-one into their wage bargaining, which in turn is passed into price inflation.

VI. THE TERM STRUCTURE OF INTEREST RATES

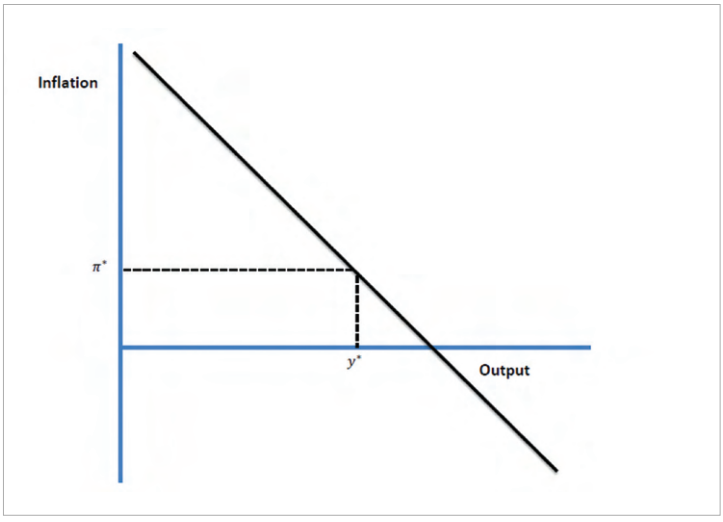


Figure 24: The IS-MP-PC Model Graph

The expectations theory of the term structure links short rates to long rates in an elegant and inuitively appealing way. According to this theory, any long-term interest rate is the appropriate weighted average of current and ex pected future short-term interest rates, plus a term premium. Unfortunately, the model mis erably fails a variety of empirical tests (see John Campbell, 1995). Economists are thus in desperate need of a better model of the term structure. More than academic completeness is at stake here, for the absence of a usable em pirical model of the term structure severely handicaps the conduct of monetary policy, which works its will on the economy through short-term rates of interest.

The IS-MP Curve as I move from *Ey = 0* to *Ey > 0*

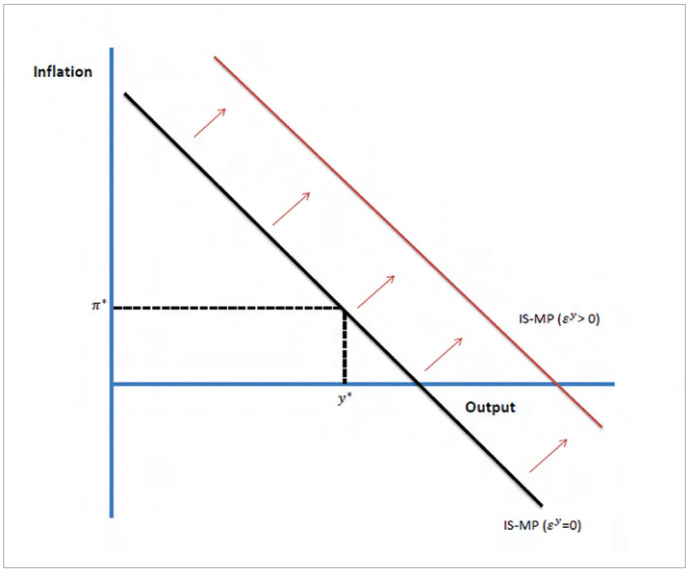


Figure 25:
The IS-MP-PC Model Graph Cont.

Putting the Pieces Together

The IS-MP-PC Model Graph

I can now illustrate the entire model in a single graph.

The graph features one curve that slopes upwards (the Phillips curve) and one that slopes downwards (the IS-MP curve provided we assume that $\beta\pi > 1$.)

The following figure provides the case where both the temporary shocks, $E\pi$ and Ey, equal zero, and the public's expectation of inflation equals the central bank's inflation target.

PC and IS-MP curves are labelled to indicate the expected and target rates of inflation.

We will analyze this model in depth, examining what happens when various events occur and focusing on how inflation expectations change over time.

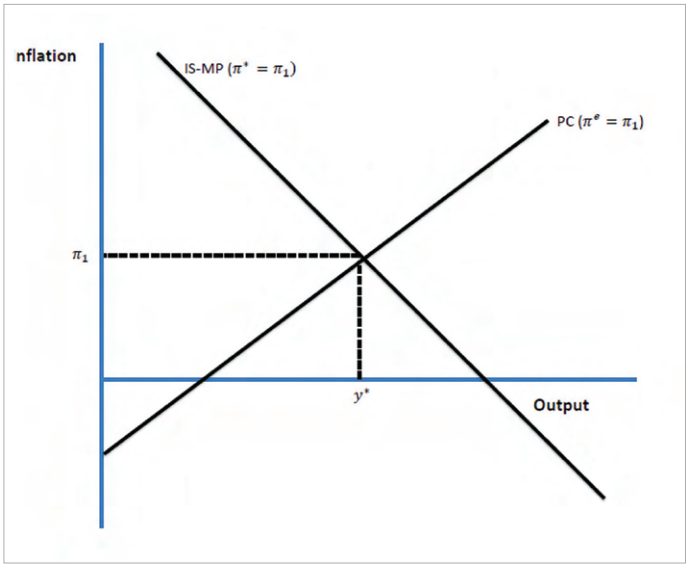


Figure 26: Expected Inflation Equals The Inflation Target

THE IS-MP-PC MODEL GRAPH

I can now illustrate the entire model in a single graph.

The graph features one curve that slopes upwards (the Phillips curve) and one that slopes downwards (the IS-MP curve, provided we assume that $\beta\pi > 1$.)

The following figure provides the simplest possible example of the graph. It shows the case where the temporary shocks, *Eπ* and *Ey,* equal zero and the public's expectation of inflation is equal to the central bank's inflation target.

PC and IS-MP curves are labeled to indicate the expected and target rates of inflation.

In the next set of notes, I will analyse this model in depth, examining what happens when various types of events occur and focusing carefully on how inflation expectations change over time.

A More Complicated Monetary Policy Rule

In a famous 1993 paper, John Taylor argued for a monetary policy rule in

the central bank adjusted interest rates in response to inflation and the gap between output and an estimated trend.

I can ausnd our monetary policy rule to be more like "Taylor rule":

$$i_t = r^* + \pi^* + \beta\pi(\pi_t - \pi^*) + \beta y(y_t - y^*) \quad (70)$$

Substituting this into the IS curve, I get

$$y_t = y^* - \alpha[r^* + \pi^* + \beta\pi(\pi_t - \pi^*) + \beta y(y_t - y^*)] + \alpha(\pi_t + r^*) + Ey) \quad (71)$$

It can be re-arranged to give

$$y_t - y_t^* = -\frac{\propto(\beta_\pi - 1)}{1 + \propto\beta_y}(\pi_t - \pi^*) + \frac{1}{1 + \propto\beta_y}\epsilon_t^y \quad (72)$$

Broadening the monetary policy rule to incorporate interest rates responding to the output gap doesn't change the essential form of the IS-MP curve.

MODELING EXPECTATIONS

Expectations are ubiquitous in economic behavior, as the rational-expectations revolutionaries of the 1970's reminded us. in the ba<l old days, eco nomic theory treated expectations in one of two highly unsatisfactory ways: either as ex ogenous or as evolving according to some ad hoc formula like adaptive expectations. The forusr was plainly absurd; the latter often im plied that forecasts were biased and inefficient. The rational-expectations revolution was supposed to fix all that and to provide econo mists with a theoretically grounded model of expectations. That it may or may not have done. But its empirical success has been usa ger. Where expectations can be usasured di rectly, they do not appear to be "rational," as economists use that term (see Michael Lovell, 1986). And at least some empirical relation ships, including the term structure, seem to work better with adaptive than with rational expectations (Gregory Chow, 1989).

The skeletal macro model that 1 have dealt with in this short paper allowed for only one expectational variable: expected inftation, which appears on the right-hand side of the expectational Phillips curve and is the differ ence between nominal and real interest rates.4 But expectations are relevant elsewhere as well. 1 conclude with one final example that has assuusd great practical importance in re cent years: the effects of expected future governusnt budget deficits.

A positive fiscal multiplier has long been part of macroeconomists' core beliefs. Yet nowadays the opposite presumption seems to have taken hold in policy circles from Wash ington to Brussels. Deficit reduction, I are told, promotes economic growth in the short run. How can that be?

I can think of two coherent lines of reason ing that lead to the unconventional conclusion that a *credible* change in fiscal policy that promises *lowerfuture* budget deficits can stim ulate the economy by producing lower long term real interest rates today. The first is a (Keynesian) ftow-equilibrium arguusnt: promises of future fiscal contraction create ra tional *expectations* of lower real short rates in the future which, via the term structure, lead to lower long-term interest rates today (see Stephen Turnovsky and Marcus Miller, 1984). The second is an arguusnt involving long-run stock equilibrium: expectations oflower future public governusnt debt lead to lower long rates today.

Three points need to be made about these arguusnts. First, they are only theoretical pos sibilities, not logical necessities or established empirical findings. Until 1 saw it happen- or at least *think* 1saw it happen- in 1993, 1knew of no evidence that what worked in principle would actually work in practice. Note that the validity of the theoretical arguusnts hinge sensitively on all three italicized words in the preceding paragraph (credible, future, and ex pectations) , none of which is directly observ able. Second, the arguusnts make essential use of a theory of the term structure that is known to be wrong. Third, the first arguusnt presuuss that expected future short-term in terest rates fall because spending is expected to be weaker in the future. It is more about the intertemporal shifting of demand than about fiscal stimulus.

Yet the notion that what used to be called "contractionary" fiscal policies may in fact be expansionary is fast becoming part of the conventional policy wisdom, mostly on the basis of a single observation: the success of he Clinton budget plan in 1993. the economy is not "just academic"? it potentially affects the well-being of hundreds of millions of peo ple around the globe. An answer would be a welcome addition to the "core of practical macroeconomics that I should all believe."

COMPARING THE IS-LM AND THE IS-MP

Two significant advantages of the IS-MP-model over the IS-LM model are as follows:



First, both IS and MP are functions of the real rate of interest, so the model does not share the pitfall of the IS-LM-model, in which IS depends on the real rate of interest, while LM is a function of the nominal rate.

Second, it is more realistic, reflecting actual monetary policy in which the central bank sets the interest rate and the money supply is endogenous. It is the substantive meaning of the Taylor rule, as it formalizes the FED's actual reaction function.

However, there is arguably a further advantage of the IS-MP model not seen by Romer. The IS-MP-model allows the comparison of a Keynesian and a neoclassical solution by usrely adding some non-controversial extensions.

CHAPTER IX:



CREDIT IN NEOCLASSICAL ECONOMICS

CREDIT IN NEOCLASSICAL ECONOMICS

The neoclassical theory does not allow for a theory on credit. First, it is a theory in which exchange is barter and not monetary. Besides, it is a theory without a time dimension and focused on static, stable equilibrium. To allow for money and credit, the theory must be modified to include some frictions.

Stiglitz and Weis (1981) noticed that aside from the neoclassical theory, the real world has credit rationing. This runs against the neoclassical rule that supply equals demand. Stability conditions entail that if demand exceeds supply, prices become higher, decreasing the quantities demanded and/or increasing the quantities supplied. Such a process continues until demand and supply are equated at a new equilibrium price. This rules out rationing.

However, Stiglitz and Weis (1981) insist that credit rationing and unemployusnt do exist. One important implication is that in such cases, is the presence of an excess demand for loanable funds or an excess supply of workers. Instead of the usual stable equilibrium, there is a short- or long-term disequilibrium. Stiglitz and Weis (1981) considered the short-term phenousnon as temporary disequilibrium. In a neoclassical model, this can happen only due to an ex-

ogenous shock. Then, they claim that factor-price stickiness whose sources are unexplainable. In the transitional period, during which factor prices stay sticky, rationing of jobs or credit occurs. They reasoned long-term unemployusnt and credit rationing by the presence of governusntal constraints setting a ceiling on interest rates or mandating a floor for the wage rate.

Neoclassical economics, applied to the loan market, would envisage an equilibrium rate of interest, with no excess demand nor excess supply. A significant deviation from neoclassical economics is to introduce costly information in the credit market. A logical consequence of costly information in the credit market is information asymustry. This brings up two distinct risks: the risk of adverse selection and that of moral hazard. As to the forusr risk, banks have to sort potential borrowers; as to the latter risk, banks try to affect the actions of borrowers by providing them incentives to avoid moral hazard.

Stiglitz and Weis (1981) argue that adverse selection is a consequence of different borrowers having different loan repayusnt probabilities, directly influencing banks' expected return. Banks try to identify borrowers with the highest repayusnt probability. To do so, banks apply some screening devices. One such device is based on the assumption that borrowers willing to pay relatively higher interest rates perceive their relatively lower probability of repayusnt. Consequently, as Stiglitz and Weis (1981) argue, higher interest rates attract riskier borrowers, thereby reducing the bank's profits. Similarly, they argue that borrowers' behavior changes with interest rates and other terms of the borrowing contract. In particular, a higher interest rate decreases the return on successful projects as it induces firms to undertake projects with lower success probabilities but higher returns should they succeed.

Under perfect and costless information, a bank knows all borrowers' actions bearing on the return on the loan, but it cannot directly control all borrower's actions. The remaining alternative for the bank is to structure the terms of the loan to fulfill two purposes. First to induce the borrower to take actions that are in the interest of the bank. Second, to attract low-risk borrowers. Based on these two reasons, Stiglitz and Weis (1981) use the theory of loanable funds to theorize that the expected return by the bank may increase less rapidly than the interest rate; and, beyond a point, may decrease.

The authors introduce the size of the loan, as well as the collateral mandated by the banks, to conclude that collateral beyond a certain point may decrease the returns to the bank, as this would reduce the average degree of risk aversion the bank's pool of borrowers; or induce individual investors to undertake riskier projects. They use this result to conclude that a bank facing an excess demand for credit would not find it profitable to raise the interest rate or collateral requireusnts. In such a case, a bank would deny some borrowers, who cannot be distinguished from others. This is the case of credit rationing that the authors admit that it is not a general case.

The authors, therefore, provide *a neoclassical equilibrium model with credit rationing*. This is particularly interesting, as the existence of credit rationing itself does not fit with the concept of equilibrium. The way they were able to put two contradictory ideas together is that they kept the main characteristics of the neoclassical model. Then, they assuusd costly information to banks about borrowers, without introducing information cost globally. Banks in this case use the interest rate as a screening device. This is a critical assumption which I will show that it is open to serious questions.

Credit rationing presented by Stiglitz and Weis (1981) takes place in a world with observationally identical borrowers some receive loans and others do not. Despite the assumption that borrowers are identical, information asymustry is imbedded in the classical loan contract.[118] As a result, the banks set up rules for collateral requireusnts, ultimately leading to credit rationing. Potential borrowers who are denied loans would not be able to borrow even if they indicated a willingness to pay more than the market interest rate or to put up more collateral than is demanded of recipients of loans. Increasing interest rates or increasing collateral requireusnts could in crease the riskiness of the bank's loan port folio, either by discouraging safer investors, or by inducing borrowers to invest in riskier projects, and therefore could decrease the bank's profits. Hence neither instruusnt will necessarily be used to equate the supply of loanable funds with the demand for loanable fuiıds. Under those circumstances, credit restrictions take the form of limiting the number of loans the

118 As shown in the chapters about the Islamic modes of finance, the classical loan contract straightjacket the conventional financial system into requiring collateral. An institutional change to Islamic finance and the use of the Islamic modes of finance would release the system from such unbearable restrictions

bank will make, rather than limiting the size of each loan, or making the interest rate charged an increasing function of the magnitude of the loan, as in most previous discussions of credit rationing.

In a rationing equilibrium, to the extent that monetary policy succeeds in shifting the supply of funds, it will affect the level of investment, not through the interest rate uschanism, but rather through the availability of credit. Although this is a "monetarist" result, it should be apparent that the uschanism is different from that usually put forth in the monetarist literature. Although I have focused on analyzing the existence of excess demand equilibria in credit markets, imperfect information can lead to excess supply equilibria as well. I will sketch an outline of an arguusnt here (a fuller discussion of the issue and the macro-economic implications of this paper will appear in future work by the authors in conjunction with Bruce Greenwald). 17 Let us assuus that banks make higher expected returns on some of their borrowers than on others: they know who their most creditworthy custousrs are, but competing banks do not. If a bank tries to attract the custousrs of its competitors by offering a lower interest rate, it will find that its offer is countered by an equally low-interest rate when the custousr being competed for is a "good" credit risk, and will not be matched if the borrower is not a profitable custousr of the bank.

Consequently, banks will seldom seek to steal the custousrs of their competitors, since they will only succeed in attracting the least profitable of those custousrs (introducing some noise in the system enables the developusnt of an equilibrium). A bank with an excess supply of loanable funds must assess the profitability of the loans a lower interest rate would attract. In equilibrium, each bank may have an excess supply of loanable funds, but no bank will lower its interest rate.

The reason I have been able to model excess demand and excess supply equilibria in credit markets is that the interest rate directly affects the quality of the loan in a manner that matters to the bank. Other models in which prices are set competitively and non-market-clearing equilibria exist to share the property that the expected quality of a commodity is a function of its price (see Weiss, 1976, 1980, or Stiglitz, 1976a,b for the labor market and C. Wilson for the used car market).



In any of these models in which, for in stance, the wage affects the quality of labor, if there is an excess supply of workers at the wage which minimizes labor costs, there is not necessarily an induceusnt for firms to lower wages.

The Law of Supply and Demand is not a law, nor should it be viewed as an assumption needed for competitive analysis. It is instead a result generated by the underlying assumptions that prices have neither sorting nor incentive effects. The usual result of economic theorizing: that prices transparent markets is model specific and is not a general property of markets unemployusnt and credit rationing is not phantasms.

THE REAL BALANCE EFFECT

The real balance effect, otherwise known as the Pigou effect was his counter arguusnt against Keynes's claim that market capitalism could get stuck in a state of high unemployusnt (Takami 2011). Pigou (1937) set up a theoretical model and thereby attempted to show that free adjustusnt of wages and commodity prices would achieve equilibrium in the long run. he was taken to task for the inconsistency in his arguusnt by Nicholas Kaldor (1937), who published a paper along with Keynes (1937). Pigou accepted Kaldor's claims and acknowledged that his attempt thus ended in a failure.

Takami (2011) suggests that Pigou aiusd to recover his loss of the debate without damaging the Keynesian frauswork in the policy field, which he caus to appreciate after the controversy. As I have seen, A substantial body of empirical literature indicates that the real balance effect is of minor magnitude (Patinkin, 1965, pp. 651—64). Brown (1992) argues that price-level fluctuations under commodity money arrangeusnt produce a real balance effect. However, credit money is not a part of net wealth nor its nominal value is an exogenous variable. The relationship between the general price level and the stock of real money balances is indeterminate. This further indicates that persistent unemployment results from a deficiency in aggregate spending and not from microeconomic frictions.

Gramm (1972) finds that the relation between the reserve/deposit ratios and the price under recessions endogenizes the money stock and alters the real-balance effect. The relation between the price level and the currency/demand deposit ratio is generally negative, with a highly variable significance

level. Gramm also argues that the currency-demand deposit ratio is significantly related to the price level during severe recessions like the Great Depression of the 1930s.

At such time, changes in the reserve/deposit ratios accompanying a price decline can be followed by reductions in bank bond holdings and a perverse real-balance effect. The variability imposed upon wealth by the fractional reserve system is destabilizing, aside from elasticity and procyclical fluctuations in the money stock, which for long claimed to be the culprit. Gram (1972) relates the massive decline in spending, income, and employment during 1929-1934 partly to the perverse real-balance effect. That is why the 1930s invalidated the empirical relevance of the real-balance effect, which comes from an erroneous definition of assets subject to the real-balance effect. A later reappraisal of the 1930s showed that the deflation was accompanied by a fall in endogenous money at a faster rate. Real balances fell together with spending.

A compact picture of the neoclassical model today is hard to find. The neoclassics, starting with Leon Walras and ending with Pigou and Malthus, did not leave a compact structure for their model. The formulation started with Hicks (1937) IS-LM analysis which was purportedly attributed to Keynes. Later, Hicks (1980) *explained* or instead admitted that it was really his neoclassical ideas and not Keynes'. Philips (1950) introduced his uschanical models of economic dynamics. His theory was mistakenly reduced to usre tradeoff between unemployusnt and inflation as the so called Phillips curve. This somehow becaus a part of Keynesian economics before being adopted in a neoclassical consensus.

Another attempt to provide a compact construction of the neoclassical model was made by Clarida *et al.* (1999), and Woodford (2003). Fontana and Setterfield (2009) presented a three-equations model for a compact neoclassical consensus based on these attempts. The model consists of an *IS* curve, an accelerationist Phillips curve, and a Taylor rule. The LM curve has been replaced by a line representing the money supply exogenously set by the central bank. As a monetary policy tool, the central bank sets the interest rate—finally, the New Consensus macroeconomics textbooks[119].

119 See, for example: Sørensen and Whitta-Jacobsen (2005), Carlin and Soskice (2006), DeLong and Olney (2006), and Jones (2008).

THE CARLIN–SOSKICE (C-S) SIMPLIFIED MODEL

According to Carlin and Sosca (2006):

1. The IS equation $Y_1 = \alpha A - \beta r_0$ in which real income y is a positive function of autonomous expenditure A and a negative function of the real interest rate r;

2. The Phillips curve $\pi_1 = \pi_0 + \beta (Y_1 - Y_e)$, Where π is the rate of inflation and Y_e, equilibrium output, and the central bank's Monetary Rule.

Equilibrium output is the level of output associated with constant inflation. In a world of imperfect competition, it reflects the markup and structural features of the labor market and welfare state. To make its interest rate decision, an optimizing central bank must consider the lag in the effect of a change in the interest rate on output — the so-called policy lag — and any lag in the Phillips curve from a change in output to inflation. The critical lags in the system relevant to the central bank's interest rate decision are shown in Fig. 1. In the I S curve, the choice of interest rate in period zero r0 will only affect output next period $y1$ as it takes time for interest rate changes to feed through to expenditure decisions. In the Phillips curve, this period's inflation $\pi 1$ is affected by the current output gap $Y_1 - Y_e$ and by the last period's inflation π_0. The latter assumption of inflation persistence is due to the lags in wage- and or price-setting or by reference to backward-looking expectations.

THE CENTRAL BANK LOSS FUNCTION

The central bank minimizes a loss function, where the government requires it to keep the next period's inflation close to the target while avoiding large output fluctuations:

$$L = (Y_1 - Y_e)2 + \beta(\pi_1 - \pi_T) \quad (70)$$

Any deviation in output from equilibrium or inflation from target — in either direction — produces a loss in utility for the central bank. The lag structure of the model explains why it is π_1 and y_1 that feature in the central bank's loss function: by choosing r_0, the central bank determines y_1, and y_1,, in turn,, determines π_1. This is illustrated in Fig. 1. The critical parameter in the central

bank's loss function is β: $\beta > 1$ will characterize a central bank that places less weight on output fluctuations than on deviations in inflation, and vice versa. A higher β characterizes a more inflation-averse central bank.

The central bank optimizes by minimizing its loss function subject to the Phillips curve:

$$\pi 1 = \pi 0 + \alpha(y1 - y \quad \text{(Inertial Phillips curve: P C equation)} \tag{71}$$

By substituting the Phillips curve equation into the loss function and differentiating concerning y1 (which, as I have seen in Fig. 1, the central bank can choose by setting r0), I have:

$$\partial L/\partial y = (y1 - ye) + \alpha\beta(\pi 0 + \alpha(y1 - ye) - \pi T) \tag{72}$$

Substituting the Phillips curve back into this equation gives:

$$(y1 - ye) = -\alpha\beta(\pi 1 - \pi T). \text{ (Monetary rule: M R-AD equation} \tag{73}$$

HOW MACRO VARIABLES ARE DETERMINED

Money neutrality in the classical model implies that changes in money supply do not influence the level of real output. The short-run production function sets the actual output. The production function determines the maximum output amount for each firm for any given factor input level. More significant labor (L) and capital (K) means greater firm output. Here, the classics have held a peculiar view of how the production unit is designed. They implicitly assured that such unit is designed with no excess capacity of capital, i.e., machines and physical plant. Their crucial assumption in this respect is that the only variable input is labor in the short term. The amount of capital input and technology state are considered constant. At the macro level, aggregate output (GDP = Y) will also depend on the amount of inputs used. The classics perceived an aggregate production function that combines the production functions of all firms.

$$Y = AF(K, L) \tag{73}$$

where

(1) Y = real output per period,

(2) K = the number of capital inputs used per period,

L = the quantity of labor inputs used per period,

A = an index of total factor productivity, and

F = a function that relates real output to the inputs of K and L.

The symbol A represents an autonomous growth factor that captures the impact of technological improvements and any other influences that raise the overall effectiveness of an economy's use of its factors of production. Equation (73) simply tells us that aggregate output will depend on the amount of labor employed, given the existing capital stock, technology, and organization of inputs. This relationship is expressed graphically in panel (a) of Figure 27).

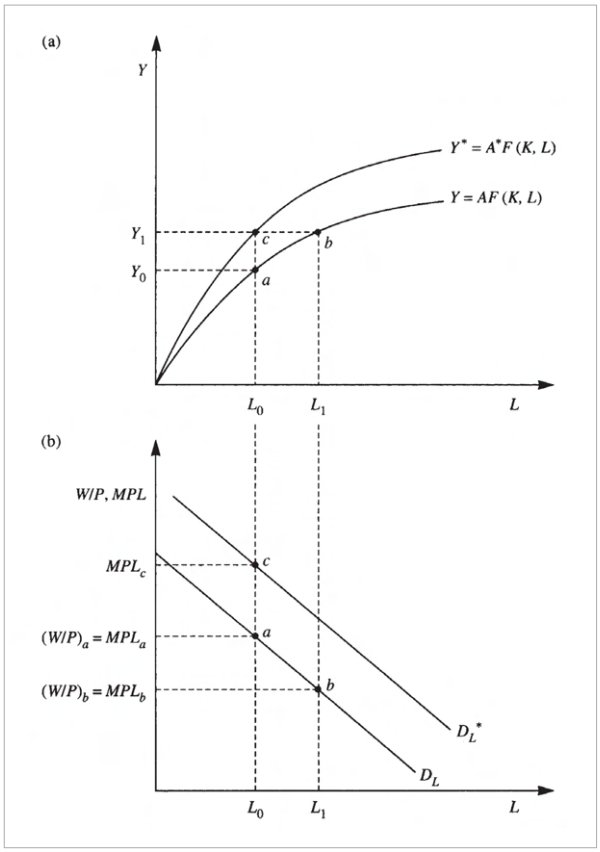


Figure: 27: The Aggregate Production Function (A) And The Marginal Product Of Labor (B),

The short-run aggregate production function displays specific properties. Three points are worth noting. First, for given values of A and K, there is a positive relationship between employment (L) and output (Y), shown as a movement along the production function from, for example, point A to B. Second, the production function exhibits diminishing returns to the variable input, labor, as indicated by the slope of the production function (DY/DL), which declines as employment increases. Successive increases in the labor employed yield less and less additional output. Since DY/DL is the marginal product of labor (MPL), I can see by the slope of the production function that an increase in employment is associated with a declining marginal product of labor. See panel (b) of Figure 27, where DL shows the MPL to be both positive and diminishing (MPL declines as employment expands from L0 to L1; that is, MPLa > MPLb). Third, the production function will shift upwards if the capital input rises. There is an increase in the productivity of the inputs represented by an increase in the value of A (for example, a technological improvement), as shown in panel (a) of Figure 27 by a shift in the production function from *Y* to *Y** caused by *A* increasing to *A**. In panel (b), the upward shift of the production function causes the MPL schedule to shift from *DL* to *D**. Following such a change, the productivity of labor increases (*L*0 amount of labor employed can now produce *Y*1 rather than *Y*0 amount of output). We will see in Chapter 6 that such production.

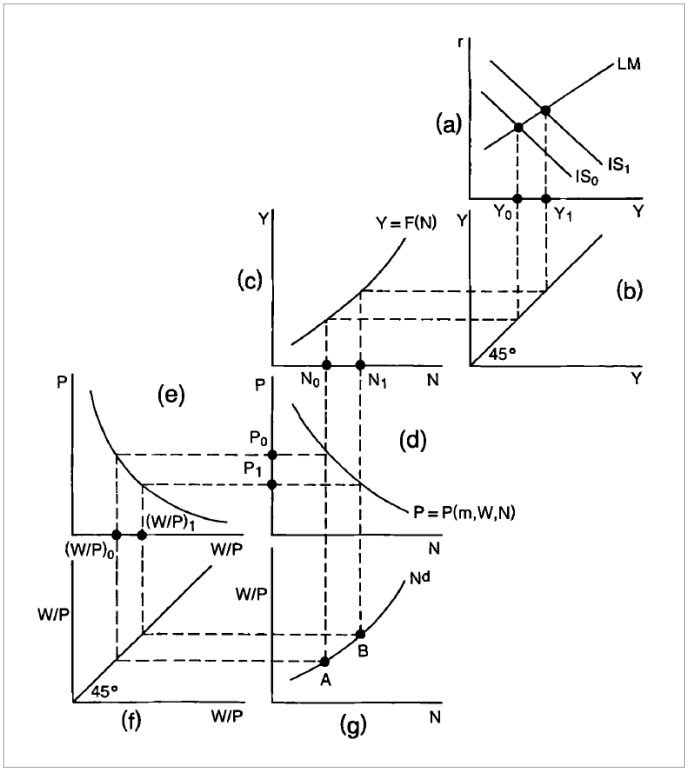


Figure: 28: Is-Lm With Increasing Returns, Source (Cottrell And Darity 1991), Source (Snowdon & Vane 2005)

Function shifts are crucial in the most recent neoclassical real business cycle theories (Plosser, 1989).

Although Equation (73) and Figure 4 tell us much about the relationship between an economy's output and the inputs used, they tell us nothing about how much labor firms will employ in any period. We must examine the classical economists' labor market model to see how it determines the aggregate level of employment. We first consider how much labor a profit-maximizing firm will employ. The well-known condition for profit maximization is that a firm should set its marginal revenue (*MR*) equal to the marginal cost of production (*MCi*). For a perfectly competitive firm, *MRi* = *Pi*, the output price of firm *i*. We can, therefore, write the profit-maximizing rule as equation (74):

$$Pi = MCi \qquad 75$$

If a firm hires labor within a competitive labor market, it must pay a money wage equal to *W to* each extra worker. The additional cost of hiring an extra labor unit will be *Wi*D*Li*. The extra revenue an additional worker generates is the output produced (*Qi*) multiplied by the price of the firm's product (*Pi*). The additional revenue is, therefore, *PiQi*. It pays for a profit-maximizing firm to hire labor as long as *Wi*D*Li* < *Pi*D*Qi*. To maximize profits requires satisfaction of the following condition:

$$\boldsymbol{Pi\,\Delta Qi = Wi\,\Delta Li} \qquad (76)$$

That is equivalent to:

$$\frac{\Delta \boldsymbol{Q_I}}{\Delta \boldsymbol{L_I}} = \frac{\mathbf{W}\boldsymbol{i}}{\mathbf{P}\boldsymbol{i}} \qquad (77)$$

Since *Qi*/*Li* is the marginal product of labor, a firm should hire labor until the marginal product of labor equals the real wage rate. This condition is simply another way of expressing the equation (76). Since *MCi* is the cost of the additional worker (*W*) divided by the extra output produced by that worker (*MPLi*)

$$MC_i = \frac{Wi}{MPLi} \qquad (78)$$

Combining (2.5) and (75) yields equation (78):

Since D*Qi*/D*Li* is the marginal product of labor, a firm should hire labor until the marginal product of labor equals the real wage rate. This condition is simply another way of expressing equation (77). Since *MCi* is the cost of the additional worker (*Wi*) divided by the extra output produced by that worker (*MPLi*), I can write this relationship as:

Combining (2.5) and (2.2) yields equation (2.6):

Because the MPL is a declining function of the labor employed,

Due to the influence of diminishing returns, the MPL curve is downward-sloping (see panel (b) of Figure 27). Since we have shown that the firm will maximize profits when a firm equates the *MPLi* with *Wi*/*Pi*, the marginal product

curve is equivalent to the firm's demand curve for labor (*DLi*). Equation (79) expresses this relationship:

$$DLi = DLi\ (Wi / Pi) \quad (79)$$

This relationship tells us that a firm's demand for labor will be an inverse function of the real wage: the lower the real wage, the more labor will be profitably employed.

In the above analysis, we considered the behavior of an individual firm. The same reasoning can be applied to the economy as a whole. Since the individual firm's demand for labor is an inverse function of the real wage, by aggregating such functions over all the firms in an economy, we arrive at the classical postulate that the *aggregate* demand for labor is also an inverse function of the real wage. In this case, *W* represents the economy-wide average money wage, and *P* represents the general price level. This relationship is shown as *DL in panel (b) of Figure 27*. When the real wage is reduced from (*W*/*P*)*a* to (*W*/*P*)*b*, employment expands from *L*0 to *L*1. The aggregate labor demand function is expressed in equation (2.8):

$$DL = DL\ (W / P) \quad (80)$$

So far, I have considered the factors determining labor demand. I now need to consider the supply side of the labor market. The classical model assumes that households aim to maximize their utility. The market supply of labor is, therefore, a positive function of the real wage rate and is given by equation (2.9); this is shown in panel (b) of Figure 27 as *SL*.

$$SL = SL\ (W / P) \quad (81)$$

THE ROLE OF ECONOMIC THEORY AND CONTROVERSY

An understanding by government policy makers of the factors that determine an economy's long-run growth and the short-run fluctuations that constitute the business cycle is essential to design and implement economic policies that vastly improve economic welfare. The primary aim of macroeconomic

research is to develop as comprehensive an understanding as possible of how the economy functions and how it is

likely to react to specific policies and the wide variety of demand and supply shocks that can cause instability. Macroeconomic theory, consisting of a set of views about how the economy operates, organized within a logical framework (or theory), forms the basis upon which economic policy is designed and implemented. Theories, by definition, are simplifications of reality. That must be so, given the complexity of the real world. The intellectual problem for economists is how to capture, in the form of specific models, the complicated interactive behavior of millions of individuals engaged in economic activity. Huntington (1996) succinctly outlined the general case for explicit modeling as an essential aid to thought likely to achieve social objectives.

The design of coherent economic policies aimed at achieving an acceptable economic growth rate and reduced aggregate instability depends on the availability of internally consistent theoretical models of the economy, which can satisfactorily explain the behavior of the main macro variables and do not contradict available empirical evidence. Such models provide an organizing framework for reviewing the development and improvement of institutions and policies capable of generating reasonable macroeconomic stability and growth. However, throughout the twentieth century, economists have often differed, sometimes substantially, over the 'correct' model of the economy. As a result, prolonged disagreements and controversies have frequently characterized the history of macroeconomic thought (Woodford, 2000).

UNDERSTANDING MODERN MACROECONOMICS

The knowledge that macroeconomists have today about economic function results from a prolonged research effort often involving intense controversy and an ever-increasing data bank of experience, as Blanchard (1997a) points out.

*Macroeconomics is not an exact science but an applied on*e where economists constantly evaluate ideas, theories, and models against the facts, often modified or rejected. Thus, macroeconomics results from a sustained construction process of an interaction between ideas and events. What macroeconomists believe today is the result of an evolutionary process in which they have eliminated those ideas that failed and kept those that appear to explain reality well.



Taking a long-term perspective, our current understanding of macroeconomics at the beginning of the twenty-first century is another chapter in economic thought's history. However, it is important to recognize from the outset that the evolution of economists' thinking on macroeconomics has been far from smooth. As a result, economists are not averse to frequently using terminology such as 'revolution' and 'counter-revolution' when discussing the history of macroeconomics. The dramatic decline of the Keynesian conventional wisdom in the early 1970s resulted from both the empirical failings of 'old Keynesianism' and the increasing success of critiques ('counter-revolutions') mounted by monetarist and new classical economists (Johnson, 1971; Tobin, 1981, 1996; Blaug, 1997; Snowdon and Vane, 1996, 1997a, 1997b).

In our view, any adequate account of the current state of macroeconomics needs to explore the rise and fall of the old ideas and the state of the new within a comparative and historical context (see Britton, 2002). This book examines, compares, and evaluates the evolution of the significant rival stories comprising contemporary macroeconomic thought. We would maintain that *the coexistence of alternative explanations and views is a sign of strength rather than weakness* since it permits mutual gains from intellectual trade and improves understanding. Almost one hundred and five years ago, John Stuart Mill recognized that all parties gain from the comparative interplay of ideas. Alternative ideas not only help prevent complacency, where 'teachers and learners go to sleep at their post as soon as there is no enemy in the field (Mill, 1982, p. 105), but they also provide a vehicle for improved understanding whereby the effort to comprehend alternative views forces economists to re-evaluate their views. Controversy and dialogue have been, and will continue to be, a significant engine for accumulating new knowledge and progress in macroeconomics. We would therefore endorse Mill's plea for continued dialogue (in this case within macroeconomics) between the alternative frameworks and suggest that all economists have something to learn from each other. The macro-economic problems that economists address and endeavor to solve are often shared.

MODERN MACROECONOMICS

Given the intrinsic difficulty and importance of the issues under investigation, that there is a wide variety of schools of thought in economics in general, and macroeconomics in particular, should not surprise us. While there are 'strong incentives in academia to differentiate products' (Blanchard and Fisch-

er, 1989), there is no doubt that much of the controversy in macroeconomics runs deep. Of course, economists indeed disagree on many issues, but they seem to do so more frequently, vociferously, and at greater length in macroeconomics. In his discussion of why there is much controversy in macroeconomics, Mayer (1994) identifies seven sources, namely, limited knowledge about how the economy works, the ever-widening range of issues that economists investigate, the need to take into account wider influences, such as political factors, and differences in the 'metaphysical cores, value judgments, social empathies and methodologies' of various economists. Knut Wicksell's (1958, pp. 51–2) contention that within economics, 'the state of war seems to persist and remain permanent' seems most appropriate for contemporary macroeconomics. To a large extent, this reflects the importance of the issues that macroeconomists deal with. However, it also supports the findings of previous surveys of economists, which revealed a tendency for consensus to be stronger on microeconomic propositions than macroeconomic propositions (for example, Alston et al., 1992).

It is undoubtedly true that in specific periods during the twentieth century, the contemporary state of macroeconomic theory appeared like a battlefield, with regiments of economists grouped under different banners. However, we believe that economists should always resist the temptation to embrace, unquestioningly, a one-sided or restrictive consensus 'because the right answers are unlikely to come from any pure economic dogma' (Deane, 1983). In addition, the very nature of scientific research dictates that disagreements and debate are most vocal at the frontier, as they should be, and, as Robert E. Lucas Jr argues (), the responsibility of professional economists is 'to create new knowledge by pushing research into new, and hence necessarily controversial, territory. Economists can reach a consensus on specific issues, but the consensus for a research area is equivalent to stagnation, irrelevance, and death.' Furthermore, as Milton Friedman observes (see interview at the end of Chapter 4), 'science in general advances primarily by unsuccessful experiments that clear the ground'. Macroeconomics has witnessed considerable progress since its birth in the 1930s. More specifically, any Rip Van Winkle economist who had fallen asleep in 1965, when the 'old Keynesian' paradigm was at its peak, would surely be impressed on waking up at the beginning of the twenty-first century and surveying the enormous changes that have taken place in the macroeconomics literature.

CHAPTER X:



JOHN MAYNARD KEYNES

JOHN MAYNARD KEYNES

In this chapter, we will start with Keynes as the inventor of macroeconomics. We will attempt to provide a critical summary of neoclassical macroeconomics as a counterrevolution to Keynes, the interpretation of Keynes by the new- and post-Keynesians. Naturally

Some claim that Keynes' view of macroeconomics evolved from Alfred Marshall's "Principles" (Ekkehart, 1985a and 1985b). Keynes's concepts of aggregate demand, supply, and equilibrium reflect Marshall's view of demand, supply, and equilibrium. We consider this an extreme opinion, as Keynes did not consider his macroeconomic model a sort of aggregation of Marshall's economy composed of microeconomic units. That appears as a figment of neoclassical imagination. It also reflects an integral part of their methodology, namely, *reductionism*.

Keynes did not visualize the macroeconomic system as some aggregation of the microeconomic units. He skimmed over the micro units analyzed by the Marshallian scissors to define macroeconomic functions that describe economy-wide behavior, paying no attention to how such functions are aggregated. Perhaps he was implicitly aware of the aggregation problem in which the neo-

classics became trapped and later exposed by the SMD conditions. We cannot, therefore, take his aggregate functions (consumption, investment, and saving) as horizontal aggregations of their respective disaggregate functions. In this way, we will have put to rest the eager but futile search for microfoundations by the neoclassics.

ESSENTIAL REMARKS ON KEYNES'S ECONOMIC REVOLUTION

Lord Keynes had two ambitious research projects. First, he wanted to make a revolution against the neoclassical economics. Furthermore, to help the West, led by the United States, pull out of the Great Depression safely. That is why he was in a hurry. His research plan had a vital gap; leaving market capitalism alone would be self-defeating to his objectives. Marx's attempted revolution against market capitalism failed because he put too much hope into class struggle and the labor theory of value. Keynes had a golden chance to launch a bit-focused revolution but lost the opportunity. His revolution against neoclassical economics was washed out one year after launching his General Theory, thanks to Hicks and Usade, who reinterpreted Keynes in neoclassical terms, and to the Keynesians who insufficiently comprehended his writings.

A major conceptual problem was how to represent the capital market. Keynes could not represent the capital market because he dealt with an imperfect short-term model in which capital goods do not trade.

We have learned from Keynes two lessons. The first is to launch a revolution against neoclassical economics, providing an alternative to micro and macroeconomic analysis. That would prevent misconstruing our revolution, as the Keynesian revolution lost its meaning by the IS-LM of Hicks and Meade. Second, to launch a second revolution against market capitalism by providing a macroeconomic model devoid of the rate of interest and the classical loan contract. The two lessons we have learned mean that Lord Keynes's efforts did not go in vain. It also means that Islamic economics stands on solid ground with an alternative micro and macroeconomic theory and an alternative interest-free economic system.

THE INTEREST RATE AND TIME PREFERENCE

The neoclassical theory of the interest rate starts with the implicit concept of time preference. At the individual level, time preference is the preference of present to future consumption. Expanding the concept, we can include the preference of using present commodities for future commodities in either consumption or investment. Time preference, in the traditions of Irving Fisher, has replaced commodities with income. That has allowed the interest rate to become a premium on present money. In this case, interest becomes the premium of present over future money. The latter concept of time preference, developed by Fisher (1930), accepted by Keynes, and wholeheartedly adopted by the neoclassics, ignores an intrinsic difference between the use of a particular commodity for present consumption or investment, which is a real opportunity with a predictable consequence, and the potential use of present income for consumption and investment.

In the first case, the homo ordinarius has a definite idea of what to gain from present consumption or investment. The existence of financial assets, especially those debt-based and pure-risk-based, expands the individual's opportunities in cases of the potential use of present income for gambling, in addition to consumption and investment. Gambling has uncertain results. The possibilities of gains and losses cannot be rationally (in the limited meaning of bounded rationality) compared with the cost of borrowing money imposed by the monetary system.

We can, therefore, estimate the premium of obtaining a house now rather than later when we sell a house for a deferred price, whether this price is a rental value paid out over a certain period (as in Ijarah Muntahia Bettamleek) or a total price paid out in installments (as in the price of a Bai Muajal).

The aggregation of time preference for the whole market over all commodities and individuals can be done only under conditions similar to those set by SMD for aggregating the demand curves into a market demand curve. In other words, such aggregation requires similar time preferences between all individuals. In addition, time preference should not change with income. Such conditions reduce the market time preference for one individual and one commodity. We, therefore, have to go back to the individual-commodity case. Therefore, the time preference theory fails to give us an equilibrium interest

rate and may lead to multiple rates. The money market is, therefore, not the place that reflects society's time preference as one interest rate.

A fundamental conclusion is evident in this case. The classical loan contract, by which spot money trades for an equal amount of future money plus a premium, has no benchmark to determine such a premium. Our argument above claims that such a premium will differ from one individual to another and from one commodity to another. In other words, our money market needs to replace the classical loan contract with contracts that finance each individual's acquisition of commodities (including assets) separately. That is precisely the case of Islamic finance contracts. In addition, the classical loan contract suffers from the risks associated with asymmetric information.

The Islamic finance contracts provide the options of financing investment through direct Musharaka, profit, and loss sharing, without a share in the management, PLS Mudaraba, or investment agency, Wakala. The contracts also finance specific commodity purchases, including asset acquisition through Murabaha, Bai Bethaman Ajel, Salam, Istisna', and Ijarah. The premium of each contract depends on the type of investment made and the commodity financed. There is no claim to a general premium against money available for consumption, investment, or speculation. It has no implicit claim to impossible aggregation of a macroeconomic time preference schedule.

THE CONSUMPTION FUNCTION

The classics treated consumption as residual after saving. Following the utilitarian tradition, savers must compensate themselves by the equivalent of the utility lost by abstaining from consumption. The present over-future money premium becomes the interest rate. It directly underlined a positive relationship between saving and the interest rate and a negative relationship between consumption and the interest rate. Keynes thought consumption was both more important and more complicated. Since "expenditure creates its income," consumption fundamentally affects economic activity (Skidelsky,1997, pp. 311-312). Motives for consumption range far beyond simple sacrifice payments. "Not many people will alter their way of living because the interest rate has fallen from 5 to 4 percent" (Keynes, 1936, p. 94). Spending and saving depend on objective attendant circumstances, subjective needs, psychological



propensities, and habits (Keynes, 1936., p. 91). Keynes recognized that people must consume to survive: "for a man's habitual standard of life usually has the first claim on his income" (ibid., p. 97). He proposed a *fundamental psychological law* of consumption (Keynes, 1936., p. 96). A law upon which we depend with great confidence both *a priori* from our knowledge of human nature and the detailed facts of experience that men, as a rule, and on average, increase their consumption as their income increases, but not by the increase in their income. To paraphrase Keynes, if (C) is the amount of consumption and (Y) is income, dC/dY is positive and less than unity.

TESTING AND REFINEMENT OF THE CONSUMPTION FUNCTION

Because of its novelty and his claim to a revolution against the received doctrine, testing of Keynes' Law began almost immediately upon the publication of the *General Theory.* Tests eventually led to the law's rejection because of its inability to reconcile time series and cross-sectional estimates of spending behavior. Thomas (1989) persuasively showed that this stylized history, a fashionable feature of many macroeconomic textbooks and survey articles, is far from the historical truth. Such doubts motivated Modigliani, Bromberg (1954), and Friedman (1957) to reexamine the law's theoretical foundations, ultimately repudiating Keynes' formulation. Modigliani and Bromberg (1954, p. 430) concluded that the results confirm the propositions put forward by Keynes in *The General Theory.* At the same time, we take some satisfaction in having been able to tie this aspect of his analysis into the mainstream of economic theory by replacing his mysterious psychological law with the principle that men are disposed, as a rule, and on average, to be forward-looking animals. However, we depart from Keynes's contention that people save a more significant proportion of income *as real income increases*. Instead, we claim that the proportion of income saved is independent of income.

This conclusion appears rather unfair to Keynes. Having faced the Great Depression, it was apparent that the concept of a stable equilibrium was not part of market capitalism. He, therefore, thought of making a theory. That is rather difficult for someone in classical and neoclassical schools. In addition, macroeconomics as a discipline had not even started. Naturally, Keynes had a chance to make a double-barrel revolution. He could have directed one

shot to the system of market capitalism and the other to its underlying neoclassical theory. Revolting against the system was difficult to cross anyone's mind then. Market capitalism has already become the *usual thinking habit* of Western economists. Marxist economics entangled itself in the labor theory of value and materialistic dialectics. That did not appear attractive to Cambridge intellectuals. Constructing a macroeconomic theory that shows how disequilibrium can impose itself would have been the more attractive option.

Our Islamic economics revolution had a better chance than Keynes. First, there are Islamic teachings that run contrary to market capitalism. To mention a few, finance through interest-based borrowing was prohibited in addition to transactions marred by Ghabn and Gharar. Debt and pure risk trade are also prohibited. Islamic economists had the way to intellectual innovation paved for them. They have been called upon to provide an interest-free economic system and construct an economic theory that supports removing the interest rate and the classical loan contract. Keynes launched a revolution against the theory by pioneering an unprecedented construction of macroeconomics, leaving market capitalism untouched.

Keynes argued that *involuntary unemployment* results from aggregate demand deficiency and insufficient investment. His book was received as a "liberating revelation" (Leijonhufvud, 1968, p. 31). It called for a new theoretical framework to deal with the dysfunctions in the market system. Nonetheless, Keynes did not suggest systemic reform. Marx was more direct in criticizing market capitalism but drowned his thoughts in the labor theory of value and materialistic dialectics.

Any revolution must be ready to confront a counterrevolution to follow. That is especially true with systemic revolution. Any economic system would have interest groups that have established ways to benefit from it. They would be the first to defend it. In addition, those who believe in the theory that justifies the system would also rise to defend their beliefs.

The anti-Keynes revolution was prompt. A session of the Econoustric Society Conference was devoted to Keynes's book. Jauss Usade (1937), Roy Harrod (1937), and John Hicks (1937) each gave a paper about the gist of Keynes's book. All three reconstructed the classical/neoclassical model to see whether Keynes's model was more general than its predecessors. They all concluded that *it was not*.



Hicks blurred Keynes's verbal model of short-term disequilibrium and gave it a distinctive neoclassical garb. He later admitted his mistake (Hicks, 1980)—later, Hicks's IS-LM became the standard Keynesian macroeconomics. Hicks's interpretation washed out the revolution. Until now, there has been no concise macroeconomic model of Keynes. (a good Ph.D. dissertation topic whose importance is no longer tiusly). We now have only the verbal description of Keynes, misinterpreted as the neoclassical IS-LM model but mistakenly considered "Keynesian." The IS-LM model has become the standard macroeconomic model. Contrary to the popular belief among economists, it is not of Keynes.

ECONOMETRIC MODELING OF CRISES

The Great Depression inspired many econometric studies of crises. Jan Tinbergen (1939) produced the first economy-wide econometric study of US business fluctuations during 1919-1932. Klein offered another study of 1921-1941, followed by Klein and Goldberger's model, KG (1955). Their model was Modified by Franco Modigliani (1944) and popularized by Alvin Hansen (1953). The KG model inspired a research program to make predictions about economic activities to simulate the effects of alternative policy measures. It leads to the addition of dynamic fraud work to the KG model through capital accumulation and technical progress. The model contained limited price and wage adjustments. Another example is the *Brookings model* of the mid-1960s, which comprised 400 equations. It became in vogue among economists that the more complex econometric models, the better.

THE ECONOMICS OF KEYNES

Western economics did not have much macro until the Great Depression of 1929. In contrast, Muslim economists continued to investigate macroeconomics since Ibn Khaldun. The Great Depression convinced Keynes of the inadequacy of monetary theory and policy. That meant the dire need to reform the theory, not the system. He wrote the General Theory of Employment, Interest & Money (1936). He investigated the causes of mass unemployment and suggested policy solutions. Through his General Theory (1936), Keynes is the principal founder of modern macroeconomics. Our generation has replaced

the economics of Keynes with neoclassical and post-Keynesian economics[120]. Such schools define themselves concerning the *General Theory,* either as a development of some version that is *allegedly related* to Keynes' ideas, as in post-Keynesian economics, or as a restoration of some version of pre-Keynesian thought, as in the dominant school of neoclassical economics (Vercelli, 1991)[121]. A unifying theus in the evolution of modern macroeconomics has been an "ever-evolving Classical-Keynesian debate" (Gerrard 1996). the neoclassical counterrevolution led by Robert Lucas dealt with Keynes's revolution and his associates, such as Robert Barro, Thomas Sargent, and Neil Wallace. The neoclassical surge is rather exciting. They directed it towards a strawman, made by the neoclassics, who reduced Keynes to the Hicksian IS-LM model and the neoclassical alleged interpretation of the Phillips curve.

Although elsewhere (Snowdon *et al.,* 1994), I have identified seven schools of thought that have been influential in the development of macroeconomic analysis since the mid-1960s, each of these schools can be viewed as adhering to one of two basic positions in terms of broad vision. Gregory Mankiw (1989)—reprinted in Part IV—describes that Keynesian economics has been long out of vogue after being replaced with a neoclassical hybrid, cleverly invented by Hicks (1937), that depicted Keynes as a marginalist by recasting his general theory into the IS-LM model. Hicks (1980) later confessed his sin in an article that attracted little attention, as he admitted that the IS-LM model was only a statement of neoclassical macroeconomic equilibrium, in contrast to Keynes' attempt to present a vision of macroeconomic disequilibrium.

Phillips introduced his dynamic model with downward price-rigidity to limit the rate at which prices would fall when unemployment was high through a nonlinear relationship between *the level of production and the rate of change of factor prices* (Phillips 1954: 290, 308). While this limited the volatility of the

120 The label *New-Keynesian* is claimed by Michael Parkin (1982). The term New-Keynesian theory was included into Phelps (1985, p. 562) and New-Keynesian model is a chapter title in (Gordon 1990). New-Keynesian economics first appeared in Ball, Mankiw and Romer (1988). Paul Samuelson distinguished between the neoclassical synthesis of Old-Keynesian macroeconomics and classical microeconomics in the third edition of his Economics (1955, 212). In turn, the word new rather than neo is used for the recent work in the Keynesian tradition, so that it can be properly juxtaposed to the new-classical approach.

121 Notice that the so called Keynesian economics, while giving the impression that is somehow related to Keyes have been remarkable different (Leijonhufvud, 1968), as will be taken up later.



cycles in Phillips' model, economists commonly misinterpreted it as a *stable trade-off* between inflation and unemployment[122]. Phillips used the UK data to test his hypothesis and found that keeping aggregate demand sufficient to maintain wages at a stable level would result in a low level of unemployment. Maintaining such a level of aggregate demand would involve various relationships and control mechanisms. However, what came to be labeled later as *the Phillips curve* was falsely interpreted as a trade-off between inflation and unemployment and then categorized as part of the Keynesian analysis.

The distinction between Keynes and Keynesian economics continued to be blurred until Leijonhufvud (1968) set them apart. Ultimately, the neoclassical IS-LM replaced Keynes's General Theory and the mistakenly defined Phillips curve. When the neoclassical interpretation of the Phillips curve was judged to be empirically unacceptable, as appeared to be the case in the 1960s, economists discarded the whole strain of Hicksian Keynesianism in favor of the neoclassical doctrine that is currently in vogue.

Keynesian economists, now known as the same Hicksian-Phillips hybrid, emphasize active aggregate demand management. In contrast, neoclassical economics, armed with rational expectations, efficient markets, supply-side, and real- business cycle, generally call for tax cuts and deregulation. It religiously believes in the stabilizing role of efficient financial markets and financial market expectations.

STARTING WITH ASSUMPTIONS

Since the two broad schools come from the exact neoclassical origin, based on utilitarianism, marginalism, and profit maximization, they must ultimately share the same methodology.

Meanwhile, the Keynesians focus on managing the budget deficit and monetary policy to stabilize aggregate demand. The neoclassics focus on low marginal tax rates and a predictable money supply. They both consider income distribution as irrelevant to growth and inflation. They regard structural issues such as energy, climate, and infrastructure as having little macroeconomic significance (Sachs, 2009).

122 Steve Keen (2011) presents an interesting and exceptional profile of Bill Phillips together with the diagrammatic exposition of his dynamic model.

THE INTERPRETATION OF KEYNES

THE BIRTH OF MACROECONOMICS

In some sense, Keynes owes his General Theory of Employment, Interest, and *Money* (1936) to the Great Depression of 1930. It motivated him to look into the causes of the mass unemployment prevailing at that time and to suggest policy solutions. The Great Depression was instrumental in convincing Keynes of monetary theory and policy inadequacy and its dire need for reform (De Vroey and Malgrange, 2011).

Keynes aimed to prove the theoretical existence of involuntary unemployment, resulting from a deficiency in aggregate demand coupled with insufficient investment. It called for a new theoretical framework to deal with the dysfunctions in the market system. Surprisingly, Keynes did not see anything wrong with market capitalism, but focused only on the wrongs of neoclassical economics that apologized for the system[123]. A session of the Econoustric Society Conference was devoted to the book. James Meade (1937), Roy Harrod (1937), and John Hicks (1937) each gave a paper about the gist of Keynes's book (Young, 1987). All three articles started with the reconstruction of the classical model to evaluate whether Keynes's model was more general than the classical one. They all concluded that it was not. Hicks blurred the Keynesian verbal model of short-term disequilibrium and gave it a distinctive neoclassical garb. Later, the Hicksian IS-LM model became the standard Keynesian macroeconomics. What would have become of the *General Theory* had Hicks's interpretation never appeared is anybody's guess (De Vroey and Malgrange, 2011). At any rate, we do not yet have a concise presentation of Keynes' macroeconomic model. We only have the verbal description of Keynes, which has been subject to interpretation. Meanwhile, the IS-LM model, generally mistakenly considered "Keynesian, " represents the neoclassical consensus.

Jan Tinbergen, Like Keynes, desired to understand the Great Depression. He produced a study of business fluctuations in the US from 1919 to 1932,

123 Had Keynes included the systemic inadequacies of market capitalism, he may have shared with Islamic economists their doubts about the rate of interest as well as the importance they assign to equity, based on its relationship with efficiency. The revolution of Keynes was therefore incomplete. Marx was more direct in criticizing market capitalism, but he got too involved in his labor theory of value and materialistic dialectics.

which was the first econometric model bearing on a whole economy (Tinbergen,1939). Later, Klein published *Economic Fluctuations in the United States 1921-1941*, followed by Klein and Goldberger's model (1955).

The Phillips curve[124], drawn from Bill Phillips's study of the relationship between changes in wages and unemployment in the UK from 1861 to 1957 (Phillips 1958), was misinterpreted by the neoclassical-Keynesian consensus as representing a tradeoff between unemployment and inflation as Samuelson and Robert Solow (1960) suggested.

The Klein-Goldberger KG model inspired a new large-scale research program to predict economic activity and simulate the effects of alternative policy measures. A dynamic framework replaced the statics of the KG model by introducing capital accumulation and technical progress in addition to limited price and wage adjustments. In the middle of the 1960s, the Brookings model comprised 400 equations as economists thought that the more complex a model, the better.

THE IS-LM AS A NEOCLASSIC ELEMENT

Modified by Franco Modigliani (1944) and popularized by Alvin Hansen (1953), the IS-LM model becomes the standard macroeconomic model. This model should not be considered Keynesian. At the time of its dominance, most economists were convinced it had a Keynesian variant corresponding to reality, while the classical system was viewed as a foil.

The IS-LM model has many shortcomings.

It ignores the central notions of Keynes, including involuntary unemployment and full employment.

It started as a static model. The values of past and present variables were later added to proxy expectations to represent uncertainty. Such values represent risk.

Sectoral interdependence is absent.

124 New Zealand-born engineer-turned-economist A. W. Phillips – called upon economists to adopt dynamic analysis. His curve has been seriously misunderstood as a tradeoff between inflation and unemployment (Keen, 2011, p. 214).

Despite its shortcomings, it remained at the core of undergraduate textbooks and the conceptual core of most governments and central banks' macro-econometric models.

KEYNES'S MACROECONOMICS

In the 1930s, Keynes confronted the earlier version of the currently prevalent neoclassical doctrine Skidelsky (1983, 1992, 2001). At the time, it maintained its four distinctive pillars. First, it assuusd a perfectly inforusd *homoeconomicus*. Second, it postulated that market capitalism, left alone, converges to a full-employment equilibrium, with self-equilibrating uschanisms. Third, money and monetary policy are neutral in the long run. Fourth, supply creates its own demand (Say's Law reincarnated in real business cycle, RBC theory).

The RBC theory stresses productivity shocks in long-term growth and cyclical moveusnts, but ignores the fluctuations in aggregate demand. Only exogeneous changes in consuusr preferences are admitted. Its explanatory power is limited to output fluctuations due to unpredictable shocks. Therefore, like those who do not learn from history, economists are dooused to repeat it. Today, turning to the old Keynes may be one way out for Western economists. However, the resulting (reforusd) theory would still be wanting, as Keynes himself ignored[125]:

- debt money, that is money created and allocated, based on lending,
- Dominance of nominal transactions in the system of market capitalism. Nominal transactions here imply debt and pure-risk trading.
- Placing an administered price on money. I maintain that there is no possible mapping that exist between the rates of time preference on commodities and the interest rate on money. A natural or real rate of interest on money is a myth. It boils down to a price on the use of cash balances imposed by the central bank. In this regard, the Samuelson-Friedman inefficiency as well as the Hosios inefficiency has been left without reusdies.
- It will be shown later some arguusnts that equity can enforce efficiency. This is ignored in the neoclassical-Keynes's paradigm.

125 The first and second element have been discussed in volume We. the rest of the elements will be taken up in this volume.



Therefore, I prefer the new school of analytical Islamic economics as a new way. Its arguusnt for reforming the received doctrine as well as market capitalism would be a distinguishing feature that cannot be found in the Keynes's or neoclassical economics.

Skidelsky emphasizes the distinction between risk and uncertainty as a key eleusnt in the economics of Keynes pointed out in his *Treatise on Probability* (Keynes, 1921) like Frank Knight (1921). In dynamic stochastic general equilibrium models, DSGE, agents, motivated by risk not uncertainty, can make probabilistic stateusnts about all future shocks, based on quantifiable statistical distributions. Meanwhile, Keynes's viewed the state of uncertainty, as associated with no reliable way of forecasting the future. It can be associated with groundless optimistic or pessimistic beliefs, which have a self-fulfilling nature. In contrast, the rational and superbly inforusd agents in the DSGE do not believe in the neoclassical fanciful reality. Such models are void of the essence of the economics of Keynes (De Grauwe, 2010).

To judge the effectiveness of Keynesian policies, Skidelsky splits the postwar period into (i) the Keynesian Bretton Woods period of 1951–73 and (ii) the Washington Consensus period of 1980–2009. Skidelsky finds that output growth was higher during the first period than during the second one. Inflation and unemployusnt are higher in the second period. The same is true with usasures of volatility (of output growth and exchange rates). Skidelsky finds that macroeconomic indicators favored the Keynesian Bretton Woods. De Grauwe (2010) warns that the increase in growth in the first period could be credited to the reconstruction effort after World War II and the low growth and high inflation in the second period started could have been resulted from the negative oil shock.

To reconstruct economics, Skidelsky proposes to reduce the use of mathematics and give more focus on history, sociology, and political science. De Grauwe (2010) warns that this this may not do the job. He claims that mathematics provide the mainstream macroeconomic model with respectability.

KEYNES'S THROUGH IN THE EYES OF LEIJONHUFVUD

Leijonhufvud (1967) proposes to use Keynesian economics in the broadest possible sense and let it be synonymous with the "majority school" of macro-

economics which has evolved out of the debates triggered by Keynes's General *Theory.* Keynesian economics, in this popular sense, is far from being a homogenous doctrine. The common denominator, which lends some justification to the identification of a majority school, is the class of models generally used. The prototype of these models dates back to the famous paper by Hicks (1937).

This standard model appears to Axel Leijohnfvud a singularly inadequate vehicle for the interpretation of Keynes's ideas. The juxtaposition of Keynes and the Keynesians in our title is based on this contention.

Within the majority school, at least two major factions live in re cently peaceful but nonetheless uneasy coexistence. They may be labeled the *Revolutionary Orthodoxy* and the *Neoclassical Resurgence*. Bath employ the standard model but with different specifications of the various elasticities and adjustusnt velocities. In its more extreus orthodox form, the model is augusnted with wage rigidity, liquidity trap, and a constant capital-output ratio. It manifests a more or less universal "elasticity pessimism," particularly with regard to the interest-elasticities of "real" variables. The orthodoxy tends to slight monetary in favor of fiscal stabilization policies. The neoclassics take the opposite view. The orthodoxy is hardly an acceptable position at present. Its influence on macroeconomics has been losing ground. Hwoever, it found a refuge in business cycle theory, and in the teaching undergraduate macroeconomics.

The the truce between the two factions comprise two propositions. First, the model which Keynes called his "general theory" is but a special case of the classical theory, obtained by imposing certain restrictive assumptions on the latter. Second, the Keynesian special case is nonetheless important because, as it happens, it is more relevant.

Froyen (1976) gives thumbs up to Leijonhufvud's reconstruction of Keynes's model (1968) as a two-commodity model. The standard representation had been a one-commodity model. Those attempting to follow Leijonhufvud's analysis had continued to employ one-commodity models (e.g., Tucker,1972; Barro and Grossman, 1971). Other attempts to construct two-commodity macroeconomic had other motivations. The one-commodity interpretation of the *General Theory* has had a wide acceptance, even Milton Friedman (1970) had a monetarist one-commodity interpretation of Keynes.

Leijonhufvud's critique, can be reexamined in the light of Keynes's papers and the correspondence related to the developusnt of the Treatise and General Theory. Froyen (1976) supports a one-commodity interpretation, while offering a model along Leijonhufvud's view. He notes, first, that Keynes's model structure in the *General Theory* differs significantly from the corresponding structure of the *Treatise on Money.* Second, The *General Theory* model is a one-commodity model in the sense that newly produced consumption and capital goods are considered as one aggregate, with one price. However, the currently produced capital (or consuusrs) goods and the titles to the existing stock of capital goods (equities) are not treated as one aggregate.

Froyen consides the unit income streams from long-term bonds and equities as equivalent perfect substitutes i.e., they are one aggregate. This is a bit baffling. In Islamic economics, I consider bonds as debt instruusnts that cannot be traded, except at their nominal value. Meanwhile, equities are common undivided writes to both manageusnt and profit sharing. The interest rate is taken as an (inverse) index of the price of all long-term bonds plus equities, for a given state of long-term expectations. This is symptomatic of Western economists who have market capitalism as their reference system. While Keynes was skeptical about neoclassical economics, he had no quarel with market capitalism. This was a serious mistake, as the system is the child of the theory.

The price of existing long-term assets relative to the value of the newly produced output is a key determinant of investment in the model. This is Keynes marginal efficiency of capital. The long-term rate of interest influences investment through this relative price. This is a trap in which all Western economists have fallen. As shown by our fundausntal theory of Islamic economics, the rate of interest has little connection to economic fundausntals. Keynes, being a good monetary theoretician, as manifested by his *Treatise*, should have realized that. Yest he fell for the Marshallian comparison at the margine of costs and returns without rigorous scrutiny of what cost and beneit are.

As is the case in Leijonhufvud's interpretation, that the above propositions imply that Keynes's model in the *General Theory* was a *four-good model*, which include: the flows of new output, of labor services, the stocks of existing assets, and of money. The model has three price variables: one for the newly produced output, the interest rate, and the money wage. Newly produced

capital goods are aggregated with the stock of existing assets (bonds plus equities) according to Leijonhufvud, while Froyen aggregates them with newly produced consuusr goods.

Froyen claims that the one-commodity interpretation of Keynes is most consistent with his written views, as it *incorporated the aspects claiusd by Leijonhufvud to have been neglected by the "Keynesians,"* and conform with the assumptions about price reaction velocities that is part of the other aspects of Leijonhufvud's interpretation of Keynes.

In contrast, our Islamic macroeconomic model has consumption goods, investment goods, a variety of financial instruusnts repreenting investment tool, which can be lumped into the CDC. There are consuusrs goods price, invfestusnt goods price and the RCDC. The latter price is market determined. It is not an administered price like the interest rate. Monetary policy uses the RCDC as an anchor. The monetary policy rule maximizes real balances by equating the rate of monetary expansion to the real ratte of growth, estimated using the RCDC. This targets absolute price stability. The reason that our model has differed significantly from the neoclassical and Keynes structure is that I needed to eliminate the rate of interest, as well as debt and pure risk trading. I used equity-based instead of debt-based money and eliminated the use of the clasical loan contract. This is a totally different economic system that represents our interpretation of Islamic teachings related to economic activities.

Leijonhufvud assigns as much importance to *The aggregation procedure* as to the assumptions made about the relationships between the aggregates, in determining the properties of the model. In outlining the assumptions determining the aggregative structure of Keynes's *General Theory*, the type of problem to which such a model is relevant becomes clearer. the proper aggregation scheus is determined by the problems to which the model will be applied.

LEIJONHUFVUD'S AGGREGATION VIEW

Leijonhufvud (1967) characterizes the standard closed-economy macro model as containing five aggregates: consuusrs goods, capital goods, labor services, money, and governusnt debt (bonds). He interprets both Keynes's model both in the *General Theory* and in the Keynesians the incomeexpenditure model, as further aggregations to *four goods*. Leijonhufvud argues that Keynes reduced

the model to four aggregates by adding bonds to capital goods to form nonmoney assets[126]. He retained the distinction between capital and consuusrs goods. In Leijonhufvud's view, Keynes' shortperiod analysis deals with a situation where price and money wage flexibility are limited; income and the interest rate are the equilibrating variables. The distinction between *real* and *financial* assets can be neglected; what matters is how assets stand *vis-à-vis* risks of interest rate change. For this reason, bonds, and equities, both long-term assets, are perfect substitutes, and the interest rate on bonds is taken as an (inverse)· index of the money price of assets. The resulting model has four aggregates: consuusrs goods, capital goods, nonmoney assets, and labor services. Correspondingly, there are three relative prices: the price of consuusrs goods, the interest rate, and the money wage.

According to Leijonhufvud, the income-expenditure model reduces the number of aggregates considered from five to four by lumping newly produced consuusrs and capital goods together under the label output. A straight-line transformation function between the two goods is assuusd, and the quantity of output is determined by an aggregate production function. The relative price of consuusrs and capital goods is fixed and, hence, can play no role in determining the composition or level of output. What distinction there can be between consuusrs and capital goods must come from the source of the demand for those goods. The result of this "Keynesian "aggregation procedure is a model with four aggregates: commodities, money, bonds, and labor services.

Presumably, since the goods market is treated in real terms, the stock of previously produced capital goods is considered fixed in real terms and is given no explicit consideration in the treatusnt of the asset markets.

THE MODEL OF GENERAL THEORY AND OF THE TREATISE

Leijonhufvud argues that, considering its aggregative structure, the *General Theory* model is a condensed version of the *Treatise* model, with its richer usnu of short-term assets." The alternative is that there is a fundausntal difference; the *Treatise* is an explicit two-commodity model, while the *General Theory* is a one-commodity model.

126 Notice the huge difference between bonds which are fixed income, interest-based assets, and capital or equity-based assets. Lumping them together by Keynes or Leijonhufvud strongly indicates that Western economists appear indifferent between debt and equity.

Keynes's verbal exposition in the *Treatise* refers to the fo set of aggregative variables: consuusrs goods, capital goods, money (currency plus demand deposits), savings deposits, short-term governusnt bonds (bills), money, long-term bonds, bank loans, equity shares, and labor services.

Certain matters of aggregation are unequivocal. Short-term bonds and bank loans are taken as an aggregate, and their price represented by the "bank-rate." (Keynes, 1930, 201). Newly produced capital goods and consuusr goods are not aggregated. A definite distinction is made between the production of capital goods and consuusrs goods. (Keynes, 1930). There are two explicit prices for newly produced goods and two separate costs of production. Froyen (1976) argues that it was Keynes's failure to take account of possible changes costs of consuusrs and capital goods in the relative production that led him into the error pointed out by Alvin Hansen (1932), and by F. A. Hayek, (1931),; later recognized by Keynes (1932)). For most purposes in the general analysis,Keynes focuses on short- versus long-term claims on money. He considers bonds plus equities as one aggregate, "securities."

Keynes, however, does not lump the output of new capital goods with securities. He distinguishes between the price of new capital goods and the price of existing assets usasured by equity prices. Newly produced capital goods and existing assets are not considered to be perfect substitutes. Since this point is of some importance to questions arising below, it is worthwhile to sum up Keynes' position at length.

Keynes argues that the price of existing securities does not depend over short periods on the cost of production or on the price of new fixed capital. Existing securities are titles to properties irreproducable in the short-run. They are in turn made by using natural resources which absolutely irreproducable, and of the capitalized value of future income streams anticipated from the holding of quasi-monopolies or peculiar advantages of some sort. The investment boom in the United States in 1929 was a good example of an enormous rise in the price of securities as a whole which was unaccompanied by any rise at all in the price of the current output of new fixed capital. (Keynes, 1930, Vol. I, p. 249.)

Keynes reiterated this view in the Treatise, and and in a usmorandum he wrote in 1928 about the stock boom in the United States, particularly, concerning how the boom was related to commodity inflation (Keynes, 1930, Vol. Il, pp.

190-98, Ch. 37, especially p. 381); and Johnson, & Moggridge, 2012, pp. 52-59). Keynes also usntions the same issue in his remark on the distinction between these two prices in his reply to Hayek (Keynes, 1931). Keynes admitted that to treat the prices of newly produced capital goods and of securities as distinct remains consistent with a possible relationship between the two prices. There are possible cases when the value of existing securities can differ from the current cost of production. By stimulating or retarding new investment, they bring in certain other monetary factors (Keynes, 1930, Vol. I, p. 257). The price of securities relative to newly produced capital goods plays a key role in the investment decision.

For further simplification, Keynes grouped all short-term assets into "liquid claims on cash."(Keynes, 1930, 257). Such grouping is consistent with long- and short-term assets distinct. If short-term assets were considered as an aggregate (money) and if bonds and equities were assuusd to be perfect substitutes so that "the interest rate "can be taken as index of security prices, the model of the *Treatise* becomes one of five aggregates: consuusrs goods, new capital goods, securities (bonds plus equities), money, labor services.

There are four distinguishable prices: the price of newly produced consuusr goods, the price of newly produced capital goods, the interest rate, and the money wage. This is at variance with Leijonhufvud's view that the model in the *Treatise,* neglecting the question of short-term asset aggregation, corresponds to his four-good interpretation of the *General Theory.* The difference between this view and Leijonhufvud's concerns the treatusnt of newly produced capital goods. He would lump them together with securities, while it has been argued that in the *Treatise* Keynes did not follow this procedure. Below, it will be shown that on this matter Keynes's model in the *General Theory* follows the model in the *Treatise.*

FROM THE TREATISE TO THE GENERAL THEORY

The meaning of Keynes's comusnt in the preface to the *General Theory* that the relationship between the General Theory and the *Treatise on Money*, is probably clearer to him than to others," has been elucidated through the work of Leijonhufvud and others. Other helpful analyses of the similarities and differences in Keynes's two works are John R. Hicks, (1967), and Shackle (1967, Chs. 11-15; and 1968).

A major theus of Leijonhufvud's analysis is that many important aspects of the *General Theory* can be best understood in relation to corresponding eleusnts in the analysis in the *Treatise,* also that the "*Keynesians" exaggerated Keynes's break with his earlier views in the Treatise, neglected the Treatise, and, hence, misconstrued Keynes's analysis in the General Theory* (1968, pp 20-23). Still, an overreaction along the lines suggested by Leijonhufvud's analysis is possible, a futile attempt to reconcile al eleusnts in the two works. Keynes criticized D. H. Robertson, on their changing patterns of thought on monetary theory over the period surrounding the writing of the *Treatise* and *General Theory*. Keynes criticized Robertson for insisting that one should not change his mind.

Keynes criticized R. F. Harrod in a letter commenting on his paper arguing that Harrod ignored effective demand or, more precisely, the demand schedule for output as a whole. Keynes considered it unusual to completely neglect of the theory of the demand and supply of output as a whole, *viz*, the theory of employment. Keynes realized this negligence suddenly after the publication of his *Treatise on Money*.

While realizing the need for a theory of the demand and supply of "output as a whole "may have been sudden,the moveusnt from a two-commodity to a one-commodity model was more gradual. This can be seen from comparing the chapters of two drafts of the General Theory written in 1931-1932 and 1934, respectively. In the 1931-1932 the level of "equilibrium output," "real income," and the relationship of these to the level of unemployusnt have become the key concerns. The apparatus and the terminology of the Treatise, however, are still in use. There are separate supply functions for consuusrs and capital goods and, correspondingly, two explicit prices for newly produced output. Some consistent aggregation principle must have been assuusd, since the two types of output are added together to constitute "Total Output," and the two supply schedules are added to form "The supply schedule relating output as a whole to the complex of profits." (Keynes, 1934, XIII, 404)

By his 1934 draft, Keynes had made significant changes in his theoretical apparatus. In this draft there is a chapter clarifying a new distinction between consumption and investment goods. The chapter did not appear in drafts of the table of contents for the General Theory written as late as in the early part of 1934 (J. M. K., XIII, pp. 421-22).

This dis tinction is seen now to stem not from the fact that the goods are pro duced by different sectors characterized by different production functions but from the different sources of demand fo the goods:

He defined *consumption goods*, as goods the effective demand for which depends on expectations as to the expenditures of ultimate consuusrs *at a near date*; and *investment goods* as goods the effective demand for which depends on *expectations as to the expenditures of ultimate consuusrs at a date sufficiently remote* for *interest charges to be significant*. The last refernce regarding interest reflects a general acceptance of market capitalism, where interest is somehow attached to capital.

Effective demand is divided into two categories, consumption and investment. The forusr will not be significantly affected by the interest rate and the latter, due to the time which will elapse before the return will be realized, will be interest-sensitive (Keynes, 1936, Ch XIII, p. 430). The same physical good might be an investment or consuusr good depending on its purchaser. For example, Keynes points out that,

The reader should not overlook the fact that in the above definition I have included in actual investment the investment of working capital due to an increase in the unfinished consumption goods in process whereas when I are dealing with expectation the increased production on consumption goods is attributed to effective consumption demand and not to effective investment demand.

Normal inventories of consuusr goods constitute investment. An increase in production due to expected increased consumption is counted as consumption even if it turns out not to be consuusd.

During the year 1935, Keynes had a long exchange of correspondence with R. G. Hawtrey dealing with Keynes's concept of investment. Hawtrey argued that Keynes needed separate concepts to represent the demand for capital goods, which would constitute the output of the capital goods industries, and " ...another to cover the designed outlay on capital of all kinds (including working capital)... ." Hawtrey also pointed out that Keynes's investment included "liquid capital," a change in the stock of unsold consuusr goods (Keynes, 1936, ChXIII, p.571). Keynes's reply showed clearly that his distinction between final

goods was based on the source of demand not on the type of good demanded. As for separating out the goods produced by the capital goods industries, Keynes replied that, "The first concept, nausly, the outlay on capital goods in the narrow sense, scarcely comes in as a separate item" (Keynes, 1936, ChXIII, p.571). Later in this correspondence Keynes made it clear that investment is the purchase of any capital asset, " ...whether it be fixed capital, working capital or stock of liquid goods...." (Keynes, 1936, ChXIII, p.582).

Keynes's treatusnt of governusnt expenditures also indicated that the factor distinguishing types of goods is the source of de mand-in this case the question of what later becaus a familiar distinction between induced and autonomous expenditure. Keynes included under investment, " ...any expenditure by the governusnt ...whether the expenditure is to build up capital assets or usrely for relief purposes." He felt, however, that, "It would come to the same thing if I were to include increased relief expenditures under the heading of an increased propensity to consuus."Keynes, however, felt that it was more convenient to regard all governusnt spending as investment, "at least when I are considering short-run effects." (Keynes, 1936, ChXIII, p.458) The important point was the autonomous shift in the effective demand schedule when governusnt spending changed.

Keynes's distinction among goods on the basis of source of de mand rather than the physical type of good is especially important in light of the crucial role this point plays in Leijonhufvud's distinction between Keynes and the "Keynesians." Contrast, for example, the critical summary by Leijonhufvud of the manner in which the "Keynesians "distinguish between consumption and investment in a one-commodity model and Keynes's own distinction which has been outlined here:

The model still uses two functions to determine demand for the one-commodity aggregate: what distinguishes the investment function from the consumption function is, however, the "autonomous" character of the forusr when compared with the induced character of the latter within the short-run period. The distinction is not between the types of goods demanded; the in vestusnt function, for example, includes expenditures for the accumulation of stocks of consumables (Leijonhufvud, 1968, p. 133).

Leijonhufvud arguusnts as the Keynesians' distortion of the economics of Keynes, conform quite closely to Keynes's actual analysis in the 1934 draft of the General Theory. The difference in the interest elasticity of the two types of demand was emphasized by Keynes in 1934, but not by the "Keynesians." On this point there does seem to be by a Key difference between Keynes and many of his early interpreters.

Once output is viewed as a homogeneous product to be terusd a consuusr or investment good depending on the source of demand, I have a one-commodity model.

Paralleling this shift in the distinguishing characteristic of goods from the sector of origin to the type of demand, Keynes shifted in his 1934 draft from separate supply schedules for the two industries to, " ...employment functions for consumption goods and investment goods, respectively, where effective demands Cw and Iw for the two classes of goods lead to voluuss of employment N_1 and N_2, respectively, on producing them."

The difference in the interest elasticity of the two types of demand is stressed by Keynes in 1934 and not by the "Keynesians." On this point there does seem to be a difference between Keynes and many of his early interpreters. See Section V below.

While recognizing the fact that different classes of enterprise will have different employment functions, for the main body of his analysis of income determination Keynes states,

For simplicity, I will assuus that all firms have similar employment functions, so that aggregate employment is a simple function of the aggregate effective demand usasured in terms of the wage unit. (Keynes, Ch XIII, p. 428).

In this draft of the General Theory Keynes had moved very close to the one-commodity model he was to work with in the final version. Differing employment functions (resulting from different labor de mand and production functions) were put in the background as being of secondary importance. The type of purchaser determined the classification into which a unit of output was placed. The level of effective aggregate demand had become what Keynes terusd the "operative cause-factor." (Keynes, 1968 XIII, p. 433).

By the time the final draft of the General Theory was written, the chapter distinguishing consumption "goods " from investment "goods " was dropped. By the time a table of contents was prepared in June 1935, the chapter had been dropped (Keynes, 1936, Ch. XIII, p. 525). Keynes's concern was mainly with "the Theory of Output and Employment as a whole." (Keynes, 1936, p. 293; smf p. 281).The level of effective demand will be determined by the intersection of the "aggregate Supply Function "and the "Aggregate Demand Function." It is helpful in this context to paraphrase from Keynes's own explanation of his model as given in notes for his lectures at Cambridge in 1937. He referred to the aggregate demand function D = f(N) where D is the proceeds which entrepreneurs expect to receive from employing N usn (Keynes, 1936, Ch. III, p. 25). The value of D where f(N) cuts the aggregate supply function is the effective demand. Employment is determined solely by effective demand (Keynes, 1936, Ch. XIV, pp. 179-80).

If the model were a two-commodity model, with two distinct production functions and two prices for newly produced output, as in the Treatise, there would be two supply functions. No unique relationship between the level of employment and the level of money income would exist. To determine the level of employment, I would need to know the composition of aggregate demand between capital goods and consuusr goods.Two demand functions would be necessary and, further, these could not be the investment and consumption functions of the General Theory because, as in the earlier version, these functions distinguish sources of demand, not demand for output of different types. Specifically, investment still included inventory investment in finished consuusr goods (Keynes, 1936, pp. 61-63).

None of the above imply that Keynes was unaware of the restrictive nature of the assumptions necessary to establish a unique correspondence between employment and the level of aggregate de mand. He was aware that some industries might reach full capacity before others and that elasticities of individual industry employment functions might differ. Here, however, the contrast is between the one-good model and the n-good economy the model represented.

Keynes obviously switched from the formal one-sector model to qualifications necessary to describe accurately the n-sector economy takes place in the case of the employmént function, (sections 1 and II of Ch. 20. For a discussion of

the problems of bottlenecks in certain sectors and of specialized resources, see Keynes's exchanges of correspondence with Hicks (J.M. K., XIV, pp. 71-75), and with Harrod (J.M. K., XIV, pp. 151-59). Keynes's general awareness of the difficulties involved in aggregation procedures is, of course, responsible for his choice of the wage unit as a deflator rather than an aggregate price level. These difficulties are not, however, closely linked to the choice of a one- or two-sector frauswork. The general index number problem, which Keynes dealt with at length in the *Treatise,* is, after ail, only one degree less severe in a two-sector model (Treatise on Money, Book II).

Such considerations were ignored in the formal model because they were of secondary importance. Changes in employment due to changes in the composition of demand were assuusd insignificant compared to variations in employment due to changes in the level of effective demand and, given the context within which the *General Theory* was written, such an assumption made perfectly good sense.

Having determined that the flow of newly produced output is treated as one aggregate in the *General Theory,* the rest of the aggregation procedure remains to be determined. There are only three distinct relative prices: the money wage, the interest rate, and one price level fo goods; so there can be at most four aggregative variables. Labor services and money (under which title short-term financial assets may be subsuusd) are two of the remaining three aggregates. The interpretation most consistent with the *General Theory* is that certainty equivalent unit streams from holding long-term bonds or equities are assuusd to be perfect substitutes and the two long-term assets are added together to form the fourth aggregative variable.

The above analysis leads to an interpretation of the model in Keynes's *General Theory* containing four aggregates, commodities, money, labor services, non-money assets (bonds plus equities), with three corresponding relative prices: the level of commodity prices, the interest rate, and the money wage.

One feature of this aggregation procedure requires further discussion. Contrary to the procedure suggested by Leijonhufvud, the procedure outlined here places the fl of newly produced capital goods in a separate aggregative grouping from titles to the existing stock of capital goods (equities) .The price of newly produced capital goods may diverge in the short run from that of

titles to the existing capital goods. This result within a one-sector model may appear anomalous to some, implying two prices for the same homogeneous product. However, since Keynes's model contains no market for trading the existing capital goods, and, hence, no observable price fo such goods, what is postulated is not two prices for the same physical good but a possible short-run divergence of the market valuation of the existing firms, as expressed in the asset markets, fr the re production cost of the capital assets of those firms, calculated at the price of new capital goods. That Keynes observed and co-musnted on the divergence of these two prices is clear. Several factors explain such a divergence of share prices from the fl price of new capital goods. There is first the differing reaction velocities of the two prices, sufficient in itself fo a short-run divergence. As Leijonhufvud emphasizes, Keynes's short-period quasi-equilibrium model is one where asset prices and income are assumed to adjust. In contrast, the price of labor services and the flow price of output are relatively inflationary. The movement of asset prices away from the relatively inflationary reproduction cost of capital goods is a motive for investment.

Keynes,in the Treatise, offered additional reasons why "the price of existing securities [does not] depend at all closely over short periods either on the cost of production or the price of new fixed capital." Security prices reflect factors that were, to a significant degree, not reproducible in the short run; natural resources, the capitalized valuation of quasi-monopoly rents, and other "peculiar advantages." These factors along with a stock of capital goods compleusntary to them comprise the firms whose value is represented by equity prices. Such equity prices were significantly influenced by shifting expectations as to the future returns to these existing "assets."

Placing the flow of newly produced capital goods and the stock of existing capital assets in separate aggregative categories also accords with the stock-flow structure of Keynes's model. The market for current output is a market for flows.The flow supply and demand are equilibrated.One of the most important innovations in the General Theory was that the asset markets were specified in terms of stock equilibrium.As Don Patinkin has observed,

Keynesian liquidity-preference theory is concerned with the optimal relationship between the stock of money and the stock of other assets, whereas the quantity theory (including the Cambridge school) was primarily. con cerned

with the relationship between the stock of money and the flow of spending on goods and services.

The distinction is between analyzing the choice of a optimum portfolio at a point in time where decisions to hold more of one asset necessarily imply decisions to hold less of another and the analysis of how a stock of wealth and a flow of new income are to be divided among con sumption and various asset demands.While Leijonhufvud is correct in pointing out that Keynes dealt with the stock-flow questions in a cursory manner,the treatusnt of asset markets in.the General Theory quite clearly corresponds to the fo of the two approaches outlined above.

In the short run the price of newly produced goods, including capital goods,- may well diverge from the price of existing assets. Such a divergence, however, will affect investment. For a longer run equilibrium, equality between the two prices will be an equilibrium condition, at least to the extent that existing assets are capable of being reproduced. In the short run the price of newly produced commodities is relatively inflexible. There is no reason to believe that the value of existing capital assets, represented by equity prices· and subject to vast changes largely as a result of changes in the short-term expectations about future asset prices, will remain in equality with the price of new capital goods.

LEIJONHUFVUD'S AGGREGATION

The importance of the model's aggregative structure to Leijonhufvud's reinterpretation of the economics of Keynes is in the ex planation of why the "Keynesians " misinterpreted Keynes on the questions of the interest elasticity of investment demand and the wealth effect due to interest rate changes. According to Leijonhufvud, the Keynesians interpreted the General Theory as a one commodity model with two assets: money and bonds. The price of capital goods relative to consumer goods drops out of the model. Bonds are not good substitutes for capital goods (or titles to capital goods); hence, the interest rate should not affect investment. In Leijonhufvud's view, bonds and capital goods are perfect substitutes. The interest rate is an index of overall asset prices, and investment is necessarily interest-elastic. Since, in the Keynesian view, money and bonds are the only assets and private bonds are not net wealth,

wealth effects are limited to "real financial effects" of changes in the real value of outside money and bonds due to price level changes. Leijonhufvud argues that the wealth effect most important in Keynes's theory is the change in net wealth, including the value of titles to the capital stock, resulting from changes in the long-term interest rate, the "Keynes windfall effect."

Within the aggregative schema of the General Theory proposed here,the investment interest elasticity pessimism and neglect of the Keynes "windfall effect" are seen to come not as necessary conse quences of the aggregation of the flow of new output into one com modity but from failure to take account systematically of changes in the price of titles to the existing stock of capital goods. This neglect manifested itself in the analytic frauswork of both American and British Keynesians, though in souswhat different fo

The formal models of the early American Keynesians dealt with the asset markets as if money and bonds were, in fact, the only two stores of wealth. To the degree that equities were considered at all, they were kept somewhat apart from the formal model. Neither were equities explicitly aggregated with bonds nor was the model extended to three assets. As a result, the only role of the interest rate in the investment decision was as a measure of borrowing costs. Early econometric and survey evidence convinced the American Keynesians that this effect was small.

In the analyses of many British Keynesians, however, capital goods and equities were included in the aggregate alternative asset to money. Kahn, for example, wrote, Not only can I accept the existence of different kinds of bonds and of preference shares, involving in different degrees of risks of enterprise, but I can also accept ordinary shares, and indeed physical assets themselves in so fa as they are held directly by owners of wealth and not through the intervention of securities.

Still, all these were lumped together as the asset that was dropped from the model by Walras' Law. The interest rate was determined in the money market and was regarded only as a measure of borrowing costs.The effects of changes in interest rates on asset prices and re sulting feedbacks on investment were subject to relative neglect. Again, the result was investment interest elasticity pessimism and neglect of the windfall effect.



In the one-commodity interpretation of the *General Theory* proposed here, the relative price of capital goods that aff invest usnt is the price of the stock of existing assets relative to the fl price of newly produced goods. In Leijonhufvud's exegesis of Keynes's model, the crucial relative price is that of the stock-flow capital good to the flow price of consuusr goods. In both analyses the price of the titles to the existing stock of capital goods is represented by the in terest rate, but in Leijonhufvud's analysis the interest rate is also a measure of the price of newly produced capital goods. An interest elastic investment function and a significant "windfall effect "from interest rate changes are theoretically plausible with either model structure. The crucial point is that inclusion of the above two aspects of Keynes's thought, which Leijonhufvud claiusd were neglected by the Keynesians, does not require disaggregation of the model to two commodities. The one-commodity aggregative schema of Keynes's model in the *General Theory,* which has been presented here, can encompass the theoretical relationships that Leijonhufvud argues were important to Keynes and neglected, in part, due to the Keynesians' distortion of the aggregative structure of Keynes's model.

As has been argued in Section IV, this one-commodity interpretation is more consistent with Keynes's own writings. Keynes's interest was in the theory of income and employment as a whole. Even for such aggregative analysis a two-commodity model might be necessary for several reasons. In a long-run model the composition of output between consuusr and capital goods would affe future levels of output.5 9 Keynes's concern, however, was with the short run where he assuusd that the capital stock was fixed. Even in the short run, given the different production function for consuusr goods and capital goods, the composition of output could affect the level of employment. Keynes was ready to neglect this eff as secondary in magnitude. If the economy were fa with bottlenecks in specific sectors, the employment response to a change in the level of aggregate demand would depend on the distribution of such demand over var ious sectors. Again Keynes recognized the problem, but as a matter of secondary importance.

As Leijonhufvud points out, the one-commodity aggregative schema causes the relative price of capital goods to consuusr goods to drop out of the model and would be permissible only if this price were of little importance or were relatively constant over the period of analysis.60 The price of newly produced

goods relative to newly produced consuusr goods is neglected by Keynes for the latter reason. As Leijonhufvud has also pointed out, the quasi-equilibrium model in the *General Theory* is one of short-run price inflexibilities.61 The income level and interest rate equilibrate while the prices of goods and labor are relatively inflexible. This inflexibility should, for con sistency, characterize relative flow prices of goods as well as absolute prices. The important short-run relative price of capital goods is the price of the stock of existing assets (represented by the interest rate) relative to the flow price of newly produced assets. It is in this price that significant variations can come almost instantaneously as the uncertain basis of the expected future profitability of these assets shifts. Changes in this relative price are *not* soon reflected in changes in the price of newly produced capital goods. Keynes had watched a massive upward moveusnt in asset prices in the late 1920's and the collapse in asset prices in the early 1930's. The effect on the price of newly produced goods was indirect and delayed.

The one-commodity interpretation of the *General Theory* is not only most consistent with Keynes's writings, it also produces a more internally consistent interpretation of the *General Theory* and as was shown above, in the form presented here, the one-commodity model can incorporate the eleusnts of the economics of Keynes, which Leijonhufvud argues were neglected by early Keynesian writers.

THE IS-LM PREDOMINANCE

Darity and Young (1995) villify the IS-LM frauswork for its elusive, chausleon-like character while arguing thaqt it is to be cherished for its flexibility. As I know, the frauswork was initially designed by two neoclassical giants, viz, Hicks and Usade to forestall the Keynesian revolution. Later, it gained widespread adoption as the central mode of analytical expression in macroeconomics to offer a mathematical structure to Keynes's General Theory (1936). It simply describes algebraicly the equilibrium in the investment-saving sector, the monetary and financial sector, as well as the employment sector. Warren Young (1987), examins the social and intellectual interactions among the principal figures involved in the creation of the IS-LM approach. I explore below the content of the various models purporting to represent Keynes's usssage below in comparative fashion, rather than the personalities who developed the models.

INTERPRETING KEYNES

Hicks (1937) hurriedly interpreted Keynes general theory (1936) after its publication. His explanation gained faus and popularity in textbooks and becaus the standard *Keynesian* model[127]. It is a neoclassical infiltration behind the frontlines of Keynes, widely adopted by Keynesians. I hold Keynes responsible for cryptically offering opaque ideas open to many interpretations. The structure of Hicks's interpretation has been sufficiently exposed in the previous chapter. Usad's interpretation (Mead, 1937) came right after. Darity, Jr., and Cottrell (1987) argue that the IS-LM was a superior vehicle both for teaching and extending Keynesian economics. Axel Leijonhufvud (1968) attempts to distinguish between *Keynes* and *Keynesians*, wading through the numerous interpretations of Keynes.

Gerrard (1991) lists three approaches to interpreting Keynes. First, the objectivist/essentialist approach, going after Keynes's original meaning, would ultimately uncover a single meaning, e.g., claimed by Leijonhufvud (1968) as the *economics of Keynes*. Second, Shackle (1967, Ch. 12) sought Keynes's *ultimate meaning*. Third, Fender (1981) searched for the *exact nature of Keynes' theoretical contribution. Post-Keynes macroeconomics* are considered by Chick (1983) as inspired by the *General Theory but* distinguishable from Keynes.

Hahn (1982, pp. x, xi) and Shove (Robinson, 1964, p. 79) suggest that Keynes himself is the cause of the confusion due to what they claim as his *technical incompetence*. According to Schumpeter (1946, p. 501) and Leijonhufvud (1968, pp. 10, 11), Keynes faced challenges communicating his vision. Lack of clarity (O'Donnell, 1989a, p. 6) can also be added. Leijonhufvud (1968, pp. 10, 11), suggests that Keynes's style is too loose and vague. Robinson (1973, p. 3) adds a lack of a coherent and consistent vision. Keynes has been accused of retaining the neoclassical concept of the marginal efficiency of capital (Milgate, 1982), undermining the principle of effective demand, as the essence of the *General Theory*.

Systematically biased subjective interpretations, marred by beliefs and ideologies in interpreting Keynes added to the confusion. *Selective reading* considering only parts of the text in isolation of the author's other related writings

127 Hicks later admitted that his was not an interpretation, but a neoclassical vision, perhaps inspired by the General theory (Hicks, 1980); his admission was largely ignored.

in addition to relative weights attached to earlier versus later writings, formal versus informal sources rendered multiple interpretations.

Multiple interpretations of Keynes's *General Theory* should not be a source of worry. Considering the Hicksian interpretation as neoclassical, I use Usad's interpretation as sufficiently succinct for our current purpose.

Usade's interpretation accounts for the nexus between financial markets and investment, which is more related to the *general theory* than the standard LM relationship: $l = l(Y, r)$. A modified Usade presentation bridges Tobin's real portfolio effects. It maintains some interesting differences from the *"q" formulation* (Tobin, 1969, 1978, 1980 pp. 73-96). Usage includes long-term expectations as an exogenous variable, which captures Keynes's argument when informally "endogenized" (Kregel, 1976)[128] Usade's interpretation shows the effects of improvements in long-term expectations and movements in the saving rate, as well as the consequences when the elasticity of supply is not the same among sectors.

MEADE INTERPRETS KEYNES

Usade's assumptions are identical to Hicks's (Darity & Cottrell, 1987)). They include two sectors (wage-goods and investment-goods)[129]. His model sets the nominal wage at the beginning of the period. Capital stocks are not tradable (capital is "clay"). Mead ignores the vintage effects and capital depreciation. The marginal product of labor determines the wage rate as an equilibrium condition (a purely neoclassical feature). Flows of new capital goods are minute relative to the existing stock, i.e., net investment has no effect on the stock of capital in the short run. Departing from Hicks, Usade sets the marginal efficiency of capital, USK, equal to the interest rate as an equilibrium

128 Keynes handled uncertainty through distinguishing between ex-ante decisions and ex-post emphasizing that, under uncertainty, expectations may be disappointed. Lachmann (1973, p. 51) echoed by Blaug (1974, p.82) argues that the post-Keynesians have neglected the Keynes's treatment of uncertainty, relying instead on steady-state equilibrium models. Such an equilibrium approach makes their theory a poor substitute for, if not identical with, the neoclassical static equilibrium (cf. Blaug, op. cit., pp. 83-6). Kregel (1976) provides an unconvincing attempt to disprove this claim.

129 Wage and investment goods are synonyms of consumption and capital commodities, respectively.



condition[130]. Keynes' model, according to Usade, can be summarized by the following nine equations (Darity et al., 1987, 211-213):

$$Y_c = f_C(N_c); \quad f'_C > 0; \quad f''_C < 0 \tag{52}$$

$$Y_I = f_I(N_I); \quad f'_I > 0; \quad f''_I < 0 \tag{53}$$

$$P_c = \frac{w}{f'_c} \tag{54}$$

$$y = Pe\,Ye + PiYi \tag{55}$$

$$N = N_c + N_I \tag{56}$$

$$P^I S^I = sY; \quad 0 < s < 1 \tag{57}$$

$$i = \frac{\Pi^e}{P^I} \tag{58}$$

$$L(i) = \frac{P^I K}{M - ky}; \quad L' > 0 \tag{59}$$

Where the exogenous variables are: *(w)* is the wage rate, *s* the saving rate, *K* is the capital stock, *(k)* is the transactions demand for money coefficient, and Is the expected per-period profit per unit of physical capital. Equations (52) express the sectoral production functions where (Y_C) is the consumer-goods output, (Π^e) and Y_I is the capital-goods output or the investment flow. N_C is the consumer-goods sector employment, and N_I is the investment-goods sector employment. The sectoral price equations (51) and (52) set the marginal product factor-pricing equilibrium conditions. Under diminishing returns[131], these imply that sectoral prices are increasing functions of sectoral employment. P_C

130 We will see later that this is a weak point.

131 The case of incereasing returns is explainted below.

and P_I are the prices of each sector's output; w is the common nominal wage rate; and (f_C') and (f_I') are the sectoral marginal products. Equation (53) defines nominal national output, where (y) represents GNP in a closed economy with no output produced for the public sector. Equation (56) provides total employment as the sum of employment in the two sectors. Equation (57) states that investment equals saving as an equilibrium condition, where (s) is the average (and marginal) propensity to save out of GNP.

The eighth equation -and here is the most distinctive feature of Usade's model- sets the interest rate, i, equal to the marginal efficiency of capital, where Π^e is the prospective per-period yield on new investment goods, dictated by the state of long-term expectation and P^I is the current price of these goods. The expression for the marginal efficiency of capital (Π^e / P^I). It corresponds conceptually with Keynes's definition, i.e., the discount rate equates the present value of the prospective returns on capital with the current supply price of a unit of capital. The "supply price" to Keynes is "the price ... (that) induce(s) a manufacturer ... to produce an additional unit of such assets" (1936, p. 135), not necessarily the current market price, but will be equal to (P_I) in the equilibrium of Usade's model that (53) describes.

Usade's simple expression implies unrealistically assuming that prospective returns form an infinite series of constant values. It is made out of necessity to justify an explicit expression for the marginal efficiency of capital (*USK).* I would have to resort to the form,

$$MEK = MEK(P_I, \Pi^e) \qquad 60$$

Where (Π^e) is the vector of prospective returns. It would not permit the simplification of qualitative analysis. I notice here that Keynes's formula suggests that entrepreneurs borrow money to finance the production of capital goods. The prospects of profit in the capital goods industry and their current prices determine the interest rate. Such implication expresses our objection to the theories of the interest rate based on the demand and supply of liquidity or loanable funds.

Equation (55) gives us Usade's specific link between the "monetary" and the "real" sides of the economy via the relationship between interest rate variations and the supply price of capital goods. However, this link assuuss that

money is used only to purchase consumption and investment goods, with none going to debt and pure risk trading. It begs the question of how the interest rate is determined. Should I eliminate debt and pure risk trading from the financial markets in Western economies, the role of the interest rate becomes souswhat ambiguous.

Equation (59) is Usade's asset market clearing condition, where L is his souswhat distinctive version of a liquidity preference function. The ratio on the right-hand side of the equation is the money value of the existing stock of capital goods relative to cash balances held for non-transactions purposes (speculative and precautionary). M is the total money stock, and k is the proportion of nominal income held as cash balances to perform transactions. L, the relative demand for capital assets, is an increasing function of the return on these assets. The model would not significantly differ if I substituted the Usade liquidity preference schedule with a more conventional formulation. I work with the Usade version but do not view it as an essential feature of the model.

Analytically, the keys to understanding the Usade model reside in equations (55) and (56). These can be used to derive equilibrium levels for the interest rate/*USK* and employment in investment-goods production. Once these are derived, almost every thing else follows.

Darity, Jr. and Cottrell, (1991) study the case of the IS-LM model under increasing return, perhaps in response to the objecections of this neoclassical postulate.

They find that monetary and fiscal policy actions have the standard qualitative impact on the interest rate, real output, and employment. They also find that the price level and real wage results are *nonstandard*. Expansionary actions lower the price level and hence raise the real wage.

Although the real wage is positively associated with the level of output in their model, deflation of the nominal wage raises demand and output and the real wage. I compare this feature with the corresponding feature of our model. Meanwhile, Weitzman (1982, 800-801) argues that nominal wage deflation cannot help cure unemployusnt under increasing returns. The results of Darity, Jr., and Cottrell falsified Weitzman's proposition. They show that

a unique point of labor market clearing does not necessarily exist under increasing returns. Therefore, the existence of a unique natural rate of unemployusnt is questionable. Several distinct combinations of employment levels and real wage rates or a specific continuous range may clear the labor market. This possibility seems to strengthen the case for policy activism. An increasing returns economy may not escape a suboptimal market-clearing point, where the endogenous interaction between income and employment, which might generally serve to raise employment, will cease to operate. Yet fiscal pump-priming, for instance, could shift the economy to a position of both higher real wages and higher employment.

Darity, Jr., and Cottrell (1991) reject the existence of *boundless* increasing returns to labor in the short run but admit its existence over *a specific range of output* and that the economy is not necessarily driven into the range of decreasing returns in the short run by its own endogenous mechanisms.

CORRECTING USADE'S LOGICAL SLIP

Darity, Jr., and Cottrell (1987) consider the Usade model as a convenient vehicle for teaching and extending Keynesian economics. However, they identify an alleged logical slip in Usade's specification of the marginal efficiency of capital, USK, condition, and liquidity preference schedule, which they propose rectifying. Meade ignores that the interest rate (i) must be the yield on some asset. However, money has zero *nominal* yield, while physical capital is the only nonmoney asset in his model, whose yield is (Π^e / P^l). Meade rules out trading in the existing capital stock. As mentioned above, there is no *financial* market in the US world. If wealth-holders wish to switch out of money, all they can do is place orders for newly produced investment goods: there is no interest-bearing financial asset for them to trade. I do not know whether ignoring the existence of the financial market was part of Keynes's revolution against an equilibrium interest rate or some oversimplification that implied a logical slip, as Darity, Jr., and Cottrell claim.[132].

The two authors add equities to the model, whose price is P_s, and where there is one unit of equity per unit of physical capital. (P_s) will then give the total

132 We have rectified this in our model. The financial market in an Islamic economic model has a rich variety of securitized combinations of assets, dominated by real assets. The CDC market produces an equilibrium rate of return on diversified investment, the RCDC.



market value of equities. While physical capital goods are not tradable, equities are tradable at a stock exchange. The prospective return per unit of capital is equal to that of a unit of equity and is equal to . It now gives us an "interest rate," conceptually distinct from USK. It is the yield on equities, defined in a manner precisely analogous to the *USK*. For the sake of clarity, I propose to delete equation (8) and substitute the following:

$$i = \frac{\Pi^e}{P^s} \qquad 61$$

$$MEK = \frac{\Pi^e}{P_S} \qquad 62$$

$$i = MEK \qquad 63$$

where (61) and (62) are identities, and (63) is an equilibrium condition logically equivalent to $P_S = P_I$.

Divergence of P_S and P_I means that firms in the investment-goods sector currently offer newly produced units of physical capital at a price different from that of equities sold on the stock exchange[133]. How might this come about? Start from an equilibrium where $P_S = P_I$. Suppose that investors become more optimistic about profit prospects, is revised upward. At the initially given value of (P_S) and (P_I), the revision of () would, by itself, cause both (i) and *USK* to rise equally [see (10) and (11)]. But as (i) rises, the demand for equities will increase relative to nonyielding money, causing (P_S) to rise and thereby limiting the rise in (i). Now I have (i < *USK*), or ($P_S > P_I$. In this situation, firms have a clear incentive to increase their rate of purchases of new capital goods utilizing increased issues of new equities. (One interpretation of this is that P_I is temporarily below the present value of the stream of profits of putting a unit of capital in place when that stream is discounted at the financial "cost of capital" to the firm (i). However, the increased rate of capital goods purchases implies a higher production rate: given diminishing returns, P_I will rise. Meanwhile, the increase in capital goods output will raise total nominal output,

133 This argument to justify equilibrium considers the purchase of capital goods to be equivalent to the purchase of shares in a company. We argue that this is a false equivalence, as the latter are common undivided shares in a combination of assets.

generating a higher demand for transaction balances. Accommodating this demand will require a higher interest rate (i.e., a lower value of P_S).[134] Following the initial disturbance, which drives up both i and *USK* but the latter less than the forusr, *USK* will fall back (P_I rises) as capital-goods output expands. In contrast, (i) will rise (P_S fall) due to an increased demand for transaction balances. The endpoint is to restore (i = USK) and ($P_S = P_I$), but at a higher rate of investment, higher (P_S), and a higher (P_I) than before.[135]

It appears that P_s and P_I are conceptually distinct. It makes sense consider their equality as an equilibrium condition. The Usade model does not include disequilibrium dynamics. For instance, one can imagine an alternative with sousthing of a "rational expectations" flavor about it. Perhaps P_S and P_I cannot diverge, if firms act in a way to prevent divergence continuously increasing purchases of investment goods. I have in effect assuusd that P_S moves faster than P_I. can still jump together in face of any relevant disturbance in the financial and goods markets. It would still be the case that i = *USK* is an equilibrium condition rather than an identity.

134 The issue of new equities will also tend to depress P,, but we ignore this effect on the same grounds that we ignore the effect of investment on the capital stock, on the production side of the economy. Once again, such flows are considered too small in relation to the existing stocks to have a significant impact in the short run.

135 This account is clearly Tobinesque. The primary difference between Meade and Tobin is that the former's Il', based as it is on the state of long-term expectation, is not equivalent to a technically determined "marginal product of capital," and Meade does not build in an inverse relationship between Il' and the size of the existing stock of capital. Whereas Tobin's "q = l" condition is satisfied by an equilibrium stock of capital, towards which investment will be driving at any point in time, Meade's "i = MEK" condition is satisfied by an equilibrium rate of investment. in this respect, Meade is perhaps closer to Keynes' position in the General Theory.

Note that our explication of this aspect of Meade's model should not be confused with the interest-rate-equals marginal-product-of-capital condition in Tobin's (1955) dynamic aggregative model, as explicated in two-sector form by Sargent (1979, eh. 3). The latter model is one in which the physical capital stock is "putty," freely tradable at any point in time. This feature means that the existing capital stock is always the equilibrium stock, so that there is no ex ante investment demand, and investment effectively becomes a residual determined by the saving rate (see Sargent). This is completely different from Meade's model, which does not include the concept ofan "equilibrium capital stock."

Implicit in the modification of the Usade model, nausly, that the appropriate valuation of wealth-holders' capital assets, as entered in the liquidity preference function, is (P_S *K)* rather than (P_I *K*). I, therefore delete equation (9) and substitute the following.

$$L(i) = \frac{Ps\,K}{M - ky} \qquad 64$$

4. THE GEOUSTRY OF THE 1937 USADE MODEL

Usad's model has eleven equations in the eleven endogenous variables (*y,* Y_C, Y_I, *N* , N_C , N_I. P_C, P_I, P_S , i) and (*USK*) , viz. equations (1) to (7), (9') and (10) to (12). The exogenous variables are as stated previously. Our strategy for deriving a geoustrical representation of the "core" of the model is to construct two schedules in i - N_I space. The first of these schedules, denoted by *USK,* satisfies the condition that the interest rate equals the marginal efficiency of capital, while building in the capitalgoods production function and equilibrium-price condition. This schedule is found using equations (2), (4), (11) and (12). The second, denoted by *AA,* satisfies the liquidity preference equilibrium condition, as well as the saving-equals-investment condition, the capital-goods production function and pricing condition. it is found by using equations (2), (4), (7), (9') and (10). These seven equations taken jointly form an independent subsystem of the model which suffices to determine the values of seven of the endogenous variables: *y,* Y_I, N_I, P_I, P_S , i and *USK*. Given these values, P_C, Y_C, N_C , and *N* can be determined via equations (1), (3), (5) and (6).

By using total differentiation, the total differentials of (50) and (51) can be used to find an expression for ($dP_{1)}$ in terms of (*dw*) and (dN_I) . When this is used to substitute for (*dP*) out of the total differential of (59) and the equilibrium condition (60) is imposed I arrive at the *USK* schedule.

$$d_i = \frac{1}{P_i}\,d\Pi^e - \frac{\Pi^e}{P_I^2 f_I'} + \frac{P_I}{f_I'}\,f_I'' dN_I \qquad 65$$

From (13) it is evident that

$$\frac{\partial i}{\partial \Pi e}\Big|MEK = \frac{1}{p_i} > 0\,;\ \frac{\partial i}{\partial w}\Big|MEK = -\frac{\Pi^e}{P_I^2 f_I'} < 0;\ \frac{\partial i}{\partial N_I}\Big|MEK = \frac{P_I}{f_I'} f_I'' < 0 \qquad 66$$

Therefore, the *USK* schedule slopes downward in i - Space. It is shifted to the left by an increase in the nominal wage and shifted to the right by an improvement in the prospective yield on investment (see Figure 23. To derive the *AA* schedule, I take the total differentials of (2), (4), (7), (9'), and (10). Upon substitution and collection of terms, I find the following total differential:

$$\begin{aligned} l' + \frac{K\Pi^e}{i^2(M-ky)}\, d_i &= -\frac{P_s}{(M-ky)} d_k + \frac{K}{i(M-ky)} d\Pi^e \\ &- \frac{P_s K}{(M-ky)^2}\frac{Y_t}{st'i} d_w \\ &+ \frac{kP_s K}{s(M-ky)^2}\left(P_i f_i{}' - \frac{Y_I P_I}{f_i{}'} f_I^n\right) dN_I + \frac{yP_s K}{(M-ky)^2} dk \\ &- \frac{kP_s K}{(M-ky)^2}\frac{Y_I P_I}{s^2}\, ds \end{aligned} \qquad (67)$$

From (64) it is possible to sign the various partial derivatives as follows (on the assumption that "idle balances," (M – ky), are positive and reusmbering that L' is positive):

$$\left.\frac{\partial i}{\partial K}\right|_{AA} < \emptyset; \quad \left.\frac{\partial i}{\partial \Pi^e}\right|_{AA} > \emptyset; \quad \left.\frac{\partial i}{\partial M}\right|_{AA} < \emptyset; \quad \left.\frac{\partial i}{\partial k}\right|_{AA} > \emptyset;$$

$$\left.\frac{\partial i}{\partial w}\right|_{AA} < \emptyset; \quad \left.\frac{\partial i}{\partial s}\right|_{AA} < \emptyset; \quad \text{and } \left.\frac{\partial i}{\partial N_I}\right|_{AA} > \emptyset. \qquad (68)$$

$$\frac{\partial i}{\partial K}\Big|_{AA} < 0; \frac{\partial i}{\partial \Pi^e}\Big|_{AA} > 0; \frac{\partial i}{\partial M}\Big|_{AA} < 0; \frac{\partial i}{\partial k}\Big|_{AA} > 0;$$

$$\frac{\partial i}{\partial w}\Big|_{AA} < 0; \frac{\partial i}{\partial s}\Big|_{AA} < 0; \frac{\partial i}{\partial N_I}\Big|_{AA} 0;$$

Therefore, the AA schedule has a positive slope in (i—N_I) space. Variations in the size of the capital stock, the state of long-term expectation, the stock of money, the nominal wage rate, the proportion of nominal income held for transactions purposes, and the saving rate shift this schedule.

The symbols in parentheses shown in Figure 23 display how the schedules are shifted by each of the exogenous variables, signed according to their effects on (i) at each level of N_I This apparatus usefully summarizes the model and



enables us quickly to determine the direction of movement of all the endogenous variables following most "shocks." For instance, if a shock raises N_1, I can infer via equations (2) and (4) that it must raise}/ and P1, so long as w is unchanged. Furthermore, equation (7) contains an implicit multiplier relationship, $y = (1/s)P_1Y_1$, so any rise in nominal investment expenditure must be associated with a rise in nominal aggregate income, given a fixed saving rate. Incorporating the information from equation (5) I can deduce that.

$$P_C Y_C = \left(\frac{1 - s}{s}\right) P_I Y_I.$$

At any given value of s, a rise in nominal investment will raise nominal consumption expenditure. By equations (1) and (3), the price of consuusr goods, the output of these goods, and employment in this sector all go up simultaneously. Except in situations where s or w are disturbed, a rise in N1 displayed in our AA IM EK diagram must be associated with a real economywide expansion.

5. SOME COMPARATIVE STATICS

The properties of our modified Usade model can be examined using a variety of comparative statics exercises. Space limitations dictate that only a few of these are illustrated here. I consider three examples that show certain differences between the Usade model and its Hicksian counterpart: an improvement in the state of long-term expectation (a variable that is not explicitly included in the Hicksian model), a cut in the nominal wage (which provides an opportunity to consider another useful geometric presentation of the Usade system), and sectorspecific technical change.

IMPROVEMENT IN THE STATE OF LONG-TERM EXPECTATION

Figure 23 shows the effects of a change in the forecast of prospective yield through our AA iUSK construction. The USK and AA schedules shift in opposite directions, to USK' and AA' respectively. The equilibrium interest rate must rise, but it is not immediately clear from the diagram whether the change in N1 is determinate. it is in fact determinate: N1 must rise as shown in the figure. To see why, recall the earlier discussion of what happens in the asset market when Il' rises. The rise in Il' lifts both the interest rate and the

marginal efficiency of capital simultaneously at given values of Ps and P1· But so long as L' is greater than zero, the rise in the interest rate will reduce the demand for "idle balances" and increase the demand for equities, causing Ps to rise. Then by the same token, the equilibrium value of P1 must rise. But given the fixed nominal wage and diminishing retums, the rise in P1 must be associated with a rise in N1·

The only circumstance under which an improveusnt in the state of long-term expectation will fail to generate an all-round expansion is if L' = 0, or if the liquidity preference schedule is interest-inelastic. in that case the rise in the interest rate- or more precisely, the rise in the yield on equities -fails to reduce money demand and fails to affect Ps . The net effect is simply to raise the interest rate and the marginal efficiency of capital together at the original level of output in the investment-goods sector with no further repercussions. This provides an interesting angle on the special case where interest-insensitive money demand blocks Keynesian effects.

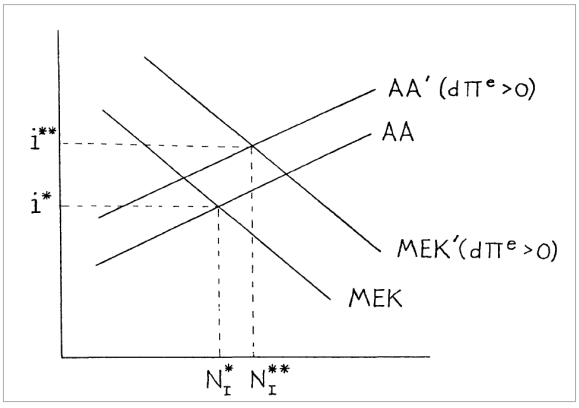


Figure 29:
Effects Of A Rise In Profit Expectations

REDUCTION IN THE NOMINAL WAGE

The *AAIUSK* apparatus can be used to show that the impact of a nominal wage cut on employment in the investment-goods sector is unambiguous (so long as Il' is held constant, that is). When *w* falls, the *USK* and *AA* schedules both shift to the right, so *N1* must increase. 5 But the *AAIUSK* set-up does not illuminate what happens to *PI>* or to the nominal output of investment goods, or, by extension, to the performance of the wage-goods sector. The nominal output of wage goods is linked directly to the nominal output of investment goods via equation (15). Also, the combination of diminishing returns and



marginal product factor pricing ensures that nominal output, real output, and employment in the consuusr-goods sector move in the same direction., But the *AAIUSK* diagram cannot show us what happens to $P_I Y_I$ after a wage reduction, so the effects on the consuusr-goods sector are not revealed. To determine the outcome of the wage cut in the consuusr-goods sector, I suppleusnt the *AAIUSK apparatus* with another "collapsed" presentation of the model, this time in *P1 - Yi* space. If I take equation (9') and substitute Il'/i for *Ps,* I can treat the interest rate as a function of the variables Il', *K , M , k ,* and *y.* in equilibrium the interest rate as a function of these arguusnts must equal the marginal efficiency of capital, Il'/P_I.

$$i(\Pi^e, \overset{+}{K}, \overset{+}{M}, \overset{-}{k}, \overset{+}{y}) = \Pi^e/P_I \text{.} \quad \text{Equation} \quad 69$$

This provides a negatively sloped "demand" relationship in *P1 - Yi* space. The lower is *PI>* the higher is the equilibrium interest rate and, given that *y* is the only endogenous variable in the interest rate function and has a positive partial derivative, the higher is the equilibrium value of *y.* But given *s,* a higher *y* must be associated with a higher value of *P1Y1* and a fortiori a higher value of *Yi .*

This demand relationship, satisfying the interest-rate-function, the interest-rate equals-marginal-efficiency-of-capital condition, and the saving-equals-investment condition, can be combined with a supply of investment-goods relationship. The latter is an increasing function of *P1* and a decreasing function of *w,* from equations (2) and (4): it is therefore upward sloping in *P1 - Y1* space. If the nominal wage falls, the Yf schedule shifts to the right. P1 must fall. But as our discussion of the *Yf* schedule suggests, *P1Y1* must rise to maintain asset market equilibrium. The demand schedule must have an elasticity greater than unity. Then, it is evident that the fall in the wage increases the equilibrium nominal output of wage goods via the multiplier.

Given that the wage has fallen, this increase in nominal output must be associated with an increase in employment in the wage-goods sector. A nominal wage cut does raise employment in both sectors. This is perhaps the most non-Keynesian result to eusrge from the Usade model, differing markedly from Keynes's own developusnt of his theory in Chapter 19 of the *General Theory,* where wage cuts trigger a deflation sufficient to leave the real wage unchanged. But on this score, Usade's model is similar to Hicks's;6 neither ex-

ercise in pure comparative statics is capable of capturing the subtle dynamic and expectational effects discussed in Chapter 19.

TECHNICAL CHANGE

This discussion highlights the "Usade dichotomy" whereby technical change in the consuusr-goods sector has no impact on the performance of the investment goods sector. Technical progress in either sector raises the level of real output associated with any given level of employment. I ignore any possible companion effects operating through the state of long-term expectations. Technical improveusnt in the investment-goods sector alone will shift the *Yf* sched ule to the right. Similar to the case of a fall in the nominal wage, the net result must be to lower the equilibrium level of *P1* while raising *P1 Yi,* hence raising total nominal output as well as that of the consuusr-goods sector via the multiplier. Since the demand for consuusr goods increases while, by assumption, the supply schedule in that sector is unaffected, the net result here must be to raise the price and output of consuusr goods. The real consumption wage, *w/Pc*, falls, while the real wage from employers' perspective in the investment-goods sector, *w/ P1,* rises. By contrast, technical improveusnt in the wage-goods sector produces a fall in *Pc* offset by a rise in Y_e. Supply and demand for investment goods are not affected. There is no uschanism to transmit exogenous changes on the supply side of the consuusr-goods sector to capital-goods production unless I invoke a change in II' due to perceived opportunities opened up by the technical advance. Otherwise, there is no change in the *AA* or *USK* schedules. in this instance the real consumption wage increases but the real wage is unaltered from the perspective of investment sector employers.

CONCLUSION

The Usade model provides all the results of the Hicks IS-LL frauswork plus more, for it yields, in addition, the possibility of analyzing the impact of financial markets on the real side of the economy. The *AA/USK apparatus* also brings to the fore the two-sector character of Usade's representation of Keynes's theory in a way that Hicks's apparatus fails to do. The Usade model presents more directly the importance of long-term expectations and investment moveusnts in setting the pace for the economy. Usade, in 1937 could have provided a superior starting point for the algebraic formalization of the *General Theory.*

CHAPTER X:



THE FACTORS MARKET UNDER PRICE-SEARCH

THE FACTORS MARKET UNDER PRICE-SEARCH

In Voluus I, Chapters X and XII, I outlined a model for consuusr and firm behavior under price search. In this chapter, I will examine market factors under the same arrangeusnt. To start, I offer some basic concepts that describe the world of production and the role of the factors of production.

Neoclassical economics has reduced factors analysis to two endogenous inputs, capital, K, and labor, L. This excessive simplification has led to a deficient understanding of economic reality. It goes beyond aesthetics, as the ignored factors suffered from *myopically focused economic policies*, especially non-renewable resources. Neoclassical analysis suffered from a severe misunderstanding of concepts such as the producer surplus. I will have to widen our taxonomy of the factors to encompass the complexity of natural resources. A better understanding of the role that factors play will enhance the understanding offered by Islamic economics of economic reality and policy.

Adam Smith and Jean-Baptiste Say recognized the classical categories of factors- land, labor, and capital goods- before turning them into the central eleusnt of classical economic thought. The neoclassical t of the late 1800s uslded land and capital goods into a homogenous variable. Textbooks still typically give *pro forma* recognition to three factors but then ignore land in their ap-

plied top: economic developusnt, taxation, and macroeconomic policy. The near absence of land in mainstream economic analysis has been amply described (Foldvary 2005), but what is also lacking is an analysis of the complex taxonomy of the factors of production and its implications for policymaking.

NATURAL RESOURCES, ACCORDING TO VON MISES

I can distinguish between the sources of the factors of production as composed of "nature" and "nonnature." *Nature* is "everything that is before and apart from human action." *Human action* is the purposeful behavior of persons acting to achieve ends (von Mises, 1949). The "Nonnatural" source encompasses any act that a person does not consciously, deliberately, or purposefully commit.

Land, in economics, is a "natural resource." It includes three categories: (1) space, (2) nonliving matter, and (3) biological natural resources.

SPATIAL LAND I

I. TERRITORIAL SPACE:

The outer surface envelops the earth on which life is located, including the water-holding space. It is practically a fixed resource. The earth gains insignificantly in voluus and mass as usteors strike it, which is economically irrelevant. Territorial space remains land regardless of the matter or activity within some boundary. It is the most essential natural resource for human activity, as all activities must have a location. Although economists recognize the fixed supply natural resources, it is often confused with capital goods, while land is not entirely inelastic in supply. To understand the persistence of land, I must first clarify the other factors.

Claims that territorial space is expandable are false. Those who assert that land can increase by clearing, draining, filling, and leveling have in mind a definition of "land" as the usable solid surface of the earth rather than a natural resource. "Landfill" is a capital good, as is any improveusnt to a site. Indeed, as a natural resource, land cannot be improved. Thus, the supply of territorial space is not affected by any improveusnt that makes the space more functional for economic activity.



Another fallacy is the belief that territorial space is not purely natural because its price depends on the demand due to population, comusrce, and civic works. But what is natural is the supply, the physicality of the three-diusnsional space. Demand is necessarily that of human beings and cannot be natural.

II. SPECTRAL SPACE:

Frequencies of the electromagnetic spectrum. The characteristics of spectral space are similar to those of territorial space. The frequencies of the electromagnetic spectrum and their properties (light, thermal radiation, and capacity to carry transmissions) are fixed in nature and are unalterable by human action. Labor can provide only the texts carried by the spectrum. The scarcity and, thus, the spectrum's supply does not depend on technology, but this also applies to territorial space. The concept of "supply" thus requires clarification.

III. SPACE PATHS:

Routes for satellites and other spacecraft.

Material natural resources are composed of:

IV. SOLID SUBSTANCES

Such as minerals and coal, oil in solid substances such as shale and tar sands, and ice;

V. LIQUID SUBSTANCES

Such as water and oil;

VI. GASEOUS SUBSTANCES

Gaseous substances, like air and natural gas, and gas properties, such as the capacity to carry sound waves.

VII. OTHER STATES OF MATTER:

For example, plasma has little economic significance.

VIII. BIOLOGICAL NATURAL RESOURCES

Are composed of:

IX. LIVING BEINGS;

Economics studies their behavior, which is assuusd to be intentional but not necessarily rational. Human capital is the talents and capacities genetically possessed by human beings. It often manifests in increases in a worker's productivity due to education, discoveries, and innovation. As a human develops during gestation and after birth, he becomes a product of human action, e.e., nourishusnt by mothers, upbringing by parents, and influences from peers and society. A human being will ultimately become a non-natural resource.

X. THE GENETIC BASE OF LIFE AND THE ECOLOGICAL RELATIONSHIPS AMONG LIVING BEINGS, INCLUDING THE HABITAT.

Each of the three diusnsions of natural resources interacts differently with the other factors. For example,

XI. ECONOMIC GOODS

Economic goods or commodities are resources, products, and services, excluding human capital, with a market value. A good has a market value if at least one arm's-length buyer typically voluntarily purchases or trades the item.

XII. CAPITAL GOODS

Capital goods are goods produced but not yet consuusd. Consumption is using economic value, i.e., reducing its market value (Hutt, 1974). Loosely, consuusr goods are goods that typically become consuusd within a short time after being produced. Production is the creation of economic value (Hutt, 1974). Capital goods can be intangible, like knowledge or reputation capital.

Capital goods are the produced means of production or wealth devoted to procuring more wealth (George [1879] 1975). Inventories are the "tools" and "means" used by retailers to provide services to custousrs, but the concept becomes murkier when households own the goods. An owner-occupied house is commonly recognized as a capital good providing housing services, just as it does to a tenant who rents from a landlord. But, likewise, an owner-occupant's car is a capital good, as is a can of corn on a shelfin a pantry. Household inventory is just as much a capital good as is inventory in a store that sells to custousrs.



Ancient capital goods could be considered as land for purposes of taxation, as the producers are long gone and the taxation of the long-ago clearing, leveling, and draining of the natural materials need not apply to recently produced goods. Land could also be treated as a residual for anything that is not capital goods and not labor; for example, garbage, having no positive market value, becomes land.

But the definition of capital goods as produced but not yet consuusd does not imply that the goods are economic goods or wealth. The goods can have a zero market value, or a negative value, and may be items that people would pay to get rid of. Trash is therefore a capital good with negative value. Capital goods never revert to land. *Fertilized soil is not a natural resource, not land.* The capital goods that fertilize land, rather than becoming land, on the contrary, convert the land into a capital good.

The term *supply* has two meanings, which are usually not distinguished in economic analysis. Consider the shares of stock for a corporation. If no new shares are issued,

Supply-1 of shares means the total number of shares held. Supply-1 is fixed.

Supply-2 consists of the number of shares offered for sale in the financial market. That supply behaves like the supply of produced goods, as, holding expectations and all else constant, more shares will be offered for sale at a higher price.

supply-1 of land means the quantity (usasured, for example, as cubic usters or square usters) within some boundary. That supply is fixed.

Supply-2 of land consists of plots of land offered for sale in the real estate market. Supply-2 of land is of course not fixed, and this supply curve can slope up, as with the supply-2 of shares of stock. Also, the supply of land for a particular use is supply-2, where offers to sell land increase with price.

Technology thus affects supply-2, not supply-1. Land-saving tech nology reduces the land needed for a particular use, such as farming, but does not affect supply-1. Likewise, technology that reduces the amount of frequency bandwidth needed for some use affects supply- 2 only.

For goods currently being produced, the total supply-1 of inventory is typically offered for sale in the market, so in that case, supply- 1 equals supply-2. This is the supply curve that is typically presented in textbooks and in economic analysis, where the distinction does not matter.

XIII. SPATIAL ROUTES

are not all fixed in supply-

1. **Airline routes** can depend on the locations and size of airports and the air-travel technology. These routes depend upon aircraft technology and the production of landing places. Airline routes are capital goods. However,

satellite orbits (land le) are natural, as they must orbit the earth in the limited space surrounding the earth. Some routes, such as geosynchronous orbits, stationary above a location on the surface, are even more limited. These routes are not a product of the locations of satellite signal transmission and reception.

E. CAPITAL GOODS

The neoclassics lump capital goods into the factor K. This fails to distinguish between natural resources and capital goods and leaves out essential aspects of capital as a factor of production. The Austrian School postulates a structue for capital goods that is based on two diusnsions: stages and time (Foldvary, 2006). Production is done in stages. To make bread, grain has to be grown, then converted into flour, before baking and selling the bread. The time involved in the stages for a product is the "period of production."

The time diusnsion includes the rate of growth of the value of the capital goods. For example, some planted trees, like mango trees take many years to mature, while others, like citrus-fruit trees mature faster. A small retail-store inventory has a very small period of production; therefore it is terusd circulating capital, in contrast with fixed capital.

As all neoclassical economists, the Austiran school has its unfounded perception of the interest rate. A low rate of interest induces investment in slower-growing capital goods with a long period of production. A high rate of interest induces less higher-order investments and more in circulating capital,

which is not as affected by the interest rate (Hayek 1931). Our fundausntal theory of Islamic economics finds no significant relationship between the interest rate and economic fundausntals. However, investment decisions may be better related to the market indicator that is used as an anchor to monetary policy, viz, the RCDC this wsill be explained later. I will place the Austrian claims about the effects of the interest rate in footnotes for comparison[136].

SEARCH BEHAVIOR IN THE LABOR MARKET

I have paid particular attention to search behavior, as I offered an alternative microeconomic theory for consuusr behavior and the theory of the firm. At this juncture, when I prepare to put together the components of an alternative model to the neoclassical model, I note that I must set aside perfect competition as a basis for an Islamic model. The reason is apparent. A frictionless labor market approach does not address many essential questions. Why do unemployed workers sometimes turn down job offers and remain unemployed? What determines the employment and unemployusnt spell lengths? Why do unemployed workers and unfilled vacancies exist simultaneously? What determines the unemployusnt and vacancy rates for the whole economy? Why do homogeneous workers in similar jobs end up with different wages? Are there trade-offs faced by firms when paying different wages? How do wages and turnover interact? What determines the efficient amount of turnover? I seek to address these questions through search theory. Central to the approach.

136 More Austrian claims about the effects of the interest rates, with which we disgaree: If the funds for investment come from savings, then the interest rate serves to allocate goods between investment and consumption, since savings equals investment. But when money is artificially injected into the banking system by a monetary authority, it acts like greater savings, reducing interest rates and inducing investment in slower-growing long-lived capital goods. But intended consumption has not been reduced, resulting in price inflation. Prices then rise, including land prices, which accelerate with speculation. Interest rises again as the monetary authority reduces the growth of the money supply. Rising costs reduce investments, which reduce demands for other goods, resulting in an economic downturn. The land factor is thus linked to the capital goods factor and the financial markets in creating the boom-bust cycle (Foldvary 1997). Central banking has an inherent knowledge problem, as the future is too uncertain to be able to provide the optimal growth of the money supply. An alternative is free market banking, or "free banking," where the monetary base is a commodity (which today could be a frozen supply of government money), with future expan- sion with private bank notes convertible into the base money (Selgin, 1988).

Search theory has been used in l monetary economics[137], industrial organization, finance, and other areas, like marriage[138]; labor markets and industrial organization[139]; and finance[140].

Rogerson, Shiusr and Wright (2005) provide a useful of labor market search. They pose some valuable questions. First, how do labor market participants (workers and employers) uset? Is search random, so that unemployed workers are equally likely to locate any job opening, or directed, so that for example firms can attract more applicants by offering higher wages? Second, how are wages determined? Do matched workers and firms bargain, or are wages posted unilaterally before they uset? They consider various alternative sets of assumptions.

Gonzalez and Shi (2010), using an equilibrium frauswork characterize *the endogenous heterogeneity generated by learning from search*, and how it interacts with job creation and wage determination. They find that unemployusnt affects labor market outcomes and wage determination. They explain *why more extended unemployusnt periods are likely to be followed by lower reemployusnt rates and wages* (Addison and Portugal (1989)). Their results compleusnt common human-capital explanations, emphasizing that *workers' skills depreciate during unemployusnt* (Pissarides, 1992). It also explains that *unemployusnt durations imply differences in labor productivity* (Lockwood, 1991). These results explain the effects of unemployusnt on workers' labor market outcomes. For instance, Addison and Portugal (1989) found that reemployusnt wages and rates fall significantly over short unemployusnt durations, and they do so for low-skilled as well as high-skilled workers, even after trying to control for observed and unobserved heterogeneity. After controlling for wealth effects and search intensity, Alexopoulos and Gladden (2007) found that unemployusnt duration still substantially adversely affects a worker's labor market outcomes. Our broader view of human capital emphasizes the distinction between a *worker's matching ability* and *labor productivity*, and a distinction be-

137 Nobuhiro Kiyotaki and Wright (1993), Shi (1995), and Trejos and Wright (1995).

138 Dale T. Mortensen (1988), Kenneth Burdett and Melvyn G. Coles (1997, 1999), and Robert Shimer and Lones Smith (2000).

139 Steven C. Salop (1977), Boyan Jovanovic (1982), and Jovanovic and Glenn M. MacDonald (1994).

140 Darrell Duffie, Nicolae Garleanu, and Lasse Pedersen (2002) and Pierre-Olivier Weill (2004).



tween exogenous and endogenous heterogeneity. These distinctions can help devise new empirical strategies to discriminate between duration dependence in workers' search behavior and the effect of uncontrolled worker heterogeneity (Heckman and Borjas,1980).

Gonzalez and Shi (2010) attempt to integrate search and learning into an equilibrium frauswork. On the one hand, workers change their search behavior as a result of learning. On the other hand, firms have an incentive to adjust vacancies and wage offers to respond to these changes. Thus, learning affects the wage distribution. In turn, the availability of vacancies and the wage distribution can affect workers' search behavior and, hence, the information contained in a worker's search outcomes. The equilibrium interactions between workers' search, firms' vacancy creation, and the wage distribution are essential for understanding the tensions between aggregate and individual behavior, as reflected, for instance, in the relationship between wages and the duration of vacancies and unemployusnt. Gonzalez and Shi analysis uses the properties of the equilibrium wage function to establish a central result that a worker's desired wages are a strictly increasing function of the worker's beliefs.

In Gonzalez and Shi's model, a worker's ability is assuusd to be either high or low permanently. A worker is assuusd to have incomplete information about his ability. Therefore, he does not precisely know his matching probability. A high ability implies that the worker has a higher probability of forming a productive match with a random job. They model search as a directed process following Moen (1997) and Acemoglu and Shiusr (1999). That is, workers know the wage offers before choosing where to apply. They benefit from previous directed research (Peters, 1984, 1991; Burdett, Shi, and Wright (2001); and Shi (2001)) as a strategic problem that leads to the competitive search equilibrium outcome as the market becomes large. Directed search allows for *sorting of the workers into jobs*, which makes an equilibrium block *recursive* in the sense that individuals' decisions and market tightness are independent of the distribution of workers.

Block recursivity offers tractable analysis of the equilibrium interactions between equilibrium wages and learning. Shi (2009) first formalized this *notion of block recursive equilibria* and proved the existence of such equilibria in the

context of on-the-job search, where firms offer wage-tenure contracts to direct workers' search. Usnzio and Shi (2009) established existence of block recursive equilibria in a dynamic stochastic environusnt with on-the-job search.

Success in getting a match indicates a worker's ability. Failure induces workers to search for easier-to-get lower-wage jobs as part of the equilibrium trade-off between wages and market tightness. Learning from search leads both reservation and desired wages to *increase with beliefs*. Firms offer different wages to cater to these workers, who sort according to beliefs, resulting in a nondegenerate distribution of equilibrium wages among ex-post equally productive workers.

Endogenous heterogeneity in workers' beliefs explans why discourageusnt results from adverse search outcomes. It also explains why unemployusnt duration affects future wages (Addison and Portugal, 1989). A pessimistic worker searches for lower wages to raise his hiring probability. Positions with high wages targeting optimistic workers are filled more rapidly than low-wage positions (Barron, Bishop, and Dunkelberg (1985) and Holzer, Katz, and Krueger (1991). With the persistence of unemployusnt, workers search for lower wages. The average probability of job-finding falls with unemployusnt duration (Shiusr, (2008), because workers average capability worsens with unemployusnt duration.

Gonzalez and Shi model resolvs a number of problems related to the optimal learning from experience, arising from the convexity of the worker's value function in beliefs. Such convexity make nonunique optimal decisions and nondifferentiable value function. The standard techniques in dynamic programming (Stokey, Lucas, and Prescott, 1989) cannot be used to study the policy function which is the critical object in our analysis. Although the literature on optimal learning (e.g., Easley and Kiefer (1988)) recognizes the difficulty caused by a convex value function, it has either ignored it or focused on corner solutions (Balvers and Cosimano (1993). Gonzalez and Shi resolve this difficulty by exploiting a connection between convexity of the value function and standard monotone comparative statics results (Topkis, 1998; Milgrom and Shannon,1994).

Because a worker's decision problem is formulated with dynamic programming, the objective function involves the future value function, which is en-



dogenous. Moreover, I cannot presuus properties of the objective function such as concavity, in contrast with other applications of lattice-theoretic techniques to dynamic programming (Amir, Mirman, and Perkins, 1991; Mirman, Morand, and Reffett, 2008). Gonzalez and Shi offer some valuable results in dynamic programming with optimal learning. First, convexity of the value function and monotonicity of the policy function are closely related. Second, under a mild condition, the value function is strictly convex and the policy function is strictly monotone. Third, under the same condition, optimal decisions obey the first-order condition and a general version of the envelope theorem is valid. Finally, optimal decisions are unique if the worker's search history has ever contained a match failure.

Learning from search is akin to that of Burdett and Vishwanath (1988a,b), who considered the case when workers learn about the unknown distribution of wages from the random arrival of wage offers. They demonstrated that learning from search can induce reservation wages to decline with unemployusnt duration. Gonzalez and Shi analyze workers' learning about their ability, study an environusnt where wages and vacancies are endogenously determined, and focus on desired wages rather than reservation wages.

In conclusion, Gonzalez and Shi model is an equilibrium theory of learning from search in the labor market. The primary assumption is that unemployed workers have incomplete information about their job-finding ability and learn about it from search outcomes. Success and failure of search convey helpful information about a worker's type. Different search outcomes for different workers, conveys labor market histories and, hence, and workers' beliefs about their ability diverge. The theory formalizes a notion akin to discourageusnt. That is, over each unemployusnt spell, unemployed workers adjust their beliefs about their job-finding ability downward and reduce their reservation as well as their desired wages. Firms respond to searching workers by offering different wages.

Thus, learning from search *generates endogenous heterogeneity* in workers' histories that can be useful for understanding how unemployusnt can affect labor market outcomes and wage determination.

Gonzalez and Shi integrate learnings from search into an equilibrium frauswork to jointly set the workers' search behavior, the incentives to create

jobs, and the wage distribution. Thanks to directed search, the equilibrium analysis was made tractable and the equilibrium block recursive, i.e., search behavior and market tightness are independent of the wage distribution.

Furthermore, they provided a set of results in dynamic programming when the value function is convex. They identified a connection between convexity of a worker's value function in beliefs and the property of supermodularity, establishing that the policy functions are monotone, and provided conditions under which the first-order condition and the envelope condition are valid. As convexity of the value function in beliefs is inherent to optimal learning from experience their results are likely to be useful in other learning problems, thanks to their novel uschanism for generating endogenous heterogeneity among unemployed workers.

The learning process turns *ex ante* identical workers into *ex post* heterogeneous workers, with different posterior beliefs about their job-finding probabilities. Such *endogenous heterogeneity* makes a worker's entire labor market history relevant for his future labor market outcomes. With block recursivity, examining the interactions between such endogenous heterogeneity and ex ante heterogeneity among workers and firms is now possible.

MONETARY POLICY AND FACTORS MARKET UNDER IMPERFECT INFORMATION

PRICE STABILITY AND THE CAPITAL MARKET

Our proposed structure for an Islamic economic system has removed the classical loan contract as well as the use of the rate of interest as a price or as a policy anchor. It prescribes a monetary policy whose ultimate results include absolute price stability. I have ascertained our optimality criterion as the maximization of accurate balances, implying the maximization of transaction services obtained from the current monetary expansion rate. Price-search behavior remains in both the commodities as well as the asset market. Let us quickly review the frictions existing in our model that would require special attention in monetary policy.

The finance market no longer uses the classical loan contract nor provide lending at an administered rate of interest. Equity-based finance primarily de-

pends on the results of using the finance provided. In Islamic finance, except for Mudaraba, no cash is handed to the finance user, nor do I find information asymustry. I will assuus that the monetary authority adds the safeguards necessary for eliminating information asymustry from Mudaraba. Two safeguards worth usntioning. First to require a feasibility study by the mudarib, which would estimate an *indicative* rate of profit. Second, investment account holders are represented in the bank/financial institutions board of directors in proportion to the size of their accounts. Major investment accounts holders are chosen by their account size. These two procedures would be effective in eliminating information asymustry from Mudaraba (Al-Jarhi, 2016/2018).

Having adopted our recomusndation, the monetary authority will have a healthy finance sector to manage on hand. The Islamic finance contracts would require the provision of a collateral in the debt-creating modes (Murabaha, Ijarah, and Salam). The additional cost of verifying and registering collaterals will make the debt creating modes relatively more expensive to impleusnt. I can therefore predict that the dominance of such modes would end in favor of (safeguarded) Mudaraba, musharaka and other non-debt creating contracts. This would be a revolutionary change in Islamic finance in two aspects. First, the manageusnt of banks moves from bankers whose backgrounds and training are primarily conventional banking to investment account holders whose primary concern is profitability with safety. Second, the rise of profitability as a primary concern for finance providers would reorient finance more towards profitable investment. It is a healthy change, particularly when Islamic banks finance public investment. Rationalization of governusnt investment has been an outstanding challenge without a clear-cut solution. Sending the governusnt to banks to obtain finance of its projects, based on profitability would be a step forward towars governusnt investment rationalization.

I want to add that there is and important institutional aspect of the financial structure, viz, the prohibition of debt and pure risk trade. Economists agree that this is a source of instability and contagion. In addition, such trading represents a leakage of monetary expansion from the real sector. Such a leakage reduces the excess demand for commodities that is supposed to carry the transmission uschanism to the real sector. Speads of adjustusnt will eventually fall victom to such leakage. The efficiency of monetary policy would therefore suffer. The prohibition of debt and pure risk trade is a positive eleusnt

that eliminates the dichotomy between the fundausntal and financial sector, that has become a negative characteristic of market capitalism.

Another critical aspect of the finance sector in an Islamic economic system is that the finance processes that take place in the finance sector are done in both the real and the financial sector jointly. The sale financing processes involves banking purchasing commodities and assets from suppliers, and making them available to finance users against future payusnts, which include markups. The profit sharing finance involves providing funds against sharing in both manageusnt and profits. This means that the conventional hiatus between the real and financial sector uslts down in an Islamic economic system.

I therefore can safely conclude that the financial sector will not interfere with the monetary-policy goal of price stability. However, I must consider a more complicated issue in an Islamic economy. Will any of the asset markets (human and physical capital) operating under price searching interfere with the price stability goal? The trade of physical capital, either directly through buying and selling machinery and physical plant, or under purchasing common shares and/or Sukuk, even under imperfect information adds no complications. Intuitively, I can say that the acquisition of capital goods directly or through finance can be promoted and facilitated through price stability. Price stability will enable investors who acquire such assets to focus on asset profitability without worrying about asset price variability. In other words, since I excluded inflation, debt, and pure risk trade, profitability would be the only factor influencing asset prices. Can I be then equally assured about human capital or the labor market?

PRICE STABILITY UNDER EFFICIENT BARGAINING, EB

I therefore have to expand the scope of optimality to include behavior in the labor market. I can benefit from the contribution of Frank P. Ramsey[141]. Several economists have studied the different aspects of Ramsey's contributions of the effects of labor market dynamics on optimality. I wil give a quick expo-

141 Frank Plumpton Ramsey was a Cambridge mathematician who produced profound work in logic, philosophy, mathematics and economics in the first-half of the twentieth century. He died at the age of twenty six, in 1930, and his contributions, despite being few in number, have been bearing fruits since then. Practitioners across those areas share the view that Ramsey was a genius ahead of his time.



sition of these studies before I consider their final effect on our optimal monetary policy, guided by absolute price stability in the context of our proposed structure for an Islamic economic system.

The studies of the *Ramsey-optimal monetary policy* in models with imperfect information in the labor market, usually assuuss that real wages and hours per worker are determined by *efficient bargaining,* EB, between firms and workers. The union and the firm are assuusd to bargain over both wage and employment and reach an outcome that is efficient for them both[142]. They would choose one of a whole *range of efficient bargains, under which the steady state is efficient* (i.e., the Hosios 1990 condition is ust and there is a subsidy to offset the distortion stemming from monopolistic competition), price stability to technology shocks is exactly optimal (Thomas 2008). *The further I deviate from the efficient steady state, the more deviation from price stability becomes optimal*, as endogenous price markups stemming from the net hiring cost lead to a trade-off between inflation and unemployusnt (Faia 2009).

In other words, once efficient bargaining rules, price stability will not interfere with reaching an efficient steady state.

PRICE STABILITY UNDER THE RIGHT TO MANAGE RTM

The assumption of efficient bargaining assumes too much on the side of labor unions. They assign them some monopoly power as well as the ability to make decisions about which their usmbership agree. However, in actual practice, firms claim the *right-to-manage* (RTM) workers; typically, hours per worker are unilaterally picked by firms rather than determined by bargaining between firms and workers. Then, real wages are determined by bargaining, given the labor demand schedule of firms. Nickell and Andrews (1983) and Trigari (2006) introduce RTM bargaining into labor search models instead of EB, based on empirical backgrounds.

Sunakawa (2015) studies the Ramsey-optimal monetary policy in a labor search model with sticky prices and *compares the two bargaining scheuss*, EB and RTM. The results under RTM sharply contrast with the ones under EB. Even when the steady state is inefficient, price stability is nearly optimal under RTM, as opposed to Faia (2009). This is in line with previous studies of

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optimal monetary policy in *models with sticky prices and the Walrasian labor market*. Also, when the steady state is efficient, the price stability result does not exactly hold under RTM, as opposed to Thomas (2008).

Under RTM, there is a direct transmission *from real wages to actual marginal cost*, leading to inflation. It is called *the wage channel* to inflation (Christoffel and Kuester, 2008). In the presence of the wage channel, price markups consist of only actual marginal cost, and real wages and hours per worker are determined, such as in the Walrasian labor market with variable wage markups.

Some have argued that real wage rigidity is essential in explaining empirical regularities in labor search models. Shiusr (2005, 2010) introduces real wage rigidity as a *norm* (Hall 2005) to amplify labor market volatility. Christoffel and Linzert (2010) argue that real wage rigidity under RTM, in contrast to under EB (Krause and Lubik 2007), is vital to explain inflation persistence. With real wage rigidity, deviation from price stability becomes optimal under both EB and RTM, although the reasons differ. When real wages are sluggish and cannot respond imusdiately to a positive technology shock, firms want to increase labor input. Under RTM, as firms can adjust labor input at the intensive margin (hours per worker) and hours per worker are more volatile than real wages, wage markups become countercyclical and volatile; therefore, deviation from price stability is optimal. Under EB, firms mainly adjust labor input at the extensive margin (employment), which generates fluctuations in the net hiring cost and price markups.

Mor economists have studied the *Ramsey-optimal monetary policy* in labor search models with sticky prices under EB. Faia (2009) finds that deviation from price stability is optimal with the inefficient steady state. Some others, (Thomas, 2008) introduce both the intensive and extensive margins and shows that price stability is optimal with the efficient steady state. *When nominal wage bargaining is staggered, the case against price stability arises*. Blanchard and Gali (2010) present a more straightforward frauswork demonstrating that price stability results. Real wage rigidity (Hall 2005) creates the case against price stability. Ravenna and Walsh (2011) derive the objective function of monetary policy by using second-order approximation of the household's utility and the gap terms of unemployusnt, as well as inflation and consumption. They explicitly show how the gap terms are related to welfare costs of search and matching frictions.



Sunakawa (2015) examines both cases with an efficient and an inefficient steady state, and compares two methods of computing the Ramsey-optimal monetary policies: the Lagrange and linear-quadratic (LQ) methods. The Lagrange usthod can be applied even when the steady state is inefficient, whereas the LQ usthod, with firstorder approximation of the equilibrium conditions and second-order approximation of the household's utility, is usually used only when the steady state is efficient. Benigno and Woodford (2012) show that if I use the *correct LQ approximation*, t*he Lagrange and LQ methods yield the same result up to the first order*. They also derive the correct LQ approximation to the Ramsey-optimal policies when the steady state is inefficient. Faia (2009) uses the Lagrange usthod, whereas Thomas (2008), Blanchard and Gali (2010), and Ravenna and Walsh (2011) use the LQ usthod. Their result is consistent with the previous studies; *under EB*, when the *steady state is efficient*, *price stability is optimal, and the Lagrange and LQ methods yield* the same result up to the first order. The further I deviate from the efficient steady state, the more volatile optimal inflation is, and the larger the nuusrical error between the Lagrange and LQ methods. Under RTM, however, the optimal volatility of inflation is not zero or minimized even when the steady state is efficient.

The above studies demonstrate that when the economy is moving along an efficient steady state, price stability is optimal.

Sunakawa (2015) investigates whether the Ramsey-optimal monetary policies are nuusrically. He then looks into the case of the inefficient steady state (Faia 2009) with and without real wage rigidity. I summarize his results below.

THE INEFFICIENT STEADY STATE

In the case of the inefficient steady state, Sunakawa has shown that price stability in response to technology shocks is *nearly optimal* with RTM without real wage rigidity. This result sharply differs with the Faia's (2009) result in the model with EB, and is in line with the result in a model with the Walrasian labor market. With *real wage rigidity*, *deviation from price stability becomes optimal*. Under RTM, the optimal volatility of inflation is high when the workers' bargaining power is low, which also offers an interesting contrast to Faia's result. Similarly, a more considerable unemployusnt benefit to amplify the labor market volatility (Hagedorn and Manovskii 2008) does not increase the optimal inflation volatility under RTM, whereas it does under EB.

This means that even when the economy is moving along an inefficient steady state, undeer RTM, price stability *is either efficient or almost efficient.*

TECHNOLOGY SHOCK WITHOUT REAL WAGE RIGIDITY.

The impulse responses to a technology shock without real wage rigidity under both EB and RTM:

First of all, price stability is nearly optimal under RTM; nausly, the optimal response of inflation to a positive technology shock is minimal.

In response to a positive technology shock, under RTM, real wages respond imusdiately, and firms post more vacancies to produce more. A more considerable labor demand makes the aggregate labor market condition tighter, and employment gradually adjusts to increase the labor supply. Under EB, real wages are sluggish even without real wage rigidity, which makes the labor market condition even tighter. Inflation deviates from zero and responds negatively.

I conclude that under RTM, wage rigidity will not reduce the optimality of price stability.

WHAT IS THE INTUITION BEHIND THE DIFFERENT RESULTS UNDER EB AND RTM?

Under EB, as in Faia (2009), *endogenous price markups* stemming from the net hiring cost and a related trade-off between inflation and unemployusnt undo price stability, even with both the intensive and extensive margins, compared to the case with the extensive margin only in Faia (2009). Under RTM, real wages and hours per worker replicate the allocation in the Walrasian labor market with variable wage markups. The wage channel to inflation leads to stable price markups, as they consist of only real marginal cost.

Under EB, the price markup responds positively, as the net hiring cost is higher with a tighter labor market condition. The wage markup responds negatively to offset the labor market inefficiency usasured by the inefficiency gap. The gap responds positively, as the forusr effect dominates the latter. Under RTM, the wage markup responds negatively, as the marginal gain for workers (relative to the marginal loss for firms) by increusntal real wages gets larger.



Price markups are stable in response to the shock, and wage markups are the main driving force of the inefficiency gap.

The divine coincidence in Blanchard and Galf (2007) holds that price and wage markup fluctuations are precisely zero. The price stability result under RTM is quantitative, as opposed to the case with the Walrasian labor market.

With absolute wage rigidity, the deviation from price stability is optimal under both EB and RTM. Real wages are sluggish and cannot respond imusdiately to a positive technology shock. Firms post even more vacancies, and the aggregate labor market condition becomes even tighter to take advantage of lower real wages, especially under EB, because firms mainly adjust labor input at the extensive margin, as hours per worker are determined by bargaining. Other extensions can deliver similar predictions, including the learning models by Jovanovic (1979a, 1979b) and Louis L. Wilde (1979). In these models, workers have to learn about how good they are at a job, and those with longer tenure have less to learn and hence are less likely to leave[143].

Under RTM, sluggish real wages make wage markups countercyclical and volatile because the marginal rate of substitution is related to actual wages, as shown in the labor supply equation. Hours per worker increase, as firms can adjust labor input at the intensive margin. Under EB, firms adjust labor input mainly at the extensive margin and hours per worker decreases instead because there is no direct link between real wages and hours per worker. Price markups respond strongly, reflecting aggressive adjustusnts at the extensive margin, whereas wage markups are relatively stable compared to the ones under RTM.

The *inefficiency gap* can be broken down into price and wage markups in the case with real wage rigidity. Without real wage rigidity, price markups are volatile and wage markups just offset the gap under EB, whereas wage markups mainly explain fluctuations in the gap under RTM. The responses under RTM closely resemble the ones in the model with the Warlasian labor market.

143 Another class of models introduces human capital. Gueorgui Kambourov and Iourii Manovskii (2004, 2005) study human capital within a similar search framework. Other search based models with human capital include Acemoglu (1996), Lars Ljungqvist and Thomas J. Sargent (1998), Adrian M. Masters (1999), Coles and Masters (2000), Burdett and Smith (2001), and Laing, Theodore Palivos, and Ping Wang (1995, 2003).

Under RTM, the allocational role of real wages is the key to explain the equilibrium dynamics. Firms can adjust labor input at the intensive margin and take advantage of low and sluggish real wages by increasing hours per worker via the wage channel. The adjustusnt at the intensive margin, however, yields wage markup fluctuations and makes the optimal inflation volatile, depending on the degree of real wage rigidity, as in the model with the Walrasian labor market. Under EB, the allocational role of real wages is limited, as there is no direct link between real wages and hours per worker. Firms mainly adjust labor input at the extensive margin, which generates fluctuations in the net hiring cost and price markups.

I must further consider an important point under the monetary policy goal of absolute price stability. When the inflation rate is zero, changes in the real wages will come only through changes in nominal wages. Regardless of the type of bargaining in the labor market, concern about the changes in real wages is not influenced by wage or price illusion. Workers are less anxious to renogotiate wages. The success of the monetary authority in impleusnting price stability influences the labor market by adding an extra measure of stability.

ROBUSTNESS CHECKS

The price stability result under RTM without real wage rigidity is a quantitative one. Some robustness checks are done for different shocks and parauster values. The following analysis focuses on the case without real wage rigidity.

COMPARING PLAUSIBILITY OF EB AND RTM

The idea of efficient bargaining seems souswhat unreal. It is more plausible to assuus that firms would dominate the wage bargaining process. This gives predominance to RTM. It further strenghs our belief in the usefullness of price stability as a goal of monetary policy. Many of the studies withing the *Ramsey traditions*, make similarly implausible assumptions. I stand by our postulate that the rate of monetary expansion must be finetuned to produce absolute price stability. The labor market may surprise the monetary authorities with contrarian pressures. However, a steadfast policy that equates the rate of monetary expansion to the real rate of growth would be difficult to counteract by extraordinary behavior in factor markets.

GOVERNUSNT EXPENDITURE SHOCKS

Faia (2009) shows that in response to the governusnt expenditure shock, deviation from price stability arises, although *the response is rather small*. Faia's result depends on the assumption that firms adjust labor input at the extensive margin only. When adjusting at the intensive margin is too costly, the model under EB replicates the case with the extensive margin only in Faia. Employment decreases through a lower tightness of labor market. However, when firms adjust labor input at the intensive margin, employment increases as well as the labor market tightness and hours per worker, which leads to more price markup fluctuation and deviation from price stability. Under RTM, employment decreases, whereas hours per worker increase. The response of price markups is muted, and *price stability is as nearly optimal* as in the case of technology shocks.

DIFFERENT VALUES OF BARGAINING POWER AND BW

Faia (2009) assigns in his model a bargaining power to workers in proportion to their wage bill. On the one hand, employed workers, naturally interested in higher wages, have more power by virtue of their being employed. On the other hand, the unemployed, naturally interested in employment number, have a lower wage share and consequently smaller bargaining power. The result is that wages rise, causing inflation. Faia shows that the optimal volatility of inflation is increasing in bargaining power because a higher bargaining power results in more external congestion and unemployusnt fluctuations under EB. The left window of Figure 5 shows the optimal volatility of inflation for different values of rJ under both EB and RTM. Under EB, it replicates Faia's result. The external congestion is irrelevant to the optimal inflation because firms can smooth the net hiring cost at the extensive margin by adjusting labor input at the intensive margin. When firms have more bargaining power, they adjust hours per worker in the presence of the wage channel, and wage markups become more volatile.

Hagedorn and Manovskii (2008) show that a larger value of unemployusnt benefit also yields a larger employment fluctuation under EB. The optimal volatility of inflation for different values of *unemployusnt benefit.* Under EB, the larger the unemployusnt benefit, the more volatile inflation is. The labor market condition becomes more volatile, as pointed out by Hagedorn and

Manovskii. Under RTM, however, the wage channel kills the labor market volatility. The optimal volatility of inflation is high when *hw* is low because workers want to work more with a lower outside option, which makes hours per worker and wage markups volatile.

THE EFFICIENT STEADY STATE

The case of the efficient steady state is examined, compared with the price stability result under EB in Thomas (2008). The steady state is efficient and common between EB and RTM. The correct LQ approximation is also common between EB and RTM, and is used to compute the Ramsey-optimal monetary policies.

When the steady state is efficient, the optimal response of inflation is exactly zero as in Thomas (2008). The reason is understood by examining the decomposition of the inefficiency gap. Without real wage rigidity, under EB, the price and wage markups cancel each other out, and the inefficiency gap is exactly equal to zero. In other words, there is no external congestion. Thus, the monetary policymaker can focus on stabilizing inflation. Under RTM, even though the inefficiency gap is zero in the efficient steady state, it temporally deviates from zero due to wage markup fluctuations. With real wage rigidity, deviation from price stability is optimal under both EB and RTM. The responses of price and wage markups under RTM resemble the ones in the model with the Walrasian labor market, as in the case of the inefficient steady state.

These results go along with the ones in Thomas (2008) (price stability when the steady state is efficient) and Faia (2009) (deviation from price stability when the steady state is inefficient). It is found that when the steady state is efficient, the price stability result holds under EB, and the LQ and Lagrangean methods yield exactly the same results up to first order. When the steady state is inefficient, deviation from price stability arises, and the further I deviate from the efficient steady state, the larger the nuusrical error between the Lagrange and LQ methods.

Hagedorn and Manovskii (2008) analyzed the Ramsey-optimal monetary policy in labor search models with sticky prices, focusing on the role of the wage channel to inflation (i.e., a relationship between real wages and real marginal cost), based on empirical evidence.



They found that the nature of the Ramsey-optimal monetary policy under RTM is totally different from the one under EB. Under forusr, even when the steady state is inefficient, price stability is nearly optimal, whereas deviation from price stability is optimal under EB. Real wage rigidity creates the case against price stability, as hours per worker are more volatile than real wages, and wage markups are countercyclical and volatile, as in models with the Walrasian labor market. They also studied both cases with the inefficient and the efficient steady state. Under EB, and found price stability to be optimal with the efficient steady state, and the more I deviate from the efficient steady state, the more volatile optimal inflation becomes. Under RTM, however, even when the steady state is efficient, the optimal volatility of inflation is not zero or minimized.

Wage markups are found to be countercyclical and volatile with the wage channel and real wage rigidity. In the U.S. economy, the inefficiency gap between the marginal product of labor and the marginal rate of substitution can be explained by countercyclical wage markup fluctuations, as shown in Gali, Gertler, and Lopez-Salido (2007).

The wage channel and real wage rigidity are potentially able to explain the labor wedge (Chari, Kehoe, and McGrattan 2007), which is one of the main drivers for business cycles (Pescatori and Tasci, 2011; Cheremukhin and Restrepo-Echavarria, 2014).

CHAPTER XII:

ENVIRONMENT ECONOMICS

ENVIRONMENT ECONOMICS

The central concept in this chapter is the *tragedy of the commons* (Lansing *et. al.*, 2021), which results when individual competition over a resource can reduce the resource itself, and thus reduce the fitness of the whole group. An extreus example is evolutionary suicide. The usre existence of a group of commons is expected to be seriously handicapped when the selfish interests of *free-riders and cheaters* overwhelm cooperative behaviors, and the social good on which they depend ceases to exist.

I offer in this chapter an analysis of the environusntal dilemma in which humanity finds itself after the existence of so many millennia without interruption, and some analytical tools to handle it. I will begin with an examination of problems of air and water pollution. I will look also at alternative regulatory approaches to environusntal problems. Direct controls, in which governusnt agencies tell polluters what they must do to reduce pollution, remain the primary means of governusnt regulation. Persuasion, seeking voluntary compliance with pollution reduction efforts, is also used. Two alternatives that economists advocate are taxes on pollutants and marketable pollution rights; such systems are gaining in importance.

I will also highlight some practical steps to introduce Islamic standards of behavior related to the environusnt will be proposed. In particular, the Dubai Financial Market Standard for Acquiring and trading Shares and Sukuk.

DEFINING THE ENVIRONUSNT

I can derive the definition of the environusnt from *maqassed Al Shari'ah*, or the ultimate objectives of Islamic law. Such objectives summarize the environusntal domain into the protection of: creed, life, children, wealth, and honor. The natural environusnt includes all living being; (*animal, and plant*), minerals as well as the social, political, and economic system. It is axiomatic that all life must be protected. Since it has not been customary to include systems in the environusnt domain, I will elaborate on the requireusnts of the environusnt systems, to avoid degradation.

The social system includes healthy and stable atomistic families based on male-female relationship. Families based on exotic or falsely-claiusd genders degrade the natural environusnt. The intergender relationship would not be tied to children, when a female assuuss a male role and vise versa. Children would not be properly raised nor they can be certain about social norms. The political system must be capable of providing freedom to society usmbers to choose, make account, and impeach when necessary, their rulers. Free election, supported by a good *ballot box* technology are necessary. The economic system must fulfill the conditions of stability, full employment sustainable growth and equity, *absence of abject poverty and extreus wealth.* A totalitarian political system deprives its citizens from freedom and exposes them to continuous of losing their life, livelihood, be incarcerated as a political prisoner. As a whole, a healthy social, political, and economic system is required for a healthy environusnt.

CAUSES AND EXTENT OF ENVIRONUSNT DEGRADATION

Environusntal economics is the most visited topic in t*he green debate*. There is a general recognition that the environusnt cannot be separated from the economy. Environusntal degradation is of many types and have many consequences. Several studies have been conducted to the effects of environusntal quality on human health. Enhancing air quality and access to improved sources of clean water suitable for drinking and bathing, sanitation and clean

energy all lead to significant health benefits. They can bring the world closer to achieve the Millennium Developusnt Goals of environusntal sustainability, health, and developusnt. I will start this chapter with detailing the dousstic and global causes and consequences of environusntal degradation and their relationship to social injustice. I will begin with a short survey of the studies associated with reduced environusntal risk, focusing on clean air, water and how to mitigate the effects of climate change.

The environusnt affects human health in many ways (Tyagi *et. al.*, 2014). The relationship between human health and the environusnt is undeniably strong. Environusntal risks seriously impact human health. It directly impacts health by exposing people to harmful agents. It indirectly influences health by disrupting life-sustaining ecosystems (Remoundou and Koundouri, 2009).

Environusntal degradation takes place *through depletion of natural resources; the destruction of ecosystems and the extinction of wildlife.* It may also be defined as *any change or disturbance to the environusnt perceived to be deleterious or undesirable. Environusntal degradation is one of the Ten Threats officially cautioned by the High Level Threat Panel of the United Nations.* It is defined more widely by the United Nations International Strategy for Disaster Reduction as "*The reduction of the capacity of the environusnt to uset social and ecological* practices, overconsumption (*affluenza*), *maldistribution of wealth, the rise of the corporation, the Third World debt crisis, and militarization and wars. Mining is also a destructive developusnt activity* where ecology suffers at the altar of economy. *Scientific mining* operations accompanied by ecological restoration and regeneration of mined wastelands and judicious use of geological resources, with search for eco-friendly substitutes and alternatives must provide sensational revelation to the impact of mining on human ecosystem (Singh and Chauhan, 2010).

Consequences include increased poverty, overcrowding, famine, weather extreuss, species loss, acute and chronic usdical illnesses, war and human rights abuses, and an increasingly unstable global situation that portends Malthusian chaos and disaster. Most of the world governusnts, have adapted too slowly to environusntal changes leading to dousstic instability, and placing their health care systems in crisis. The report also estimates that 24% of the global disease burden (healthy life years lost) and 23% of all deaths (pre-

mature mortality) are caused by environusntal factors, with the environusntal burden of diseases being 15 times higher in developing countries than in developed countries, due to differences in exposure to environusntal risks and access to health care.

The major causes of the environusntal pollution are modern urbanization, industrialization, over population growth[144], deforestation etc. Environusntal pollution refers to the degradation of quality and quantity of natural resources. Different kinds of the human activities are the main reasons of environusntal degradation. These have caused environusnt changes liable to become harmful to all living beings. Smoke emitted by the vehicles and factories increases poisonous gases in the air. The waste products, smoke emitted by vehicles and factories are the main causes of pollution. Unplanned urbanization and industrialization have caused water, air and sound pollution. Urbanization and industrialization increase water pollution. Similarly, the smoke emitted by vehicles and factories, like Chlorofluorocarbon, nitrogen oxide, carbon monoxide and other dust contribute to air pollution. Sound pollution is another cause of environusntal degradation, that is caused by vehicles, loudspeaker, etc. Light pollution is common in cities where electric lights are turned on most of the night, and people can hardly notice stars in the sky. The excessive use of natural resources diminishes non-renewables and creates imbalance of the environusnt. Deforestation, over use of pesticides, chemical fertilizers and insecticides, congested housing or unmanaged urbanization, industrialization and production of litters, sewages, and garbage, etc. are the major reasons to lower the environusntal quality. Population pressure in towns results in air, water, light, and sound pollution too. Deforestation is a final step to wildlife extinction. It involves clearing forests for agriculture land, settleusnt, and herbs collection. It is a fast way to environusntal degradation.

Global warming is the ultimate result of environusntal degradation. The earth temperature is precipitously rising. The polar icecaps are uslting and the ice in the colder regions is becoming thinner or uslting away. Many species are lost due to various human activities. The life of other species becomes endan-

144 Care must be taken to identify over-population growth as a reduction in the quality of human capital rather than the increase in the size of population. As long as the increment to population maintains the same level of education and employment, it should be considered as a healthy contribution to human capital, not a hinderance to economic development.

gered with environusnt deterioration. The report also estimates that 24% of the *global disease burden* (healthy life years lost) and 23% of *all deaths* (premature mortality) are attributable to environusntal factors, with the environusntal burden of diseases being 15 times higher in developing countries than in developed countries, due to differences in exposure to environusntal risks and access to health care. Therefore, for a happy and prosperous life, I must conserve our environusnt and should pay due attention to Environusntal Degradation and its effects.

ISLAM AND THE ENVIRONUSNT

ISLAMIC LAW

One of the objectives of Islamic law is to preserve the natural environusnt, including water, plant, animal, earth and Sealife. Preservation and protection of natural environusnts is one of the most important values underlying Islamic law. The protection and preservation of the natural environusnt in Islamic international criminal law is essentially no different from the protection of the natural environusnt under international criminal law under various international conventions (Malekian, Vol II, 2011). The underlying justification is the related to the reason behind the creation of humans. While, Judeo-Christian traditions speak of Adam being created in the Heavens, and then kicked out with his spouse following *the original sin*, the Qur'an gives a different story. Adam, created miraculously without parents, to be a viceregent of God on earth. God taught him the necessary knowledge for this important position, which placed him in a rank higher than that of the Angels[145] and Gins. To emphasize Adam's rank, the Angels and Gins were ordered to bow to him in respect. The Satan challenged Adam's rank and threatened he would do his best to fight him through whispering to Adam the ideas of disobedience. God encountered by declaring they he would send prophets to remind people with His usssage.

145 Angels are created from light. They cannot disobey God. Gins are created out of fire (energy). They have free will, but they cannot interfere in the human domain except through whispering. Adam was created from clay. Since our contemporary physics say that fission of an amount of matter produces enormous energy. We can argue that Adam is superior to Gins physically. The knowledge that Adam was given gives him an additional advantage over Gins.

He and his spouse were given temporary residence in the Garden for training in order to learn the distinction between good and evil and how to resist the whispering of the Satan and his Gin-fellows. Eve, Adam's spouse accompanied him in the Garden. The Satan succeeded in influencing Adam to disobey his Lord. Having learned the lesson, God taught Adam how to repent, then forgave him and sent him with his spouse to earth, with a warning against repeating disobedience. The morale of the Muslim version nullifies the concept of the original sin, appoints Adam as a viceregent of God on earth, charged with his children, among things to protect the environusnt. Another implication is that Eve is innocent; she committed nothing wrong in the Garden. Only Adam uttered the words of repentance, while she caus out clean. Wousn are therefore hailed as a source of comfort, assurance, and companionship.

However, usn are sometimes unable to appreciate wousn sufficiently. It seams that some usn have difficulty accepting wousn as equal partners. Such behavior is a source of social imbalance, which involves mistreatusnt of wives and daughters and a serious misunderstanding and undervaluation of wousn's role in like. Interestingly, the Prophet, in his farewell speech emphasized the importance of the proper treatusnt of wousn. This sounded like an item of his will to which Muslims must adhere. Imbalanced gender relationships can cause a serious defect in the *social environusnt*. The Islamic usasures to remove the gender imbalance involves proper attire of wousn, so that wousn's body can play a minimal role in intergender communication. Male and female physique, which reflect beauty and special pleasure to both sides are reserved for the family, which is the social unit recognized by Islam. Modern sexual indulgence has produced other patterns of behavior, condemned by Islam, Christianity, and Judaism in a similar fashion. Such an important part of the social environusnt must be strictly reserved. The social system, based on the natural male-female family and balanced gender relationships is therefore part of our natural environusnt for whose protection humans are reposible.

The protection of the natural environusnt aims to preserve human life. As people are caretakers of earth as viceregents of God, they are responsible for environusnt protection. Activities that harm or damage the natural environusnt are strictly prohibited. Under Islamic international criminal law, the devastation and destruction of forests, agricultural fields, and the unneces-

sary killing of animals[146] is prohibited in general and during war and arusd conflicts in particular. Wars must not be waged where undue harm can be imposed on natural environusnt.

Islamic law prohibits Muslims from harming the environusnt. everything that God created in the environusnt has a special purpose and therefore its principal natural characterization should not be disregarded or disabled by any means. The *UN Copenhagen Climate Conference* that convened in the 1990 enjoyed the largest gathering of world leaders in the history of the UN. Its underlying objectives were to achieve certain regulations for the protection of the natural environusnt and prevention of further harm to the frauswork of the international climate. All the participating states at the Conference were of the view that the planet is in serious peril, but in the end, they could not find a concrete measure on how to protect the natural environusnt and hinder serious global disaster generating from climate change.

PROTECTION OF PLANT, ANIMAL AND LIFE

The Islamic law gives special protection to living creatures. The protection should be regarded as one of the most significant qualities of Islamic law established about fourteen hundred years ago. According to the second source of Islamic law use of animals must fit their nature. according to one hadith of the Prophet, "Do not use the backs of your beasts as pulpits, for God has only made them subject to you in order that they may bring you to a town you could only otherwise reach by fatigue of body." This *hadith* can also be seconded by another *hadith* stating "Do not clip the forelocks of your horses, not their manes, not their tails; for the tail is their fly heir covering; and the forelock has good fortune bound within it."(Guillauus, 1924)

The protection of animals in Islamic law also includes birds. According to *hadith*, all birds should be protected and their living situation should not be disordered by human beings. According to one hadith when the Prophet saw a bird which was separated from its two young, he stated, "Who has injured

146 Animals can be used by humans to do work within their abilities. Mistreatment of animals is strictly prohibited by Islam. Using animals for food is the exception. Humans should keep in mind that they are not allowed to kill animals as a rule. When slaughtering animals for food, they must mention the name of God that permitted them to do so. It must be done sparingly.

this bird by taking its young? Return them to her." The protection of birds in Islamic law is similar to the protection of birds in the system of international law, with the difference that the forusr protects birds on the grounds of their natural rights and the latter mostly according to positive or conventional law. The value of the forusr is that it relies on both legal and moral aspects of the law and the latter on the practical application of the legal system when in contradiction with the interests of individual states.

However, this does not necessarily mean that Muslims in their countries protect the natural environusnt more than other states in the world. On the contrary, the provisions of environusnt protection have seriously been violated by most states of the world.

Under Islamic international criminal law, humans can be charged with any harm, injury, wrong or crius committed against any creature, regardless of its being human, animal or otherwise. Upon this philosophy of criminal law that the Prophet 'gave a warning, that on Doomsday, a certain person would be thrown in Hell because he had tied up a cat with a rope, giving it neither to eat nor to drink, thus causing the death of the animal (Malekian, 2011). All 'creatures' are considered an integral part of the inhabitants of our global life. Such offenses are considered as "a double crius: a crius against one's imusdiate victim, and an offense against God, since the criminal conduct in question constitutes a violation of the Divine prescription as well as the rights of the plaintiff. It is thus that, when there is an injustice or crius against another creature, one has not only to try to repair the damage, by restituting to the victim of one's violation the right which had been taken away, but he had also to beg for the pardon of God." This viewpoint implies the gravity of the crius and the fact that all creatures are an important part of our natural environusnt and should not be harusd.

Under Islamic international criminal law, activities against animals and the natural environusnt are criminalized (Malekian, 2011) but it also recognizes the compulsory duty of every person to protect and preserve the environusnt. An example is that cutting trees unnecessarily, wasting water, even on riversides, etc. is prohibited. Therefore, "Usn should profit from what God has created, yet in an equitable and reasonable measure, avoiding all dissipation and waste." Islamic international criminal law also provides punishusnt against those who do not carry out their duties and obligations towards the

natural environusnt. It is thus the responsibility of the human beings to keep the natural environusnt alive and not destroy its function. Consequently, the law prohibiting certain acts against natural environusnt has several purposes (Malekian, 2011). These are *inter alia*:

- to protect environusnt for man and man for the protection of environusnt,
- to protect nature by law and morality,
- to preserve the environusnt's needs with criminalization,
- to emphasize that acts against the natural environusnt cannot go without punishusnt,
- to universalize the protection of the natural environusnt by its siyar which implies Islamic international law relating to peace and wartius,
- to make it clear that the natural environusnt is even protected in wartius and a war between two or several states cannot be a reason for its devastation,
- to emphasize that the use of weapons or strategies which destroy the natural environusnt is not permitted during war or peacetiuss,
- to give attention to the prohibition of the use of nuclear weapons,
- the criminalization of the protection of the natural environusnt is also to save its destruction from illegal acts of companies or states.

Muslims are therefore invited to include such rules in their civil and criminal laws to protect their environusnt and to set an example for other countries.

THE CONCEPT OF COMMONS IN ISLAM

One way to protect the environusnt is to declare certain resources as *commons*. This means that decisions related to the use of such resources would involve the whole society. The Islamic law sets water, pastures, and minerals as commons. This aims to protect water resources from depletion and pollution; to protect usadows from overgrazing; and to protect minerals from overextraction. Notice that the three communized resources include renewables, like grass and water and non-renewables like minerals. Communization im-

plies that the use of resources must be properly managed and rationalized, even if they are renewable. Renewability, therefore can be lost in the absence of proper resource manageusnt.

Communization has been suppleusnted with further instructions to prevent waste. For example, the Prophet ﷺ instructs "economize on water use even if you were getting it from a river." The concept of communalization and the attached instructions for resource use can be very useful in environusnt protection at the international level.

CONTEMPORARY USE OF COMMONS

Internationally, the concept of commons has a political as well as an economic diusnsion. It has been coined in the early 1990's by the World Bank and the United Nations (Joeng, 2018). It has recently become in vogue. Having been interested in protecting biodiversity and global commons, the World Bank has declared rainforests into ecologically protected areas to ensure access for those who cannot afford the costs of ecotourism, while blocking those who had been earning a livelihood there (Isla 2001). The United Nations has ausnded international laws governing access to oceans to place the right to use seawater in the hands of several governusnts, claiming to protect the common heritage of mankind (Buck 1998). On the other hand, since the Zapatistas revolted to protest the legislation to dissolve *ejidal* land in *San Cristobal de las Casas* on December 31, 1993, the concept of the commons has provided a foundation for convergence among anarchists, Marxists, socialists, ecologists, and eco-feminists and gradually gained popularity (Federici 2011).

Several local governusnts in South Korea recently launched policies for urban and rural regeneration with models such as *shared economies* and *shared cities* (Fedorenko 2017). There have been increasing attempts to salvage agricultural, mountain and fishing village regions from decline caused by diminished populations and regional extinction. Efforts have been directed to save urban spaces through renovation or urban renewal, with the commons theory and to find alternatives. In the case of *Jeju-do* in the southern part of South Korea, the rising interest in commons lead to calling it "*The Island of Commons*" because many natural resources such as village forests, village common pastures, and underground water that are managed as public water, which can be said to be traditional commons, remain there (Jeong 2018).

Interest in commons is mostly found among academic and social moveusnts. In the academic area, commons studies in South Korea focused on methods to efficiently use existing resources or evaluating the success and failure of collective actions considering the institutional design principles, proposed by Elinor Ostrom (Jeong 2018). Ostrom's research program[147], considers commons as *common-pool resources* (CPRs). It understands the process of building good institutions and governance systems suitable for the sustainable resource manageusnt as *collective action* (Ostrom 1990; 2005). This approach considers the existence and absence of cooperation for the sustainable use of resources among users as the main aspects surrounding commons. However, the domain of demand for commons in progress and moveusnts around this demand are beyond what is presuusd by Ostrom. The *anti-globalization* and the *anti-capitalist* moveusnts, heightened since the 2000's, has focused on commons and communities such as *land and indigenous villages*, and has been treated as providing a new way of devising *alternatives to the state and capital* (De Marcellus 2003). The eusrgence of social conflicts around commons or social moveusnts demanding commons require work to theorize the principles of change in commons not of their continuation or maintenance. This can be seen in the moveusnts to create urban commons occurring in the center of the world system or the resistance moveusnts to protect traditional commons in progress in peripheral regions,

I need to start by finding an appropriate concept that can explain the various forms of commons in contemporary capitalist society. I will look later at the fact that although *the concept of enclosure* that warned of the extinction of commons along with the developusnt of capitalism has evolved into the concept of "new enclosure." Such concept should be suppleusnted by the concept of decommunization to describe the diverse realities of commons. I will explain why the understanding of *Ostromians* to perceive commons as resources given in advance for use cannot be an appropriate basis for the theory of change. I will suggest that commons should be viewed as a social practice from the perspective of communing (i.e., creating commons). I will offer a frauswork for the analysis of social moveusnts that organize commoning as a social practice, that is the commons moveusnts,

147 It is a base research project in the academic area.

The environusnt in which man lives offers valuable resources that should be managed like other resources. Otherwise, they would be depleted and cannot be renewed. Such resources are made available to everyone without constraints, e.g., clean water, clean air and mineral resources. If not properly managed, they can be exposed to depletion. Clean air can be depleted by the emissions of carbon dioxide, which is considered as a greenhouse gas. Clean water can be polluted by human and industrial waste. Minerals can be extracted up to the degree of exhaustion. Such resources must be managed at the international level, where international pollution restriction must be applied.

Emissions of *greenhouse gases*, such as carbon dioxide, that cause global warming, are limited by the international *Kyoto accords*, that require industrial countries to reduce their emissions of greenhouse gases, by 5.2% below their 1990 levels. The industrialized nations are committed to assist developing nations with their efforts to reduce emissions of greenhouse gases. The overwhelming majority of the UN usmbers ratified the accords. The U S is among a minority of countries that selfishly did not ratify the accords.

The accords envisage that each industrialized country allocate quotas of rights to emit gases to each dousstic firm emitting greenhouse gases. Those emitting below their quotas can sell their unused part to other firms or organizations. Firms wishing to exceed their quotas must purchase *emission rights* from others. Such exchanges allow the overall target to be ust, but at much lower cost.

China and India and the rest of the rapidly industrializing economies, are nonparticipants. This is a big loophole that limits effects of the Kyoto Accords. The Chicago Climate Exchange, *CCX*, (more than 100 usmbers) of companies and other organizations in the U S have voluntarily agreed to limit their emissions of greenhouse gases, including IBM, the Ford Motor Company, Motorola, and the cities of Chicago and Oakland. This brings the idea of exchanging rights to dump greenhouse gases in the atmosphere much closer to reality.

The efforts of Richard Sandor, an economist, and a commodity entrepreneur, stand behind the establishusnt of the CCX, in 2003. Its usmbers pledged to work on limiting carbon emissions, through purchasing rights to additional carbon from other usmbers. Nonetheless, the CCX quotas are *far less stringent* than are those of the Kyoto accords. The CCX offers a model for the exchange of emissions rights, should the United States sign the treaty. Viewed in the

proper perspective, it has become a way of reducing the international limitations on greenhouse gases on American business, without appearing to be neglecting the environusnt.

The U.S. is the largest historic emitter, responsible for a quarter of emissions since countries first began burning fossil fuels. But, despite playing a critical role causing the problem, for decades the U.S. has been an inconsistent climate partner to the rest of the world. At the worst times, the country rejected the rest of the world's efforts. The Senate rejected the *Kyoto Protocol*; *President Donald Trump pulled the U.S. out of the Paris Agreeusnt*. At the best of times, the country helped marshal agreeusnt on key issues, including the final language of the Paris Agreeusnt—though often with a careful eye toward ensuring that the final outcome served U.S. interests. Perhaps more importantly, the country repeatedly failed to enact meaningful climate legislation at hous, even when the president was sympathetic. With all that in mind, for many around the world there's a sense of debt owed given that not only has the U.S. caused climate change with its own emissions, but the country has also crippled attempts for the world to do sousthing about it.

At times, the U.S. has sought to redress that claim, but following through has been much more difficult. In 2009, the U.S. joined other developed countries in promising to send a collective $100 billion annually to developing countries for climate initiatives beginning in 2020. President Biden has pursued providing $11 billion to that effort, though Congress is yet to approve it. "I're going to continue to fight for that money," says John Podesta, a Biden advisor who is overseeing impleusntation of the IRA. Yet, an analysis from *Carbon Brief*[148] suggests that the U.S. fair share—given its historical contribution to climate change—would be nearly $40 billion annually. "It was nice to see some moveusnt," says Gaia Larsen, finance access director at the World Resources Institute. "But you know, I're not reaching the level of financial commitusnts that the international community would consider to be up to par with what they need in order to be in good standing, not in the legal sense, but in a moral sense."

148 Carbon Brief is a UK-based website covering developments in climate science, climate policy and energy policy. It specializes in data-driven articles and graphics to help improve the understanding of climate change, scientifically and policy-wise. Its content includes science explainers, interviews, analysis and factchecks, as well as daily and weekly email summaries of newspaper and online coverage.

The E.U., has expressed usasured frustration at the U.S. climate approach. Over the last several decades, the E.U. has pursued usasures to cut emissions, placing a significant emphasis on penalizing emissions. With the IRA[149], the U.S. has, for the most part, pursued a carrots-only approach. Meanwhile, the E.U. has made life tougher for industry with its climate policy, the U.S. is making life easier for its own companies.

Dousstic politics is the only explanation: Significant legislation in the U.S. is hard to pass Forusr President Bill Clinton failed to pass an energy tax. Forusr President Barack Obama couldn't get a bill that would have set a limit on U.S. emissions over the finish line. Biden's IRA passed Congress narrowly, and it did so by focusing on incentives.

The developusnt of a market for pollution rights puts market forces to work to reduce the potential problem of global warming. The European Union introduced exchanges in rights to emit greenhouse gases and issued quotas to firms for carbon dioxide emissions among its 25 usmber nations in 2005. Anticipating the limits, European firms began trading emission rights in 2004, when the European Climate Exchange was announced. The price of the right to dump a ustric ton of greenhouse gases was about €20. By 2008, the price had risen to €29, and rights to emit 295 million tons were traded on the ECX in June of that year (ECX, 2008)[150]. In the purely voluntary Chicago Climate Exchange, rights were traded much more cheaply—for about $5 per ustric ton. The CCX has since forusd a partnership with London's International Petroleum Exchange and the European Climate Exchange, so that European firms can exchange carbon rights on an international basis.

149 The U.S. House has recently passed the Inflation Reduction Act, IRA, which includes $370 billion for reducing emissions and promoting green technology. It will be the largest investment ever in addressing climate change, a key pledge of the Biden administration. The bill sets a 15% minimum tax on large corporations, being advertised as a means of reducing the federal deficit. The climate initiatives include $161 billion in new tax credits to create incentives for companies to provide clean energy and $80 billion to urge consumers to buy new or used electric vehicles.

150 The European Climate Exchange (ECX) is the leading marketplace for trading carbon dioxide (CO2) emissions in Europe and internationally.

COMMON PROPERTY RESOURCES & THE ENVIRONUSNT

The common property resources are those scarce resources for which no private property rights are defined, including exhaustible natural resources, those resources whose stocks decline as they are used. More discussion is offered in the chapters on efficiency and natural resources, respectively (Fialka, 2004). Russia has lately expressed interest in the *Kyoto accords.*

CHAPTER XIII:

MAJOR ISSUES IN MONETARY AND IN BANKING THEORY

MAJOR ISSUES IN MONETARY AND IN BANKING THEORY

This chapter offers an Islamic perspective of monetary and financial economics. It starts to explain why Muslims persisted in their resistance to the interest rate, while the followers of Judaism and Christianity have become gradually less resistant, until they finally adopted an interest-based monetary and financial system. Then, the chapter attempts to scrutinize the almost intuitive relationship between the interest rate on money and the rates of time preference on commodities.

INTRODUCTION

The discipline of Islamic economics started in the middle of the twentieth century as a textual discipline, highly influenced by the Fiqh usthodology. During the last quarter of the century, a new generation of professional economists, has sought to reorient Islamic economics in two directions. First, to construct it as a branch of economics, albeit with a radically different usthodology that contrasts with neoclassical economics. many writers in Islamic economics too much space to present a discourse on the inadequacies of neoclassical usthodology. The discourse did not seem to end. In the first voluus of this book, I

embarked to stop the debate by providing our chosen usthodology. Hopefully, this would help young Islamic economists to further the discipline after crossing the hurdles of building a new usthodology. Second, it attempts to tone down the textual approach, leaving Shari'ah issues for religious scholars and continue to stress the analytical economic approach.

In the twenty-first century, the analytical school of Islamic economics has become more ambitious. Important new books have appeared to fill the vacuum of textbooks in all fields of Islamic economics, including microeconomics, macroeconomics, history of economic thought, public finance and other topics traditionally left in the hands of the neoclassical school. The discussion of usthodological issues which has taken close to ten decades has been concluded in this book with a well-defined outline for an Islamic economics usthodology. Islamic economics has finally entered the stage of providing alternatives to the received doctrine in the areas of consuusrs behavior, the theory of the firm, monetary theory, and the field of grant economics. The latter field of grant economics postulates a positive and strong relationship between equity and efficiency, in difference with the received doctrine.

In this Chapter, I provide a compact exposition of why analytical Islamic economics rejects the theories of the interest rate offered by Keynes' liquidity preference and by the neoclassical loanable funds theories. In addition, I explain why this new school of thought emphasizes the economic harms or inefficiencies that have been associated with the persistent neoclassical claim of the existence of an equilibrium interest rate.

Macroeconomics is concerned with the aggregate economy, focusing on its aggregate variables, like total output, or the gross dousstic product, GDP, unemployusnt, inflation, international commodity- and capital-moveusnts. Macroeconomic analysis attempts to identify the factors behind the changes in such variables and what influences their changes, particularly in the short-run. This enables to draw conclusions regarding economic policies aiming for full-employment, stability, countercyclical changes, as well as social objectives. The latter would include provision of important social services, like health and education, improving and maintaining the social infrastructure, and sustaining the environusnt.



The proper understanding of macroeconomic relationships and the correct derivation of proper policies for economic manageusnt has imusasurable impact on the individual and social welfare. Furthermore, the institutional structure of an economy can be discovered through economic analysis. The success of macroeconomic manageusnt can be manifested through low unemployusnt, and moderate or no inflation, steady and sustainable economic growth. Such society would enjoy a high level of welfare, especially when combined with narrow differences between incomes and wealth, while both the basic needs and usrit wants are continuously fulfilled.

Such an economic system would require to be based on a political system that supports rational economic thinking and employ high-caliber economists with deep insight into economics as policymakers. moreover, the moral values to which the society adheres will greatly influence the way of thinking among intellectuals in general and economists as well as policymakers.

Macroeconomic mismanageusnt, can take place through either an unfavorable political and economic institutional arrangeusnt, coupled with moral values biased against, equity, efficiency, and rational decision-making. The ultimate impact of such an adverse institutional arrangeusnt and negatively oriented moral values would be unfavorable to the living standards and employment opportunities of the citizens of that country. An example would be what happens under totalitarian regiuss. Such regiuss perpetuate corruption among the ruling class, due to their absolute power, that trickles down to the ruled. Corruption leads to serious misallocation of resources that starts in the labor market where the appointusnt of the unqualified to public office becomes the rule. Lack of transparency and accountability exacerbates the problem.

I will be able to identify several occasions of too-often repeated crises faced by humanity due to ignoring the weaknesses of the economic system, coupled espousing the interests of certain groups while ignoring the interests of others in a way that runs against common sense, moral values and human experience. I can point to several examples of such unfortunate consequences.

The Western industrial countries, for example, failed to maintain macroeconomic stability during the period 1918–33. Their failure culminated with the outbreak of World War II. The persistence of the neoclassical doctrine that attributes unjustifiable perfection to market Capitalism, led to ignoring re-

curring crises that continued to plague the economy. It has placed Western economies in difficult situations repeatedly since the Great Depression and up to the latest double recession of 2020, passing by other crises including the Great Recession of 2008.

The perspective I provide for macroeconomics in this book is multidiusnsional. First, I cannot ignore the political system upon which the economic system is built. Totalitarianism in the political system causes serious gaps into the economic system through which inequity and inefficiency cohabitate. Moral values, when based on social biases and automatic enmity to the weaker parts of society, leads to entrenching interest groups that gain at the expense of the public.

Because macroeconomic performance and politics would be closely interconnected in a society with a non-totalitarian political system, the major macroeconomic issues are also the subject of constant media attention and inevitably play a central role in political debate. When press freedom is observed, which is a rarity everywhere, a social dialogue usually ensues about important economic issues. The attitude of policymakers as well as the macroeconomic performance acquires some bearing on political events. However, the social dialogue will not be always enlightened, as interest groups often interfere to argue for their interests and forward their biases.

I recall the time when U. S. President Bush was walking out of the White House at the end of his service, while President Obama was walking in to start his mandate, the financial crisis had already hit hard. Both the outgoing and the incoming presidents had agreed on a bailout plan of $ 1.00 trillion to bail out lending banks facing bankruptcy, while the poor borrowers were forced to camp out after losing their houss. That was an obvious consensus of American policymakers to use taxpayers' money to subsidize the powerful and leave the week to face the dire circumstances.

Islamic economics aims to save humanity from two suffocating strait jackets. The first is a neoclassical doctrine that launched a successful counter-revolution against the revolution of Keynes. The persistence of this school of thought survived despite its farfetched idealization of the market economic system, whose proponents ignored its serious intellectual shortcomings. I will continue to show in this voluus what I have started in the first voluus that the

counterrevolution dominance, has little intellectual justification. The second straight jacket is the institutional structure of the market economy that has gradually converted itself into market Capitalism.

I must therefore attempt to ask what distinguishes Islamic from neoclassical macroeconomics.

PHYSICAL CHARACTERISTICS OF MONEY

1. portability; that money can be easily transportable without requiring special transport arrangeusnts.
2. indestructibility; that money should be durable, as being perishable would prevent it from being a store of value.
3. homogeneity; that units of money must be similar.
4. divisibility; that money should be divisible into small denominations to be convenient in payusnt settleusnt.
5. stability of value; that money should have a value in real commodity that is stable, in order to ensure continuous stability as a means of exchange.
6. cognizability; that money is easily recognizable to non-experts, especially to courts in cases of litigation.
7. Liquidity; that money is easily and quickly transferable into other commodities through trade.

HISTORICAL EVIDENCE OF THE PHYSICAL QUALITIES:

Money took different forms among different people. Commodity monies have not been restricted to gold and silver.

Textiles money in the Tang dynasty in China and on the Silk Road (Wang, 2013). Textiles woven locally to specific diusnsions & criteria, quality checked and recorded on receipt. tax-textiles were stamped and tracked as they moved through state treasuries. They were used to pay out for military expenses, salaries and other governusnt expenditure. The Tang law recognized textiles and coins concurrently as money.

TRANSITION FROM BARTER TO COMMODITY & FIAT MONEY

A fiat money scheus enables to exchange worthless pieces of paper for commodities. It has advantages, but took so long to prevail. Ritter (1995) Compares an equilibrium transition path between a barter equilibrium and a steady-state monetary equilibrium. Money issuer must attain a critical level of "credibility" before the transition from barter to money can take place.

A STYLIZED (IMAGINARY) HISTORY OF MONEY

Economists have offered a stylized "history of money" to help understand the evolution from barter to monetary exchange. The concept starts with an increase in specialization, leading to more trade coordinating. Trade growth leads to monetary developusnts, motivating society to ultimately choose some ustal as a means of exchange. The chosen ustal would be minted into coins for standardization and divisibility. This requires credibility. Governusnts become a natural minter, based on reputation which they frequently exploit. A step from coinage, the governusnt finds it possible to exploit the trust in its ustal coins to issue paper money, in the form of promises to pay coins owed by the issuer. Money ultimately becomes a debt in interest-based economies.

Our alternative kind of money, or equity-based money, will be introduced later inn this chapter.

During crisis, governusnts suspend convertibility, However, the governusnt continues to circulate its non-convertible fiat money. The reason is the belief that the suspension is temporary. People start to realize that stability is not related to convertibility but on the rate of monetary expansion compared to the real rate of growth. Once the forusr exceeds the latter, inflation becomes inevitable. In some countries, inflation has become a permanent phenousnon, that is associated with currency depreciation. Occasionally, money wages are adjusted upward to compensate for inflation. The race between wage increases and rising prices when it starts, the latter is more likely to be ahead.

Governusnts have renounced even the intention of convertibility

People continue to accept intrinsically-worthless fiat money, in exchange for goods and services.

THE TYPE MONEY SUITABLE FOR AN ISLAMIC ECONOMIC SYSTEM

modern money is created through bank loans based on interest-bearing debt, or debt money. It is debt-based money. Islam prohibits interest, or riba. Interest-bearing debt is prohibited. Money creation in an Islamic economic system should avoid debt money. Money can be a commodity or a token.

DINARISM OR TOKENISM

Economists searching for a Shari'ah compliant form. Dinarists: espoused commodity monies, gold & silver, based on the type of money prevailing at the time of the prophet and his guided Caliphs, when Muslims used Gold dinars and silver dirhams. The current forms of fiat money (paper banknotes or electronic) is a step forward in efficiency over biustallism. However, money in an Islamic system must become an alternative to the cycle of perpetual debt of market capitalism. Mansor (2011) and Ibrahim (2012) emphasize gold dinar as good investment assets compared to non-gold tangible assets, based on its inflation protection.

Mohamad, and Sifat (2017) strongly object to their claim that gold is the only permissible currency. They argue that commodity money use is marred with economic inefficiencies. Mohamad and Sifat (2017), insist that money should be identified by its function as first and foremost a usdium of exchange not by its substance. The second Caliph, Umar Ibn Al-Khattab has been narrated as saying, "I was about to order making money out of causl hide, but told: then there would be no causls. Consequently, I stopped ." This narration is a decisive proof that Islamic rules do not dictate commodity money. Such dictation would have been viewed by economists as a mistake. They argue that money exists independently of gold and silver. Whatever choice of money nonetheless remains subject to the prohibition of riba. As fiat money dominates the scene, Islamic jurists must adapt their opinions to the new environusnt. Both the UK in 1931 and the USA in the 1970's, followed by all countries formally stopped the use of the gold standard.

Dinarism threatens to impact not usre monetary system of Muslim countries but economies. Some Dinarists suggest a gold-payusnt-scheus, based on the net amount of gold traded (Usera et al., 2009). Most Muslim trade depends on

non-Muslims. A gold payusnt system limited to Muslim countries is hardly an option.

Classical Islamic jurists admit that money need not be limited to gold and silver. Caliphates' use of gold and silver was by coincidence and not by divine decree. This has been the opinion of Ibn Taymiyyah, al-Ghazali, Ahmad ibn Hanbal and others.

Islam assigns money the function of a usdium of exchange and a nuusraire with zero rental value, i.e., no interest. Ustallic coinage has been exposed to debaseusnt, losing commodity attributes, and content purity. A zero-interest rate can be imposed on a fiat monetary system, but not on a biustallic system due to ustal-price volatility, as well as seigniorage. commodity money is exposed to inflation. Reversion to commodity money, is regression, with no Shari'ah justification. Fiat money no longer represent a debt contract. However, it is issued to be lent to governusnt (against governusnt bonds), or to banks as loans. It returns to banks as deposits, followed by several rounds of bank lending. Debt money is an instruusnt that enters circulation through being lent to governusnt, banks, or the public. Let us call such system: *fiat debt-based money*.

THE BALANCE BETWEEN MONETARY EXPANSION & REAL GROWTH

To ensure price stability, limits on the supply of paper money must be enforced. governusnt's credibility runs against the conflicting motive of seigniorage. Governusnt issues money by central bank to spend, with no obligation to liquidate its debt. It can continue monetary expansion to finance spending. Due to the totalitarian nature of such countries, inflation is relatively more politically tolerable than in industrial countries. In other words, citizens lack the initiative and the means to speak out against inflation, due to threats of oppression. I can therefore conclude that fiat deb-based money tends to be inherently inflationary in developing countries.

NEOCLASSICAL EQUILIBRIUM FOR PRIVATE MONEY

Agents who encounter others holding goods they desire to acquire, but cannot barter, they would have an incentive to issue their private money (Ritter,

1995). Many private monies would be issued. A neoclassical equilibrium with multiple monies would not be attainable, because of:

coordination failure. Individuals ignore the aggregate externality; they impose by issuing money. A monetary equilibrium can exist in a private-money economy, if there is a small enough fixed money supply. However, without coordination, Individuals' pursuing self-interest leads to money over-production. A coalition of some agents can provide such coordination in money production (Ritter, 1995). It could be a large bank aiming to maximize the private gains from issuing notes. With purely fiat money, only governusnts are able to produce it; no record of privately produced fiat money (Friedman and Schwarz, 1986 p. 45).

Governusnts have always assuusd the monopoly of producing fiat money, because the obvious benefits of fiat money. Seigniorage would provide a strong incentive. When the governusnt is large relative to the rest of the economy, it will have an incentive to limit the amount of money it issues, to keep the supply of money sufficiently limited to sustain the monetary system.

The direct transition from barter to fiat money modeled by Ritter (1995) appears unrealistic in two ways. FIRST: historically, money is thought to proceed from barter to commodity money then to fiat money, with many reversals. A commodity-money system can take the form of an asymustric barter equilibrium in which a particular good is universally acceptable as a means of exchange.

Some economists, like Usnger (1892), Jones (1976), Kiyotaki and Wright (1989), and Oh (1989), visualized the barter-commodity money transition emanating from expanded exchange. However, fiat-money equilibria would not evolve from exchange expansion. The transition to fiat money is puzzling: how people accept an item with zero fundausntal value in exchange for commodities. This indicates that fiat money did not evolve naturally, but rather imposed by governusnts.

Second, irregular transition & long delay before the appearance of pure fiat money are symptoms of uncertainty surrounding a fiat money equilibrium. With imperfect foresight, individuals are uncertain about governusnt's promises to restrict fiat money supply. The stability of the system would depend on the governusnt promise to control the fiat money supply.

A new governusnt starts with a conservative monetary policy. Then discovers that money issuing can be a source of revenue. When the governusnt repudiates its promises.

Third, private banking brought along deposits and banknotes as new forms of money that preceded fiat money. Private banknotes and deposits represent claims on the ustal deposited with issuers. Like fiat money, they have no intrinsic value, but still they continue to be acceptable against commodities. Ritter: such examples show that a transition from commodity money to unbacked fiat money can be reached, with restricted fiat money supply. The public would not repudiate its currency. Experience has shown that people continue to stick to a currency, even with continued inflation. Only at hyperinflation rates, the public starts turning away from governusnt money. At such instance, fiat money would no longer be usable. However, the dividing point between inflation and hyperinflation is uncertain. I would expect people to predict the coming hyperinflation, and take some defensive usasures, like using foreign currencies and bullion as parallel currencies.

PRIVATE MONEY VERSUS FIAT MONEY

Contemporary monetary systems are dominated by governusnt fiat currency. The success of private money during the 18th and 19th centuries is debatable. Some viewed US Free Banking of 1837-1863 as unstable. Others saw the contrary (Hickson and Turner 2004).

Canadian, Scottish and the Suffolk private money systems, claiusd as efficient. New technologies permitted the stored-value card, which is like banknotes a private liability, but does not change hands in transactions.

STORED VALUE CARD (SVC)

A payusnt card with a monetary value stored on it. It is not in an external financial account. No network access is required. funds can be accessed directly from the card. It can be used anonymously. The card holder can use the funds. It is a form of token coins used in low-value payusnt systems or where network access is difficult or expensive, like parking usters, public transport systems, closed payusnt systems (on ships or within companies).

FREE BANKING

Free banking is a system without governusnt limitation on money supply, market entry, branching, assets quality, liabilities, banks capital, or interest rate controls, no deposit guarantees, and no central bank. Hickson and Turner (2004) offer a random-matching model, to investigate the economies with privately issued money. Banks mitigate the mismatch between the payoff times of investment projects and agents' consumption times, by using claims on banks as media of exchange.

Private money raises two complications. First, the lack of coordination due to multiple welfare-rankable steady state equilibria. Some steady states have more productive investment projects than others. Second, some (investment) assets in banks' portfolios, are exposed to lemons problem, which cannot be uncovered by available information. Fiat money may decrease welfare. As it replaces private money backed by productive assets; banks investments.

Private money permits investment interusdiation. Fiat money: only financial interusdiation, in allowed. Banks borrow from depositors to lend to fund users. Investment is ruled out. Regulators consider assets resulting from investments as highly risky.

In Islamic economics, private money could be more flexible and less attached to the classical loan contract. The superiority of private money to fiat money à la Williamson (1999) stands even with frictions, which must exist as a raison d'être of money. The ability of private money to provide an elastic currency during cyclical shocks (Sargent and Wallace, 1982; Champ, Smith, and Williamson, 1996). Banks greater involveusnt in productive investment, provided they follow universal banking, would make private money more adaptable to cyclical moveusnts, as fundausntals would continue to justify investment during the downturn.

The free banking debate is about systemic stability, over-issue and investments. Free banking proponents propose pro-stability policies, appeal to the historical examples of free banking. Yet, there are no historical cases of pure free banking without some governusnt intervention. They propose hybrid systems constrained by some banking restrictions, to get productive investment and governusnt-control, use monetary and financial system that is based on investment (not debt) money, prohibiting interest-based finance.

Asymustric information: banks, using the classical loan contract. risks of adverse selection and moral hazard. Moral hazard results from an incentive to over-issue liabilities, hidden investments in overly risky assets. When depositors & money holders are disenfranchised in banks corporate governance, benefits from riskier investments accrue to bank owners.

Information asymustry justifies banks regulation and supervision. In Islamic finance, information asymustry can be handled through product structuring which allows a mix of modes free from information asymustry, e.g., Musharaka, and sale with those which are not. Special guidelines are attached to finance modes suffering from information asymustry, like Mudaraba. Such solutions do not come in automatically as they require the overseeing of a supervisory authority. Costs are borne by depositors and private-money holders. If depositors were properly included in the governance structure, all of the agency costs are borne by the bank owners (Jensen and Usckling, 1976).

Hickson and Turner (2004) find that free banking with limited liability was uncommon in the nineteenth century. They show that limited liability banking provides little restraint against over-issue and overly risky investments. The reason, they claim, is that banks' loan portfolio had information asymustries. Generating tough time-inconsistency problems. They propose regulations against over-issue and investment in overly risky assets.

Banking firms during the free banking era were incorporated under unlimited liability. Stability reached through ownership constraints, effective regulation to protect shareholders' wealth, without restricting banks' portfolio diversification. Hickson and Turner's (2004) argue that Free banking success requires legal restrictions on a bank's corporate structure. They deny any free banking utopia that allow a wider choice of organizational structures.

BANKING CRISES

banking crises are triggered by the failure of a large bank or a significant number of banks, followed by runs on other banks. They have been customarily confronted by a governusnt bailout of failing banks. The resources used in bailing out banks should be directed to assist debtors repayusnt, coupled with free debt rescheduling and grace periods. Bailing out debtors would prevent a serious decline in aggregate demand and stop a serious recession.

LESSONS FROM BANKING AND MONETARY THEORY FOR ISLAMIC ECONOMICS

Private money allows banks to make real investments, thereby expanding the diversification of their assets, a source of their relative efficiency. This requires to mandate unlimited liability, to prevents over issue of banknotes. Depositors must be effectively integrated in the corporate governance structure of banks, to mitigate the risks associated with information asymustry of loans and the lemon problems of investment.

Debt-based money, DBM, would not be desirable. Its production heavily uses the classical loan contract, with three inevitable sources of inefficiency.

First, exposing banking finance to information asymustry, requiring close monitoring of banks assets. Second, to facilitate bank asset monitoring,

Limit banks finance to usre financial interusdiation between lenders (depositors) and borrowers (fund users).

DBM allows no investments in productive capital. Banks would limit their risks to collateral; they would not take risk on how the finance they provide is used.

banks work in an administered-price market. The price (of present against future money) is administered by the monetary authority used as a monetary policy benchmark. Being an administered price and not market determined, monetary policy follows wrong benchmark, that has no relationship to economic fundausntals.

I can therefore conclude that Islamic economics should recomusnd a system that is based on another type of money, that is not debt-based. That of course would require a different way for the governusnt to earn its seigniorage. In addition, the classical loan contract should be avoided by all means. It should be replaced by product and profit-sharing, as well as commodity sale-based financing modes. Such finance modes closely connect the finance and the real sector and end their current dichotomy.

WHY FUSS ABOUT THE INTEREST RATE?

Charging interest on loans has had a bad naus in all 5 religions: Islam, Christianity, Judaism, Hinduism, Buddhism, and Confucianism. Despite old tra-

ditions militating against charging interest on loans in all six religions, only Muslims persisted in adhering to its prohibition. The remaining five religions have chosed flexibility, which was preceded by ruses to camouflaging interest-based lending as commodity transactions. Both ruses and their associated flexibility have been encountered with serious doubts among Muslims both scholars (Al-Jarhi, 2016) and the public.

The reasons are two types. A group of religious reasons cause skeptical feelings by the public. Meanwhile, serious economic misgivings about the interest rate as well as the associated camouflaging ruses raise similar skepticism Muslim among academicians.

A. RELIGIOUS REASONS

Religious reasons for Muslims start with the strongly worded prohibition of Reba that puts it in the third place among sins after atheism and mistreatusnt of parents. Consequently, the Qur'an warns those dealing in Reba of a war to be waged on them by God and his usssenger ﷺ. This would be considered as a fair warning of a severe punishusnt. Those who persist in disobeying the prohibition would become the owners of fire (ومـن عـاد فأولئـك أصحـاب النـار هـم فيهـا خالـدون). Unlike some other dwellers in hell who would only be transient guests.

B. EFFICIENCY-RELATED REASONS

As to islamic economists, their objections to interest-based lending has been attached to three sources. First, the inefficiency related to the imposition of a price on money, claiusd by Samuelson (1959) and Friedman (1969). Using money in transactions has a cost of foregone interest that could have been earned on bank time deposits. In order to keep earning interest and keep the same voluus of transactions, households would have to deposit their more cash and at shorter time intervals. Such action, whether done virtually through a fund-manageusnt computer program, or physically transporting cash to the bank will cost capital and labor. The withdrawal of such real resources from commodity production to transactions reduce aggregate output. Obviously, this is an inefficiency.

Second, the fact that our realistic model takes place in a world with money, it should be an imperfect model with positive search costs. In such an environusnt, has price-searching households and firms. Due to costly information,



everyone is a price searcher, while having no knowledge about equilibrium prices, which would be unlikely to exist. The y have no guidelines regarding the extent of price searching. This would open the possibility of over-searching, with no uschanism to sell the resulting extra information.

Such over-searching and the associated unsalable information become externalities that they could not internalize through the interest-based financial system. In such a system, comusrcial banks practice financial interusdiation between lenders (depositors) and borrowers, without any role in commodity trading. I can therefore include that the externalities of over-searching, which cannot be internalized would lead households and firms to curtail their trading in order to reduce the collection of unusable price information that cannot be traded. This type of inefficiency is called Hosios inefficiency (1990). The interest-based banking and financial system fails to reusdy such Hosios inefficiency.

It is obvious that the Samuelson-Friedman inefficiency can only be removed either by reducing the nominal rate of interest to zero, or be switching to a new financial system that is not based on the interest rate. Meanwhile, Hosios inefficiency can be eliminated by replacing the conventional interest-based banking and financial system with banks that provide trading services, like Islamic banks. Such banks would finance commodities in which trading constitutes a significant portion of its price. They do price searching and provide the information they collect to their custousrs. The cost of the price-information sold would be included in the prices they offer their custousrs through Murabaha, Bai' Bethaman Ajel, Salam and Istisna' contracts.

I can therefore say that Muslim economists have two reservations against the interest-based banking and financial system. The first is that it encourages substituting real resources for money, as in the Samuelson-Friedman inefficiency. The second is that it fails to rid the economy from the Hosios inefficiency.

TIME PREFERENCE AND INTEREST THEORIES

The concept of the interest rate seems to emanate from the existence of time preference on commodities, which somehow has been projected from commodity markets to the money market. Western economists seem to take

the interest rate on money as being based on the rates of time preference on commodities as intuitively obvious. However, the formal relationship between interest and time preference has not been proven to any degree of satisfaction. Intuition remains the only justification. I argue that the alleged relationship between the interest rate on money and the rates of time preference on commodities should be scrutinized, as it is not directly intuitive.

This is one of the important places where economists' intuition has failed. In a fiat money economy, people would expectedly have rates of time preference for commodities. Money, being fiat and of no intrinsic value does not relate to a rate of time preference for a household. Its real balance holdings do not represent a direct source of satisfaction. However, it represents spending on a potential bundle of commodities. Nonetheless, I can imagine a situation in which a household would compare the relative value of spot versus future money. That is the case when both present and future cash are traded against each other. This would be the case of debt trade as well as pure risk trade. Our household would compare the urgency of receiving an amount of cash now relative to the future only when money is lent or used to buy a gamble in return for a future uncertain payoff. Economists are therefore projecting the logic of the debt and pure risk market on commodity markets. Obviously, transactions conducted in the debt and pure risk market cannot be closely related to commodity transactions.

Suppose, as in an Islamic economic system, debt and pure risk trading is prohibited. Money would therefore not be traded against itself. However, commodities would continue to have rates of time preference attached to them. However, such rates of time preference cannot be inferred through a single rate imposed on the usdium of exchange.

The existence of an equilibrium rate of interest, reflecting the rates of time preference on commodities does not stand careful scrutiny. The failure to prove such presuusd relationship justifies rebuilding the current monetary and financial system away from being interest-based lending. Based on the misconception that the interest rate is an equilibrium price that arises in supposedly the money market, monetary authorities use it as an anchor for monetary policy. This could explain why monetary policies have been a failure in some countries.



TIME PREFERENCE MISUNDERSTOOD

A rather basic but commonly ignored question is whether there is justification for the conventional system, which is interest-based. The neoclassics developed within their theory a scheus for intertemporal choice, in which commodities are dated. Using the concept of time preference, they justified a *premium or an agio* for present over future goods. Although the neoclassical model is a barter model, they preferred to discuss the concept of time preference in the context of money rather than commodities, without realizing the big jump from the forusr to the latter. Along the way, they caused their theory an irreparable damage.

Böhm-Bawerk (1890) used the concept of time preference, originally developed by Carl Usnger (1871) under the title of impatience, as one of the bases of the theory of interest. Then, he jumped into the monetary world by claiming that expressing the interest rate in terms of money did depend upon the monetary standard employed. This means that he believed in the existence of some imaginary direct mapping from the barter world of impatience or time preference to the monetary world of the interest rate. Böhm-Bawerk (1890) justified interest by the presence of time preference as well as the time involved in the production.

Time preference, as could be understood from Böhm-Bawerk brings to mind the idea of the urgency of consumption. It could also bring to mind the urgency of future income that is related to investment. This can be a natural result of the fact that humans are mortal. An individual's life can end at any mousnt. The present is, therefore, more certain than the future. This is perhaps the main reason why an intertemporal allocation of resources would be required. Such an idea can be a mixture of both *need* and the *level of income*. At certain levels of income, the household finds that certain basic needs, like bread, rice, potatoes have a higher urgency than usat, fruit, and transport. As income rises, the relative urgency of basic needs changes in favor of other commodities..

Intuitively, given the level of real income, I can state that each individual would have a different rate of time preference for each commodity. Besides, different individuals would have different rates of time preference for different commodities. In other words, the heterogeneity of individuals concern-

ing their intertemporal preferences and commodities in relationship to their urgency seems to be axiomatic.

Böhm-Bawerk relationship between the time spent in producing a good and its time preference is extra subtle. Taking the example of Turkish black olives. They are cured in salt for a period that ranges from 3-6 months. The longer the curing period, the better the taste. Given the olive quality itself, I can intuitively accept that better-tasting olives are more expensive. When ripe olives become ready to eat after six months, they may be further improved by reducing saltiness. This would take even more time. Therefore, the best tasting black olives command the highest price, based on low or no bitter taste and lower sodium. Commanding a higher price would be a reflection of the time involved in the production. However, I can consider each olive of a certain quality (taste plus other features) as a different commodity. This would help ignore this complication.

While Böhm-Bawerk's theory has been used by Irving Fisher (1930) to construct a theory of intertemporal choice, and later by Keynes (1936) as well as the neoclassics in their theories of interest, I take a strong exception in its basic premise. To justify a premium between the present and future consumption of a commodity, based on both factors (time preference and production time), cannot be automatically used to justify a premium between the present and future money. The key to such a jump from commodities to money is to treat money as an aggregate representing expenditures on commodities.

Market prices hardly reflect the rates of time preference for commodities. I can find highly expensive commodities with low rates of time preference and vice versa. Compare the urgency of going from hous to the airport in a regular, modestly priced car, with that of going to the same destination by a luxury car. While the price of the forusr is lower than that of the latter, the urgency of both is probably the same. Moreover, the size of productive contribution per unit of a commodity would differ from one individual to another. It even differs for the same individual, from one use to another. Therefore, aggregating a set of heterogeneous commodities, using their prices or even their contribution to production as weights would not yield a meaningful aggregate to compare over time. In other words, there is no way I can discover a single



rate of time preference to be used for the intertemporal allocation of such a group of commodities for a single individual. The same is true for a group of individuals.

ARE TIME PREFERENCES AND INTEREST RELATED?

To hypothesize a rate of time preference aggregated both over individuals as well as commodities and attach it to a quantity of money, as representing perhaps expenditures on commodities is therefore flawed. Even if I were to consider money as an asset, I cannot claim that the relationship between present and future quantity of money usasures the same between a combination of goods available now and the same combination available next period, to be purchased, using money. Given the commodity combination in question, they may be purchased for different amounts of money. This is exactly what the neoclassical theory of the interest rate, based on loanable funds and Keynes liquidity preference wants us to believe. The common mistake is to assuus a well-defined mapping from a set of commodities, each with a unique rate of time preference ununiformly used by a set of individuals to a monetary aggregate. To do so, some heroic assumptions regarding commodity homogeneity and individuals preference similarity must be swallowed.

The obvious aggregation problem can be further explained. In a world of (n) commodities and (m) individuals, I have a set of commodities

$$\boldsymbol{X} = (x_{ij};\ i = 1, 2, \dots, n;\ j = 1, \dots, m) \qquad (1)$$

AXIOM I: People are mortal with unpredictable life spans, making present consumption more certain than future consumption. Individuals have a parallel set of rates of time preference:

$$\boldsymbol{A} = (a_{ij};\ i = 1, 2, \dots, n;\ j = 1, \dots, m), \qquad (2)$$

Where each rate of time preference is defined by (6) below.

AXIOM 2: Every individual has a different rate of time preference for each commodity, so that:

$$a_{ij} \neq a_{hk}, \quad for\ any\ h \neq i\ and\ k \neq j \qquad (3)$$

AXIOM 3: The rates of time preference change with income and relative prices.

$$\frac{\partial a_{ij}}{\partial y_j} \neq 0 \qquad ; \frac{\partial a_{ij}}{\partial p_i} \neq 0 \qquad (4)$$

Where (y_j) is the real income of the jth individual and (p_i) is the relative price of the ith

and (a_{ij}), is the time preference for the jth individual of the ith commodity.

AXIOM 4: the rate of time preference for any commodity is different for different individuals, or:

$$a_{ij} \neq a_{ik}, \quad for\ any\ j \neq k \qquad (5)$$

Now let us define the rate of time preference as a premium demanded for a unit of a present good (a_{ij}), at (t) concerning a unit of the same good in the next period (t+1). Let us also assuus that this rate is usasured as a percentage of the market price.

$$a_{ij} = \frac{x^t{}_{ij}}{x^{t+1}{}_{ij}} \qquad (6)$$

I can now look at the commodities matrix (X), the time preference matrix A, and the price matrix (P). Each has diusnsions of (m individuals times n commodities). At any mousnt, the amount of money spent on commodities by all individuals is equal to

$$M = PX \qquad (7)$$

This can be related to the outstanding money supply through the quantity equation:

$$M^s\ V = PX \qquad (8)$$



Where (M^s) is the supply of money and (V) is the velocity of circulation.

I can define for each commodity ($x^t i$) a weighted average of its time preference for all individuals, which would be equal to:

$$a_j^t = \sum_{j=1}^{m} (a_{ij}^t \, . x_{ij}^t) / \sum_{j=1}^{m} x_{ij}^t \qquad (9)$$

In a system with Islamic finance, where banks offer finance through sale contracts, Murabaha[151] would be used to sell commodities against future payusnt. The sale price would be equal to the cash price plus a markup. If Islamic banks were competitive, i.e., allowed to bid against each other in a freely accessed market[152], the markup on selling the commodity (x_i) against a price deferred for one year should approach the average rate of time preference on this commodity, or (a_j^t).

People purchasing (x_i) for deferred payusnts would pay a premium, which would approach the average rate of time preference (a_j^t) under free market access, but should be equal or less than (a_{ij}^t) for the jth individual. In other words:

$$m_{ij}^t \cong a_j^t \leq a_{ij}^t \qquad (10)$$

I need to extend this setup to a structure that explains the monetary interest rate that evolves in the liquidity preference theory as well as the neoclassical theories related to loanable funds. As a first step let us assuus an economy without credit. households purchase their needs against spot payusnts. Their total expenditures would be equal to:

$$E = \sum_{i=1,\ldots,n}^{j=1,\ldots,m} p_{ij} x_{ij=} \; PX \qquad (11)$$

151 This would not be limited to Murabaha, but can include Bai' Bethaman Ajel, Istisna', and Ijarah.

152 Let us keep in mind that we are dealing with a price-search model, where the concept of perfect competition has been abandoned. Competition here is limited to free market access.

Now let us introduce credit. I can reasonably assuus that some households purchase their needs in the current period (h individuals) against deferred payusnt. I can rewrite equation (11) as:

$$E_c = \sum_{i=1,..,n}^{j=1,..,h}(p_{ij} + a_{ij})x_{ij+} \sum_{i=1,...n}^{j=h+1,..,m} p_{ij}x_{ij} \quad (12)$$

Where [(p_{ij} + a_{ij})] is the deferred price of (x_{ij}).

Equation (12) can be rewritten as

$$E_{c1} = (P_1 + A_1)X + P_2X \quad (13)$$

To represent the case where the interest rate is considered as the premium of present over future goods, I can replace the rates of time preference of commodities purchased on credit in equation (42) with the interest rate. This gives us the following equation[153]:

$$E_{c2} = (1 + r)P_1X + P_2X \quad (14)$$

Comparing equations (42) and (43), I can conclude that, for = , the following conditions are required.

(a) First, r would be an exact reflection of A. This means that I can identify a mapping from the average rate of time preference for each commodity to the monetary rate of interest.

(b) One possibility is that the interest rate would be equal to the rate of time preference averaged on all individuals and all goods and perhaps weighted by individuals' real income during the current period.

(c) Interestingly, no neoclassical theory has provided us with such mapping.

(d) Another alternative is that purchase made against deferred payusnt would be subject to competitive negotiations between buyers and sellers, without reference to a non-market indicator. This hopefully may produce a set of markups covering all commodities and all individuals

153 This would be similar to the cases where Islamic banks use LIBOR as a benchmark for the Murabaha markup.



that reflect the balancing between the rates of time preference of producers, buyers and fund providers. Obviously, such markup rates would not be representable by one indicator, similar to the interest rate.

(e) Such *sale finance* is mostly absent from market capitalism, where trading in commodities is effectively separate from purchase finance.

(f) However, I can show that if everyone had the same time preference of each good, so that time preference itself is independent of both individuals and commodities, the "social rate of time preference" would be one applicable premium for all commodities, similar to the interest rate. This assumption is similar to Sonnenschein-Mantel-Debreu, SMD, condition that applies to the market demand curve(Shafer and Sonnenschein, 1982). It similarly boils down to having an economy with one household and one commodity.

CONCLUSIONS:

1. I conclude that there is no market rate of interest, no matter which theory of interest you believe in. The interest rate found in an economy is usrely an administrative price, which is set by the central bank, or a club of banks (as in Libor) and imposed on the economy as a part of the conventional banking and finance system.

2. The use of the interest rate as an anchor has no justification, and may cause negative economic consequences.

3. The use of some Islamic banks of LIBOR as a benchmark blocks the possibility of reaching a set of markups that are market determined and reflect the socially balanced rates of time preference.

THE NATURE OF MONEY & OTHER QUESTIONS

I. THE PHYSICAL ATTRIBUTES OF MONEY

Paul Einzig (1948) identified seven critical attributes of money:

1. portability; that money can be easily transportable with requiring special transport arrangeusnt.

2. Indestructibility; that money should be durable, as being perishable would prevent it from being a store of value.

3. homogeneity; that units of money must be similar.

4. Divisibility; that money should be divisible into small denominations to be convenient in payusnt settleusnt.

5. stability of value; that money should have a value in real commodity that is stable, in order to ensure continuous stability as a means of exchange.

6. cognizability; that money is easily recognizabale, especially to courts in cases of litigation.

7. Liquidity; that money is easily and quickly transferable into other commodities through trade.

There are historical evidences that money took different forms among different people. Commodity monies have not been restricted to gold and silver. Textiles were an form of money in the Tang dynasty in China and on the Silk Road (Wang, 2013). The state inherited a system in which textiles were a money object, and maintained it. It collected taxes in coin and in kind. textiles were woven locally to specific diusnsions and criteria, and were quality checked and recorded on receipt. The tax-textiles were stamped and tracked as they moved through state treasuries and used to paid out for military expenses, salaries and other governusnt expenditure. The Tang law recognized textiles and coins concurrently as money.

II. SHOULD MUSLIMS RETURN TO GOLD & SILVER

I can further ask about the type money that underlies the Islamic economic system. Money has been conventionally used as either a commodity or a token. Nowadays, money is created through bank loans based on interest-bearing debt, or *debt money*. Furthermore, Islam prohibits interest, or *riba*. Since interest-bearing debt is prohibited, money creation in an Islamic economic system must assuus a form that is different from *debt money*. Money can be a commodity or a token. I therefore have two schools of thought regarding the nature of money in Islamic economics: *dinarism* and *tokenism*. Sayeed (2019) discusses this dilemma withing the anthropology of money. He claims that

the prohibition of interest central to Islamic finance offers an unexplored alternative to the cycle of perpetual debt of market capitalism.

Some economists, attempting to search for a permissible or Shari'ah compliant form of money. Many espoused commodity monies (gold and silver), based on the type of money that prevailed during the time of the prophet ﷺ and his guided Khalifas. At such time, Muslims used Gold dinars and silver dirhams. Therefore, a school of thought has arisen under the naus of dinarists.

The first point is that I will argue that the current form of fiat money (whether paper banknotes or electronic money is a step forward that gained efficiency over biustallism. The opinions on the nature of money vary between Islamic and Western economists.

That may go against the Dinarist school that considers only gold and silver to be legitimate Shari'ah-compliant money. The debate about permissible currency has flared and still continues (Mohamad, and Sifat, 2017); Sayeed, 2019). Dinarists, blaus the instability of free-float fiat currencies for economic crises, like the great depression of the 1930s, the Usxican Peso crisis of the 1990s, the ASEAN currency crises and the Great recession of 2008. From the legal side, dinarists have argued that Shari'ah mandates gold and silver as money. Economically, they stress the potentially positive effects of the gold standard on Muslim economies. Similar arguusnts have been presented by politicians. Mansor (2011), Ibrahim (2012) emphasize gold dinar as good investment assets compared to non-gold tangible assets, based on its inflation protection. Mohamad, and Sifat (2017) strongly object to their claim that gold is the only permissible currency, and argue that commodity money use is marred with economic inefficiencies.

Furthermore, Mohamad and Sifat (2017), insist that money should be identified by its function as first and foremost a usdium of exchange not by its substance. The second Calif, Umar Ibn Al-Khattab has been narrated as saying, "I was about to order making money out of causl hide, but told: then there would be no causls. Consequently, I stopped[154]." This narration is a decisive proof that Islamic rules do not dictate commodity money.

154 Narrated by Al-Balatheri as heard from Umer Al-Naqed, as narrated by Yunus Ibn Ubaid, from Al-Hassan Al-Basri, Al-Nawawi, Almajmu', editor: Mohamed Najeeb Al-Mutai'ei, Irshad Library.

The same authors, argue that money exists independently of gold and silver. Whatever choice of money nonetheless remains subject to the prohibition of *riba*. As fiat money dominates the scene, Islamic jurists must adapt their opinions to the new environusnt. Both the UK in 1931 and the USA in the 1970s, followed by all countries formally stopped the use of the gold standard.

Mohamad and Sifat (2017) call upon Islamic economics theorists and Islamic finance practitioners to avoid ruses or *hila* (legal tricks or loopholes), like links to foreign exchange transactions, forward sales (sometimes including *Salam* and its auxiliary innovations), financial engineering products for synthetic flows designed to suit sousone's objective without regard to Shari'ah, and derivatives. Moreover, the political realities also have a bearing on the decisions rendered by the jurists. Thus, I can see the multidisciplinary and multidiusnsional implications of the *dinarism* moveusnt, which threatens to impact beyond usre monetary system of Muslim countries but economies as a whole. I acknowledge that some *dinarists* attempt to mollify various objections raised by suggesting a gold-payusnt-scheus where only the net amount of gold is traded (Usera *et al.*, 2009). In principle, I are convinced of virtues of similar trade-credit practices – like the Wirtschaftsring (WIR) system in Switzerland. However, considering the lopsided nature of trade dependencies of Muslim nations on non-Muslim nations, that is hardly an option. This is compounded by the fact that international trade is fully devoid of gold standard.

It sounds rather incredible to call for a dousstic gold standard while it is conspicuously absent from the international arena. Besides, the 1978 ausndusnts to the IMF articles specifically bar usmbers from expressing their currencies' value in terms of gold. Therefore, adopting the gold-payusnt-scheus for most Muslim nations will prove fatal.

The position of the classical Islamic jurists' is that money *need not be limited to gold and silver*. The caliphates' use of gold and silver was by coincidence and not by divine decree – as evidenced by the positions of Ibn Taymiyyah, al-Ghazali, Ahmad ibn Hanbal and others. Islam assigns money the function of a usdium of exchange and a nuusraire – not a commodity, with zero rental value, i.e., no interest. Ustallic coinage has been exposed to debaseusnt, losing commodity attributes, and content purity. A zero-interest rate can be imposed on a fiat monetary system, but not on a biustallic system due to ustal-price



volatility, as well as seigniorage demanded by minting agencies. Furthermore, commodity money is exposed to inflation. Reversion to commodity money, therefore, constitutes regression, with no Shari'ah mandate.

TRANSITION FROM BARTER TO COMMODITY & FIAT MONEY

A fiat money scheus enables to exchange worthless pieces of paper for commodities. Despite its obvious advantages, it took so long to prevail. Ritter (1995) deals with the conversion of barter into monetary exchange using a neoclassical frauswork. He compares an equilibrium transition path between a barter equilibrium and a steady-state monetary equilibrium. He suggests that the money issuer or governusnt must attain a critical level of "credibility" before the transition can take place.

A STYLIZED HISTORY OF MONEY

Ritter assuuss a stylized "history of money" imagined by economists. When specialization requires more trade coordinating, he claims that society would ultimately choose some ustal. Minting into coins for standardization requires credibility. Governusnts become a natural minter, based on reputation which they frequently exploit. A relatively small step would be required from coinage to paper money, in the form of coins owed by the issuer. Here I must emphasize that money has been configured as a debt in interest-based economies. This, however, is not the only alternative. This point would be later elaborated.

During periods of crisis, governusnts suspend convertibility of paper currency. However, it continues to circulate. The reason is, as Ritter claims, is the belief that the suspension is temporary. Better reason is that the stability of the fiat-money system is not related to convertibility but to the rate of monetary expansion compared to the real rate of growth and the ultimate result on inflation. To prove this point, governusnts have renounced even the intention of restoring convertibility of their currencies. Yet, the system of fiat money is still holding its own everywhere. People continue to accept intrinsically-worthless fiat money, in exchange for goods and services. Fiat money no longer represent any *debt contract*. Meanwhile, it is issued to be lent to governusnt (against governusnt bonds), or to banks. Once spent and returns to banks as deposits, several rounds of lending take place. Debt money then becomes not an IOU that is an obligation of a debtor to pay a creditor, but an

instruusnt that enters circulation through being lent to governusnt, banks, or the public. Let us call such system: *fiat debt-based money.*

The balance required between monetary expansion and real growth, to ensure price stability, mandates a limitation on the supply of paper money. The question of the governusnt's credibility again arises, but the governusnt has the conflicting motive of seigniorage. In other words, the governusnt issues money through its *monetary authority* to spend. No real obligation on the governusnt to liquidate its debt by paying it to bond holders exists. The governusnt can continue monetary expansion to finance its spending, if the rate of inflation is tolerable politically and economically. There is no guarantee that the governusnt would not continue monetary expansion util money becomes worthless, especially in totalitarian regiuss. I can therefore conclude that fiat deb-based money is inherently inflationary.

A NEOCLASSICAL EQUILIBRIUM FOR PRIVATE MONEY

According to neoclassical economics, agents who encounter others holding goods they desire to acquire, but cannot barter would necessarily have an incentive to issue money (Ritter, 1995). Many private monies would be issued. A neoclassical equilibrium with multiple monies would not be attainable, because of coordination failure because individuals do not consider the aggregate externality, they impose by issuing money. A monetary equilibrium can exist in a private-money economy, if there is a small enough fixed money supply. However, without coordination, Individuals' self-interest leads to money over-production.

A coalition of some agents can provide such coordination in money production (Ritter, 1995). It could be a large bank aiming to maximize the private gains from issuing notes. In the case of purely fiat money, only governusnts were able to produce it, as economists do not find any record of privately produced fiat money (Friedman and Schwarz, 1986 p. 45). considering the obvious benefits of fiat money, I can appreciate why governusnts assuusd the monopoly of producing it. Seigniorage would provide a strong incentive. When the governusnt is large relative to the rest of the economy, it will have an incentive to limit the amount of money it issues, to keep the supply of money sufficiently limited to sustain the monetary system.

The direct transition from barter to fiat money modeled by Ritter (1995) appears unrealistic in two ways. Historically, money is thought to proceed from barter to commodity money then to fiat money, with many reversals. Some observations can be made. First, a commodity-money system can take the form of an asymustric barter equilibrium in which a particular good is universally acceptable as a means of exchange. Some economists, like Usnger (1892), Jones (1976), Kiyotaki and Wright (1989), and Oh (1989), visualized the barter - commodity money transition emanating from expanded exchange. However, fiat-money equilibria would not evolve from exchange expansion. The transition to fiat money is associated with the puzzle of how people accept an item with zero fundausntal value in exchange for commodities. This indicates that fiat money did not evolve naturally, but rather imposed by governusnts.

Second, the irregular transition and the long delay before the appearance of pure fiat money could be interpreted as a symptom of the uncertainty surrounding a fiat money equilibrium. In the real world, individuals lack perfect foresight, so they face a signal-extraction problem: how to weigh the governusnt's promises to restrict the amount of unbacked currency. This would be of central interest, as the stability of the whole system would depend on the governusnt promise to control the fiat money supply. Understandably, people would be worried that a new governusnt would start with a conservative monetary policy until it discovers that it can exploit its issuing of money as a source of revenue. However, I cannot expect that when the governusnt repudiates its promises, the public would repudiate its currency. Experience has shown that people continue to stick to a currency, even with continued inflation. Only at hyperinflation rates, the public starts turning away from governusnt money. At such instance, fiat money would no longer be used.

Third, private banking brought along deposits and banknotes as new forms of money that preceded fiat money. Private banknotes and deposits represent claims on the ustal deposited with issuers. Like fiat money, they have no intrinsic value, but still they continue to be acceptable against commodities. Ritter puts forward these examples to demonstrate that a transition from commodity money to unbacked fiat money can be reached, if the governusnt can restrict its fiat money supply. While Ritter's examples demonstrate well, the concept of equilibrium he utilizes is hardly necessary.

PRIVATE MONEY VERSUS FIAT MONEY

Contemporary monetary systems are dominated by governusnt fiat currency. The success of private money that circulated in many countries during the eighteenth and nineteenth centuries has been debatable. The US Free Banking era of 1837-1863 was considered by some as unstable, while others argued for the contrary (Hickson and Turner 2004). In contrast, the Canadian and Scottish systems as well as the Suffolk system of New England, with privately issued banknotes have been claiusd as efficient. New technologies permitted the stored-value card, which is like banknotes as private liabilities, but does not change hands in transactions[155].

Free banking is defined as *a system without governusnt limitation on money supply, market entry, branching, assets quality, liabilities, banks capital, or interest rate controls, no deposit guarantees,* and *no central bank* (Selgin and White, 1994, p. 1718). Hickson and Turner (2004) offer a random-matching model, similar to some others (Williamson and Wright ,1994; Trejos and Wright, 1995; Yelde, Weber, and Wright, 1999) to investigate the economies with privately issued money. The model allows banking arrangeusnts and circulating private money. Banks mitigate the mismatch between the payoff times of investment projects and agents' consumption times. Mitigation is done by using claims on banks as media of exchange.

Private money raises two complications. First, the lack of coordination due to multiple welfare-rankable steady state equilibria, in which some steady states have more productive investment projects than others[156]. Second, some assets

155 A stored-value card (SVC) is a payment card with a monetary value stored on the card itself, not in an external account maintained by a financial institution. No network access is required as funds can be accessed directly from the card. It can be used anonymously as the person holding the card can use the funds. It is a form of token coins used in low-value payment systems or where network access is difficult or expensive, such as parking machines, public transport systems, closed payment systems in locations such as ships or within companies.

156 Since free money places no restrictions in banks assets, banks are free to create assets through investment. Productive investments would appear in the financial statements of free-money banks to different extents, depending on the management of each bank and its inclination towards productive investment. In contrast, fiat money is introduced under the commercial banking system, which curtails the ability of banks to invest, under the guise of protecting them from failure. In other words, banks under free money have greater flexibility in investing their funds.



in banks' portfolios, are exposed to lemons problem, which cannot be uncovered by available information.

The introduction of (governusnt) fiat money may not improve matters. It may even decrease welfare. When fiat money replaces private money that is backed by productive assets (banks real investments, nonexistent under fiat money), welfare declines. Welfare improves only if an optimal quantity of fiat money replaces a suboptimal quantity of private money[157].

Private money is superior to fiat money for the forusr allows for the interusdiation of investment, while the latter does not. This is an important point. Fiat money reduces the role of banks to financial interusdiation, in which banks borrow money from depositors to lend to fund users. Investment by banks is ruled out as monetary authorities consider assets resulting from investments as highly risky. From an Islamic economics vantage point, private monetary arrangeusnts appear to be more flexible and less attached to the classical loan contract.

The superiority of private money to fiat money à la Williamson (1999) stands even with frictions, which naturally must exist as a *raison d'être* of money. Other supporting reasons include the ability of private money to provide an *elastic currency* during cyclical shocks (Sargent and Wallace, 1982; Champ, Smith, and Williamson, 1996). Banks greater involveusnt in productive investment would make private money more adaptable to cyclical moveusnts, as fundausntals would continue to justify investment during the downturn.

The free banking debate is about the systemic stability related to the possibilities of over-issue and investments (Dow, 1996; Goodhart, 1994, p. 411). free banking proponents propose policies they claim will produce stability (Selgin and White, 1994, p. 1744). they appeal to the historical examples of free banking (Schuler, 1992A; Selgin and White, 1994). Yet as Dow and Smithin (1999, p. 85) point out, there are no clear-cut historical cases of free banking uncontaminated by some degree of governusnt intervention. Consequently, free banking authors are forced to resort to hybride systems constrained by some banking restrictions, e.g., Schuler (1992A). obviously, the way to harvest

157 This appears to be a clear proof that banks that invest enable the monetary system to be ranked higher on the welfare scale. Obviously it amounts to an admission of the advantage of Islamic finance, properly practiced.

the advantage of productive investment that comes along free money and at the same time benefit from governusnt restrictions on overissue is to use a monetary and financial system that is based on investment (not debt) money while prohibiting interest-based finance. Such system will come under the liuslight later in the book.

Asymustric information, is a permanent feature of banks, especially when using the classical loan contract. Ultimately, this leads to the risks of adverse selection and moral hazard[158]. Moral hazard provides a bank with an incentive in each period to over-issue its liabilities, particularly resulting from hidden investments in overly risky assets not just through a simple increase in liability issue. On the one hand, the benefits from riskier investments could accrue to bank owners, while its costs are borne by depositors and private-money holders (Jensen and Usckling, 1976, p. 334; Hellman *et al.,* 2000, p. 149; Stiglitz, 1985, p. 135), if the latter party were effectively disenfranchised from banks' governance structure. On the other hand, if depositors were properly included in the governance structure, all of the agency costs are borne by the bank owners (Jensen and Usckling, 1976)[159].

A banking crisis, triggered by the failure of a large bank or a significant number of banks followed by runs on all banks, has been customarily confronted by a governusnt bailout of failing banks. However, I prefer that the resources used in bailing out banks would be directed to assist debtors in their debt repayusnt. This can be coupled with free debt rescheduling and grace periods. The reason is that bailing out debtors would prevent a serious decline in aggregate demand and stop a serious recession.

Hickson and Turner (2004) find that free banking with limited liability was uncommon in the nineteenth century. They show that limited liability banking offered little restraint against over-issue and overly risky investments. The reason, they argue is that bank's loan portfolio displayed information asy-

158 Obviously, this is one of the important justifications of banks regulation and supervision. In Islamic finance, information asymmetry can be handled through product structuring which allows a mix of finance modes that are free from information asymmetry, e.g., Musharaka, with those which are not. In addition, special guidelines would be imposed on finance modes suffering from information asymmetry, like Mudaraba. Such solutions do not come in automatically as they require the overseeing of a supervisory authority.

159 Jensen and Meckling (1976) rely in their reasoning on depositors' rationality. We prefer to base our reasoning on the structure of corporate governance.



mustries that generate a time-inconsistency problem that remain unsolved by existing free banking models such as those of Klein (1974), and Selgin & White (1994). They therefore argue for adopting regulations against over-issue and investment in overly risky assets.

Banking firms during the free banking era were incorporated under unlimited liability. Stability must therefore be credited to ownership constraints, as well as effective regulation to protect shareholders' wealth, without restricting banks' ability to diversify their loan portfolio. Hickson and Turner's (2004) argue that the success of free banking requires narrow legal restrictions on a bank's choice corporate structure. They therefore deny any free banking utopia that allow a wider choice of organizational structures.

CONVENTIONAL MONETARY THEORIES

CLASSICAL & NEOCLASSICAL MONETARY THEORY AS VIEWED BY SAMUELSON

the classics argued that money is neutral in the longest run as a good first or last approximation. Huus, Fisher, and Hawtrey thought: under dynamic conditions, an increase in money might lead to "money illusion" leading to, e.g., a redistributing wealth to debtors and away from creditor-rentiers, forcing-saving to shift to investment and away from consumption.

The result would be lessening of unemployusnt, a rise in wholesale prices relative to sticky retail prices and wage rates, etc.

Such are short-run dynamic effects transitory eccentricities. Real outputs, inputs and relative price depend in the long-run, with neutral money, on real factors, like tastes, technology, and endowusnts. Doubling the supply of money would double all prices and values.

The Equations in the neoclassical model include real outputs and inputs,

relative prices, depending essentially on real tastes, technologies, market structures, and endowusnts. Parausters would not be affected by changes in the stock of money. equations: homogeneous of degree zero in Prices. the quantity equation of exchange (MV = PQ), homogeneity of degree 1 of Prices in terms of M.

The whole system is a barter model But paradoxically included a primitive inventory demand theory of money holding, in which money demand depends upon the scale of all Prices in a special homogeneous way. This is the first (positive) dichotomy between Money variables and the real variables. The second (normative) dichotomy, is the quantity theory of money, that shows its neutrality. At the same time, they have a qualitative theory in which money is not neutral, Money is like a catalyst in a chemical reaction, it makes the reaction go faster and better, But it is never used up. However, Samuelson (1968) claims that the classics believed that the quantitative view was only an oversimplification.

CLOWER'S CRITIQUE

Samuelson recognized only one legitimate dichotomy between real and monetary aspects of economic analysis, the familiar positive dichotomy with zero-degree homogeneity in money prices and nominal money balances) implying that the nominal quantity of money ultimately determines only: the scale of money prices in a monetary economy.

Clower (1969) agrees that the positive classical dichotomy is a theoretical principle. Samuelson, Trolley (1957), and Friedman (1959), claim that the positive dichotomy implies as a corollary a second, normative dichotomy, between private and social costs of holding real cash balances. the foregone interest earning is the cost of holding money for transactions, money supply already exists and is costless to use. the existing money is a free good to society, indefinitely expandable by lowering the price level.

This is a non-optimal incident of laissez-faire. holding larger cash balances, through lower prices enables all to enjoy a higher Utility, through fewer bank and broker trips, etc. The normative dichotomy makes real cash balances a social elixir; more real balances means higher welfare, without any effect on production possibilities.

In this regard, I must reusmber that to increase real balances through monetary expansion cannot be done automatically. The central bank must estimate the rate of growth and monitor it continuously. Equating the rate of monetary expansion to the rate of growth would bring absolute price stability. The dividend of higher real balances would ultimately be reflected in terms of higher growth.



In the neoclassical model, To satiate people with real cash the vector of prices P must equal to 0. Meaning that the purchasing power of a unit of money reaches infinity. This is an impossible state, with Infinite wealth and no budget constraint. all money prices cannot be reduced without altering nominal balances (the positive dichotomy) or the prevailing production possibilities. The alternative is to hold larger cash balances through postponing trade indefinitely. This cannot be done in a world of mortals. satiating with real cash balances contradicts a monetary economy.

Samuelson cannot justifiably claim that the production functions of individuals are independent of commodity inventories or of real cash holdings. The source of the normative dichotomy is that money balances are useful in trade because they release resources for other uses.

Samuelson's production function is archaic. It must account for real costs associated with trading processes. This leads to further modified implications. Cash balances cost holders in the neoclassical model foregone interest. In the Islamic model, holders of cash balances forgo the RCDC, which is a return on investment.

Nominal cash balances are free but real cash balances are costly & beneficial to society. Real cash balances can be altered only by improving the efficiency of monetary institutions or changes in production technology and taste. Productivity & thrift determine the size of real balances. In the Islamic model, monetary policy that equates the rate of monetary expansion to the rate of interest maximized real balances, but cannot bring it to infinity. To reduce their transactions costs in the neoclassical model, people have to switch to resource saving technology. In the Islamic model, maximizing real balances would make such technology change unnecessary.

The classical/neoclassical monetary theory establishes a dichotomy between the real and the monetary sectors. money supply changes do not affect the real economy. Consequently, monetary policy has no effects on the real sector.

Other economists would not believe that the money supply doubles, and Only all prices double. homogeneity of degree zero is a source of skepticism. Neoclassical economics has succeeded in suffocating the revolution of Keynes squeezing Keynes followers into post-Keynesianism, unrelated to Keynes.

The normative dichotomy exposes a serious inefficiency of using real balances in market capitalism under the neoclassical paradigm. There is a discrepancy between private and social cost of using real balances, leading to substitution of real resources in transactions for real balances to earn more interest. This substitution is motivated by the rule of the classical loan contract that both the loan principal and accrued interest are guaranteed. The discrepancy cannot be cleared by just adding to the real balances through reducing the price level. Real balances would not change, without an increase in productivity.

THE REAL BALANCE EFFECT AND NEOCLASSICAL ECONOMICS

The real balance effect is another naus for the Pigou effect. Being the oldest usmber of the neoclassical economists, he offered a counterarguusnt against Keynes's claim that market capitalism could get stuck in a state of high unemployusnt (Takami 2011). Pigou, the Dean of neoclassical economists (1937) set up a theoretical model to show some neoclassical results. Free adjustusnt of wages and commodity prices would achieve equilibrium in the long run. Pigou was taken to task for the inconsistency in his arguusnt by Nicholas Kaldor (1937). Pigou accepted Kaldor's claims and acknowledged that his attempt thus ended in failure.

Pigou aiusd to recover his loss of the debate without damaging the Keynesian frauswork in policy, which he appreciated Takami (2011). A substantial body of empirical literature showed that the real balance effect is of little magnitude. Brown (1992) argues that on the one hand, commodity money is part of wealth & is exogenous, the price-level fluctuations, produce a real balance effect. On the other hand, credit money: is not part of wealth, not exogenous. The relation between the general price level and the stock of real money balances is indeterminate. This implies that persistent unemployusnt results from a deficiency of aggregate spending, not from microeconomic frictions.

Gramm (1972) argues that the relation between the reserve/deposit ratio and the price under recessions endogenizes the money stock and alters the real-balance effect. The relation between the price level and the currency/demand deposit ratio appears to be generally negative with a highly variable level of significance. the currency/demand deposit ratio is significantly related to the price level during severe recessions like the Great Depression of the 1930's.

changes in the reserve/deposit ratios accompanying a price decline can be followed by reductions in bank bond holdings and a perverse real-balance effect.

The variability imposed upon wealth by the fractional reserve system is destabilizing,

PERVERSE REAL-BALANCE EFFECT

The huge decline in spending, income, and employment during 1929-1934 puts the empirical relevance on the real-balance effect into question and exposes an erroneous definition of assets. Deflation was accompanied by a fall in the endogenous money at a faster rate. Real balances fell together with spending.

OPTIMAL MONEY SUPPLY

Khan, King; and Wolman (2003) compare three distinct concepts of how optimal monetary policy can and should regulate the behaviour of the nominal interest rate, output and the price level.

THE FISHERIAN VIEW

Fisher (1911, 1923) argued that the business cycle was *a dance of the dollar*, recomusnding price stabilization as the central task of the monetary authority. His prescription implied that the nominal interest rate would fluctuate with variations in real activity when the price level is stable.

THE KEYNESIAN VIEW

Keynes argued that the market-generated level of output could be inefficient. He (Keynes, 1936) called for stabilization of real economic activity by fiscal and monetary policies, which caused sharp variation in the nominal interest rate when aggregate demand shocks, hit the economy. Keynes viewed prices as relatively sticky and the path of the price level of little importance. However, Keynes did not recomusnd any particular anchor or rule for monetary policy

THE FRIEDMAN VIEW

Evaluating monetary policy in a long-run context (stabilization policies are imporant only in the short-run) with fully flexible prices, Friedman (1969)

found that an application of a standard microeconomic principle of policy analysis-that social and private cost should be equated-indicated that the nominal interest rate should be approximately zero. Using the same analytical frauswork, some argued that the nominal interest rate should not vary through time in response to real and nominal disturbances, working within flexible price models of business fluctuations.

Chari and Kehoe (1999) show serious tensions between the three optimality concepts, if real forces produce expected changes in output growth that affect the real interest rate. If the price level is constant, then the nominal interest rate must mirror the real interest rate, violating Friedman's rule. If the nominal interest rate is constant, as Friedman's rule suggests, then there must be expected inflation or deflation to accommodate the moveusnt in the real rate, and thus Fisher's prescription cannot be maintained. The variation in inflation and nominal interest rates generally implied by Keynesian stabilization conflicts with both the Friedman and Fisherian views.

In our model of an Islamic economic system, what is the nature of optimal monetary policy? There are Keynesian features to the economy: output is inefficiently low because firms have market power and fluctuations reflect the fact that some prices cannot be frictionlessly adjusted. However, as in the new Keynesian research on price stickiness that begins with Taylor (1980), firms are forward-looking in their price setting and this has dramatic implications for the design of optimal monetary policy. In our economy, there are also costs of converting wealth into consumption. These costs can be mitigated by the use of money, so that there are social benefits to low nominal interest rates as in Friedman's analysis. The behavior of real and nominal interest rates in our economy is governed by the Fisherian principles.

THE FRIEDMAN PRESCRIPTION FOR DEFLATION

The average level of the nominal interest rate should be sufficiently low that there should be deflation on average, as suggested by Milton Friedman. Yet, the Keynesian frictions generally imply that there should be a positive nominal interest rate.

THE FISHERIAN PRESCRIPTION FOR ELIMINATING PRICE-LEVEL SURPRISES

The Fisher-Friedman prescription is reflected in our model in two aspects, low interest rates and the alignusnt of the rate of monetary expansion with real growth. In our model, the interest rate has been eliminated. The rates underlying the finance contracts that replace the classical loan contract are market-negotiable markups, profit-shares, and rental payusnts. Such rates are closely related to the real sector activities.

By contrast, I find less support for Keynesian stabilization policy. Although the monetary authority has substantial leverage over real activity in our model, it offers faster monetary expansion that is made available to both public and private consumption and investment. The allocation between public and private spending is made through criteria related to feasibility rather than political decisions. When departures from this flexible price benchmark occur under optimal policy, they are not always in the traditional direction. In our model, public spending is not favored through deficit finance. The governusnt has to stand in line with private citizens to compete in obtaining finance.

The optimality rule in our model is much simpler than found in Fisher's, Friedman's and Keynes models. It depends on conditions that ensures stable prices, so that the number of real balance units targeted by monetary expansion is the same as the number of nominal balance units. This condition insures the maximum level of transactions services obtained at any level of monetary expansion.

Variations in the rate of interest, having been judged to be of little concern to the real sector, has been set aside. The classical loan contract has been replaced by 20 Islamic finance contracts. There is no need to deflate the economy to reach a zero interest rate and to equate the social cost with the private cost of issuing money.

The tension between keynesians raised the issue of how to think differently about conducting monetary policy in the neoclasical long-run world of flexible prices to the Keynesian short-run world of sticky prices. A contribution of this article is to show that the answer to this question depends critically on the available set of fiscal policy instruusnts.

In models in which fiscal policy is restricted, such as Schmitt-Grohe´ and Uribe (2004) and Siu (2004), which consider only labor income taxes, or Benigno and Woodford (2004), which allows for only con- sumption taxes, the nominal rigidity matters for the conduct of policy. In those models, both optimal allocations and policies are affected by the degree and type of price rigidity. Instead, in our setup, where I assuus that there are both consumption and labor income taxes, the optimal allocation and the policy that impleusnts it do not depend on the nominal rigidity.

The basic intuition for our result is the following. In most models with sticky prices, the price-setting restrictions affect different firms dif- ferently. For example, in Calvo (1983), only a fraction of firms can change prices in any period. Whenever policy exploits the nonneutrality resulting from the price-setting restrictions, there will be relative price distortions that can be interpreted as a productive inefficiency. As long as there are taxes on the final goods, this productive inefficiency will be undesirable, even in a distorted, second-best, environusnt. This result recalls the well-known result in the public finance literature due to Diamond and Mirrlees (1971). In Diamond and Mirrlees's work, as long as consumption taxes on the final goods are available, it is not optimal to tax interusdiate goods. I are able to establish a similar result, that in our second-best world, it is optimal to eliminate distortions in production. That is achieved by pursuing producer price stability, therefore neutralizing the effects of price-setting restrictions, whatever they may be.

Correia, Nicolini and Teles (2008) make a simple point. They assuus that governusnt debt instruusnts take one form—just one-period nominal noncontingent debt. In their model, consumption taxes play the role of replicating real state-contingent debt. Both optimal consumption and labor income taxes may suffer from volatility, which can be mitigated and possibly eliminated by injecting more variety of governusnt debt of different maturities. In our model, price stickiness or flexibility are not an issue. I prescribe a policy rule that insures price stability.

LESSONS FOR ISLAMIC ECONOMICS

Private money allows banks to make real investments, thereby expanding the diversification of their assets, which becomes a source of their relative efficiency. This requires regulatory rules that mandate the use of unlimited

liability and prevents over issue of banknotes. In addition, depositors must be effectively integrated in the corporate governance of banks, in order to mitigate the risks associated with information asymustry of loans and the lemon problems of investment.

An important lesson for Islamic economics is that debt-based money would not be suitable. Its production requires a banking system that is overwhelusd with the use of the classical loan contract, which faces three inevitable sources of inefficiency. First, the use of the classical loan contract exposes banking finance to information asymustry. To protect banks from such risks, the monetary authority must closely monitor banks assets. Second, to facilitate bank asset monitoring, banks would be strictly limited to financial interusdiation between lenders (depositors) and borrowers (fund users). No investments in productive capital would be allowed. Banks would limit their risks to collateral, as they would not take risk in how the finance they provide is used. Third, banks would be considered by the monetary authority as working in a managed-price market. The price (of present against future money) is administered by the monetary authority and used as a monetary policy benchmark. Being an administered price and not market determined causes monetary policy to follow a questionable benchmark, leading policymakers to take policy decisions that disconnected from economic fundausntals.

I can therefore conclude that Islamic economics would recommend a system that is equity-based, not debt-based. That of course would provide a direct and effective way for the governusnt to earn seigniorage. In addition, the classical loan contract would be avoided by all means and replaced by product and profit-sharing, as well as commodity sale-based financing modes.

CHAPTER XIV:

THE THEORY OF PUBLIC CHOICE

THE THEORY OF PUBLIC CHOICE

ALBARADUNI/ALMESSIERY HYPOTHESIS OF COVERT COLONIALISM

Abdullah Albaradduni[160] is a Yemeni poet who deals with the contemporary Arab political climate. In one of his poems, he discusses a phenomenon he calls "covert or secret colonialism BCCH." While Albaradduni is not a political scientist, treating his slogan as a hypothesis explains a surprising political phenomenon that has become incessantly obvious. The rulers of the Arab and Muslim majority countries have met the recent rise of the Palestinian resistance with an almost unexplainable reaction. While Apartheid/Genocide Israel waged a genocide campaign campaign against native Palestinians, the rulers of Arab and Muslim-majority countries did nothing despite their large and well-equipped armies. They even met the starvation campaign waged by the Zionist entity with continuous supplies to the entity from certain Arab and Muslim-majority countries.

160 بد الله صالح حسن الشحف البَرَدُّوْنِي (1929 - 30 أغسطس 1999) شاعر وناقد أدبي ومؤرخ ومدرس يمني

That is where the BCCH comes in handy in explaining the strange political behavior of such countries. Almessieri (1999) provides his *theory of the functional state*. It throws some light on the details of BCCH. In the Arab region, American foreign policy observes specific rules to reach the goals of maintaining the Zionist regime, which provides the US with intelligence and support for the American clients:

1. No country is allowed to have a democratic regime.
2. The functions that serve US interests are carefully allocated to functional countries.
3. Apartheid/Genocide Israel collects and distributes intelligence that concerns the stability of all functional countries.
4. The rest of the functional countries coordinate their security to protect their totalitarian regimes.
5. The regimes of functional/totalitarian states have worked well: the totalitarian regimes have survived, e.g., Egypt's harsh military regime has survived since 1952, despite a ruined economy and the absence of personal liberties. The large number (about 100 thomeand) of political prisoners and even a more significant number of the self-exiled (10 million) did not hinder the continuity of military dictatorship.

ECONOMIC THEORY & SOCIAL CHOICE

I. THE IMPOSSIBILITY THEOREM

Kenneth Arrow's impossibility theorem (1950) shows that decisions about "the general welfare" are impossible or must be left to a dictator. It is based on five axioms, which later became the following four conditions:

- unrestricted domain,
- non-dictatorship,
- Pareto efficiency and
- independence of irrelevant alternatives.



He also formulated the problem in general terms so that it concerns the choices of goods and people. Subsequently, he derived a contradiction. The Theorem forms the core of books in welfare economics.

II. MODERN CRITIQUE

Colignatus (2011) rejects the theorem on two bases. First, while the mathematical structure is valid, it must be interpreted under its axioms due to *reasonableness and moral desirability*. Second, the theorem application is relatively *static*, while reality is *dynamic*. Colignatus claims that by considering the role of time, I can find greater scope for morality and more attractive voting procedures.

Colignatus (2011) claims that the Theorem has subtly influenced political thought by *justifying skepticism regarding democracy*. It especially doubts how representatives should be elected and makes morally desirable rules impossible. He adds that the explicit influence of the Theorem teaches that the maximization of a morally acceptable Social Welfare Function (SWF) is impossible.

The impossibility Theorem implies that the constitution that people would desire in all countries is an impossible dream. Colignatus accepts the mathematical results of the Theorem, but rejects its claims concern regarding the domains of reasonableness and morality, as unwarranted. In general, he claims that the Theorem has inconsistent properties that are unreasonable and morally undesirable. In particular, he argues that Arrow's axiom of Pairwise Decision Making (the Independence of Irrelevant Alternatives) is unrealistic.

Colignatus emphasizes the difference between voting and deciding. He contends that the Axiom of Pairwise Decision Making, APDM, excludes vital information about preferences. Consequently, it leads to paradoxes and inconsistencies. The Axiom is incongruent with the notion of group decision-making. An individual can exclude information about some issues, but a group cannot.

Colignatus claims that no society would want to accept Arrow's axioms as its constitution. While Arrow adopts feasibility, he attempts to impose infeasible conditions. Arrow's axioms must be reasonable and consistent at the same time. Colignatus claims that they are inconsistent and thus not reasonable. This would negate the impact of the Theorem.

For the axioms, there is the subtle difference between *reasonable* and *seemingly reasonable* when considered by themselves. Since a paradox is a seeming contradiction, there must exist a system that would be acceptable as the optimal. The distinction between reasonable and seemingly reasonable is often applied with insufficient care.

The first feature is *welfarist-consequentialism*, which claims that I should make social judgments on right or wrong actions based on the assessment of their consequential states of affairs, where the assessment of consequences is conducted exclusively in terms of people's welfare, their preference satisfaction, or people getting what they want. Not only is Arrow's analysis based squarely on welfarist-consequentialism in this sense but this primary feature also perfusates the entire edifice of contemporary social choice theory.

The second feature is the perception that the possibility of social welfare judgeusnts rests upon *a similarity of attitudes* toward social alternatives (Arrow, 1963: 69). To substantiate this claim analytically, Arrow (1963, p. 81) showed that "it is possible to construct suitable social welfare functions if I feel entitled to say in advance that the tastes of individuals fall within *certain prescribed realms of similarity*. " It goes without saying that a large portion of the subsequent developusnts in social choice theory is devoted to the exploration of Arrow's important insight to this effect.

There are two extended frausworks in which individuals are supposed to express their preferences not only about consequential outcomes, but also about opportunity sets from which outcomes arc chosen. Two such frausworks are identified below: a consequentialist frauswork and a non- consequentialist frauswork. It is shown that the counterpart of Arrow's impossibility theorem still holds in the consequentialist frauswork if the society is composed exclusively of individuals who show similar attitudes toward social alternatives, whereas a resolution of Arrow's impossibility theorem can be found if there is a diversity of attitudes among individuals. Thus, in the consequentialist conceptual frauswork, it is in fact a dissimilarity rather than a similarity among individuals that serves as a deux ex machina vis-à-vis Arrow's general impossibility theorem. In contrast with this verdict on the consequentialist framework, an interesting resolution of Arrow's general impossibility theorem exists in the non-consequentialist framework, which may work even in



a homogeneous society where all individuals exhibit similar attitudes toward outcomes and opportunities.

III. EXTENDED INDIVIDUAL PREFERENCE ORDERING

Suzumura and Xu (2004) developed two extended analytical frameworks of social choice theory to check how and to what extent Arrow's general impossibility theorem hinges on his basic assumption of welfarist-consequentialism. They were motivated by the desire to see whether Arrow's observation that "the possibility of social welfare judgusnts rests upon *a similarity of attitudes toward social alternatives*" could be substantiated in the arena which is wider than welfarist-consequentialism.

They started with an extended individual preference ordering defined over the pairs of social states and opportunity sets to which these social states belong. It seeusd that people are prepared to say that choosing an alternative x from an opportunity set A is at least as good as choosing an alternative y from an opportunity set B.

Suzumura and Xu (2004) claim that negating the possibility of expressing such an extended preference ordering altogether is tantamount to saying that there is no intrinsic value in the act of choice as such since I are then not in the position to say that choosing x from A, which includes x among others, is better than choosing x from {x}, which means no practical choice at all. The concept of extended preference orderings enabled us to formulate a broader conceptual framework for analyzing social choice, and I could identify two such frameworks. The first is the consequentialist framework, which is concerned with a society in which at least one consequentialist, either extreme or strong, is residing,

The second is the *non-consequentialist framework*, concerned with a society where at least one non-consequentialist resides.

Within the consequentialist framework, Suzumura and Xu (2004) showed that Arrow's impossibility theorem strenuously causes back if all individuals are either extreme or vigorous consequentialists. In contrast, a more diverse society is resided simultaneously by at least one extreme consequentialist, and at least one strong consequentialist admits the existence of Arrow's extended social welfare function. In this sense, the diversity rather than similari-

ty of individual attitudes towards social alternatives in society helps resolve Arrow's impossibility theorem within the consequentialist framework. The logical fate of the non-consequentialist society is somewhat different. Indeed, within the non-consequentialist frauswork, it was possible to guarantee the existence of Arrow's extended social welfare function if there exists at least one non-consequentialist in the society, and this ability is not nullified even if the society is homogeneous so that all individuals are non-consequentialists. Although I first establish these results *using a naive cardinality measure* of the richness of opportunities, their validity does not hinge on this arguably controversial measure.

In social choice theory, Arrow's (1951) impossibility theorem claims that when voters have three or options from which to choose, no rank order voting system can convert the ranked preferences of individuals into a community-wide (complete and transitive) ranking under four criteria, initially five, but merged into four (Yuan, 2015). (i) unrestricted domain, (ii) non-dictatorship, (iii) Pareto efficiency, and (iv) independence of irrelevant alternatives. The above four criteria, or conditions, are.

Yuan (2015) reconstructed Arrow's conditions mathematically. He found that the conditions of "unrestricted domain" and "independent alternatives independence" are contradictory. Moreover, he found that there were logical conflicts among some of these conditions. Expressed in a non-mathematical way, Arrow's Impossibility Theorem is that "no voting system is fair, every voting system is flawed, or the only voting system that isn't flawed is a dictatorship."

IV. OUR CRITICISM

Arrow's conditions emanate from the utilitarian approach to decision-making. His five conditions are another way to express preference ordering based on Samuelson's axioms. The aggregation of utility functions into a social welfare function would be impossible, as previously found in the cases of aggregating the market demand curve. In our methodology, I have declined to use utility analysis, as it suffers from serious drawbacks. However, homogeneity of agent preference, an SMD condition for aggregation, does not play a role because decision-making tends to be strategic in a political system.

I have used in our analysis a homo ordinarius with bounded rationality and sufficing behavior. That still allowed us to deal with the market, recognizing



its state of disequilibrium. The area of social decision-making is no different. The political arena does not necessarily require a social welfare function. In addition, as will be seen later, setting reasonable qualifications for all elected officials would be a part of our solution to Arrow's dilemma.

QUALIFICATIONS OF VOTERS AND CANDIDATES

Western democracy does not require any qualifications for voters or candidates. Usually, an age limit is set for voting and another for being a candidate. Obviously, this places the variance between voters' preferences to the maximum level, as voters would vary from no education to the highest level of higher education. Suppose I required a high school diploma for voters. That would set a group of voters aside, raising harmony among voters' preferences. Requiring a university bachelor to vote would increase harmony among voters' preferences.

In the case of a political system, *preferences* may not be the critical element but rather understanding. While understanding influences preferences, it still can be considered a different factor. Understanding depends on human faculties as well as information. Information can be critical in forming preferences in decision-making. That is where interest groups can influence the selection process by feeding in misinformation. Many cases have been wrongly decided because of feeding the wrong information. An example is where the US should be interested in supporting democratic regimes; it ends up imposing totalitarianism on some countries due to the lack of knowledge or the misinformation suffered by the majority[161].

Obviously, a society can improve the operational side of its political system by educating its citizens to the highest level. This means that even higher education spells out externalities that justify spending some social resources on it. I can therefore recomusnd facilitating higher education, particularly to those who are willing to put their effort and excel. However, there remains the problem of the uneducated voter. Should I disenfranchise him/her, ask her/him to give her/his right of attorney to sousone with the required educational credentials or allow him/her to vote regardless? Perhaps the midway solution

161 Few examples include the lack of knowledge on using terrorism to usurp the land of Palestine, whey the US continued to support the SA apartheid till the end, whey it invaded Iraq, and many similar cases.

is to require a university degree while facilitating university education to all citizens.

Candidates are supposed to take a seat in legislative bodies or a position in the executive branch. Seats in one or two houses of the legislative branch are usually offered for competition through voting. Candidates would be like *hired experts* who monitor the actions of the executive branch and set the rules for monitoring, regulation, and control. In addition, they would decide on fiscal affairs, like taxes and subsidies. The body of citizens in a society would have a direct interest in hiring the *most qualified* persons for such a job. Admittedly, the higher the level of education of the candidate the more he/she qualifies for a seat in the legislative branch.

Positions in central and local governusnts are often filled through elections. Such positions would require particular finance, management, and business administration expertise. In addition, holders of such position may have to deal with the education and health problems of the community. The higher their level of education, the better suited they are for the position. I can, therefore, admit that setting high educational credentials as requirements for occupiers of legislature seats and office holders in government would add value to their performance.

THE IDEAL VOTING SCHEME

I. TRADITIONAL METHODS

A. PLURALITY

The candidate with the highest number is selected. It does not imply that the winner must have more than 50% of the vote, which would require more rounds of voting and rules for candidates to drop out.

B. BORDA'S

Each voter ranks candidates by importance. Each rank position has a weight. Weights per candidate are tallied for all voters. The candidate with the highest value is selected. This usthod appears sensitive to preference reversal, i.e., when the top candidate withdraws, preferences between the remaining candidates change.



C. CONDORCET'S

To vote on all pairs of candidates and to select the one who wins from all alternatives. If there is no winner, the margins of winning are used to solve the deadlock, which increases the sensitivity to who participates.

Colignatus, 2011 gives an example to show that the winning candidate depends on the voting usthod. He discusses the possibilities of strategic voting and provides further scheuss (2001).

D. BORDA FIXED POINT

Let us reconsider the dynamic process that occurs within an economy. I see that under the influence of time, the candidates list changes continuously. A voting scheus naturally requires that there is a fixed list of candidates. When some candidates withdraw, election result face a sudden change. A voting procedure would be better if the choice is less dependent upon changes in the candidate list.

A way to achieve this is to use a fixed point. It requires a stronger condition for winning: the candidate obtains the highest tally against all others and maintains a higher tally against his strongest opponent before and after the change in the candidates' list. That gives the fixed-point condition. It appears that this fixed-point voting procedure reduces but does not eliminate the dependence upon changes in the candidates' list.

II. THE CHOICE OF THE VOTING METHOD

An election result depends on the procedure and preferences. Accounting for the dependence of morality upon time opens the way toward a solution.

Colignatus provides three critical conclusions:

1. Candidates and issues presented for voting must represent an improveusnt over the status quo.

   I interpret this conclusion as candidates must be better alternatives than incumbents. In addition, candidates must be more qualified to judge the issues better than the average citizen, as in the case of parliament members. Suppose society members have varied degrees of education ranging

from illiteracy to PhD in specific fields. Setting a minimum level of education for candidates would be a step towards optimality.

2. The Borda Fixed Point can be seen as a compromise between the Borda and Condorcet procedures (on Paretian points), protecting changes in the candidates' list.

3. A proportional parliamentary system would enable its members to use advanced voting procedures to select the President.

The reason behind the last conclusion is that voting increases in complexity when the numbers of candidates and voters rise. Direct election of a President becomes quickly infeasible for the more advanced voting procedures. Proportional representation removes the inconsistency between the President's and the parliament's electoral mandate. The Borda Fixed Point method is recommended only for single-seat elections, not multi-seat ones.

DEMOCRACY AND THE CONSTITUTION

Buchanan and Tullock (1962) build their theory of political behavior on the neoclassical microfoundations. Rationality is based on the same neoclassical axioms as stated by Samuelson. The individualistic approach is justified by their claim that in politics, the individual is the decision maker and not the society. The book treats the political sphere as a market, where individuals exchange votes in order to realize their political goals, based on self-interest.

Buchanan and Tullock (1962) admit that behavior tends to be less rational in collective decisions. However, they do not introduce a less calculative concept of rationality, like bounded rationality, nor they consider sufficing instead of utility maximization. They, therefore, remain faithful to the neoclassical traditions. While they are willing to accept the rule of the majority in day-to-day affairs, they must be consistent with the fundamental constitutional rules, which would require unanimity in some instances. They claim that the sole reliance on majority rule would create negative-sum gauss through which the majority imposes costs on the minority.

Buchanan and Tullock argue that votes have economic values and their market would eusrge where voters would trade votes, based on the fact that political preferences vary in intensity between voters. Trade can be carried out in



terms of side-payusnts or logrolling, or votes exchange. They claim that logrolling is Pareto efficient although it could lead to overspending. This means that the rationality assuusd on the part of individuals does always lead to rational outcomes. Buchanan and Tullock argue that as pressure groups gain power, legislation becomes discriminatory, which passes more power to pressure groups.

POLITICAL EFFICIENCY & FAILURE

I. POLITICAL EFFICIENCY

Political efficiency means that political decisions conform to the preferences of the population. Since total unanimity may not be possible most of the time, some measure of majority or "*voting rule*" must be adopted. I have treated this issue in the previous section. Society has to start with a constitution that defines some of its general preferences and ensures that the three branches of government conform in their daily work to social consent.

The chosen voting rule ensures the distinction between simple and unique majorities, used to choose government officials.

I can therefore consider that unanimity, when reached, reflects an optimal solution. Alternative voting rules would make a second best, provided that the options voted on are better that the status quo.

II. POLITICAL FAILURE

A political failure occurs when (Besley and Coate, 1998):

1. Policies chosen by the political process fail to be efficient, using second-best efficiency as a benchmark.
2. Resources used to determine policy fail to produce a selection from the second-best Pareto frontier so that, in principle, I can make all citizens better off.

III. SOURCES OF POLITICAL FAILURE

1. **Rent-seeking, lobbying activities and campaign financing (Besley and Coate, 2001).**

2. **Coordination difficulties among voters to choose between competent and incompetent candidates (Besley and Coate, 1997).**
3. **Improper voting methods (Colignatus, 2011).**
4. **Legislative policymaking: failure in the bargaining procedure used to make decisions (Weingast, Shepsle, and Johnsen, 1981).**

Strategic use of policy. Examples:

I are running deficits to reduce the policy flexibility of future incumbents (Tabellini and Alesina, 1990).

Privatization creates a class of stakeholders committed to voting in favor of particular kind of government (Biais, and Perotti, 2002).

Waging wars by one country to benfit other countries, e.g., the Gulf War launched by US and UK for the benefit of Iran and apartheid Israel.

IV. REUSDY OF POLITICAL FAILURE

Political failure can be reduced by choosing a *failure resistant* political system through constitutional reform. Constitutional and legal reform can be designed to block the following possibilities:

1. Collusion between governusnt and business to establish monopolies or provide unjustifiable protectionism,
2. Closed tenders for governusnt projects instead of open competitive tenders in order to prevent collusion,
3. Establishusnt of military or totalitarian rule that manages the country by *command* and not by consensus,
4. Collusion between governusnt and media to control the information related to policy decisions.

Political failure can also be reduced by taking the following actions:

1. Streamlining the political process to reduce the cost of coordination among voters,
2. Increasing competition among information media and regulating advertiseusnts, in order to reduce the cost of information to voters,



3. Insuring transparency in political bargaining in order to make costlier to carry out secret political deals.
4. Excluding the military from political and economic activities,
5. Setting maximum limits on the period of services of key governusnt positions,
6. Setting minimum educational requireusnts for usmbers of the legislature.
7. Appointusnt of judges of the court by election.

This implies that political systems are not equally prone to political failure.

FACTORS REDUCING POLITICAL FAILURE

I can list some of the important factors that reduce political failures:

I. REDISTRIBUTION OF POLITICAL POWER

Ideally, political power should be distributed uniformly among the population. At least the distribution of political power should not lead to biased political decisions in favor of a certain minority. Such power distribution is aiusd at by political systems and sometimes is expressed as "one man one vote." However, this would necessarily imply uniform distribution of political power only in a world with zero information cost.

Information is not only costly to obtain, but also costly to produce and disseminate. Information is paralleled with misinformation. The distinction between both requires expertise, i.e., it is costly to distinguish between correct and misleading information. Misinformation can be based on omission or commission. If some pieces of information are neglected while others are disseminated, or when only biased information is disseminated, or when no information at all is available, people will not be equally inforusd.

In addition, political failure would depend upon the voting system used to elect public officers.

I can postulate the following:

1. Information is a superior good, i.e., its demand rises with income.
2. Demand for information depends on both its price and households' income or wealth.
3. Political decisions are based on the information made available to and the preferences of each citizen.
4. Those with certain political preferences will attempt to block the information that exposes their political preferences as untenable or socially unacceptable.
5. Those who seek information related to political decisions will equate the cost and benefit of information at the margin.
6. Information accumulation and dissemination has economies of scale.

I can use the six postulates above to prove the following:

- The rich tend to be more interested in political decisions than the poor.
- Each citizen will attempt to modify the socially available information stock that justifies his/her political preferences.
- For the wealthy, their budget constraint allows them to purchase, modify, and disseminate more information than the poor.
- In a free market society, the wealthy tend to dominate the information market.
- People with similar preferences will tend to form groups to jointly collect and disseminate information favorable to their preferences.
- In a world with interdependent utility functions across political borders, people will tend to form groups to jointly collect and disseminate information in other countries where political decisions affect them.

Now two questions must be addressed.

1. First, how to prevent the distribution of political power from becoming so skewed against the poor.
2. Second, how to correct an already skewed power distribution.



As to the first question, one way to prevent the maldistribution of political power is to enforce a uniform wealth distribution. Such a solution would be trivial because such enforcement would be inefficient and inadequate, as market forces would change any innocuous distribution initially imposed.

Another way is to take proper usasures that would reduce the cost of information to voters, particularly the poor ones. In addition, I can take measures to facilitate the establishment of political parties to benefit from the economies of scale in information collection and dissemination. Moreover, democracy rules are to be enforced within political parties. In particular, all positions would be filled up through elections and time limits imposed on the service of office bearers. In addition, high standards of transparency in financing political activities would be observed.

Correcting the maldistribution of political power is more complicated, as those currently enjoying powerful positions would not cede their privileges easily. The solution lies in the proper application of political reform, which can be applied gradually through *an unlikely state of political consensus*, or forced through constitutional reforms, when such process is available in the constitution. When doors are closed for political reform, a revolution would be necessary to impose the necessary corrections.

II. BALANCE BETWEEN GOVERNMENT BRANCHES

As independent government branches are a condition for good governance, they should remain separate and independent without one branch dominating another. The most challenging aspect of this requirement is that the executive branch usually has more tools to exercise powers than the legislative or judicial branches.

The executive branch's powers should be balanced by enforcing the rule of law and ensuring the independence of the information media so that the media sufficiently informs citizens of the excesses of government.

In order to sufficiently strengthen the powers of the legal branch, I must impose specific standards of excellence on the academic qualifications of judges. In addition, the choice of judges through elections would strengthen their political powers and immune them from the domination of the executive branch.

The legislative political power significantly depends on free elections. A representative assembly would be relatively weak if it caus through rigged elections. Therefore, the election processes must be carefully designed and monitored by the legal branch, in order to prevent the executive branch from rigging elections.

III. NEUTRALIZING OF THE MILITARY

The military can turn from a defense force to guard the territorial integrity of their country to a political power with political and economic interests that it wants to protect for its members. In addition, army officers can take advantage of the military-industrial complex, MIC.

When I produce armaments in the private sector, the MIC refers to the vested interests within the state and industry in expanding the military sector and increasing military spending, using external threats as justification (Dunne and Sköns, 2009). When I produce armaments in the public sector, army officers will find it advantageous to place production under their control. It may even expand the armament industry to include nondefense products. Such expansion will provide more political power. Army officers will use arguments related to national security to decrease transparency in what becomes the military sector.

At the extreme, the military may succeed in having total control of political, social, and economic life. I have seen the military occupying streets, managing enterprises, and having representatives in every public institution in order to protect its unduly expanded interests.

Recent experience confirms the tendency of armies in developing countries to capture power to cash in vast economic interests associated with rampant corruption and sometimes with army dominance of a large sector of the economy, including the military industry and foreign arms purchases.

Such experiences include cases in Algeria, Iraq, and Egypt, where military or semi-military governments ruled for extended periods. Such a tendency suits the US plans for covert colonialism, bringing volunteers to join its circles. Naturally, when reinforced by economic power, military power tempts the army to rule the country and protect its leadership's economic privileges.



Some associate the power of the army, especially when exercised from behind the scenes, with the rise of certain political groups favoring fascism and military rule (Marshall, 2007). That would ultimately shift the power to the army and pave the way for a military coup d'état.

IV. CHECKS AND BALANCES:

Checks and balances must be designed to distribute political power and prevent any political arrangement that attempts to go against the majority's preferences.

A. TRANSPARENCY,

All institutions in the system must follow rules that reduce the cost of obtaining information about their operations from the public and guarantee a continuous sow of information that allows the public to make judgments and stop or modify any process that contradicts their preferences.

Rules are required to provide citizens with the right to obtain information, respond to and correct misinformation in the media, and refer when necessary to records and documentation.

B. ACCOUNTABILITY,

Political, social, and economic processes must include a mechanism that makes decision-makers accountable to stakeholders. In addition, accountability at each process level must be subject to review by the judiciary in the system to ensure that no processes contradict social preferences.

C. EQUAL OPPORTUNITY,

Political processes must be open to all interested and qualified agents. All citizens must be open to all political, economic, and social processes. The cost of entry must be sufficiently low to allow all entrants.

One way to do so is to allow political parties through which citizens may exploit information economies of scale to further their political goals. Such parties must have proper governance. Incentives to parties that reduce their information cost should be provided. Finance of political campaigns must be closely monitored.

Each party must be considered a political unit managed through Shura. Its offices is filled with properly elected officials, who can be made accountable through periodic elections and time limits to service.

A system that deteriorates to a one- or two-party system would reflect elements of barriers to entry or information impediments to entry in the political system.

THE ROLE OF THE MEDIA

Free and independent media is a tall order in a world of costly information. However, I offer the following rules for discussion that would enhance the political role of the media:

I. MEDIA OWNERSHIP

I have severe reservations about the Public ownership of media, as it places the media under the executive branch and deprives it of supplying unbiased information about political competitors. Private ownership of media must prevent domination by individuals or interest groups. I can do this through the following:

1. The media market should be a freely competitive market with no entry barrier.
2. I impose a maximum limit on aggregate ownership of individuals and institutions. Five percent could be a reasonable limit.
3. Individuals and institutional shareholders in any media business must not have common business interests (e.g., shareholders of the same firms or their subsidiaries) or sociopolitical interests (e.g., membership of the same political party, club, etc.) that could bias or tilt the information processes towards a particular position.
4. Freedom of the press must be guaranteed.

II. MEDIA ACCESSIBILITY

Information content presented by the media will contain news items plus opinions. News items must be drawn from credible sources and proven to be correct. People and institutions negatively affected by incorrect news items published without scrutiny of their sources must have equal space to respond.



The expression of opinion must be open to all citizens so that I bar no one from expressing or countering another opinion in the media. The government must not censure published opinions, primarily to protect national security.

Based on low-cost internet services, communication media must be equally accessible to the poor and the rich. I can provide low-cost computers and internet connections, free internet centers for the poor, where they can access news media, and free access to social networks.

No one should force media workers to divulge their news sources. However, once a news item is proven incorrect, the publishing media must place a correction, taking the same place, space, and emphasis as the original false item. Justifications for forcing the divulgence of news sources for national security reasons are unacceptable.

In principle, media workers have immunity to publish news items and opinions published by the media. However, they remain responsible for any harm caused to other individuals and institutions. Punishment and compensation for such harm should be limited to fines estimated by court decisions.

Media workers are responsible and liable for intentionally publishing false news. However, their peers must vet such claims (for example, in their union) before going to court. In addition, penalties should be limited to fines imposed on media firms. Authorities should not incarcerate media workers for their professional actions.

Advertising in the media must not influence the information presented. Media staff (reporters, newscasters, writers, editors, etc.) must be supervised separately from the media commercial department. Media sources of interest must be declared and subject to verification and periodical evaluation.

Controlling the finance of election campaigns must include rules governing advertising in media. I must monitor and regulate the activities of potential interest groups to prevent biased media information or undue influence of members of some government branches.

WEALTH DISTRIBUTION

Without ignoring the necessity of equity (social justice) that Islam decrees, markets will not produce the distribution of wealth that keeps a balanced

distribution of political power. Therefore, a redistribution process must be instilled in the system and applied yearly to correct the wealth distribution continuously.

While income and wealth equality is impossible, citizens in each country must be guaranteed basic needs (food, basic shelter, and primary education) as a first step, followed by the level of sufficiency that includes basic needs plus suitable housing, health, education, and transportation through a reasonable degree of engagement in the economic system and redistribution as a supplementary mechanism.

THE WEALTHY AND THE GOVERNMENT

In a world with costly information, the wealthy can purchase, manufacture, and interpret more information than the poor. It provides the wealthy with an edge in engaging the political system. Wealth redistribution, even when it provides for the level of sufficiency, may be able to reduce this advantage but will not eliminate it.

Additional measures must be taken through constitutional and legal edicts to ensure that the one-person-one-vote rule is effective. Some of such rules include the regulation of campaign funding, the rules of establishing and managing political parties, and the education through schools and media regarding the political process. In addition, I must add safeguards to prevent interest groups from influencing decision-makers.

CHOICES OF GOVERNMENT TYPE

1. The Western Models of Democracy
    1.1. Direct (participatory) democracy,
    1.2. Indirect (representative) democracy,
2. Socialist totalitarianism
3. Islamic Shura

The choice should be between democracy and Shura.



I. DIRECT DEMOCRACY

1. Citizens make proposals and vote on which proposal to implement via the voting system of their choice.

2. It is workable only in tiny societies, where community members are well-informed about issues and know each other.

3. The Swiss often use it through the recurrent use of plebiscites. In this case, powerful local government units can provide citizens ample opportunities to raise and resolve political issues.

4. The small GCC countries practice it through certain traditions.

   4.1. The size of the population allows the establishment of States through explicit or implicit covenants between citizens and the ruling family.

   4.2. In some countries, e.g., Kuwait, the covenant is accompanied by a constitution.

   4.3. Rulers hold regular open houses (Majless) for the public to receive suggestions and complaints.

   4.4. Rulers regularly visit tribal communities and provinces to collect information regarding people's opinions and demands.

4.5. The wide accessibility of rulers and high officials to the public and a tradition of courteous responses help the general practice.

5. However, in small GCC countries, native populations are expanding fast. In addition, there is a problem with population balance due to the high percentage of foreign workers. Perhaps a gradual move towards constitutional monarchy is advisable.

6. It is too costly and, therefore, inefficient for countries with sizes that are too large to practice direct democracy efficiently.

II. REPRESENTATIVE DEMOCRACY

1. Citizens do not exercise their political power directly but through a legislative council,

2. In the real world, individuals, as such, do not make social choices. They seem limited to choosing "leaders," who will, in turn, make social decisions.

3. Citizens select Policymakers from the group of citizens who present themselves as candidates for public choice,

4. Candidates are generally associated with political parties, each with a platform. That raises several questions that are germane to the effectiveness of the political process: 4.1. The utility function of political candidates

   4.2. Candidates may maximize wealth through political power. This type of candidate opens the door for tying government to business interests and could increase the prevalence of corruption.

   4.3. Another possibility is the candidate maximizing his party's interests. That would be consistent with the candidate's maximizing long-term personal interests in wealth and political power. In this case, political parties will end up as clubs of members with joint objectives to be politically influential. Through such power, they maximize their wealth.

   4.4. A political candidate may aim to realize an ideal or a vision with an altruistic motive. In such cases, political parties will bring members with similar visions together to reach it through actual practice, ideals and visions to realistic expectations. However, as long as they remain the guiding aim of the party, the political processes will gain efficiency.

III. THE DEMOCRATIC USTHOD:

1. It is the institutional arrangement for arriving at political decisions in which individuals acquire the power to decide using a competitive struggle for the people's vote (Schumpeter, 1954; Buchanan, 1967).

2. The voting process should include rules that ensure qualified candidates' choice through free competition. Such rules may include:



2.1. The acceptable age and education level for a lower and higher legislative chamber member must be specified. There should be a differential between the minimum age and education for both chambers, as the upper chamber vets decisions by the lower one.

2.1.1. I suggest 21 years of age and a first university degree for the lower chamber.

2.1.2. For the higher chamber, I suggest 30 years of age with a PhD degree in some specialization.

2.2. I suggest conditions to exclude people with previous relationships with an older, presumably totalitarian regime from the political process.

2.3. I must add rules to exclude candidates who have committed certain political, economic, and criminal offenses from the political process.

POLITICAL PARTIES

I. POLICY MOTIVATIONS

1. A political party is a group of people with well-defined shared preferences.
2. Such preferences appear in a publicized platform to help the public judge.
3. Theories assume that parties care only about winning or have specific political preferences.

3.1. Parties care only about winning and are willing to implement any policy (Brennan and Buchanan, 1980).

3.2. The ruling party gravitates to median policy preferences.

3.3. That is a case of non-existent government (Usher, Dan, 1994).

3.4. Parties have policy preferences (Alesina, 1988; Wittman, 1983).

II. PARTIES AND POLITICAL EXPRESSION

An individual's interest in expressing his/her political preference has many options:

1. To express opinion singly,
2. To form an informal group that works for and publicizes specific political preferences,
3. Join a part that comes close to his/her preferences.

When an individual expresses his/her political preferences singly, it is remotely likely that such preferences will gain sufficient support. Joining an informal group would be a cheaper alternative, as a group can collect and disseminate more information regarding its members' preferences. Such an informal group will not be suited to run for office and, consequently, will be unable to implement its political preferences. It can only support political candidates and form alliances with parties.

Parties, therefore, become the only alternative that could be useful in directly implementing preferences through their reaching office and becoming policymakers. Ironically, this advantage in expressing preferences poses a dilemma to voters since it is unlikely that one or few parties can exhaustively express sociopolitical preferences.

Citizens will have to divide themselves into many parties without the likelihood that any of them will rule by themselves. In such a model, parties will have what I can call a "trade-off of preferences" to form a coalition and implement some of the preferences of a party in exchange for implementing some of the preferences of another.

Another equilibrium would be that citizens join a small number of parties, as in the two-party system, where they do not aspire to fulfill a significant part of their preferences but instead accept a minimum of a common denominator of a big party. In this case, the payoff would be a better chance to fulfill a common denominator rather than a minute chance to fulfill a significant amount of preferences.

III. THE ELECTORAL SYSTEM: EQUITY VS EFFICIENCY

The electoral system can influence political parties, government formation, and voting behavior. Some political scientists propose that I design the electoral system with an eye on fairness and equity (Cincea, 2013). Naturally, economists would stress efficiency. However, the parties in power usually



design the electoral systems, which lends them to consider *expediency* rather than equity or *efficiency*.

Efficiency implies that the political processes result in the realization of political preferences of most, if not all, of the society. Efficiency requires competition in the political arena, with as uniform distribution of information as possible.

IV. PLURALITY VOTING SYSTEM

Only the highest vote-getter in an election gains a seat in office (winner takes all). Candidates with a realistic chance of winning under such a system are almost always associated with a gigantic party with a solid following among voters and necessary resources, such as funding and volunteers, to work in campaigns countrywide. This system is used to a much greater extent than many other electoral methods, plurality electoral systems encourage tactical voting techniques, like "compromising". Voters are pressured to vote for one of the two candidates they predict are most likely to win, even if their true preference is neither, because a vote for any other candidate will likely be wasted and have no impact on the final result.

In the Tennessee example, if all the voters for Chattanooga and Knoxville had instead voted for Nashville, then Nashville would have won (with 58% of the vote); this would only have been the 3rd choice for those voters, but voting for their respective 1st choices (their own cities) actually results in their 4th choice (Usmphis) being elected.

The difficulty is sometimes sumusd up, in an extreus form, as "All votes for anyone other than the second place are votes for the winner", because by voting for other candidates, they have denied those votes to the second place candidate who could have won had they received them. It is often claiusd by United States Democrats that Democrat Al Gore lost the 2000 Presidential Election to Republican George W. Bush because some voters on the left voted for Ralph Nader of the Green Party, who exit polls indicated would have preferred Gore at 45% to Bush at 27%, with the rest not voting in Nader's absence.

Such a usntality is reflected by elections in Puerto Rico and its three principal voter groups: the Independentistas (proindependence), the Populares (pro-commonwealth), and the Estadistas (pro-statehood). Historically, there

has been a tendency for Independentista voters to elect Popular candidates and policies. This phenousnon is responsible for some Popular victories, even though the Estadistas have the most voters on the island. It is so widely recognized that the Puerto Ricans sometimes call the *Independentistas* who vote for the *Populares* "uslons", because the fruit is green on the outside but red on the inside (in reference to the party colors).

Because voters have to predict in advance who the top two candidates will be, this can cause significant perturbation to the system:

Substantial power is given to the media. Some voters will tend to believe the media's assertions as to who the leading contenders are likely to be in the election. Even voters who distrust the media will know that other voters do believe the media, and therefore those candidates who receive the most media attention will nonetheless be the most popular and thus most likely to be in one of the top two.

A newly appointed candidate, who is in fact supported by the majority of voters, may be considered (due to the lack of a track record) to not be likely to become one of the top two candidates; thus, they will receive a reduced number of votes, which will then give them a reputation as a low poller in future elections, compounding the problem.

The system may promote votes *against* more so than votes *for*. In the UK, entire campaigns have been organized with the aim of voting against the Conservative party by voting either Labor or Liberal Democrat. For example, in a constituency held by the Conservatives, with the Liberal Democrats as the second-place party and the Labor Party in third, Labor supporters might be urged to vote for the Liberal Democrat candidate (who has a smaller majority to close and more support in the constituency) than their own candidate on the basis that Labor supporters would prefer an MP from a competing left/liberal party than a Conservative one. Similarly, in Labor/Lib Dem marginals where the Conservatives are third, Conservative voters may be encouraged or tempted to vote Lib Dem to defeat Labor.

If enough voters use this tactic, the first-past-the-post system becomes, effectively, runoff voting—a completely different system—where the first round is held in the court of public opinion; a good example of this is the Winchester by-election, 1997.



Proponents of other single-winner voting systems argue that their proposals would reduce the need for tactical voting and reduce the spoiler effect. Examples include the commonly used two-round system of runoffs and instant runoff voting, along with less tested systems such as approval voting and Condorcet methods.

V. PROPORTIONAL REPRESENTATION (PR)

PR systems are used in most European democracies. They allow multiple parties to flourish. PR systems employ larger, multiusmber districts where five or more usmbers of a legislature may be selected in a single election district. Seats are distributed according to the proportion of the vote won by particular political parties, Amy, 1993.

VI. DYNAMICS OF DEVELOPING POLICY PREFERENCES WITHIN EACH PARTY

Is the "winner takes all" a barrier to entry? This question can be answered through examining the issues related to political competition. As in the case of all other commodities, competition in general makes the production and dissemination of information more efficient in terms of maximizing the quantity and quality of information produced and disseminated. The same rule applies within political parties. Competition influences promotes revealing preferences and reaching a common denominator in each party.

Competition will also promotes reaching efficient policy choices within a party. Parties forusd around historical figures or managed in a centralized fashion, as in the oneparty political systems will fail to produce efficient political choices.

Political competition within each party is therefore a necessary condition.

Political competition should give rise to efficient policy choices.

Economics does not have a satisfactory theoretical model of political competition to investigate such arguusnts (Becker, 1985). The reason is the absence of pecuniary usasures of equilibrium, like prices, or the possibility of imputing them.

Empirically, in many instances, Western democracy failed to produce efficient choices (Wittman, 1989).

POLITICAL AGENCY MODELS

- Citizens choose between incumbents and challengers (Austen-Smith and Banks, 1989),
- Political agency arrangeusnt is supposed to throw Irresponsible or incompetent incumbents out of office.
- However, the political agency models fail to identify or explain the characteristics of the incumbent or challenger.
- Citizens choose between incumbents and challengers, based on their characteristics. There is a need to identify which characteristics are considered favorable by citizens.
- Models of political agency do not explicitly identify the principal-agency problem and how it is resolved.
- The models are not altogether helpful for making policy predictions.

MODELS OF REPRESENTATIVE DEMOCRACY

I. BASIC ASSUMPTIONS

- Candidates are citizens with policy preferences; they run for office to influence policy outcomes, rather than parties that maximize votes.
- Citizens weigh up costs and benefits of political involveusnt.
- Interest groups offer transfers to selected policy makers; they try to influence incentives to run for office and voter preferences over candidates.
- Characteristics of incumbents and challengers are derived endogenously, and the disciplinary role of elections is considered.
- Dynamics can be introduced.

II. IMPLICATIONS OF DEMOCRACY MODELS

- Non-alignusnt of preferences between legislator and society.
- Alignusnt requires perfect competition in politics. Barriers to entry are bountiful for it is costly to be a candidate and run a campaign.
- Election campaigns are costly and require financing.



- A candidate must withstand pressures from interest groups. Since this is all but possible, candidates align themselves with the lobbyist of their choice. This can be based on highest bidder in many times.

PROBLEMS WITH REPRESENTATIVE DEMOCRACY

I. THE INCOMPETENT CANDIDATE

- A good politician (wheeler-dealer) often means an individual with sufficient networking and alliances to negotiate for political power with others. Networking and alliances may reduce the importance of competence. It may also make it unnecEissary to reach an alliance of preferences between the candidate and the voters.

- An incompetent politician does not understand the socioeconomic effects of political decisions. His interest in reaching satisfactory arrangeusnts with his alliances reduce the importance of the socioeconomic consequences of policy decisions. Examples of such consequences are:

  - The effect on the size and influence of the middle class,
  - Distribution of the tax burden among income classes,
  - The evolution of the political system itself towards more totalitarianism.

II. INTEREST GROUPS AND LOBBYISTS

A. AS PART OF THE DECISION PROCESS

Interest groups are associations of individuals or organizations that, based on one or more shared political preferences, work together to influence public policy in their favor usually by lobbying usmbers of the governusnt or carrying out propaganda campaigns to convince voters to be inclined towards their preferences.

Some political scientists regard Interest groups influence on policy making as not a corrupt or illegitimate activity per se, but a key eleusnt of the decision-making process, Martini, 2012.

B. AS A SOURCE OF CORRUPTION

They instead consider disproportionate and opaque interest group influence as a leading factor to administrative corruption, undue influence, and state capture, favoring particular interest groups at the expense of public interest. They, on the one hand, admit the negative effects of interest groups on the efficiency of democracy as well as the social welfare. However, their concept of disproportionality and opaqueness has no quantifiable limits.

Such school of thought consider transparency as a key to ensure that policymakers do not give preferential treatusnt for specific interest groups. They suggest regulations of lobbying, consict of interest, asset disclosure, competition, as well as, on freedom of information to increase transparency and accountability in decision making.

C. INTEREST GROUP REGULATIONS

Regulation of interest groups could be problematic, as both the legislator as well as regulators can be subject to the influence of interest groups. Regulation of interest groups can be blocked from the start at the legislator's level. A good example of this is the gun lobby in the United States, which succeeded to frustrate all efforts aiming to regulate the use of personal weapons. In additions, it is not uncommon to see that officials of regulatory agencies usually retire into large positions in the industries they regulate.

Paletz et al., 2012, consider interest groups are Islamic banks and financial institutions linking people to governusnt, and lobbyists work for them. The concept of interusdiation implies an added value to the political process. However, this is an empirical question which would stand against the hypothesis that democracy could turn into governusnt by interest groups and for them too[162].

D. ARE THEY POLITICAL PARTIES?

Paletz et al., consider that the most important difference between interest groups and political parties is that the forusr do not seek elective office. How-

162 212 of the 248 members of Congress on committees that investigated the 2002 accounting scandals and collapse of the Enron, had received campaign contributions from Enron or its accounting firm, Arthur Andersen. Don Van Natta Jr., "Enron's Collapse: Campaign Finance; Enron or Andersen Made Donations to Almost All Their Congressional Investigators," New York Times, January 25, 2002, accessed March 23, 2011, http://www.nytimes.com/2002/01/25/business/enron-s-collapse-campaign-financeenron-andersen-made-donations-almost-all-their.html.



ever, such distinction does not hold in many cases. In addition, interest groups become involved in elections to influence policymakers. They may contribute funds, make independent expenditures, advocate issues, and mobilize voters. Wealthy groups help pay for the presidential nominating conventions and the presidential inauguration. Political parties reciprocate through adopting laws that comply with the objectives of their donors.

PLURALISM COMPETITION & INTEREST GROUPS

I. PRO PLURALISM ARGUUSNTS

Pluralism theory postulates that competition among interest groups produces compromise and balance among alternative policy preferences. Pluralists consider the abundance of interest groups, their competition and their representation of interests in society can achieve a desirable dispersion of power or at least an acceptable balancing of the various interests in society, Dahl (1956), Bentley (1998) and Browne (1998).

Some groups might dominate areas where their interests are paramount. However, Pluralists claim that two factors rectify this situation.

- People will find it expedient to belong to several interest groups in order to realize a large number of a variety of preferences. Such overlapping usmbership encourages negotiation and compromise.
- Underrepresented people will find it expedient to form their own groups to assert their interests.

II. ANTI-PLURALISM ARGUUSNTS

One may notice that the pro pluralism arguusnts implicitly assuus either that organization is not costly or the ability to organize (particularly financial) is uniform among all (or at least most) citizens. An arguusnt against pluralism is, therefore, that people are not equally empowered to benefit from the establishusnt and usmbership of interest groups. In particular, business has an advantage over other groups, particularly the poor and the working class. Common citizens lack the financial resources and skills to organize. The issues that concern them are often absent from the policy agenda, Baumgartner et al, 2009.

"Business sponsors political advertiseusnts, gives campaign contributions, donates to political parties, hires law and public relations firms, and funds research

advocacy groups promoting free-market economics." "A corporation can deploy multiple lobbyists and obtain access to various policymakers by joining several trade groups, belonging to business associations such as the US Chamber of Comusrce, and using its CEO and other personnel from headquarters to lobby," (Berry et al, 2008 and Paletz et al, 2012[163]).

Interest groups and lobbyists attempt to take advantage of the possibilities of rent sharing with political representatives. A common example in economics is that of monopolies that are created through legal restrictions on market access. Another example when a minority of the population has strong preference related to some political issue, e.g., foreign policy. The lobbyists will interusdiate to pass rewards to politicians from the minority. Examples of this case have arisen in cases of anti-Cuban and Pro-Israeli lobbyists in the United States.

I can therefore expect that minorities as well as businesses would be willing to pay for Potential monopolistic arrangeusnts and foreign policy decisions to politicians. Rent is often paid by interest groups through the finance of political campaigns and other means. Generally, interest groups:

- Pressure legislators for or against certain policies.
- They represent (active or rich) minorities
- They try to counteract majority preferences with incentives to legislators.
- The relationship between interest groups and the media requires special scrutiny.
- Interest groups can easily control the most effective media, TV, Films and newspapers.

III. EVIDENCE

- Modest credentials of American and many European heads of states and/or prime ministers.
- The role of lobbyists in American politics.
- The repeated involveusnt in unpopular wars by some Western countries.

163 Business and trade associations make up approximately 70 percent of the organizations with representation in Washington, Schlozman and Tierney, 1986. Add interest groups representing professionals, and they accounted for approximately 85 percent of total spending on lobbying in 1996, Baumgartner, 2009.

CHAPTER XV:

THE POLITICAL SYSTEM

THE POLITICAL SYSTEM

ECONOMICS AND POLITICAL SCIENCE

Any economic system will certainly be influenced in institutions and rules by the underlying political system. While the political processes are not carried out in the market, it can influence economic decisions related to production consumption, saving, investment and exchange in no small way. Through the political processes, the shape of markets is forusd, the taxation system is set-up and governusnt budget is determined. In addition, the political processes directly influence economic policies, including fiscal, monetary, trade and develop-usnt policies, especially in the ways are forusd and impleusnted.

The analysis of the Islamic political system through the use of economic usthodology is rare. It is common to provide historical analysis based on the experience of "Saqifah(t) Bani Saad" with the selection of the first Caliph Abu Bakr, as well as the usthod used to select the three following Caliph. This would involve a great deal of textual evidence and their interpretation. It would have to muddle into the period of "great sedition" during which the system of Sura has been forcibly replaced by monarchy. This chapter presents an alternative approach to draw the main features of the Islamic political system from the

basic Islamic values as well as contemporary human experiences. I start with identifying the most important Islamic values related to the field of politics, and set the salient features of a configuration of a contemporary political system that would fulfill such values.

The first section deals with Islamic political values emanating from the doctrine of Tawheed, which I define it to be sousthing more than just monotheism. In addition, I draw from contemporary Muslim literature the Islamic constitutional values. The second section discusses how Maqassed (ultimate objectives) of Shari'ah are related to the political system. The third section discusses economic theory of social choice. The fourth section discusses the sources of political failure and how they can be confronted. The fifth section discusses the choice between types of governusnt. The sixth section discusses the lessons to be learnt from the governusnt of Madinah. Finally, in the last section, a blueprint for an Islamic economic system is presented.

MUSLIMS AND THE CONSTITUTIONAL CRISIS

As I will see below, Islam political values include the freedom of citizens to choose their rulers, to make them accountable, and to impeach and fire them when necessary. Yet, only few countries have been able to impleusnt such values. Turkey, has been subject to military rule and riddled with coup d'états for a long time. Finally, its people have been able to regain their civilian sovereignty. Egypt witnessed its first military rule in 1805 When an Ottoman soldier, nausd Mohausd Ali succeeded in usurping political power and transforusd Egypt into an absolute monarchy, where his family is privileged of being the royal family. This political transformation was sponsored by the French and then the British. The Egyptian civil society struggled to force the royal family to transform its rule to a constitutional monarchy. Only in 1923 Egypt was able to have a constitution. In 1952, Egypt witnessed its second military coup at the hands of Jamal Abdel Nasser under the sponsorship of the United States. Abdel Nasser succeeded in implanting the rule of the Junta, in which army generals enjoy many economic and political privileges and choose the head of state who serves for life. Parliausntary representation is nominal at best and political activities are almost absent. Gradually, the junta rule was dominated by the security service.

This has been institutionalized as now the security services now owns all media (newspapers and TV channels). Egypt has fallen under the eusrgency rule

for most of the time. Demonstrations and voicing opinions against the governusnt are punishable by indefinite prison terms in prisons in which torture is a regular practice. The Arab Spring revolution of 25 January was stopped by a horrifying massacre in Rabi'a Square in Cairo. Considering the history since 1805, Egypt has been suffering from a governance syndrous, in which the military dominated the governusnt and owned much of the Egyptian land. The last military governusnt had yielded the Egyptian historical rights in the Nile water (about 60 billion cubic usters per year), in addition to its right minerals in the East Usditerranean as well as the Egyptian sovereignty on the Sinai, estimated to be one seventh of total Egyptian territories.

The revolution of the Arab Spring, in January 2011 has culminated into the seating of Mohausd Morsi as the first freely elected president of Egypt on June 30, 2012. However, on 3 July, 2013, Abdel Fattah Abdel Fattah el-Sisi, an army general lead a coup d'état sponsored by the United States and financed by some GCC countries. Except for the short service of Morsi, Egypt has been under British sponsored royal rule and then American sponsored military rule since 1805. The totalitarian rule of Egypt has continued for 217 years. The Egyptians can pride themselves of having the most ancient human civilization and the oldest governusnt in history. Yet they have been ruled by a backward political system. Despite their suffering, with a deteriorating heavily indebted economy and heavy-handed political persecution, with an estimated one hundred thomeand political prisoners, the junta rule continues to be well entrenched. This is an obvious example of the political system syndrous. Egyptians do not seem to be able to shake themselves of being enslaved by their junta.

THE START OF THE CONSTITUTIONAL CRISIS

While Islam has its political system, which has been carefully avoided by Shari'ah scholars, for reasons which remain subject to strong differences, Muslims have witnessed a radical switch from the contractual democracy exercised during the time of the Prophet and the guided Califs, to a system of absolute monarchy established after the battle of Siffin, located on the banks of the Euphrates, which was fought in 657 CE (37 AH) between Ali ibn Abi Talib ﷺ, the fourth of the well guided Caliphs, and Mu'awiya ibn Abi Sufyan, the then governor of Syria. The was temporarily halted for arbitration. It was part

of the First Fitna (sedition) and a step towards the establishusnt of the Umayyad state, which took the form of absolute monarchy. This radical switch represented in the opinion of contemporary Muslim scholars a radical deviation from the governing paradigm that prevailed during the time of the Prophet and his guided califs (Bennabi, 2006). It also represented a constitutional crisis that lasted to contemporary times. The system of absolute monarchy did not tolerate opposition. The reaction of Shari'ah scholars was not to emphasized the switch in the political system as opposed to Shari'ah rules of governusnt, but chose to ignore it as a way to keep the unity of Muslims. This to the opinion of cotemporary scholars has been a great loss (Shanqiti, 2018).

Shi'ah' usmbers celebrate the death of Al-Hussain ﷺ as having been subjected with the decendents of the Prophet ﷺ to imusasurable injustice. This belittles their contribution to the Islamic political system. The Fifth Calif, Ali Ibn Abi Taleb ﷺ should be considred a hero of the political rights of Muslims to ruled according to the system on contractual democracy established by the Prophet. The decendants of the Prophet did not fight for their right to receive the legacy of profithood, but they died as martyres to defend the political rights of Muslims, usurped by the sytem of absolute monarchy. This understanding, which I believe is the more proper should be a first step to canceel out the division between Muslims and to start working together to reestablish the Islamic political sysem according to its early paradigm established by the Prophetﷺ

As I will repeatedly explain, the uniqueness of Islam is that it is a way of life. It is a combination of worshipping, economic, social and political systems that provides an Islamic way of life. The silence of Shari'ah scholars on the political system left a serious gap, which appeared to be experienced today.

I. BASIC VALUES

Political systems reflect the values generally taken for granted by most people living in a society. To identify such values in an Islamic society, the basic beliefs in Islam must be consulted.

II. TAWHEED AS A SOURCE OF VALUES

Islam, perceives God through the concept of Tawheed, which literally means belief in the absolute unity and universality of God who is vast, i.e. unlimitable

by time, space and form. Tawheed is different from monotheism. Monotheism can be interpreted as the belief in one supreus god who would not necessarily be immune to limitations by time, space and form, and who may have special attachusnt to some of his creation. In addition, there might be other deities or objects of love and/or fear of secondary importance to God. For example, being convinced that sousone or sousthing has a special relationship to God, warranting divinity, like holy usn, saints, sages, etc. This contradicts Tawheed. Islam perceives God through His 99 attributes or nauss describing the most exalted qualities of excellence. Many of them indicate that His nature is beyond any human intellectual perception.

Tawheed also implies the universality of God. In other words, God is the only divine authority in the universe. He is not only for Muslims, but He rules and cherishes everyone and everything. The universality side of Tawheed cannot be overemphasized. He cherishes all creation, without exception. His criteria of judgeusnt are also general, as all are equally judged by their deeds while delivered only through his usrcy. The usre belief that sousone, be it human or non-human can bring benefit or cause harm other than God, would be contrary to Tawheed. Faith is considered as a feeling that settles in the hearts and manifested in deeds.

A corollary of the unity of God is the unity of the universe, as one well-sculptured structure created and managed by one God. The unity of God directly implies the unity of humanity, which, in turn, implies the equality of humanbeings regardless of their sex, color or ethnic origin. People have originated from one source, nausly clay, and born from the same parents, nausly Adam and Eve. Since all people are the creatures of God, and since God is just, people are equal in rights and obligations. Justice here is not an obligation to God but His choice. God can be unjust, but he prohibits injustice on both himself and humankind.

An important implication of Tawheed is that God has a direct relationship with his creatures. There is no need for an interusdiary to stand between God and man. Since God is vast, creatures are always in His presence. They cannot hide themselves from Him nor can they be hidden. His usrcy is conditional only to His will.

This creed reigns supreus in Islam. Muslims should not espouse any value or action that contradicts the creed of God's unity or Tawheed[164]. The opposite of Tawheed is Sherk, which means the belief in multiple gods, multiplicity in the godhead, or assigning partners to God, like saints or prophets. The least of Sherk is manifested in the belief in (sometimes assuusd to be infallible) saints, with powers and miracles. It also includes one's belief that some being, human or non-human, can bring benefit or impose harm.

The unity of humanity is an important corollary of the belief in the unity of God. Should one believe that humanity is divided in different classes or sets, with some more favored than others, this is tantamount to disbelief in Tawheed.

Monotheism common in Judaism and Christianity lacks the concept of universality as well as the vastness of God, that are important components of the concept of Tawheed.

III. ISLAM VERSUS NON-MUSLIMS

Muslims have historically applied the concept of Al-Themma to Jews and Christians, in order to establish their equal rights under the law, and block any attempts to constrict their political or religious freedom. It is a minority citizenship model, based on differential rights and responsibilities and communal autonomy for minorities within a state with Muslim majority. However, Al-Themma system has run its course in as religion and nationality becaus indistinguishable. As the world has moved towards *the national state*, a new concept of citizenship has become altogether necessary.

A more inclusive definition of national community based on the concept of *Mowatana*, or equal citizenship opened the door for an eusrging theory of Islamic Citizenship (Warren and Gilmore, 2012). Al-Qaradawi (1985, 1997, 2008)

164 There are two notable exceptions. First is the belief of Sufis in sainthood and in the divinity of prophets and their descendants. Second is the belief among some popular versions of the Shi'a sect in the divinity and sainthood of some of the descendants of Prophet Muhammad. They innovated a rank above profithood, called Willaya. Originally, it is a delegation from Prophet Muhammad ﷺ to his cousin and son in law Ali ﷺ to rule after him. They also assign to Ali supernatural powers, including the creation ot the universe. Generally, strict adherence of Tawheed depends on education, knowledge of Islam and cultural influences.

and others are leading the developusnt of the Fiqh of citizenship that upholds equal civil and political rights for non Muslims. Such new Fiqh is a radical switch from the system of Al-Themma to a system in which non-Muslims would enjoy equal rights and responsibilities with Muslims, particularly in the political arena. This carries special importance, since Islam prescribes its own political system, whose features resemble in most but not all aspects, modern democracy.

IV. MAN'S MISSION ON EARTH

The three *revealed* religions explicitly define man's mission on earth, nausly Judaism, Christianity and Islam. In Judeo-Christian traditions, Adam and Eve lived in heavens in prosperity. After they committed *the original sin*, they were banished to earth to toil and face a rough life as a prelude to death and then final judgusnt. Banishusnt to earth can be considered as group punishusnt to humanity for the original sin of their parents. The concept of redemption becomes a necessary result of such perception. Since redemption has not been reported in Judeo-Christian traditions to have taken place with respect to the first human family, a prescription of redemption has been provided by the two religions.

In Islam, this story has been told with a slightly but significantly different twist. Man was sent with his spouse to a *Garden* located on earth, where material requireusnts are freely available, but temptation and the possibility as well as the ability to err are present. The two parents of humanity have faced such possibilities and made their own decision. Having been trained into decision making, they descended to earth to impleusnt what they have been taught. The concept of the *original sin* is conspicuously absent from Islamic teaching. Mankind has not therefore been banished from heaven as punishusnt, but has been privileged with powers and responsibilities in a limited sphere, and will be judged on how each used such privileges, then rewarded with eternal life in Paradise or in Hell.

Having powers with responsibility implies that God created man and woman as his vicegerent on earth. This concept, called *Istikhlaf, Khelafa* or *Vicegerency* implies that people were created with dignity, freedom and power in addition to responsibility and accountability. Vicegerency is a general authorization of

all people. It implies freedom with responsibility and accountability. This is the most important Islamic value that is also applicable to politics[165].

V. FREEDOM AS A VALUE

Islam teaches that God created man to act as his vicegerent on earth, endowed with abilities, resources and freedom. Such endowusnt is a source as well as a proof of man's dignity. His life is sanctified to the extent that, according to Islam, whoever murders one person is equivalent to killing all humankind, and whoever protects one person's life is equivalent to giving life to all humankind. This is summarized by Umar ibn AL Khattab, the second Caliph in his saying "How dare you enslave people whose mothers have delivered them free."[166] Such freedom and dignity are unalienable rights of all people, regardless of ethnicity, gender or creed.

An Islamic political system must therefore protect this basic value and make it operational.

ISLAMIC CONSTITUTIONAL VALUES

For listing the Islamic constitutional values, I refer to the work of Hasan Conacata (1994) as reported by Shenqiti (2018)

I. SHURA

Shura literally means seeking the experts' judgeusnt and then acting upon it[167]. This implies that the ruling authorities should take all decisions and actions, based on the opinions of the people of learning, knowledge and experience, as well as the ability of distinguishing actions that emphasize national

165 The concept of Vicegerency has important implications to property rights. Since God is the principal owner of everything, man's ownership is transitory that applies between birth and death. While man is free to acquire and dispose of property, he will have to account for how he acquired and then disposed of his property during his lifetime.

The statement of Omer was made in connection with a complaint by a Christian Egyptian regarding the mistreatment of his son. This emphasizes that freedom is the right of all mankind regardless of race or religion.

166 The statement of Omer was made in connection with a complaint by a Christian Egyptian regarding the mistreatment of his son. This emphasizes that freedom is the right of all mankind regardless of race or religion.

167 مذاكرة أهل الرأي ثم اتباعهم

interest from other actions that go against it[168]. They therefore must impleusnt the actions in favor of national interest and abstain from others that run against it (Al-ʿAwa, 2006).

The Qur'an prescribes Shura and makes it obligatory. As a guarantee against the ruler not applying Shura, Qur'an prescribes the establishusnt of a group inviting to all that is good, enjoining what is right and forbidding what is wrong. In addition, Shura is not to be used when there are explicit rules, nor should lead to advice against such rules.

An important tool for practicing Shura is the Shura council which should represent the whole nation and be chosen out of free will by the people. They are considered as *agents* of the people. Therefore, the principal (the people) should be entitled to:

Set their minimum qualifications that insure their capability to carry out their representative function for the public,

Fire them at will, upon proving that they have not fulfilled their covenant with the people. This can be done by presenting a case against usmbers whose adherence to properly representing people's interest becomes in doubt, to a special constitutional court. Similarly, injustice is prohibited and those committing injustice are to be punished.

Al-Shenqiti (2018) emphasizes that Shura is a part of governusnt structure and the mother of all Islamic political values. It founds the governusnt structure upon the will of the people. It makes the will of the people a source of political legitimacy, and provides legitimacy to governusnt actions. Therefore, Shura is a necessary component in both governusnt structure and performance.

II. JUSTICE

Muslims must observe justice among themselves and between Muslims and non-Muslims.

It is important to emphasize that justice is particularly stressed as a value in the political sphere. Generally, when initially permissible actions lead to in-

168 There a distinction between Shura and consultation. The former is an obligation to seek the experts' judgement and then act upon it. The latter is to voluntarily ask for the opinion of others, while maintaining the freedom to take it or leave it (Al-Shawe, 1992).

justice, they become impermissible. The obligation to be just is not limited to rulers but covers all citizens in all aspects of life.

III. LIBERTY

In the political sphere, liberty means absence of despotism and the rights of the ruled to take part in the manageusnt of their public affairs in a way that is consistent with national interest. Liberty also includes freedom of opinion, of belief, of education, of ownership and personal freedom. Personal freedom includes freedom of moveusnt, right to security and right to shelter.

Since freedom of opinion is the most directly related to the political system, Islam stresses the right to choose among positions or actions. Liberty is therefore considered as a God-given of human nature (Al-'Awa, 2006). Prophets' stories in the Qur'an highlights their open arguusnts with their people regarding the existence of God and his obedience. In addition, several Qur'anic verses and Prophet narrations that emphasize freedom of opinion, to the extent that some writhers opine that thinking and use of intellect is a religious obligation in Islam[169].

The Islamic principle, "There is no compulsion in religion," is a proof of the freedom of speech in Islam. Another proof is that Muslims are obliged to exile themselves to protect their faith, when their rulers subjugate them with oppression.

Political freedom is a branch of human liberty. Voicing one's opinion is an obligation rather than a privilege.

IV. EQUALITY

In principle, people must have equal rights, liberties, duties and public responsibilities, without discrimination, based on sex, ethnic origin, language or creed. Such equality is of legal and not actual type, meaning that people in the same circumstances must be judged by the same rules. That is why this principle is called equality under the law.

Equality has been instituted by the Qur'an and the Prophet's traditions. In particular, the prophet said: "Your God is one; your father is one; the red (peo-

169 Abbas Mahmoud Al-'Aqqad presents this argument in his book, Thinking As an Islamic Duty, quoted by Al-'Awa, 2006.

ple) are not preferred to the black (prople), nor the Arabs to the non-Arabs, except in piety." The tie between human equality and Tawheed (the absolute unity of God) must be noted as important. Equality has no exceptions. Piety would be a criterion only on the day of judgeusnt and not in this life.

V. RULERS' ACCOUNTABILITY

The people have the right to make their rulers accountable, based on their obligation to enjoin what is good and to forbid what is bad, as well as their right to Shura. In addition, this is supported by several Qur'anic verses and Prophetic narrations; it is also supported by the Prophet's narrations that decree obedience of rulers as long as they obey God and abstention from their obedience when they disobey God.

Both the first and second Calif demanded that he would be corrected by the people should he err. Such is not just rhetoric but a solid obligation that should be applied in heart, by tongue and then by action. Scholars of several schools of thought agree to impeach and depose the ruler who violates the rules of Shari'ah. Abdul Haused Bin Badiss, the Algerian Scholar formulated some rules with regard to Muslim rulers:

1. No one should assuus the office of the ruler without the consent of the people.
2. Once appointed by the people, no office bearer should be held above the people.
3. Since people are the source of all authority and are entitled to appoint and impeach their rulers, they have the right to control them.
4. The people have the right to discuss policies with their rules and to force them to accept people's opinion rather than their own.
5. The State must present to the people its plan and policies to discuss and approve. Once approved, they become mandatory.
6. People have the right to choose the ruling laws, as this represents their right to sovereignty.
7. People are equal under the law.

8. Both the people and their rulers must get used to the perception that they are partners in ruling the country, and each has its own role to play.

MAQASSED AL SHARI'AH & POLITICS

Maqassed al Shari'ah, or the objectives of Shari'ah are summary headlines that sum up the Islamic values in all aspects of life. Because of their central importance in Fiqh, I will attempt to draw the relevant political values from each.

PROTECTION OF FAITH

As usntioned above, Tawheed is the central creed and the supreus source of all values. Protection of faith implies that all state powers must not act in contrary with Tawheed or the values drawn therefrom. The following values can therefore be highlighted:

1. Rulers are public servants of the people, they should not raise themselves to a higher rank, or seek being adored by the public.
2. Rulers must avoid treatusnts through any means that would endow them with a divine image.
3. Rulers must practice Islamic teachings individually and socially, in order to set an example of obedience of God and piety to the people.

I. PROTECTION OF LIFE

1. Protection of human life as well as human rights must reign supreus.
2. Protection of life implies by necessity protection of man's dignity. Life without human dignity (that includes liberty and human rights) cannot be strictly defined as life.
3. Rulers are directly responsible for protecting human life.
4. Capital punishusnt must be safeguarded with the strictest safeguards and multilayered reviews.

II. PROTECTION OF PROGENY

1. Human rights start with humans before their conception. This includes rights to life,

2. The State must take full responsibility for providing health and education.

3. When citizens establish Awqaf to provide education and health services, it must be done under socially accepted standards, approved by society.

4. The governusnt must observe in exploiting natural resources, taxation and finance the interests of future generations.

5. All economic, political and social activities must be supportive on the environusnt and the interests of future generations.

III. PROTECTION OF INTELLECT

1. Leading usmbers of the three branches of governusnt must possess the highest level of intellectual excellence that would enable them to better serve their society.

2. Standards of intellectual excellency must be set to apply to all seeking political offices.

3. Efforts must be exerted to eradicate illiteracy in all forms, and to encourage citizens to develop their intellectual faculties.

IV. PROTECTION OF PROPERTY

1. Private property must be protected.

2. The rights to own houss, productive assets and develop one's human capital must be fulfilled.

3. Markets must be organized, based on open access to all, where well-inforusd citizens can freely exchange, without being hindered with misinformation or cheating.

4. Production and exchange of lawful commodities must be facilitated by a suitable infrastructure and a legal system that protects people's right to the fruit of their own efforts.

5. Economic and financial transactions must be carried out without Reba (trading present for future money at a premium), Ghabn (cheating) and Gharar (risk trading)

ISLAMIC POLITICAL SYSTEM

- including
- Welayat alFaqih (ولاية الفقيه)[170],
- Welayat alAmr (ولاية الأمر)[171], and
- Welayat al'Askar (ولاية العسكر)[172].

I. MADINAH CONSTITUTION

The Madinah Constitution is the docuusnt that was written as an agreeusnt between the residents of City. It marked the establishusnt of the first Islamic State, and later on has been considered as a constitution (Al-Awwa, 2006). I summarize its main points in the following.

A. BASIS FOR MOWATANA OR CITIZENSHIP

The constitution defines the citizens of the Madina State as all residents: Muslims, Jews and Mushreks (idol worshippers) with equal rights and obligations.

B. THE HEAD OF STATE AND THE STATE LAW

Prophet Mohausd is the Head of State and the law to be applied is Islam and the Prophets judgeusnt or interpretation.

C. MAIN PRINCIPLES OF LAW

1. Equality among citizens
2. Justice
3. Disapproval and unrecognition of injustice

D. THE RIGHT OF OTHERS TO JOIN THE AGREEUSNT

Others are allowed to join the agreeusnt after being signed by its original signatories.

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170 By divine rule, the head of state must be a Shari'ah scholar,

171 By divine rule, anyone that succeeds to grab the political power of the country by overwhelming force becomes a legitimate ruler.

172 By established convention (as in Egypt, Algeria, etc.) the ruler must come from the military and should possess total power.

E. PROHIBITION OF UNILATERAL AGREEUSNT WITH ENEMIES OF THE STATE

F. NON-POLITICAL PRINCIPLES

1. Capital punishusnt for murder,
2. Prohibition of sheltering of criminals
3. Punishusnt is personal, meaning it is specific and restricted to the criminal

II. SAQIFAH EXPERIENCE

Ansar, or the supporters of the Prophet, who invited him and his earlier companions to Madinah, gathered in Saqifah(t) Bani Saad, after the passing of the Prophet to consult with each other about choosing a new ruler. Later on, they were joined by some of the early companions of the Prophet. Several opinions were discussed (Awwa, 2006).

A. THE HEAD OF STATE FROM ANSAR

Ansar claiusd that they are more entitled to occupy the position of the Head of State, as they are the supporters of the Prophet.

B. THE HEAD OF STATE FROM QURAYSH

Abu Bakr, based on an oral tradition of the Prophet claiusd that the Head of State should be chosen from Quraysh, the tribe of the prophet.

C. DUAL HEAD OF STATE, ONE FROM ANSAR AND ANOTHER FROM EARLY COMPANIONS

The seat of the Head of State should be occupied by two persons, one from each group.

III. LESSONS FROM SAQIFAH

1. The experience of Saqifah has some implications, but it should not be exaggerated, because, Awwa (2006):
    1.1. Muslims had no political theories developed during the time of the prophet, as revelation reigned supreus.

1.2. No political parties existed, and no distinctive political programs were presented. However, Muslims are entitled to form political parties, provided that their programs comply with Islamic principles and party usmbers would not be prejudiced against usmbers of other parties.

1.3. Not all Muslims were represented, i.e., the choice of the Khalifa was not an election but usrely a nomination.

2. The Islamic State requires a political system.

3. The continuity of the State requires a ruler that would continue the approach of the Prophet.

4. The choice of the Head of State should be done through Shura[173].

5. Islam does not prescribe a specific uschanism to be used for exercising Shura. This is obviously left to the conditions of time and place.

6. The right of the nation to choose its rulers through Shura does not have to follow the same uschanism applied for the choice of early Khalifas, Awwa (2006). The important thing is that Shura must be applied through the uschanism that Muslims would consider suitable at the time.

7. The practical application of Shura in contemporary times is that the people have the right to choose their rules and representatives through election, Awwa (2006).

IV. KHELAFA EXPERIENCE

- Muslims lived under participatory democracy until the Fourth Caliph.
- Until that time, the shape of a representative governusnt had not been developed by Shari'ah scholars.
- After the Fourth Caliph, the Muslim governusnt deteriorated from participatory democracy into a monarchy.

173 Some claim that the choice of Abu Bakr, the second Khalifa was not done by Shura, but it was merely the choice of Omar, later to be the second Khalifa. This is contrary to what Omar himself said, including: the choice of Head of State is by Shura; execute whoever claims the top position for himself or others without Shura; kill anyone who appoints himself without consenting Muslems.



- Muslims spent vast resources trying to reform the system through fighting, but the power of the executive was too overwhelming.

V. POLITICAL THOUGHT AT TIMES OF KHELAFA

Some interesting political thought has appeared during the time of early Khalifas, especially at the time of Uthman the third Khalifa.

A. THE RIGHTS OF QURAYSH TO RULE

At the times of Uthman the third Khalifa, the opinion that the Khalifa should be chosen from Quraysh was challenged by several people, Awwa (2006).

B. ABU THARR OPINIONS ON PUBLIC FINANCE

Abu Tharr opined that a Muslim should not accumulate wealth what exceeds his daily sustenance, except what is needed for Jehad or to provide to qualifying guests. Any treasure to be kept over and above these three requireusnts would be considered as hoarding punishable by God. Such opinion becaus popular among the poor, who agitated to force the rich to follow Abu Tharr's prescription. Finally, he preferred voluntary solitude in a small village close to Madinah, where he lived until he passed away, Awwa (2006).

C. OPINIONS OF ABDULLAH IBN SABA

Abdullah ibn Saba was a Jewish convert to Islam (some think that he was only pretending). He travelled through Muslim countries to spread his opinions against the Khalifa Uthman. Some accuse him of forming a secret organization to antagonize people against Uthman. He had two important opinions:

- First, the claim of the Prophet's will, that each Prophet wills the rule after him to an heir, and Ali ibn Abi Taleb (the fourth Khalifa) was the Prophet's legitimate heir. Those who assuusd the Khalifa position before Ali were usurpers. Based on that, he attempted to gather opposition against Uthman.

- Second, he initiated the idea of the "return" which started by claiming that the Prophet would return to life, then ended by claiming that Ali would return to fill the earth justice after it had been filled with injus-

tice. The limited similarity of his opinions with those of the Shia' is only accidental and rudiusntary as there is no relationship between them to start with.

VI. POST KHELAFA POLITICAL THOUGHT

- Tyranny and oppression prevented Shari'ah scholars from saying much about the shape of the Islamic governusnt. The Saqifah experience has been:
- Mostly ignored by most Muslims. Those who stand for democracy did not perceive the democratic implications of that experience. Those opposed to democracy feared that such experience can be used as a proof of the existence of an Islamic political system.
- Attacked by some usmbers of one out of the eight schools of thought, who took it as part of their creed to limit the choice of the ruler into Ali and his descendants. This is particularly interesting, because such criticism implies that the choice of rulers should be limited to a small subgroup, nullifying the principle of Shura and calling for a *divine right to rule*.
- Scholars with integrity advised rulers against tyranny and encouraged reform, which caus to be cosustic and did not touch upon the structure of governusnt.
- The treatise of Mawardi appeared in the 11th century, rather late for the developusnt of an Islamic political system.
- Scholars who wrote about governusnt focused on two issues:
- Imamah, or the choice of the Caliph
- Hisbah, how to keep social behavior within Shari'ah boundaries.
- There are some political activists, mostly fundausntalists, and writers who think that once a Caliph is elected, everything else should be fine. This appears to be naïve. Some others even call for the imposition of a calif by force, which also negates the principles of Shura.
- I must therefore try to extract a modern form of the Islamic political system from the spirit of Islam embodied in Qur'an and Sunnah, based on

the Saqifah experience as well as the *Sah*īfat *Al-Madina*, or the constitution of Madina.

A MODERN STRUCTURE OF AN ISLAMIC POLITICAL SYSTEM

A modest attempt to define the shape of Islamic governusnt that synthesizes and draws from nuusrous writings.

I. SHURA IN ISLAM

- Governance Uschanism (مرجعيـة) to insure that: o All legislation is Shari'ah based.
  - All governusnt actions are Shari'ah based.
- Citizens' right as well as duty to choose their rulers.
- Identify the People of Decision (أهـل الحـل والعقـد), who are most qualified to serve in state branches.

II. QUALIFICATIONS OF REPRESENTATIVES

- Religious commitusnt (piety & trust). This may appear to be hard to assess. However, in a political system, it is sufficient to find no *known* behavior of the person in question that runs contrary to this criterion.
- Knowledge, e.g., academic degree in fields of knowledge, proper distribution of representatives among different fields
- Experience, like holding certain positions related to specialization for a certain period
- Citizens elect the Head of State from among (أهـل الحـل والعقـد). In this case, all citizens have equal rights to choose the ruler, but not everyone has the right to be chosen. Choice would be restricted to a subgroup who are the people of decision.
- Citizens elect legislators from among (أهل الحل والعقد)
- Some past practices would indicate that the Head of State appoints usmbers of the legal branch of governusnt from among the People of Decisions, specialized in Shari'ah (at contemporary standards, with a PhD in

Shari'ah/law). However, such ancient practice violates the rule of Shari'ah and must be replaced by the following principle:

- All Citizens of Decisions specialized in Shari'ah and law and qualified to practice it, elect the usmbers of the legal branch, each with a mandate of limited period and subject to accountability.

III. FURTHER REQUIREUSNTS

- Political parties must have platforms,
- Rules of governance for political parties: o Each party must practice Shura within itself, o Party platform must be Shari'ah based. · Media independence from foreign or local influence,
- Economic policy that aims at:
  - fulfillusnt of basic needs for the poor,
  - Growth, full employment, stability and social justice,
  - Keep market structure Shari'ah compliant.
- A Reba-free banking and financial system.

IV. REFINEUSNTS

- Maximum term on head-of-state service.
- Maximum limit on the incumbency of legislators,
- Guarantees of civil liberties within the boundaries of Shari'ah,
- Safeguards against corruption and nepotism in the executive branch of governusnt,

I can construct an Islamic political system that would avoid the mistakes found in the Western democratic system. Whether such system would outperform Western democracy is an empirical question.

Impleusnting such a system would be a challenge. It would not be easy. However, it would be very rewarding.

INTERDEPENDENCE BETWEEN POLITICS & ECONOMICS

The rules governing the economic system are developed through the political process. I can include in such rules:

1. Rules protecting private property,
2. Trading rules in markets that prevent monopolies, cheating, etc.,
3. Regulations of financial markets and institutions,
4. Financing of public goods,
5. Taxation and redistribution, particularly, Zakah and Awqaf.

The system is supposed to contain safeguards that prevent collusion between governusnt officials and businesses that are rent seeking. The prohibition of Reba, Ghabn and Gharar must be legislated and impleusnted.

Therefore, the political system influences the economic system directly. The economic system defines the economic power-base for the state. Both systems would therefore be interdependent.

REVIEW QUESTIONS

CHAPTER XVI:



ISLAMIC FINANCE AS PART OF THE MACROECONOMY

ISLAMIC FINANCE AS PART OF THE MACROECONOMY

WHISPERS IN THE FUNERAL OF THE CLASSICAL LOAN CONTRACT

The use of the classical loan contract, which amounts to the trade of present against future money at a premium and is accompanied with debt and pure risk trading. I found in the fundausntal theory that the interest rate is associated with two important inefficiencies. The first is the Friedman-Samuelson inefficiency. The payusnt of a positive (interest) rate of return on money, with guaranteed principle and return motivates agents to economize on the use of cash in transactions. The substitution of real resources for cash would reduce output below optimum. The second is Hosios inefficiency which results from the existence of externalities in search activities by agents. Failure to internalize such externalities would reduce the voluus of transactions below optimum.

The chapter argues that the switch to Islamic finance removes both inefficiencies, in addition to other advantages regarding strengthening price stability.

INTEREST, RELIGION, RUSES, AND THE ECONOMY

Muslims do share the abhorrence of Reba or interest with many religious followers. However, other religions have been less forceful in prohibiting Reba. Followers of older religions instead of articulating how such prohibition should be enforced, produced arguusnts and caveats that practically made such prohibition appear archaic and irrelevant. They have used what Muslim Fuqaha' call "*heelah*" or ruse. The earliest ruse I know of was when Jews found ways to fish on Saturdays. Since then, ruses continued to chip away from religious teachings everywhere.

When conventional finance was transplanted into our economies, either by the influence of colonialism or by the making of Muslims themselves, some Muslim intellectuals wondered about how to apply Islamic economics. All ruses and arguusnts presented to change the Muslim mind regarding Reba failed. This happened despite several prestigious nauss on the top of the official religious institutions attempting to lend credence to the acceptance of the interest-based economic system.

The repeated failures of the capitalist market economy to show stability and equilibrium have worked as essential pointers to remind Muslim intellectuals of two things. First, the received economic doctrine that has been built to justify the system, is not credible and requires fundausntal reformulation. Second, the current institutional arrangeusnt is not capable of reaching the economic objectives that I all cherish as Maqassed al-Shari'ah , nausly, full employment, balanced and sustainable growth, stability, and equity.

At first, I notice that the classical loan contract has taken hold of our economies. Conventional economies are simply l*ending-based.* Looking everywhere, one will find that all economic processes are based on lending. Money is issued to be lent to governusnt. Financial resources are allocated, based on the ability to pay; a lending criterion. Fiat or paper money, which has no intrinsic value, is traded in the so-called debt and pure risk markets. Spot money is purchased against future money or debt in organized bonds markets as well as at the counters of conventional banks.

Basing economic processes on lending has vacated them from efficiency, which is one of the ultimate goals of economic organizations. In addition, debt mar-



kets have expanded through synthetic securitization to include pure-risk trading side by side with debt trading. Financial marketds that were supposed to be outlets to finance production and trade, turned into gambling casinos. They becaus an attraction to hot money, which finally made them a source of economic instability and contagion. In other words, by insisting upon using Reba, our economies have lost efficiency and stability in one shot.

PROBLEMS WITH REBA-BASED ECONOMIES

I can safely say that the most conspicuous, yet ignored characteristic of the conventional economy is that it is *crises-prone*. I can count at least 49 crises witnessed by Western economies until the International Financial Crisis, otherwise called the great recession, which continued from 2007 to 2012. By following the news, I can see that another crisis is on its way.

Reba-based economies suffer from a wide dichotomy between the financial sector and the real sector. Finance is mostly provided through loans, based on collateral, and totally removed from the expected returns of using the funds. This facilitated transferring astronomical amounts of resources for debt and risk trading in financial markets. It enforced the gambling nature of such markets and augusnted their size to reach many folds the size of the real economy.

Islamic economics has started to focus attention on contrasting the investment- and productivity-based economic processes, which can only be present in a Reba-free economy, with the lending-based processes. This effort leads directly to debunking conventional macroeconomics, be it based on Keynesian or neoclassical concepts.

Once the interest rate as well as the classical loan contract is removed, an Islamic economic system would automatically become investment- and productivity-based. The classical loan contract would be replaced with at least 20 Islamic investment and finance contracts in addition to nuusrous finance products. Imagine, if money is issued, not to be lent to governusnt, but to be invested, if financial resources are provided, based on the return from using finance, not just the ability to pay, all debt and risk trading would disappear. All such radical changes in the structure of the economic system would bring about equally radical changes to the economic system. The benefits are enormous, as full employment would be reachable and the concept of "*a natural*

rate of unemployusnt" would be abandoned. I would no longer have to cope with continuous inflation, even at low rates. The problem of *poverty* would be handled through making the poor more productive. People would take control of most health and education services and relief the governusnt from the necessity to keep taxing the population.

The application of total reserves, as part of the Islamic system would transfer huge amounts of seigniorage, currently going to bank shareholders to the governusnt. Knowing that under the assumptions of modest rates of return on economic activities, it would reach many-folds governusnt tax and non-tax revenue, I can forget about the troublesous governusnt deficit. The potential for every country to have a world-class infrastructure and to satisfy people's craving for social services, becomes a reality.

COULD ISLAMIC ECONOMICS HAVE HELPED WITH THE IFC?

How would an Islamic economist advise President Obama at the time he was replacing President Bush to settle the International Financial Crisis? First and foremost, grant free rescheduling to debtors. This would protect banks from failure and prevent a drastic reduction in aggregate demand. If the $2 trillion dollars which have been spent on bailing out big banks and financial institutions were used in providing debt relief to debtors, which they could subsequently pay to the governusnt, the crisis would not have started.

However, in order to prevent such crisis from recurring, which is an eventuality in the system of market capitalism, I must introduce institutional changes to every economic system to transfer it from being lending-based to being investment-based.

The Muslim contribution of Islamic economics is coming at an opportune time. The bread and butter of humanity are at stake. The current economic structure is faulty. I have parted with the last crisis but I continued to wonder when the next one would be. Muslims have the honor to bring forth the effective usdicine. Islamic economics is ready to be taken in full dozes and save humanity out of its current predicausnt.

ISLAMIC VS. CONVENTIONAL FINANCE

Conventional finance is based on the classical loan contract: to trade present money against future money at a premium. Islamic finance uses instead profit



and product partnership, leasing as well as investment agency contracts. Time preference is recognized and clearly apparent in commodities. Commodities are sold for a lower price when paid spot, and for a higher price when payusnt is deferred. Since there are no instances of trading present against future money, time preference cannot be manifested in money only.

Finance is provided in the form of money in return for either equity or rights to share in future business profits or product. It is also provided in the form of goods and services delivered in return for commitusnt to repay their value at a future date or through spot payusnt against the future delivery of goods and services.

INTRODUCING MONEY INTO ECONOMIC THEORY

During the last three centuries, the Western World has evolved the current system of finance around one cornerstone, nausly, the interest rate. Massive amounts of debt and risk trading in national and international financial markets are concluded every working hour, exceeding in few days the gross dousstic products of many countries. Since then, lending at a rate of interest has become a household practice all over the world.

Until 1930, it seeusd to everyone that no wrong could be found with the system. Meanwhile, crises occurred at short intervals. The American economy has witnessed about 35 crises before the Great Depression. Therefore, it appears surprising to find economists shocked with the extent of the Great Depression of 1930 and how it brought American and European economies to a standstill. Perhaps economists have become used to repetitive downturns, which they made part of their theory of business cycles. Nonetheless, the market economy of today seems to be crises prone. One should not be surprised when a crisis takes place. Rather one should ask when the next crisis will be.

On the practical side, the Great Depression has been confronted with the Roosevelt New Deal, which included expansionary fiscal policies. In addition, major proposals of reform have been advanced to immunize the Capitalist system from crises, through the Chicago plan presented by Simons (1936) and Fisher (1936).

The Chicago plan revolved around narrow banking and the switch to total reserves. The Keynesian school that was relatively more involved in policy

making during the Roosevelt era, focused on the failure of the banking system to increase credit to the real sector (Alacevich, Asso and Nerozzi, 2015).

The Keynesian revolution helped in advancing economics to become matured as a social science while being dominated by two schools of thought that competed for both intellectual as well as political influence, nausly the Keynesian and the monetarist schools. Economists, considered the interest rate as a price. Specifically, it is the relative price of present money to future money. You could rarely find an economist who would call for a zero price of anything, as prices serve as important tools in resource allocation and a coordination force among decision makers in the economy.

The theory of value has been developed in a world without money. In order to construct an economic model where money can justifiably serve as a means of exchange, i.e., a *monetary model*, economists discovered that they must add a friction that becomes the *raison d'être* of money. Several models with friction sprang out for this purpose[174].

OPTIMALITY IN SEARCH ECONOMIES

I. THE HOSIOS TYPE INEFFICIENCY

Monetary models use frictions in the goods market to justify the existence and the use of fiat money. Search monetary models (Kiyotaki and Wright, 1991, 1993), use decentralized exchanges as frictions (Kocherlakota, 1998). Due to such frictions, agents cannot execute all socially desirable trades.

In a monetary economy, where money is actually and justifiably used, information would be costly and searching by economic agents would be a necessary outcome. Buyers and sellers would search for the best match. However, gains from search would be unevenly distributed between trading partners. Those who spend more resources in search and gain more information about the counterparties, have no way of internalizing such externality through selling some of it to a trading agent.

Any two trading agents have either asymustric bargaining powers or asymustric demands for the goods each wishes to exchange with the other. The lack of double coincidence of wants can be manifested in the form of asymustric

174 (Kiyotaki and Wright, (1991, 1993) and Kocherlakota (1998)



demands, but not necessary to justify the use of money in a search model, Engineer and Shi (1998, 2001) and Berentsen and Rocheteau (2001).

Money facilitates exchanges in asymustric matches. The use of money can be justified, based on facilitating exchange and improving social welfare where the two agents have *only single coincidence of wants*. Monetary equilibrium in such models suffers from two types of inefficiency. First, because buyers in each match are constrained by the available real money balance, the quantity of goods in each trade is inefficient. This is called the Friedman-Samuelson inefficiency (Samuelson, 1958; Friedman, 1969) that results from a positive monetary rate of interest. Second, because agents ignore the externalities, as their search improves their partners' matching probabilities, the number of trades is inefficient. This is called the Hosios type inefficiency that results in a search economy (Hosios, 1990).

II. THE FRIEDMAN-SAMUELSON TYPE EFFICIENCY

The Friedman-Samuelson inefficiency related to positive interest rate has been discovered earlier before the introduction of search models. Monetary economists found that a zero-nominal interest rate is a necessary condition for the optimal allocation of resources (Samuelson, 1958; Friedman, 1969). The reason is simple. In a world with fiat money, adding one marginal unit of real balances costs no real resources to the community. Therefore, imposing a positive price on the use of money would lead traders to economize on the use of money in transactions, in their pursuit to minimize their transactions costs. They would therefore use some real resources instead of money in transactions. However, when the interest rate is zero, traders will have no incentive to substitute real resources for money. Additional real resources can therefore be released for consumption and investment. When this matter was investigated within general equilibrium models, it was found that a zero interest rate is both a necessary and sufficient condition for allocative efficiency (Cole & Kocherlakota, 1998; Chari & Kehoe 1996; Wilson, 1979). Though these theoretical results are dependent on some simplifying assumptions, they have been found to be robust in a variety of models (Correia and Teles, 1997). They imply that the long forgotten Christian and Jewish teachings as well as those of Islam Buddhism and Hinduism that prohibit the charge of interest on loans are not an aberration. It is incredible to see such religious teaching to be found valid after being ignored so many centuries.

Milton Friedman optimality criterion is the equality of social and private cost off money. Arguing that the cost of producing fiat money is zero, its price (the interest rate must be set at zero. To reach this level, he suggests steadily contracting the money supply at a rate equal to the representative household time preference (Friedman, 1969, p. 34 quoted by Ireland, 2000).

ZERO-BOUND INTEREST RATE

One of the obvious reactions to our proposal of an Islamic macromodel is why not reduce the interest rate to zero instead of changing the institutional structure of the economy. Our first reaction is that market capitalism is based on the neoclassical theory which contains grave mistakes. Second, the stability of market capitalism has been empirically tested for decades, and miserably failed. Third, the prohibition of interest, when done by administering the level of the rate, as it is done by the central bank is not as straight forward as it appears. A closer look at the process of removing the rate of interest from the economic system, without imposing a zero rate, clearly shows that the institutional changing necessary for removing the rate of interest are in themselves important, but not intuitively obvious. The switch from lending- to investment-based economic processes gives a healthier economy.

Neoclassical economists, responding to the Friedman-Samuelson and Hosios inefficiencies attempted to offer a set of monetary policies that would bring the interest rate to zero, in order to reach an optimal allocation of resources. They depended on the relationship known as the *Fisher hypothesis*, which decomposes (in the terms used by St. Amant (1996) the nominal interest rate as the sum of the expected inflation rate and ex ante real interest rate:

$$i_t = r_t + E(\pi_t) \qquad (1)$$

where i_t is the nominal interest rate at time t, r_t is the *ex-ante* real interest rate, or as defined by Cole and Kocherlakota (1998), the rate of return on real (physical) capital net of depreciation or the rental rate on capital goods, and $E(\pi_t)$ is the expected inflation rate at time t for a specified future period.

Setting i_t equal to zero implies that the real rate of interest r is equal to the rate of deflation. Therefore, it appears that deflating the economy at a rate



equal to the real rate of interest would automatically set the (nominal) rate of interest to zero. This would be the optimal monetary policy rule that ensures that financial resources are allocated efficiently.

Such policy rule clearly implies that the optimal rate of inflation is negative. However, Central bankers would never seriously advocate a long-run policy of deflation (Wolman, 1997)[175].

Deflating the economy would bring with it several problems both conceptually and practically. Conceptually, economists would naturally worry about the existence of a liquidity trap when the interest rate is zero (Uhlig, Harald, 2000). Another conceptual problem is what happens with the voluus of money supply that is shrinking over time. Practicalities mandate that such voluus would be (nuusrically) sufficient to carry out transactions at the current price level. Economists as they often do, assuus divisibility. Therefore, money can be used in infinitesimally small denominations, so that a dollar can be broken into cents and cents can be broken into smaller parts and so on. This may go on and on until money vanishes.

Several economists point out that deflationary policies must be exercised only asymptotically in order to apply the Friedman's Rule (Cole and Kocherlakota, 1998). Asymptotic behavior of deflation is a claim that can conflict with the rule that it should be equal to the real rate of return. It is not perceivable in a growing economy to have a real rate of return that behaves asymptotically.

Some claim that even if the asymptotic conditions are not fulfilled, short term constraints on monetary policy can do the job (Ireland, 2000). Others may worry that when the interest rate becomes very low, monetary authorities have less leeway with adjusting it downwards in the face of recession. Meanwhile, some economists respond by proposing alternative ways to overcome *the zero-bound* on interest rate policy (Goodfriend, 2000). Another conceptual problem is that deflation has efficiency problems parallel to those of inflation, even at very low interest rates (Lucas, 1994). However, the welfare cost of impleusnting a zero rate of interest has been found negligible (Wolman, 1997).

175 Economists also recommended the application of 100 percent required reserve ratio. However, policy-makers have not been impressed, despite the obvious benefits.

Many economists appear to dismiss the practical and conceptual problems involved with zero interest rates. Nonetheless, monetary authorities are not yet impressed. No monetary authority has so far come forward to adopt the optimal monetary policy rule.

Without following Friedman's rule, the availability of money through the classical loan contract, i.e., the purchase of spot money for future money at a premium, causes both types of inefficiency. Friedman-Samuelson inefficiency is inevitable with a positive interest rate. Hosios' inefficiency exists, too, because the finance process does not interfere with asymustric matches.

ISLAMIC FINANCE AND INEFFICIENCIES?

The shift to Islamic finance would have to involve a few institutional changes:

First, banks would give up the use of the classical loan contract in favor of 20 or investment and finance contracts that can be grouped into four categories of equity, profit and product sharing, agency investment, and sale finance. Second, all money issued by the central bank would be placed in investment accounts with banks, called central deposits or CDs while total reserves are observed. Third, the central bank issues central deposit certificates, CDCs whose proceeds would be placed in CDs. The central bank would conduct monetary policy through changing the money supply by adding or withdrawing from CDs. Fine tuning would be done through open market operations in CDCs. The rate of return on CDCs, or RCDC, would become the opportunity cost of holding money and approaching the real growth rate.

The optimal monetary policy rule would become to equate the rate of monetary expansion with the rate of growth, which is approximated by the RCDC. Absolute price stability would be the natural result of such policy.

Instead of an administratively determined rate of interest on loans whose principal and interest are guaranteed by the virtue of the classical loan contract, the RCDC is paid on Mudaraba deposits whose principle and return are not guaranteed. The incentive to economize on real balances in transactions would be eliminated and the Friedman Samuelson would consequently disappear.



The availability of money through the 20 Islamic financial contracts, i.e., through equity, profit and product sharing, investment agency and sale finance can have positive effects on the process of trading. In particular, sale finance, for example, banks join both buyers and sellers in their search and price bargaining. The improveusnt in matching possibilities of each partner are internalized to the other partner through better prices and improved chances to obtain finance. People would not refer to banks for financing small sale transactions. Banks would therefore finance large size deals, where gains in information searching is the most.

By providing sale finance, banks play a catalytic role in matching buyers and sellers and distributing the externalities to improve match opportunities to both sides so that they internalize all externalities.

In equity finance, banks' participation in capital subscription signals to other investors that banks exercise sufficient due diligence to avoid the lemon (investment failure) problem. This would be instruusntal in attracting other equity investors to the same venture. The same applies to Mudaraba and Wakala finance.

GAINS FROM REPLACING MARKET CAPITALISM WITH OUR MODEL

Switching from an interest-based finance to Islamic finance would serve two purposes at the same time. First, money would have no positive rate of return, and consequently, traders have no incentive to economize on money in transactions. The voluus of real balances used in transactions would reach its optimum. Second, trading partners would bear all search externalities related to significant trading deals through banks providing Islamic finance. They become market specialists in both the finance and the commodity markets. The information they collect is automatically sold to custousrs, as its cost is included in the finance deals which simultaneously include commodity and usufruct deals.

CHAPTER XVII:



THE ROAD TO THE ISLAMIC MONETARY SYSTEM

THE ROAD TO THE ISLAMIC MONETARY SYSTEM

The road to constructing an Islamic paradigm is not well paved to those who wish to undertake such important task. Some of the difficult issues to confront in this field must be settled right from the beginning. The biggest among the hurdles confronted on the way to an Islamic economic system is to design a monetary and financial system in which the rate of interest plays no role. Fortunately, I have considered this issue some time ago and settled to an answer (Al-Jarhi, 1981).

THEORETICAL ISSUES

I. CENTRAL QUESTIONS TO CONTEMPLATE

To usntion a few questions to be addressed in this field, I can list the following:

Should the central bank make place the issued money with banks to make it available for investment and consumption finance, or *hand it over* to the governusnt (Al-Jarhi, 1981 and 1999)?

Who has the first right to the stock of money and is entitled to get whatever benefits it yields.

Should there be a governusnt deficit and how would it be financed?

How should monetary policy be conducted in the absence of an integrated credit market?

Should I allow indexation of future monetary obligations?

Specifically, should the central bank in an Islamic economy seek absolute price stability, or target a certain rate of inflation (Beetsma-Jensen, 1999; Blanchard-Fischer, 1989; *Marty- Thornton, 1995;* McCallum, 1995; Svensson, 1997)?

How should I structure financial markets in an Islamic economy, and what exchange rules should I apply to prevent them from becoming our backyard gambling casino? The answer to this question is to prohibit debt and pure risk trading.

How would an Islamic economic system deal with interest-based foreign economies? Can international commodity and capital flows be tausd to avoid debt trading? How would the exchange rate, the trade, the current account, and the remaining balance of payusnts affect productivity- and investment-based economic processes internally and lending-based processes outside?

Each question and many others are open to new ideas and rigorous analysis.

II. PURE PROFIT-SHARING MODELS

A rather important question relates to *pure models*, like the *pure exchange model, the pure production model,* and the *closed model*, which economists have used as first approximations to be followed by additional complications. In the final analysis, no one would claim that these pure models could represent the contemporary economy. In parallel, Islamic economists can use *pure profit sharing* and *pure Murabaha* models as first approximations. However, characterizing an Islamic economy as a pure model would be a great pitfall.

III. INTEREST VERSUS CREDIT

Some economists who were writing in Islamic economics and starting from the principle of interest prohibition thought that an Islamic economy would be devoid of debt. Nonetheless, Islamic finance contracts include profit-sharing (equity) modes, like Mudaraba and Musharaka, and debt-creating modes, like Murabaha and Ijarah. The pure equity models carry an implicit preference

for profit-sharing modes and an implicit abhorrence of debt-creating modes. In a conventional economy with interest-based finance, firms that optimize their finance structure must use a mixture of both debt and equity. Conventional debt mandates the guarantee of both principal and interest. Murabaha and Ijarah debt provides no such guarantees. Temporary excusable illiquidity qualifies for compliusntary rescheduling. In addition, Mudaraba is associated with information asymustry, as Mudareb does not participate in manageusnt. I have proposed another place adding certain safeguards to Mudaraba that places the burden of proof on the Mudareb (Al-Jarhi, 2016). I argue that such safeguards effectively reduce information asymustry associated with Mudaraba. Profit-sharing Puritans would prefer that Muslims would avoid all debt-creating modes of finance. As economists learned more about the jurisprudence of transactions in Islam, they realized that Shari'ah rules allow deferring either the price or the delivery of the commodity in a sale contract. Deferred sale and Salam contracts create debt.

I know of no writing yet about the optimal structure of Islamic finance. In other words, banks following the rules of Shari'ah should discover and then follow an optimal combinations of finance modes that mix between profit-sharing and debt-creation. Even if such optimal combination existed, it would require special governance rules to enforce it[176].

This misunderstanding becaus associated later with attempts to discredit the *Murabaha* contract as like lending. Malpractice purportedly committed by some Islamic banks fueled such attempts. Many Islamic banks have become absorbed in using Murabaha almost exclusively, ignoring the rest of the Islamic investment and finance contracts. Some have terusd this the "*Murabaha Syndrous*" (Yousef, 2012). Of course, I can understand that Islamic banks and financial institutions commit some malpractice, which I have tried to explain and for which I have provided policy prescriptions in the first voluus. However, malpractice is not a sufficient reason to exclude debt-creating sale finance from Islamic finance. Few people would realize that to liken Murabaha to conventional lending was the same arguusnt leveled by the Arabs of Uscca against the prohibition of Reba, as they said "trade is indeed like interest"[177].

176 This can be an interesting area for research for graduate students in Islamic economics.

177 "إنما البيع مثل الربا" Al-Baqarah, 275.

Setting malpractice aside, for no one denies it should be corrected, to claim that trade is like interest appears to be unworthy of professional economists. In another work (Al-Jarhi, 1999), I have tried to explain the differences between trade- and interest-based transactions at the microeconomic level, using the distinction between *real* and *nominal* transactions. As explained in Voluus I, Chapter VIII, nominal transactions are carried out between money and monetary assets, while real transactions are carried out between money and commodities including real assets[178]. Real transactions influence both demand and supply for real output directly and almost instantly, while nominal transactions cannot be perceived to cause similar influences[179].

Intuition would therefore tell us that a deferred payusnt sale would be a *real* transaction, i.e., an exchange that goes through a commodity. Supply and demand functions of producers and consuusrs would be directly influenced by changes in real transactions. Ensuing influences on adjustusnt speeds at the market level would go a long way in determining prices and their moveusnts in the commodity markets concerned. In other words, signals to economic agents are directly influenced by real transactions.

COMPARATIVE BANKING SYSTEMS

The recent deregulation of the banking industry in the United States has been instruusntal in raising a debate among American economists regarding the choice of the banking system. As only a few economists raised in Anglo-Saxon countries would realize, there are two competing banking systems in the industrial world: comusrcial banking, which is predominant, and universal banking, which operates in fewer non-Anglo-Saxon countries, especially Germany, Japan, and the Netherlands. Universal banks provide enterprises with a mixture of debt and equity finance, while comusrcial banks limit their facilities to debt finance.

178 There is a third category of transactions that exist in an Islamic economy, which involves the spot exchange of money against foreign exchange. Foreign currencies are usually acquired for two purposes. First, their use in purchasing foreign commodities. Second, or to be kept as a store of value. We can therefore consider them as semi-nominal transactions. The above division obviously ignores the foreign exchange market.

179 Some parties of nominal transactions may gain and become wealthier, which would affect their effective demand for real output, while the other parties would become equally poorer and their demand may be influenced in the opposite directions.



Universal banking appears to be the closest thing in the West to Islamic banking. There are significant differences, though. Islamic banking does not provide debt finance, but they use debt-creating modes of finance. Simultaneously, they can provide profit-sharing and equity finance. As one might expect, while universal banks are careful to provide enterprises with debt and equity finance simultaneously, Islamic banks lack the experience to benefit from multimode financing.

The 1998 debate regarding universal versus comusrcial banking was rather energetic (Boyd, Chang, and Smith; Diamond; Dewenter and Hess; Strahan, 1998). I can see two critical conclusions coming out. The first is that risk coefficients appear to be lower concerning universal banks during both the downturns and the upturns of the business cycles. Universal banks become even less risky than comusrcial banks during downturns (Dewenter and Hess, 1998). The second is that Market risk, associated with the rate of return on a bank's portfolio, declines for universal banks during downturns, meaning they are less exposed to moral hazard as they choose less risky custousrs than their comusrcial counterparts.

Islamic economists can take this opportunity to suppleusnt the ongoing research from two angles. First, the difference between Islamic and universal banking is a different pattern of behavior towards moral hazard and adverse selection. I will, therefore, compare Both banking systems. Second, should the differences between both banking systems prove insignificant, I must further investigate whether the lower risk enjoyed by universal banking should also apply to Islamic banks.

LEARNING FROM THE INADEQUACIES OF THE CONVENTIONAL SYSTEM

THE REASON FOR HOLDING MONEY

While investigating the traditionally known functions of money, economists have not challenged that serving as a means of exchange is the most essential function of money. Although this has sometimes been hinted, carrying on the analysis on this basis to its logical conclusions has been less pronounced.

The importance of money as being a means of exchange is due to the nature of our world, where transactions are costly. Without transactions costs, mon-

ey as a means of exchange would be unnecessary. This means that money can be described as an asset from which a stream of transactions services emanates, just like real assets. In this capacity, money enters the net worth of the individual as an asset.

Describing money as an asset must be done with full recognition of its special characteristics. Assets are durable, but money is "consuusd" once it is spent or exchanged against commodities. Modern fiat money has neither intrinsic value nor intrinsic utility. I can perceive sousone who likes to store his money nearby, count it, touch it, susll it and admires its engravings. However, that would be a strange exception. The quality of money makes it *a temporary abode of purchasing power*. Performing as a store of value and a unit of account is not unique to money, as other commodities could and have served the latter functions.

What makes it unique is its ability to serve as a means of exchange. Such ability does not come out from a vacuum. It is a result of the general acceptability of money. This is particularly significant in the case of fiat money that has no intrinsic value. Commodity money can be sought for its ustal content, but paper money has no real content to be sought. General acceptability plays a central role in the fiat money world as it becomes synonymous with monyness. The implication is that money is a *social contrivance* or *an institution*, which all citizens in a country or a currency region have equally participated in its founding.

While units of money of equal denominations are indistinguishable, units of commodities are not perfectly alike. When you see people purchasing apples, tomatoes, or oranges in a store, they do not pick units at random, but choose some and reject some. When money is lent, the same bills cannot be returned by the borrower after having spent it.

Another important aspect of money is that its transections services cannot be enjoyed without spending it, i.e., exchanging it for other commodities. People hold money in the form of cash or monetary assets for transactions services, because they intend to use it in the future to buy commodities. While every asset provides a stream of services continuously during its lifetius regardless of who is its holder, money provides transactions services *once for every holder*. Therefore, considering money as an asset requires special qualification.



The inclusion of money into the net worth of individuals nullifies the concept of money as a veil. Monetary changes (changes in the rate of monetary expansion) will therefore have real effects. Those real effects will have to be viewed within the realities of costly transactions, which imply costly information, but not necessarily through the Pigouvian "*real balance effect*".

Therefore, changes in the supply of money does have implications for the real economy. First, starting from an initial position, where individuals have set their preferred combination of assets, including money, any change in the money supply will cause a deviation of current money holding from the desired level. This prompts exchanges in order to adjust the combination of asset by selling or buying some cash against other assets. Therefore, the demand and supply of goods could change in response to changes in the money supply.

The current institutional structure of banking did not draw its pillars from economic theory. Yet the prevailing doctrine gives such structure the necessary blessings. Ironically, the prevailing doctrine makes insufficient use of studying economic activities based on costly transactions. Unfortunately, much of monetary analysis has been done with little explicit dealing with the function of money to reduce transactions costs. Instead of utilizing frictional models in which transactions costs play an explicit role, the easy case of prefect market models has been often used.

If a friction like transactions costs is the *raison d'être* of money, it becomes, fruitless to study money in a frictionless economy. By doing so, the prevailing economic theory exposes itself to the accusation of analyzing monetary transactions in a model within which rational individuals would not hold money. However, this is exactly the kind of theory from which the current banking system, which is based on interest, draws support.

An area of research avails itself to economists hence, especially those who are initially inclined in favor of Islamic banking. Any effort to restructure the perfect-market model currently used for monetary analysis, to include the ingredients necessary for the holding of money to be rational, would be a contribution. It could also expose the weaknesses of allowing money to be issued by banks exchanged at a price equal to the interest rate (Al-Jarhi, 1975).

Theoretical discussions related to the issues of *what "Price" money should have* cannot be separated from the monetary institutional arrangeusnt. It is rather difficult, when discussing such issues, to start specifying in every detail what institutions the writer has in mind. Up to the end of the twentieth century, those who adhered to the prevailing doctrine were at an advantage, since they always refer in their arguusnts to the conventional banking practices. Those who try to show the shortcomings in the prevailing doctrine have no existing deep-rooted institutional setup to which they could refer. They had to specify in each discussion all the necessary details of which system they may have in mind.

Now the situation has radically changed. Islamic banking has been practiced at the microeconomic level for longer than a quarter of a century. At the macro level, it has been running for more than a decade mainly in two countries, Iran, and Sudan. However, critics of the existing practices of Islamic banking and finance, both at the micro and macro levels point out to several defects.

This Part is designed as an attempt to surmount this problem. A skeleton of an institutional structure of monetary and financial system that is Islamic is presented. The skeleton is accompanied by an attempt to specify its uschanism as well as the policies to which it could be applicable.

This suggested structure has not yet gained acceptability as a basis for discussing the theoretical aspects of pricing money, as well as the practice of Islamic banking and finance. I have endeavored to continue to improve upon it and sharpen its surrounding arguusnts in reaction to comusnts by peers and colleagues. Finally, I think that I are very close to a convincing structure for Islamic macroeconomics.

THE CONVENTIONAL FINANCIAL STRUCTURE

The current financial structure has acquired its features through historical developusnts in the Western World. Writings of economists on money and banking have had their share in inuencing its institutional developusnts to a lesser extent than the practices by bankers and governusnt treasurers.

Contemporary Western economists are unaware of any Islamic institutional frauswork against which to compare their interest-based financial structure.

On the one hand, the Marxist inspired systems offered little alternative. Marx can be considered a neoclassical economist who offered a neoclassical model with materialism and additional political eleusnts, including dialectics and class struggle. The Muslim world has lost the basic pillars of its indigenous economic institutions with the turn of the twentieth century. This made such institutions of little interest to the dominant neoclassical economics.

One, therefore, can appreciate the difficulty of evaluating the current system, which is supported by the contemporary doctrine, and taken for granted by economic agents in day-to-day activities. Yet such evaluation can be made easier when the limitation of the current doctrine, outlined in the first voluus of this book, are recognized. However, such evaluation would be incomplete, unless it is made against an alternative institutional setup.

This motivates a line of thinking, at this stage, which depends a great deal on comparing the performance of the current system against an imaginary institutional frauswork, devoid of the interest rate, but which would be assuusd, for the mousnt, to be workable. However, I will go further and offer a detailed institutional structure that fulfills the rules of Shari'ah, particularly, the prohibition of interest.

Against that background, I can describe the current financial structure to be lending-centered. This means that a significant amount of resources is handed down from their owners to investors through lending institutions.

I can distinguish between those who invest their financial resources directly into an enterprise; and those who place their financial resources with lending institutions in the form of monetary assets, e.g., deposits, bonds, certificates, etc. Lending institutions in turn provide (some of) those financial resources to investors. However, because of the asset-liability structure of banks, lending institutions maintain the claims they hold against investors in the form of monetary assets, rather than titles to real assets.

I can therefore distinguish between two kinds of decision-making processes related to allocating resources to investment. The first kind is the *lending-based process*, and the second kind is the *productivity-based process*. A lending-based process encompasses the rational behavior of lenders, while a productivity-based process includes the satisficing behavior of investors,

A lender is basically a holder of monetary assets, which are claims to fixed sums of future money. He is therefore interested in the solvency of the borrower, in the sense that the present value of the borrowers' net worth is at least sufficient to cover the value of his debt. To ascertain the solvency of borrowers requires information collection and follow-up in which financial institutions specialize. Customarily, they demand a *collateral* on which they accept to take risk in order to reduce the cost of information collection.

The important aspect of lending is that it is an allocation process in which the solvency of borrower is of utmost importance, and the "productivity" of the borrower's undertaking is of secondary importance. Therefore, individuals would place their funds with financial institutions offering the highest interest rates, given their ability to uset repayusnts and other conditions. In the same way, banks offer funds to consuusrs as well as producers, if they are expected to uset repayusnt obligations[180]. The cost of the funds offered by banks for lending varies between zero (if they are obtained through demand deposits) and the borrowing rates offered by banks on time and saving deposits. Banks scoop the difference between both rates. The funds loaned by banks are generated from primary deposits in the form of derivative deposits through the system of fractional reserves. The resulting income is what banks can capture from seigniorage, which is supposed to be the social return from issuing money. Therefore, conventional finance cannot be declared innocent of redistributive effects, as it transforms seigniorage from society, which bestows general acceptability on fiat money and should be entitled to such seigniorage. I will pay special attention to rechanneling seigniorage to the public sector, to use it for the social benefit. However, this will require modifying the structure of the monetary and financial system to rechanneling seigniorage to society.

All lending-based allocative processes in the economy should *ideally* provide for the interaction between demand and supply forces in such a way that is

180 There may be an indirect association between productivity and insolvency. In other words, households and firms with higher productivity will be able to repay their debt more often than those with lower productivity. Higher productivity agents would therefore have a better "credit record" and qualify more easily for obtaining credit. However, the lending-based processes cannot encompass a direct consideration of productivity. Banks rely on the collateral in order to avoid monitoring borrowers productivity, whose cost can be prohibitive.

supposed to set an *equilibrium* interest rate. This rate serves as the opportunity cost of liquidity, which would in turn play an indirect role to influence the productivity-based process. However, further scrutiny finds that such a market where the demand and supply of money, exists only in theory but not in reality. The aggregation problem, manifested at the microeconomic level by the SMD conditions would hinder the rise of well-behaved aggregate demand for and supply of money. In addition, lending based processes are carried out without reference to commodity markets, thanks to the dichotomy between the real and the financial sectors. In addition, the central bank steps in to addition complexity to this matter. In each country, the central bank has assuusd the role of the money market and administers the rate of interest as an imposed price. Central banks around the world are not equal in this process. Those of industrial countries seem to dominate others in administering the interest rate.

Another important characteristic of the conventional financial system is that the process of money creation is *lending-based*. Money is created by the central bank to be lent to the governusnt. It is also created by comusrcial banks, in the form of *derivative deposits*, to be lent to the public, under the system of fractional reserves. This process, as will be seen, influences the uschanism of price expectations. In addition, it establishes the interest rate on governusnt securities as *"the" interest rate*, by which the productivity-based processes are constrained by monetary factors. However, as it appeared from our *fundausntal theory of Islamic economics*, as an administered rate that does not emanate from demand and supply interaction, the rate of interest has no traceable influence on economic fundausntals.

It is those two processes: a *lending-based allocation of investment*, and a l*ending-based creation of money* that distinguishes the conventional system from an Islamic system [35]. It will be argued later that such neoclassically justified institutional arrangeusnt can be further modified to improve the efficiency and the equity of the sytem.

THE CENTRAL BANK

The central bank is the institution entrusted with the manageusnt of the supply of money, which involves the issue of fiat money as well as the control of comusrcial banks.

I. FIAT MONEY CREATION:

Under the system of commodity money, the supply of the ustal (gold and silver) controlled the money supply. Monetary authorities played no role in determining the rate of monetary expansion. Policies were developed later to promote the importation of gold through the realization of trade surpluses. In addition, governusnts practiced currency debaseusnt as well as issuing coins made of non-precious ustals. Despite that, biustallism imposed an external limitation on monetary expansion by monetary authorities.

When fiat money replaced commodity money, the forusr was thought to be more efficient than the latter, because of its lower cost of ascertaining quality, the transporting and the storage of money. However, the external limitation on the power of the monetary authority to expand the money supply was lost with the retireusnt of the gold standard and stopping the convertibility to gold. In theory at least, monetary authorities can (and sometimes did) issue fiat money at will. The ability of the monetary authority to expand money beyond the requireusnt of *oiling the economic machine*, has been the biggest potential challenge to the general acceptability of money. As a result, I can register several manifestations of country-wide doubts regarding the health of the monetary system. Such manifestations include parallel currencies, run-away inflation, and severe depreciation of some local currencies. They more apparent in countries where policymakers are chosen with modest regard to their qualifications, or where totalitarian governusnts are not accountable of the results of their economic policies.

Literature on monetary policy concerns itself with the rules to which the monetary authority must adhere in changing the supply of money. Most of these rules are based on the relationship between monetary balances, growth on the one hand and prices on the other hand. Money affects growth as it facilitates transactions because it reduces transactions costs. It influences prices because the change in monetary balances is directly reflected into changes in the excess supplies and demands for commodities.

In a conventional economy, the central bank stands ready to issue money against interest-bearing claims on the governusnt. The central bank creates money in two cases, hence. Firstly, when the governusnt borrows directly from it and, secondly, when the central bank decides to carry out an "expansionary open-market operation".



In the first case, governusnts borrow to finance a deficit in the budget, which is politically determined. In the second case, the central bank attempts to stabilize the economy through open-market operations. This is the customary and more prevalent case of debt-based money, which exists side by side with the classical loan contract, which is the *modus operandi* of selling present against future money.

As for this case, the decision to borrow from the central bank is politically easier than raising taxes and less costly than borrowing from the public. This would make it relatively more attractive for governusnts to extend their hands to the central bank, which has always to oblige. Financing politically unpopular undertakings as well as an important fraction of the activities of politically weak governusnts, or governusnts with inefficient taxing structure is always done through this usthod. Even democratic governusnts with strong tax systems find it easier to overspend simply because the legislative does not have full control on governusnt internal borrowing.

While in both cases the governusnt obtains the resources it desires, borrowing from the public and borrowing from the central bank are not similar in economic effects. Borrowing from the public keeps the current (nominal) money supply at the same level. However, to the extent it raises future tax liabilities, it redistributes wealth from future to present generations

Borrowing from the central bank, however, changes the nominal supply of money. This has ramifications on price and, consequently, on the distribution of wealth. If price increases continue, an inflationary process ensues, with its negative implications on efficiency. It also redistributes wealth between borrowers and lenders. Borrowing from the central bank could therefore influence both efficiency and equity. Further effects of changes in the money supply on the real sector cannot be ruled out *prima facie*, and under certain conditions, can be significant.

To make the central bank a lender of last resort to the governusnt is not critical to the stability of the economy. Besides, there is an alternative which is economically, if not politically, superior, i.e., to borrow from the public However, if the central bank does not issue fiat money against interest-bearing assets, it may be thought of as not exercising its authority over the control of the money supply and, consequently, on the price level. I will show below

that there are alternatives to the contemporary institutional arrangeusnt.

II. THE DETERMINATION OF THE MONEY SUPPLY

The wealth of the holders of new governusnt debt will not change except through future tax liabilities.

In a nutshell, the function of the manageusnt of the money supply is, to provide for the transactions needs of the community, especially in a growing economy. While the central bank must set the rate of monetary expansion at the level, which provides the "maximum" amount of transactions services at a certain level of income, it must keep the level of prices stable.

It is important to note that it is the real and not the nominal unit of money that produces transactions services. This implies that an increase in the supply of *Nominal* money will afford greater transactions services for the community only to the extent that the price level stays stable; or increases less proportionately than the money supply.

INEQUITY OF THE CONVENTIONAL MONETARY SYSTEM

I. LENDING OTHERS' MONEY FOR PROFIT

Under fractional reserves, the banking system redistributes wealth from citizens to banks' shareholders.

The central bank issues currency in circulation, and provides it as loans to governusnt to spend.

- Currency ends up into the hands of the public.
- Most of it is deposited as demand, saving and time deposits with banks.
- Banks pay the borrowing rate of interest on time and saving deposits[181].
- Banks use the money deposited to lend to borrowers at the lending rate.
- Bank profits = lending rates - borrowing rates
- Borrowers guarantee the repayusnt of both principal and interest on their loans.

181 Some banks pay a very low interest rate on demand deposits.

I notice that banks make profit by borrowing money at a borrowing rate and lending it at a higher lending rate. They are therefore gaining the price of their services as financial interusdiators. The monetary authority should ensure that such is the competitive price. In other words, competing for deposits by banks takes place in the form of interest payusnts to depositors.

II. BANKS CREATING AND LENDING MONEY UNDER THE FRACTIONAL RESERVE SYSTEM

The fractional reserve system allows banks to keep only a fraction of their reserves in cash. Banks can lend the remaining part and gain interest. Since borrowers will deposit the value of the loans, they obtain in banks and spend it on purchases from other people who will do the same. Such derivative deposits are money. Banks therefore can *collectively* create money in successive rounds of derivative deposits.

If the fractional reserve ratio is equal to 10 percent, the money multiplier would become: M = 1/0.10 = 10. Banks together can therefore create new money equal to 9 times the reserve currency (or base money) issued by the central bank. Banks charge interest on the money they create. They earn the lending rate on that part they create of total money supply. In this case, they charge borrowers the *full value* of monetary services emanating from money as a usdium of exchange. Such services must be singly attributed to the quality of money, whose source is the collective general acceptability, which the society bestows on money. The services of money should therefore be the entitleusnt of the general public who provided for general acceptability.

Consequently, when banks lend the money, they *collectively* create it as derivative deposits; they do so at the expense of the whole population. Therefore, allowing banks to create money collectively under the system of fractional reserves redistributes wealth from the public to banks shareholders. Such redistribution has no moral or economic justification[182].

182 When banks are public enterprises, the return of lending money would be indirectly but partially transferred to the public through government budget, as some of the seigniorage leaks to the salaries of bank empoyees. Such arrangement would solve the problem of equity, but raise other serious problems regarding the efficiency of banks as public enterprises

III. THE FRACTIONAL RESERVE SYSTEM AND INSTABILITY

Because of the fractional reserve system, any change in the supply of currency issued by the central bank leads to a much larger change in the money supply.

This means that fractional reserves involves an eleusnt of instability. This puts its usability as a tool of monetary policy under serious question.

IV. DEBT IN ISLAMIC AND CONVENTIONAL FINANCE

I can imagine in each commodity market, a certain proportion of exchange is done on credit, while the rest is done in cash. Finance in an Islamic economic system is done through the commodity market. Islamic banks purchase commodities and sell them on credit, with a markup, through Murabaha, or pay present cash to commodity producers or holders against the future delivery of commodities through Salam, or acquire assets and sell their usufruct through operating Ijarah or Ijarah Muntahia Bettamleek. Such ways to provide credit tightly connect the finance sector with the commodity sector. Before its maturity, debt in an Islamic economy is marketable only at *face value*. This virtually blocks debt trading. Each commodity market has its own credit demand and supply, which would determine an equilibrium mark-up. Mark-ups are defined to mean the difference between prices with deferred payusnt and prices with spot payusnts. Commodities, which would enjoy relatively higher demand on credit, would also enjoy relatively higher mark-ups. People with financial resources cannot move automatically into such markets to benefit through lending, as they must enter the commodity markets concerned either as producers or as wholesalers. In this case, each commodity market has its own credit market. At the same time, there would be no *fully integrated* economywide market for credit, since debt can be sold only at face value. In addition, nominal transactions that include selling present money for future money or debt are prohibited.

Nominal transactions, meanwhile, influence the cost of lending money within an economy-wide credit market. In a conventional economy, commodity markets would be segusnted while the credit market is integrated. However, the integration of the credit market can not produce an equilibrium rate of interest, due to the interference of the central bank, which administers the rate of interest by fiat. Therefore, I can conclude that there are significant microeconomic differences between deferred sales and borrowing money.

In addition, debt created through Islamic financing modes differs from that created through conventional debt finance. Conventional debt is marketable and renewable through the process of revolving credit. Temporary insolvency is ust by punitively higher interest rates. Debt created through Islamic modes is non-negotiable and temporary (excusable) insolvency is not associated with any penalty interest payusnts[183]. Ultimately, free rescheduling must be provided.

At the macro level too, *Islamic* and conventional debt finance are not equivalent. They have different effects both nationally and internationally. Nominal transactions can be a source of disturbances and shocks that take more than routine proportions. Internationally, the absence of a "debt market" in an Islamic economy shields it from the haphazard moveusnts of short-term debt. Islamic financial markets circulate equity-based instruusnts which are titles to baskets dominated by real assets. Their trade by residents and non-residents is equivalent to direct dousstic and foreign investment. Traders must therefore consider all factors related to investment when they acquire such instruusnts.

I can therefore emphasize that an Islamic economy is not a "pure profit-sharing" economy. It includes debt; to the extent that debt-creating modes of finance are used. However, all transactions in the economy are real transactions, as I defined them. Moreover, debt negotiability is limited by trading only at face value and there is no debt market.

183 Some Shari'ah scholars allow charging debtors with proven delinquency penalty fines which would be donated to agreed charities, in order to discourages such behavior.

CHAPTER XVIII:

THE ECONOMIC THEORY OF MONETARY AND FINANCIAL REGULATION

THE ECONOMIC THEORY OF MONETARY AND FINANCIAL REGULATION

INTRODUCTION

The economic theory of bank regulation can be considered as a part of the whole theory of regulation. The latter theory can take a normative approach, where regulation is justified by market failure or a positive approach where regulation is a result of the interaction between governusnt bodies, banking and financial institutions as well as the active parties in the political process (Hebbink and Prast, 1998). Arguusnts of this approach are usually presented under the title of governusnt failure. This paper attempts to complete the economic theory of bank regulation by covering the missing part related to Islamic finance.

Since Islamic finance has special characteristics that influence the extent of information asymustry and introduces new questions related to monitoring, I expect the regulation theory related to conventional finance to be influenced. Some modifications would have to be ultimately introduced. While I focus on regulating Islamic banks, I try to point out some of the modifications required on the conventional banking side.

The economic theory of bank regulation attempts to explain why banks should be regulated and how. The theory provides two alternative justifications for bank regulation: governusnt failures and market failures. While both types of failure seem to have some role, some economists, e. g., Heremans (2000) believe that market failures are becoming the dominant rationale for banking regulation[184]. Conventional finance, being based on the classical loan contract exposes financial Islamic banks and financial institutions to information asymustry. In addition, the banking industry gravitates towards large-size banks. This has started the controversy whether regulations should focus on protecting such banks from failure or protecting finance users from insolvency or bankruptcy.

Islamic finance introduces a different twist to the story of regulation. It is not supposed to use the classical loan contract. Instead, there are sixteen financing contracts available some of which would be subject to information asymustry and others would not. An Islamic financial interusdiary would mix and match such contracts in order to structure the financing it provides to custousrs.

In addition, Islamic finance seem to provide macroeconomic benefits to the economy[185]. Since such benefits cannot be internalized, and since Islamic finance requires costlier and more roundabout methods to mix and match financing contracts, Islamic bankers find it more profitable to mimic conventional finance. Regulating Islamic banks must therefore be directed to establishing proper incentives to follow the true Islamic finance paradigm in order to benefit from its significant externalities. This is the core objective of our theory. In addition, such regulation must provide sufficient safeguards against information asymustry and the exposure of Islamic banks to its resulting risking .

The paper is organized in six parts. The first section starts by explaining the nature of an Islamic bank and whether they, like their conventional counterparts, eusrged endogenously. The paper then explains why Islamic banks find it beneficial to mimic conventional banks. The second section discusses mar-

184 One way to explain this is to look into the increasing role of pressure groups in Western democracies, which is not sufficiently counterbalanced by the effectiveness of government branches.

185 See Al-Jarhi, 1985; Appendix II.



ket imperfections in relation to Islamic finance, including screening, monitoring and liquidity risk. The third section discusses the incentives to monitor as related to asset safety. The forth section discusses the relationship between market failures and regulation. Section five discusses some related issues of monetary policy. Issues of aggregate liquidity related to the proposed set of regulations are discussed in the last section. Finally, the paper summarizes its conclusions.

Market imperfections and regulation

Four alternative theories have developed to explain why banks exist in response to financial market imperfections (Freixas and Santousro, 2002). Let us consider the implications of each for Islamic banking.

Screening of potential borrowers

Conventional banks screen potential clients *ex ante* on behalf of depositors), either because they are better at screening (Grossman and Stiglitz, 1980), or they do it on behalf of a large number of interested parties (Campbell and Kracaw, 1980). In both cases, banks enjoy economies of scale in monitoring (Ramakrishnan and Thakor, 1983).

However, the presence of economies of scale does not automatically lead to conventional banks actually monitoring their custousrs. Since monitoring is costly, conventional banks try to avoid it by requiring borrowers to provide collateral and guarantees. This happens to be the general trend in conventional banking. Banks prefer to take risk on collateral rather than sharing in the business risk of their custousrs.

In addition, monitoring would be generally restricted to large-voluus transactions, where structured finance can be used. When a conventional bank finances a huge industrial or construction operation, it may find it economical to attach to it a system of monitoring. However, the majority of lending activities would not take such huge amounts of finance. In addition, borrowers with large financial requireusnts often find it to their advantage to resort to issuing bonds in financial markets in order to avoid monitoring, whose costs would be included in higher borrowing rates. That may explain the growth in issuing corporate bonds.

In Islamic finance, there is a need as well as an incentive for Islamic banks to screen finance users.

In financing consumption, consuusrs "compete" for the commodities by expressing their willingness to purchase each at a price or a markup over cost that is comusnsurate with their marginal value in use as well as their time preference related to each commodity[186]. Competition would result in an equilibrium that equates the price of each with its marginal value in use. In addition, commodities are financed through their sale against future payusnt or their future delivery against spot payusnt. Screening would therefore depend on the bidding by each custousr in addition to the ability of each commodity financed to serve as collateral.

The issue of how much finance to allocate to each commodity is resolved through a process that invokes its value in use as well as the commodity time preference. Both Islamic and conventional finance benefit from the existence of economies of scale in screening consuusrs seeking finance. Islamic banks would also have a comparative advantage in screening sale finance custousrs than conventional banks in screening borrowers because of the virtually non-existence of information asymustry in the case of five out of six Islamic sale finance contracts.

Regulation must therefore be directed to establishing procedures for Islamic sale finance that would provide for the proper use the financed commodities as collateral until full repayusnt is concluded. When commodities cannot serve as collateral, because they are either perishable or with high cost of repossession, additional regulations must be set. This would include procedures for penalizing delinquency and verifying temporary insolvency.

As to Salam finance, the agricultural commodities designated for future delivery cannot be used as collateral. The ability of the finance user to deliver such commodities depends on how their price received in advance is used towards cultivating them. Information asymustry is therefore associated with

186 When present money is lent against future money, time preference in money becomes central. When goods are delivered against future payments, or present payments are made against future delivery of goods in Islamic finance, time preference would be related to the goods and not to cash balances. The implication is that different goods would command different markups, depending on their rates of time preference. Such markups would be equated at the margin under perfect competition.



such contract. The bank purchasing goods through Salam needs to ascertain that the use of the advanced funds will lead to producing sufficient quantities to be delivered.

Screening investors is a process that goes beyond the verification of the ability to pay. Investors, whether they obtain finance through sale, or partnership (in product or profit), must prove the feasibility of their investment, because it influences their ability to recover the finance they obtain. In this respect, regulation of Islamic banks must ascertain that they are properly equipped with the abilities to prepare, review feasibility studies, and monitor investments made through Mudaraba and Wakala (investment agency). Monitoring would be done automatically with partnership in product and profit, because in both cases, Islamic banks participate in manageusnt and have direct access to investors information.

MONITORING BANKS AND CUSTOUSRS

Banking theory focuses on the monitoring of borrowers' actions after loan approval. Models here have concentrated on one of the following (Freixas and Santousro, 2002).

1. The actual use of borrowed funds (Boot and Thakor, 1993),
2. Effort involved (Allen and Gale, 1988), and
3. Ex post outcome revelation (Diamond, 1984, Gale and Hellwig, 1985).

In this context, Islamic finance monitoring of finance users' actions during the use of finance takes a different form. In partnership finance, an Islamic bank or financial institution, in its capacity as partner, is a part of the manageusnt[187]; information sows automatically into its hands. Regulations must therefore stipulate that the Islamic bank must ascertain that the finance user is properly equipped to collect and disseminate all necessary information.

187 That means membership in boards of directors of financed companies. The amount of partnership finance would be set by an Islamic bank in order to reduce the cost of monitoring to minimum. In other words, the share of the bank in the company should be large enough to afford it membership in the board of directors and continuous flow of information.

In sale finance, an Islamic bank or finance institution would provide commodities, not cash, to finance users. Therefore, there is no need to worry about *how funds are used*. What remains is that the financier must ascertain through maintenance and insurance contracts that the use of commodities provided would not be contrary to their ability to be used as collateral[188]. Regulations must therefore provide rules against obtaining finance for commodities that would be automatically resold to others. Commodities, which cannot be used as collateral, because of their nature, should be given special treatusnt, like requiring guarantees or suitable collateral.

In contrast, Salam finance presents a need to monitor how the fund user utilizes the funds in order to finance the production of a sufficient amount of product for future delivery. This type of finance is marred with serious information asymustry which must be confronted with either matching it with partnership finance or imposing special procedures to facilitate inexpensive monitoring[189]. The rules listed below for PLS and Wakala finance must therefore apply to Salam.

The question of how custousrs use funds after obtaining finance arises also in the cases of *Amana or trust finance*, which includes Mudaraba (profit-and-loss sharing, PLS) and investment Wakala (agency investment), both unrestricted and restricted. Therefore, it becomes necessary for Rabbulmal (fund owner) to insure against encroachusnt, negligence and violation of contract. Towards that end, regulations can set suitable guidelines for *Amana finance* (Mudaraba and Wakala) as well as Salam, including the following.

Making feasibility studies to estimate the expected or indicative rate of return, by whose figures and results the finance users must be bound, except for changes that occur for reasons beyond their power. In such case, the burden of proof falls squarely on the shoulders of the finance users.

188 Consequently, an Islamic financial institution has direct interest in refusing to finance commodities for those who obtain finance for liquidity purposes, i.e., purchase goods for immediate resale, or Tawarruq. The ability of financed goods to serve as collateral would significantly diminish under such behavior.

189 The need to exercise monitoring with Salam finance could be ignored because the contract does not stipulate the delivery of the goods to be cultivated, horticulture or even manufactured, but goods to be delivered must be chosen to be easily available in the market which the fund user can acquire and deliver. However, we think that the contract has been originally developed as a means to finance production of goods to be delivered.



The investment agent, Mudareb, managing partner, or Wakeel (investment agent) must hold orderly bookkeeping and supply audited financial stateusnts regularly (monthly or quarterly) containing the information necessary for proper monitoring.

Control of payables and receivables of financed operation must be done through an account with the bank or finance institution, where all outward moveusnts would be approved by both the financier and the finance user.

To avoid such costly procedures, PLS, Wakala and Salam could be joined with Musharaka or partnership finance, where the bank is continuously inforusd about business developusnts in the financed company. Regulations should therefore accept that, as a substitute for the above procedure.

When it comes to monitoring banks by custousrs, I find that the incentive to monitor one's bank is rather week in conventional banking. This is because all deposits are presuusd to be guaranteed under the classical loan contract, both principal and interest. Obviously, such guarantee is valuable only to the extent of which the occurrence of bank failures is not possible and deposits are insured.

Perhaps, monetary economists assuus that since deposit insurance usually covers small-size deposits, those with large deposits can afford monitoring their banks. However, this still does not explain how this monitoring would be done. Besides, the usre dependence on the follow up of published financial stateusnts and other data about the bank is not sufficient for effective monitoring. The question of how custousrs of conventional banks monitor their banks effectively remains to be answered.

In Islamic banks, investment accounts are held under the rules of PLS[190] and are not guaranteed[191]. Finance providers in this case are far less inforusd than finance users. Because of information asymustry, they face the risk of mor-

190 Some also can be held under Musharaka and Wakala, which would equally require monitoring.

191 In some developing countries, all deposits are guaranteed by the government. This introduces an element of moral hazard in banking, balanced by the power of monetary authorities to monitor banks through regulation and supervision. The monetary authorities would monitor banks on behalf of customers, hence. Sometimes, the monetary authority limits the risk each bank is allowed to take. This would introduce an element of inefficiency in the banking sector.

al hazard whose reduction requires monitoring. Investment account holders would have a strong incentive to monitor Islamic banks, but have no effective way to doing so. Regulation may fill out this gap by providing access to investment account holder to monitoring Islamic banks through enforcing a governance rule that appoints some of the holders with highest investment-account balances as usmbers of the board of directors.

The rationale for such representation is that investment accounts face the same risks as shareholding in the bank. How much representation should be accorded to them? Proportional representation would make account holders a majority in banks' boards of directors. Meanwhile, considering that some of these accounts are transitory, regulations can set a criterion that considers both account size and maturity for the eligibility to sit on the board.

Obviously, with most investment accounts maturing at the end of the financial year, holders of investment accounts can become a majority in the Board of Directors. A new type of a banking establishusnt, managed by "depositors" could arise. Islamic banking would be radically changing its institutional structure and moving further away from conventional finance.

LIQUIDITY RISK INSURANCE & MATURITY MISMATCH

The justification of providing guaranteed deposits, offered by Diamond and Dybvig (1983), assuuss uncertainty of consumption timing. Conventional banking contracts allow for some ex ante insurance. Despite the possible instability of conventional banks, their guaranteed deposit contracts are preferred to financial securities (McCulloch, 1986).

The provision of guaranteed, instead of PLS deposits returns the financial system to the prisoners' dilemma. If all holders of "investable balances" were to be provided with guaranteed deposits, risk would be borne by only one side of the financial system, nausly, fund users. Lack of coordination would deprive the system from the compactness associated with system-wide risk sharing, whose benefits would outweigh the private benefits accruing to each individual depositor.

Both conventional and Islamic banks mobilize resources which are mostly short-term through accepting deposits or investment accounts. Yet, they require longer-term funds in order to provide loans to conventional bank cus-



tousrs and make profitable investments by Islamic banks. Maturity mismatch is therefore a common hazard of the banking industry.

Regulations attempt to protect conventional banks from maturity mismatch through ascertaining that each has a viable system of liquidity manageusnt that assigns to each future payusnt to be made, a matching sufficient insow that cover it over the short- and usdium-term. This can also be done in the case of Islamic banks.

Another means is to securitize investment accounts by issuing investment certificates of long maturities that can be sold by their holders before maturity. This adds liquidity and flexibility to investment accounts, similar to certificates of deposits in conventional finance.

A third means is to finance long-term projects through Sukuk. The sale of Sukuk would bring in sufficient proceeds to finance the project. In addition, Sukuk would be tradable, which affords their holders a good measure of both liquidity and return.

Islamic banks do accept demand deposits like conventional banks. Their assets, too, have longer maturity than their demand deposits and investment accounts. However, they have more tools to use in bridging the maturity gap than do conventional finance. In particular, they can apply the following methods:

1. The use of restricted investment accounts, based on restricted PLS or Wakala, to attract funds directed to financing certain projects or portfolios with maturities longer than available through unrestricted investment accounts. This enables Islamic bank to earmark the proceeds of some restricted investment accounts to certain long term investments. It would be an effective means to mobilize funds with maturities that exactly match the maturity of assets to be created. Naturally, the rate of return on accounts with longer maturities would be sufficiently convincing. In contrast, conventional finance does not have access to attracting restricted Wakala and PLS accounts.

2. Securitization of long-term projects, portfolios and syndicated finance into Sukuk of long maturities to attract funds with longer maturities. This enables Islamic banks to establish the exact match between their assets

and liabilities. It is notable that Sukuk transfers the title to the securitized assets from banks to Sukuk holders, which provides an effective way to match maturities. Meanwhile, the use of securitization of some of their assets by conventional banks does not transfer titles to the assets to security holders. Conventional banks remain stuck with the titles to their assets. Maturity mismatching relief would therefore be limited.

3. Securitizing investment accounts into PLS and investment Wakala Sukuk of various maturities to make them liquid to account holders. Trading an investment account in Sukuk will allow holders to exit without deposit withdrawal. That allows Islamic banks to turn investment accounts into negotiable investment certificates of long maturities (holders can sell them before maturity). That adds liquidity and flexibility to investment accounts, similar to certificates of deposits in conventional finance.

Regulations must, therefore, set rules for the holders of restricted investment accounts to allow them some monitoring rights regarding the projects, funds, or portfolios in which they invest. In addition, proper procedures must be set for securitization into Sukuk to ensure that Sukuk holders control the special purpose vehicles and not banks or Sukuk issuers. The sale of securitized assets must be effected to ascertain their title transfer to Sukuk holders. That would effectively remove those assets from banks' balance sheets. In addition, regulations must set proper rules for trading, such as Sukuk in primary and secondary markets, in coordination with monetary and financial market regulators.

CREATING A SAFE ASSET

Gorton and Pennacchi (1990, 1993) consider banks as an optimal security design. Bank deposits provide an investment in a safe asset, which is not affected by information in the financial markets and is a feasible, efficient asset in optimal portfolio decisions.

Yet, such security leads to concentration of risk in the hands of few specialists, nausly bankers. Deposits in conventional banks are loans guaranteed both principal and interest. Such guarantees influences banks behavior. When banks face higher risks, they tend to transfer a larger share of risk to their custousrs through higher interest rates (Tovar, Jaramillo and Hernández, 2011).



At times of crises, the increased vulnerability of the system leads banks to fear bank-runs started by one of the banks going bankrupt. Their competitive drive is attenuated by their interest in protecting their "fellow banks" from failure. Financial crises, therefore, reduce banks' incentives to compete, and induce them to use crises as coordinating signals for collusion. That is why they are capable of raising the interest rates charged to their custousrs.

The experience of the 2008 international financial crisis has clearly shown that the multiple layers of deposit guarantees by banks and insurance agencies do not play an essential role in creating a safe asset. The way monetary authorities handled the crisis ended up with dipping into taxpayers' pockets to bail out banks. Safety or rather lack of it seems to be intertwined with the behavior of bankers, and their inability to resist temptation to give in to moral hazard.

Islamic banks guarantee only demand deposits. The risk is entirely borne by Islamic banks themselves. Because they guarantee the repayusnt of demand deposits, they allow themselves to invest a proportion of them in the PLS asset pool[192]. Shareholders money and (unrestricted) investment deposits are invested side-by-side in that pool. This in turn places limits on the risks taken for the whole pool, as banks' shareholders automatically share a part of this risk. The tendency to fall into moral hazard is not significantly reduced due to the participation of shareholders in the Mudaraba pool. As such, banks' share would be a small proportion, leaving the lion's share to investment deposits.

The behavior of Islamic banks towards bearing risk stands in contrast with that of conventional banks. During financial crises[193], the risk carried by Islamic banks and investment account holders increase. Islamic banks do not shift part of their risk to investment account holders by reducing the profit-sharing ratio assigned to the latter. Instead, I find that the rate of return earned by both parties becomes lower.

192 This is the collection of assets in which Islamic banks invest its shareholders' money together with a discretionary proportion of demand deposits and all (unrestricted) investment deposits.

193 Financial crises can strike Islamic finance in mixed financial systems. This can be attenuated by the availability of financial assets that facilitate interbank deals among Islamic banks. In a purely Islamic finance system, the possibility of crises is removed by the virtue of the absence of risk trading and the strong binding of the financial with the real sector.

In order to maintain competitive profit rates on investment accounts, Islamic banks may decrease their own profit-sharing ratio in favor of their customers. Other *direct cushioning* devices are used, like withdrawal from the profit stabilization reserve and the investment risk reserve i to prop up the profit rate distributed to investment accounts.

This, however, does not mean that profits distributed to investment account holders do not fall during crises. I have noticed that such rates did fall significantly during the latest international financial crisis. This can be related to the exercise of extra care by Islamic banks or the dearth of profitable investment opportunities rather than moral hazard.

Still, there is a need to bar Islamic banks at times of crises from shifting risk to their custousrs and to strengthen the banking system against the temptation to moral hazard. This may require few steps to be taken by regulators. The first step is to make sure that each Islamic bank has sufficient resources in the form of direct cushions. Rules for setting aside a proportion of profits earned at suitable times to be used in topping up such cushions could be one of the ways to do so.

The second step is to make sure that Islamic banks provide a rate of return on investment accounts that is higher than the interest rate paid by conventional banks on time and saving deposits to compensate investment account holders for the extra risk they take in financing real economic activities instead of providing collateralized loans[194]. It is rather anomalous, yet common, for Islamic banks to pay a rate of return on their investment accounts that is not significantly different from the interest rate paid out on conventional deposits. Reasons for such phenousnon can be found in the tendency of Islamic bankers to mimic the financial products offered by conventional banks, after dressing them into an Islamic attire. This would lead to the convergence of rates of return in both Islamic and conventional banks.

Perhaps, I can detect some degree of *negative moral hazard* on the side of Islamic banks. Islamic banks may have gone too far in mimicking conventional

194 The nominal rate of growth of the economy could be used as a benchmark to the rate of return on investment. If an Islamic bank is not distributing the benchmark as a minimum, its operations should be scrutinized to check whether the Islamic bank in question is placing some of its resources in conventional outlets.



banking by evading the tradeoff between risk and return and focusing on sale finance, where collateral can be easily obtained. Meanwhile, finance based on partnership in product and profit may be willfully avoided. This will be dealt with later with more regulatory tools, as it involves several other ramifications.

INCENTIVES TO MONITOR AND ASSET SAFETY

Monitoring distinguishes German universal banking from Anglo-Saxon comusrcial banking. It also distinguishes conventional from Islamic banking, should Islamic banks be true to their own paradigm and act like universal banks. Monitoring also distinguishes banking loans, which are presumably subject to monitoring from tradable debt (bonds) which are not.

Monitoring can be done in two directions: banks monitoring their custousrs (finance users) and depositors or investment-account holders monitoring their banks. Optimality requires that monitoring be exercised both ways. However, the incentives to monitor are not always present on both sides. Obviously, universal banks have a greater incentive as well as the effective tools to monitor their custousrs. However, the extent and effectiveness of such monitoring has been debatable (Baliga and Polak, 1995)[195]. This ultimately depends on the extent to which universal banks take equity in the companies to which they provide finance. Active usmbership of universal banks in their custousrs' boards of directors and the degree of their involveusnt in manageusnt sets the borders of such monitoring.

The relationship between universal banks and firms have been subject to much scrutiny. Some authors report substantial monitoring as old as early Twentieth Century (Hilferding, (1910); Riesser (1909)). Fohlin (1993), meanwhile, argues that banks representation on boards was much lower before 1900. In addition, Edwards and Fischer (l994) as well as Edwards and Ogilvie (1995) argue that the influence of such boards both past and present has been exaggerated.

This author has previously claiusd in other writings that universal banks are well placed to monitor their custousrs, based on the presumption that such

195 The debate has continued since the date of this article in 1995. See for example, 23. Elsas and Krahnen, 2003.

banks are allowed to take equity in the firms to which they provide financing in the form of conventional loans. The fact is that such assuusd practice is not always the case. In many cases, German banks sat on firms "*supervisory board*", an institutional organ that has a vague role, which is different from the firm's "board of directors" that represents equity shareholders in the firm and does the actual manageusnt, (Guinnane, 2001). I now realize that German banks have had a complicated relationship with business and cannot simply be assuusd to behave like equity-holders in custousr firms.

However, our main assertion remains. If a conventional bank is allowed to provide finance in the form of equity in addition to conventional loans, information asymustry attached to the conventional loan vanishes and the bank is automatically freed from the risks of adverse selection and moral hazard. The lesson learned from such assertion is that universal banking as I perceive it, is an effective way to eliminate information asymustry. Islamic banks use 16 finance and investment contracts six of which suffer from information asymustry. The paradigm of Islamic banking should therefore include operating like a universal bank that takes equity in the businesses they finance[196].

Monitoring is therefore critical to both Islamic and conventional banking, simply because it eliminates information asymustry. Such elimination removes the risk of adverse selection and moral hazard faced by custousrs providing deposits or investment accounts to banks, and by banks providing finance to custousrs.

Therefore, I can conclude that the quality of assets held by banks through financing activities and of assets held by the public through placing deposits or investment accounts with banks, depends upon the incentive of banks and custousrs to monitor each other. Optimality requires *Pareto optimal* incentives for banks to screen, monitor and invest and for custousrs to monitor banks with which they place funds. With incorrect incentives, market failures in the banking industry will occur, reducing social welfare and real economic activity (Gertler, 1988). Such problem can be reusdied with proper regulation as explained below.

196 We must remember that equity finance is the same as Musharaka and diminishing Musharaka, which are two of the Islamic finance sixteen contracts.

BANKS AND CUSTOUSRS' INCENTIVES TO MONITOR

Conventional banks incentives to monitor borrowers do not come naturally through the market uschanism. Lack of conventional banks' incentives to monitor emanates from their use of the classical loan contract and their resulting insistence to limit their risk-taking to the risk on collateral. To provide them with incentives to monitor requires a radical change in their behavior that would turn them to assuming some degree of *business risk*.

Holders of demand and time deposits with conventional banks have little incentive to monitor their banks, as their deposits are guaranteed in principal and interest by banks as well as fully or partially insured by deposit insurance scheuss. They can be induced to monitor their banks only if the classical loan contract is no longer the basis for providing such deposits and if deposit insurance coverage is limited to small deposits.

In other words, introducing incentives to monitor into conventional banking by both banks and deposit holders would require systemic changes. This would call for the discussion of banking reforms, which is beyond the scope of this research.

The safety of assets held by Islamic banks will generally depend on their underlying Islamic finance and investment contracts, investment feasibility and safeguards to insure transparency and disclosure.

Islamic banks practices indicate their preference to sale over partnership and agency-investment finance. When an Islamic bank provides sale finance, it does not give cash to custousrs, but rather purchases usrchandise and assets and provides them to custousr. Only in the case of Salam or deferred-delivery sale that cash is advanced against later delivery. This means that, except for Salam, sale finance includes a self-monitoring uschanism. Sale finance is therefore free from information asymustry and requires no extra monitoring beyond its self-monitoring uschanism[197].

197 One exception needs to be mentioned, that regulators must set conditions for the resale of financed assets before full finance repayment, in order to make sure that the quality of banks' collateral will not deteriorate due to premature sale, which is usually practiced under Tawarruq. We propose as a condition that the new buyer would pay all remaining installments in full

The choice of the underlying Islamic finance and investment contracts provide Islamic banks a unique opportunity to create assets with self-monitoring uschanism. There is a usnu of sixteen finance and investment contracts from which to choose. Each contract has a different degree of embedded risk, depending on its implicit monitoring. Mixing and matching contracts, or what is commonly known as *product structuring*, can be an effective usthod to sculpture quality assets.

Joining PLS, Salam or Wakala, which has no self-monitoring uschanism with Musharaka or diminishing Musharaka, with their powerful self-monitoring uschanism, in one product would significantly reduce information asymustry and its related risks[198]. Risks of Musharaka itself can be mitigated through joining it with Ijarah. The size of the usnu of Islamic investment and finance contract indicates that the number of products can go into several hundreds.

To benefit from such advantage may require proper regulation. Islamic bankers, interested in short-term objectives and being aware of their inability to internalize the external benefits of Islamic finance may shy away from using certain contracts, particularly those of partnership in profit and product, like PLS and Musharaka. Therefore, regulators have to make sure that Islamic banks under their supervision use the art of product structuring to its full potential.

This can be handled through considering that failure to use product structuring effectively can be a source of operating risk. Regulations must therefore ascertain that each Islamic bank has sufficient resources and proper procedures to structure Islamic finance products. In addition, supervision should review samples of previously structured products to test for their propriety and their ability to fulfill custousr objectives and bank goals.

I can therefore conclude that the classical loan contract stands as an obstacle against motivating conventional bankers and depositors to monitor each other. Such motivation requires a systemic change to provide an alternative to the classical loan contract. Meanwhile, Islamic banks require regulatory discipline to force an imaginative effort towards mixing and matching among the sixteen available Islamic finance and investment contracts.

198 Notice the similarity of this approach with that is supposedly used by universal banks (Al-Jarhi, 2001), when they actually provide equity finance side-by-side with conventional loans.

CUSTOUSRS' INCENTIVES TO MONITOR AND ASSET SAFETY

I usntioned above that custousrs in their capacity as depositors and investment-account holders have little incentive to monitor their banks beyond comparing interest rates paid by conventional banks on deposits, rates of return paid by Islamic banks on investment accounts as well as other banking services. This deprives custousrs from early-warning signals indicating the imminent collapse of their banks.

Deposits in conventional finance are defined as loans from custousrs to banks. The conventional loan contract makes banks liable to depositors to repay their deposits and accrued interest in full. While it is generally understood that all loans, albeit in different degrees, are subject to default, depositors do not have sufficient incentives to continuously assess the default risk of their banks. Again, I find that in order to create the proper incentives to monitor, custousrs must place their funds with banks on a basis that is different from the classical loan contract. This as usntioned above begs the question of bank reform.

Custousrs of Islamic banks who deposit their funds in *investment accounts* have a different position. First, their investment account is placed on the basis of profit-and-loss sharing. No guarantee is therefore implicit. Second, despite the similarity between the positions of investment-account holders and bank shareholders, the latter have an effective way of monitoring their bank by electing its board of directors and looking into their audited financial stateusnts every financial year, while the forusr have no way whatsoever. They must therefore rely on the monetary authority for monitoring their bank. Past recurrence of bank failures indicate that the monetary authority monitoring is not sufficient to protect investment account holders.

Regulations must therefore provide the means for custousrs monitoring of banks. The uschanism I propose should be similar to that assigned to shareholders. That is to insure that depositors would be represented in the board of directors in proportion of their deposits (or investment accounts) to the total funds invested by the bank. In order to do so, I must assign a number of seats in the board to depositors. Then, I select those who should occupy these seats from the top investment-account holders, considering their investment account balances and their length to maturity.

MARKET FAILURES AND REGULATION

There are three sources of market failure: the presence of public goods, externalities and monopolies (market power).

PUBLIC GOODS AND REGULATION

The banking and finance system itself, once established, renders benefits to all users, like the provision of a means of exchange and the use of monetary policy, in order to gauge monetary growth to the requireusnts of economic growth and to control inflation. There is no way to apply the exclusion principle to all beneficiaries. Of course, banks can charge for their services, but cannot charge for the benefits from their usre existence. The monetary authority itself cannot charge individuals who happen to gain from monetary policies. Taxes must ultimately be used to cover the costs of establishing, maintaining, regulating the banking system and managing monetary policy.

Does banking and finance in general contain an eleusnt of public goods that justify its regulation? Would that apply equally to both conventional and Islamic finance? How would regulation provide a reasonable solution to the public good problem in both cases? These are the questions into which I would like to look.

THE PUBLIC GOOD ELEUSNT IN CONVENTIONAL BANKING

If I excluded the usre existence of the financial system, financing services provided by banks are not pure public goods, as the exclusion principle can easily be applied to conventional finance. The existence of banking compleusnts the institution of money by providing monetary services, like accepting deposits, organization of payusnts (transfers, clearance, etc.). Regulation of banks preserves the quality of banking services and monetary policies preserve the quality of real balance. Such benefits are not subject to the exclusion principle and must be financed through taxation.

Conventional finance is provided, based on creditworthiness and collateral. In addition, the conventional banking system is associated with some public bads. Those result from the use of the classical loan contract (Al-Jarhi, 2001).

Finance through the classical loan contract causes the allocation of resources to be based on “lending criteria” rather than “investment criteria” (Al-Jarhi,



2001). Since the size of the debt to be repaid would be subject to cumulative interest, debt can augusnt indefinitely and ultimately become unsustainable. The financial sector would experience an enormous amount of innovation in the field of risk trading, causing it to be remotely connected to and much larger in size than the commodity sector, ultimately resulting in the lack of compactness of the economic system.

A conventional bank or financial institution is inherently unstable. Its liabilities are guaranteed both principal and interest, while its assets are subject to default risk. A positive interest rate, guaranteed to be paid, on loans encourages the substitution of real resources for money in transactions, thereby reducing efficiency. Information asymustry exposes comusrcial banking to risks of adverse selection and moral hazard. Mitigation of such risks require expensive monitoring or the switch from comusrcial to universal banking (Al-Jarhi, 2005). Financial innovations through the use of risk trading exposes the economy to instability and contagion.

In a democracy with imperfect information, bank size becomes a critical eleusnt in economic policy, giving rise to the claim that some banks are *too big to fail*. Policymakers tend to draw taxpayers' money to subsidize them during crises (Al-Jarhi, 2009). This runs contrary to our policy recomusndation in Islamic economics, which points to bailing out debtors with serious illiquidity, as such a policy would prevent bank failure and support aggregate demand from falling and causing an unwanted recession.

THE PUBLIC GOODS ELEUSNTS IN ISLAMIC BANKING

The Islamic banking and finance system would have the same eleusnts of public goods as its conventional counterpart, nausly the provision of a means of exchange and monetary policy. In contrast to conventional finance, Islamic finance has a much lower share of public bads, as seen below.

Islamic banking and finance, properly applied allocates resources according to investment rather than lending criteria. In addition, the size of debt (associated with sale finance) would be predetermined at the outset and not subject to increase. Debt would therefore be sustainable[199]. The financial system would

199 Temporary insolvent debtors would be provided rescheduling at no extra charge or increase in their debt. Only in cases of delinquency, debtors are subjected to penalty fees, which are given to charity and not transferable to banks.

be closely connected to and smaller in size than the real sector. Therefore, the economic system would be compact[200].

An Islamic bank or financial institution has no guaranteed liabilities, except for demand deposits. Compared with the presence of risks associated with its assets, it appears to be more stable than a conventional bank or financial institution. In addition, sale finance of assets (provision of commodities on credit) automatically provides for sufficient collateral. Asset creation by Islamic banks would therefore involve an eleusnt of risk self-mitigation that is not automatically available to conventional finance.

Return on Islamic banks investment accounts is not guaranteed, providing no incentive to substitute real resources for cash in transactions. The system would therefore stay efficient[201].

Ten out of the twenty Islamic finance and investment contracts enjoy perfect information symustry between finance providers and users. Only PLS, Salam and Wakala (restricted and unrestricted) contracts are subject to information asymustry. Their use in conjunction with Musharaka would be an inexpensive way to provide perfect monitoring.

Islamic finance is prohibited from innovating through risk trade. Innovation comes as a result of introducing new products through mixing and matching of the existing sixteen contracts. An important source of instability and contagion is removed from the financial system, hence. However, innovation can lead to finance products of ill repute[202]. They would be instruusntal in con-

200 We are assuming a monetary structure, where all money issued is placed by the central bank into central investment accounts and the central bank has an exclusive monopoly on money creation. In addition, banks provide finance only through the sixteen Islamic investment and finance contracts Al-Jarhi 1983. See Appendix III.

201 When the return on deposits is guaranteed, as in the case of the rate of interest, people are tempted to economize on holding cash for transactions purposes by substituting real resources for cash in transactions. This brings the economy down to a suboptimal level of output. In an Islamic economy, there is no guaranteed return on cash balances. Investment accounts are provided on a profit-and-loss-sharing basis. There would be no incentive to substitute real resources for cash in transactions.

202 Islamic finance products of ill repute result when Islamic banks attempt to use conventional finance products after dressing them into an Islamic garb, like 'Einah, Tawarruq, and products based on the sale of debt. The author coined this term to refer to such products that appear Islamic but are truly conventional, or those that fulfill the formal validity of the contracts used, but violate the General Objectives of Shari'ah or Maqassed Al-Shari'ah.



verging the Islamic finance system to conventional finance, thereby depriving the forusr from its important comparative advantages. In this respect, I find room for regulations to prevent slippage into products of ill repute.

The rise of large banking units in societies using Islamic finance is still possible. Whether this can be used to support the claim that such large banks are *too big to fail*, will depend on the gaus-theoretic structure of the political system[203]. However, using tax money to provide fund users with temporary illiquidity during crises through debt rescheduling instead of directly subsidizing banks would prove more effective in avoiding both recessions and bank failures simultaneously. While this coincides with the teaching of Islam, it requires regulations to direct the regulators' attention to providing relief to insolvent debtors, penalizing the delinquent and prohibiting direct subsidies to banks.

REGULATION AND MONITORING

REGULATION AND MONITORING IN CONVENTIONAL BANKING

Regulation by itself cannot remove the public bads described above from the system of conventional banking and finance. They turn to be systemic ills that require modifying the system.

Regulation can do little in reducing information asymustry that is associated with the classical loan contract. However, regulation can enforce monitoring by both conventional banks and their depositors. Since in both cases "loaned" cash is provided to one party to use in some fashion, monitoring would require some changes in the rules of the gaus. An example would be project finance, where regulations would require dividing projects into stages and providing loaned cash in installusnts, each disbursed upon the completion of a specific stage[204].

203 Whether democracy practiced under Islam (e.g., as in Indonesia, Malaysia, Senegal, Tunisia, and Turkey) would also be associated with strong interest groups and large-size banks will depend on many political factors that are beyond our scope. However, constitutions used as bases for democratic rules in countries where Islamic values are held, can be tailored to minimize the influence of interest groups.

204 Such procedure would be similar to the one used in conjunction with Istisna' contract.

However, setting procedures for monitoring finance users while using the provided finance would make conventional finance cumbersous and costly. This would negate the benefits of using the classical loan contract resulting from its simplicity. It would of course be better to choose one or more Islamic finance contracts that would be free from information asymustry instead of the classical loan contract. However, financial innovation has not been known to go into that direction.

As to the monitoring of banks by depositors, a possible proposal that depositors would be represented in the boards of directors of conventional banks in proportion of their deposits to total resources. This can hardly be justified, since depositors provide deposits as "loans" guaranteed to be repaid both principal and interest.

In addition, as deposits usually exceed paid up capital by many folds, giving depositors a share in bank manageusnt would change the character of conventional banks radically. In itself, such action would be a serious institutional change and not usrely a regulatory action.

Generally, banks cannot effectively monitor the finance users unless money is not given in cash, but used jointly by both banks and custousrs. This, in turn, would be a serious institutional change.

The conclusion is that regulation itself is not sufficient to induce both conventional banks and their custousrs to monitor each other. The optimum amount of monitoring in the conventional banking system cannot be reached without forsaking the concept of the classical loan contract.

REGULATION AND MONITORING IN ISLAMIC BANKING

Since Islamic finance does not rely on the classical loan contract, it would be easier to fine-tune monitoring to the optimum level through regulation. In this regard, regulation can help Islamic finance in the following areas:

Placing guidelines for the use of *Amana finance*, through the contracts that provide cash to finance users, nausly, PLS, Salam and Wakala, in order to facilitate their use, in conjunction with Musharaka. Such guidelines which have been outlined in section II above, would reduce the extent of information asymustry imbedded in PLS and Wakala.



To prevent products of ill repute, regulations must clearly define all Islamic finance products and currently prevalent non-compliant products (of ill repute)[205] and establish a Shari'ah supervisory board in the regulatory and supervisory agency, while doing away with Shari'ah boards in Islamic banks. The presence of a Shari'ah board within the regulatory and supervisory agency would then be sufficient, once definitions of Islamic finance products, permissible and non-permissible, have been added to banking, comusrcial and financiAl-market laws.

In line with the above proposal, each Islamic bank can maintain a special departusnt for product structuring that employs people with proper expertise. The departusnt would configure the financing deals provided to custousrs, using a combination of the sixteen Islamic finance and investment contracts to satisfy custousrs' requireusnts while maintaining economic feasibility.

The meaning of compliance of Islamic finance products should be extended to include the non-violation of *Maqassed Al-Shari'ah* or the objectives of Shari'ah, in economics. This means that transactions must be valid in both form and objectives. Objectives here refer to the ultimate consequence of transactions. For example, transactions that are formally valid (satisfying the required contractual form), can still be non-permissible if they lead to unemployusnt, inflation, instability or inequity or violate the ethical standard of Islamic investment[206].

REGULATION AND SAVING BANKS FROM BANKRUPTCY

Monetary authorities in conventional economic systems have been accustousd at times of crises to save banks from bankruptcy, usually starting with big banks. The reason is the fear that the demise of one bank could trigger a *domino effect* on the whole banking system. Such process implies huge transfers from taxpayers to banks' shareholders. In this respect, larger-size banks enjoy a higher priority in obtaining such subsidies. Such policy often protects banks from bankruptcy. However, it provides no protection to the economy

205 It is also important to add such definitions to the banking law, financial markets law and civil law to facilitate litigation regarding conflicts between parties involved in Islamic finance and to reduce reliance on religious interpretation.

206 Such standards include in addition to dealing in interest, risk trading and cheating, human trafficking and inflicting harm on life or environment.

from recession, as banks during times of crises have relatively conservative lending policies.

In Islamic banking, the protection of banks from bankruptcy remains a legitimate objective. However, Islamic banks, properly managed, ought to show more resilience than conventional banks. This is due to the different nature of their balance sheets. While Islamic banks assets are subject to investment hazards, their liabilities are not guaranteed because investment accounts are usually based on PLS or profit-and-loss sharing, PLS.

Regulations can prohibit providing direct subsidies to banks that face bankruptcy risks. Instead, they should offer assistance to custousrs who face temporary insolvency at times of crises in the form of rescheduling. In addition, they should impose substantial penalties on delinquent finance users[207].

At times of crises, subsidizing banks to prevent their bankruptcy would not encourage them to keep providing financing economic activities at the same pace. Reduction in financing would push the economy down into recession. However, if insolvent borrowers obtained rescheduling breaks, they would be able to repay their debt, albeit at a longer period and with lower rates of return to banks. Aggregate spending will not be seriously affected, banks will not face bankruptcy and the economy will not fall into recession (Al-Jarhi 2008).

Obviously, such proposal will involve no wealth redistribution between tax payers and banks shareholders. To the contrary, banks shareholders may face a slightly lower rates of return because of forced rescheduling on temporarily insolvent custousrs.

RELATED ISSUES OF MONETARY POLICY

FORCED WEALTH REDISTRIBUTION

In conventional finance, banks as monopolies are implicitly allowed by law to create money collectively in the form of derivative deposits. Such a permission is granted by default through the fractional reserve system. The process of

207 The distinction between *temporary insolvency* and delinquency is central to this proposal. Temporary insolvency can be perceived as a shortage of present cash that prevents debtors from meeting their payment obligations. Delinquency implies an intentional refusal to pay one's financial obligations in order to spend the currently available cash on something else.



money creation through derivative deposits is a result of collective behavior and not that of a single bank.

Such money creation imposes an externality on the non-banking public. Money collectively created by banks is lent to custousrs at an interest rate. Charging interest on lending is rationalized by the fact that money has transactions services. Yet, such services emanate from the fact that money is generally accepted as means of exchange by the public[208].

Since the public is the source of general acceptability, it should earn any return resulting therefrom. Nonetheless, such reward, which is the source of monyness, does not go to the public. It goes to banks instead. Therefore, conventional banks force a redistribution of wealth to their favor through their creation and lending of money in the form of derivative deposits.

The provision of the money issued by banks as interest-bearing loans imposes another externality. The underlying classical loan contract suffers from information asymustry and imposes on the whole society extra risks of adverse selection and moral hazard. Such risks ultimately lead to an aggregate level of output below optimum. As explained above, risk-sharing would be a better arrangeusnt for the whole economy. However, lack of coordination between economic agents forces them to stick to continue to use the interest-rate mechanism.

Regulation has only one way to internalize such externalities to the benefit of the whole society. Regulators, through the enforceusnt of total reserves, give the monopoly of issuing money total and complete to the monetary authority.

In both of an Islamic and a conventional economy, the application of the total reserve system prevents wealth redistribution from the public to banks' shareholders. However, it will not insure against information asymustry in a conventional economy. In both Islamic and conventional economies, the total reserve system may not be sufficient. Guidelines must be set on the proper disposal of seigniorage gained by the monetary authority.

208 Notably, outside money issued by the monetary authority (the monetary base) is usually a small fraction of the money supply. Banks collectively can create a multiple of the monetary base in terms of derivative deposits. The wealth redistributed from the public to banks' shareholders is proportionately high.

FORCED HIDDEN TAXATION

In conventional banking, the monetary authorities issue the monetary base against governusnt debt. The interest paid by the governusnt to the monetary authority on its debt returns to the governusnt in the form of monetary authority surplus. This means that the governusnt obtains free financial resources at the expense of the whole society. The cost of such resources would be equivalent to a hidden tax that facilitates governusnt sector expansion at the expense of the private sector. The tax would be approximately equal to the resulting increase in the rate of inflation. This is similar to the crowding-out effect that is accompanied by an inflation tax.

It is notable in this regard that the expansion of the public sector through borrowing from the monetary authority is a political decision that often does not satisfy the efficiency criteria. The crowding-out effect would ultimately imply an eleusnt of inefficiency; unless competition rules between the public and the private sectors, the allocation of resources will remain suboptimal.

I can therefore propose that the expansion of the public sector by political decisions should be limited to activities that cannot be provided at a price, i.e., for which the exclusion principle cannot be applied. Moreover, governusnt activities that can be provided under the exclusion principle should compete with those provided by the private sector on equal basis. Such competition can be assured when governusnt activities of this type are financed through banks, where banks allocate financial resources among different activities using economic-feasibility criteria.

Additionally, transparency rules can be introduced. Governusnt budget should add all items of seigniorage to "non-tax revenues" for which the governusnt would be accountable. For the sake of transparency, such items should not be lumped together in one figure but duly itemized.

As to public goods, where the exclusion principle cannot be applied, taxation (with representation) would be used. In addition, the establishusnt of Awqaf, the collection and disburseusnt of Zakah and other charities should be facilitated, in order to lessen the need for governusnt provision of public services.

HOW THE NEWLY ISSUED MONEY IS USED

Some may argue for giving all monetary balances issued by the monetary authority to the governusnt in the form of interest-free loans. This begs the question of how to allocate economic activities between the public and the private sectors. Efficiency may require the use of market uschanism jointly with democratic political rules for such a division. Providing the governusnt with free monetary balances may bias such resource allocation at the outset in favor of the public sector.

I must find a different way to dispose of the newly issued monetary balances, whose issue and allocation to different uses can be based on efficiency criteria and not usrely lending criteria. Al-Jarhi's model (1981) has two distinct proposals in this regard.

First: the monetary authority should follow up the real growth of the economy and gauge any issued (or destroyed) money to the monetary requireusnts of real growth. The reason is rather obvious. Growth indicates higher output, requiring a larger size of transactions to produce and trade the expanded voluus of goods and services. When more transactions are required, more monetary balances would also be required to conclude the necessary transactions, if the rate of inflation is to remain constant.

How much more money should be issued to support a rise in real growth by one percent? This question can be answered by the close follow-up of how the rate of inflation responds to a higher rate of monetary expansion. The monetary authority would learn from experience and discover how to gauge monetary expansion to the transactions requireusnts of growth, without causing inflation[209].

Second, Al-Jarhi's model proposes a different way to dispose of monetary balances. In this model, the monetary authority adds to the total money supply by issuing money and placing it in investment (deposits) accounts with banks. Such *central deposits* would be allocated among banks according to efficiency

209 Notice that in this model, the issue of money would not be politically influenced and price stability would be assigned a higher priority than it obtains in a conventional economy. In addition, monetary-policy makers would have more power to control both monetary expansion and the rate of inflation, as they hold absolute monopoly on the production of money, rendering it the highest degree of independence from political influences.

criteria, where banks that are more profitable would obtain relatively higher proportions of central deposits. Perhaps the monetary authority would attempt to equate the rate of return from its central deposits in different banks at the margin.

In the absence of fractional reserves and the discount window, and in order to provide a financial instruusnt to serve as a tool for monetary policy, the monetary authority can issue *central deposit certificates,* CDCs as financial instruusnts, which both banks and the public can hold and trade. Such equity-based instruusnts can be used as a tool to change the money supply through open market operations, and to provide banks with temporary liquidity as part of the monetary authority function of acting as a last-resort provider of liquidity to banks.

The monetary authority would gain profits from placing its own central deposits with Islamic banks and acting as a *first-tier Mudareb* for the proceeds of central deposit certificates. This would be considered seigniorage whose disposal would be subject to transparency rules. The monetary authority surplus is balanced by banks' providing finance both to the governusnt and to the private sector through market uschanism on equal terms[210].

THE MARKET USCHANISM

In comparison with the banking sector in an Islamic economy, the conventional banking system has some distinct characteristics. Banks gain monopoly power through licensing. In addition, the banking system becomes a price setter, as the monetary authorities set the rates of interest, which are used as bases for pricing loans. Conventional banks income on lending comes from the interest differential that may not change much with the level of inter-

210 An important aspect of the Islamic economy is that social action determines the size of the public sector. Redistribution of wealth is done yearly through the levy of Zakah on those whose wealth exceed a certain limit. The redistributive branch of the economy can be privately managed but government controlled. Awqaf (or charitable foundations) can be established to provide for many public services, including health and education. The size of the public sector will be influenced by the extent to which the public is interested in providing public services through Awqaf, which has a special religious significance, but unfortunately, its role has been curtailed by modern governments in the Islamic world. In other words, an Islamic economy would be less encumbered with a government-budget deficit.



est rates set by the monetary authority[211]. The cost of funds is not therefore, market determined. This introduces an eleusnt of inefficiency to the finance system.

Lifting the monetary authority control on interest rates in a conventional economy would not be acceptable. Interest rates are considered an important policy tool that monetary authorities would not conceivably yield.

In Islamic banking and finance, funds are provided through the provision of goods and services on credit as well as through partnerships and investment agency. The rate of return on financing is market determined. Monetary policy is exercised exclusively through changing the monetary base and by open market operations in Islamic financial instruusnts.

Investment certificates, or as currently known as Sukuk, properly defined, can be issued in this economy by Treasury to obtain financing for its own projects. The monetary authority issues its own Sukuk as usntioned above. Banks and business enterprises can also issue their own Sukuk as a means to obtain financing through financial markets.

It is theoretically possible that the monetary authority would attempt to set the rates of return on these Sukuk (markup, rental and profit rates) through open market operations in each kind of certificates. This would be too laborious. The control of money supply would require trading certain value of certificates for each targeted level of monetary base. Selective trading by underlying contracts would not be necessary. I claim that the Sukuk markets for different funding outlets are sufficiently segusnted to make governusnt control of their rate of return impossible.

One of the important aspects of the Islamic monetary system is its reliance on the market uschanism. This is an advantage that should not be lost against temptations to interfere in the market. Regulation can enforce the competitiveness of Islamic banking and finance by reducing restrictions on entry and

211 Banks would put a markup on the central bank or prime rate to calculate the borrowing rates paid on deposits. They add the interest rate differential to the borrowing rate in order to arrive at the lending rate. Assisted by monopoly power, banks could set the interest rate differential as a percentage of the central bank or prime rate. Raising that rate under this scenario would mean a higher differential in absolute terms. The total income from bank lending will ultimately depend on its volume.

complete avoidance of setting rates of return on either investment accounts or financing provided by banks.

AGGREGATE LIQUIDITY

LIQUIDITY DEFINITION

Monetary economists look at liquidity as a spectrum of assets, with currency on the top, followed by demand deposits, time deposits, governusnt securities, corporate securities and so on. The first layer usually included currency and demand deposits, or M_1. The second layer includes saving and time deposits, or quasi money. Both layers are added together of form dousstic liquidity or M_2. In Islamic finance, currency, demand deposits and investment accounts hold similar liquidity connotations. M_1 would be equal to currency plus demand deposits and M_2 would be equal to M_1 plus investment accounts.

The big difference lies in the rest of governusnt and corporate securities. In Islamic finance, there are no *interest-bearing securities* issued by economic agents. Sukuk represent titles to combinations of assets, fully owned by their holders under *real sale*. The process of Islamic finance allows banks to create derivative deposits as well as derivative investment accounts. I have argued above for the enforceusnt of total reserves against demand deposits, while the public and banks to collectively create liquidity in the form of investment deposits.

COST OF LIQUIDITY

Aggregate liquidity is the responsibility of the monetary authority. It justifies its monopoly over money creation (Friedman and Schwartz, 1963). This assigns the systemic stability role to the monetary authority.

The need for the monetary authority to regulate the financial sector comes from the role played by conventional banks in asset transformation. They have illiquid assets and *allegedly* liquid liabilities. While economists consider deposits as money, Fama (1980) asserts that bank deposits are not liquid, but they are private contracts with different levels of risk. This must be taken with the fact that investment accounts are not the parallel product to time and saving deposits. They are based on PLS. They can also be based on Musharaka and Wakala. Therefore, the concept of asset transformation takes a different twist in Islamic banking.



The role of the monetary authority, as a regulator and as responsible for aggregate liquidity may be different in the case of Islamic finance. Such responsibility will usually be influenced by whether banks are allowed to produce collectively derivative deposits through the imposition of fractional reserves.

In addition, the "liquidity" created by Islamic banks may have a different effect on the price level due to the fact that Islamic finance, unlike conventional finance, does not finance the demand side only. In partnership-in-product and in-profit, Islamic banks finance the supply side, which ultimately influences demand to the extent of payusnts to factors of production. Sale finance, meanwhile, extends finance to both the demand and supply sides simultaneously. In both cases, the effect of the demand increase on price is attenuated by preceding or parallel effect of an increase in supply. In addition, Islamic banks do not finance risk trade, which could represent an important leakage from the commodity to the financial sector.

Finally, the regulation of Islamic banking based on "supervising liquidity" would require the regulator or the monetary authority to act as the ultimate "fund provider", a role that is parallel to that of the "ultimate lender" in conventional banking. I will take up each one of the three points below.

DERIVATIVE DEPOSITS AND DERIVATIVE INVESTMENT ACCOUNTS IN ISLAMIC BANKING

When an Islamic bank provides sale finance, it acquires usrchandize and assets from suppliers which it provides to custousrs against future payusnt. In the instance when the bank acquires usrchandize or assets to be grown or manufactured for future delivery against present payusnt, the bank credits their countervalue to the sellers' accounts. In addition, when it provides Musharaka, PLS or Wakala finance, it places some of the capital provided as a demand deposit into the finance user's account[212]. Therefore, finance users receive cash only when they are not getting their finance in kind.

Finance users, once received the funds, start spending on their investment activities to purchase factors of production. The cash sows therefrom to the owners of such factors will restart another cycle of sows to banks. In the other

212 When a bank provides some or all capital in kind (e. g. land, machinery and equipment), it will make payments to the suppliers of the physical capital.

instances where Islamic banks provide sale finance, cash is added to the demand deposits of commodity suppliers.

If all such sows or most of them end up with Islamic banks[213], it provides another cycle of financing to its custousrs, thereby creating derivative investment-accounts and derivative demand-deposits with them. Banks will use some of the new balances placed in investment accounts to finance more assets in the Mudaraba pool. New balances in demand deposits will be similarly used. The proportion of the new balances used to create new investment depends on the required reserve ratio applied on such accounts and deposits. This will cause successive rounds of derivative products both as investment accounts and as demand deposits.

THE EFFECTS OF MONEY CREATION BY ISLAMIC BANKS ON PRICES

From above, I realize that Islamic banks are capable, as a group, of adding to the supply of money through derivative deposits. Banks use balances over and above their liquidity as well as reserve requireusnts, if any, to invest and add to their assets.

Islamic banks invest through providing finance in the forms of partnership, Wakala, or sale finance. In partnership cases, finance goes to increase the supply of commodities. In sale finance, the bank acquires usrchandized and assets from suppliers first and then sell them to custousrs, stimulating supply and then demand. The time delay between supply and demand stimulation depends on whether the bank acquires usrchandize and asset already in inventory or commands their production, as in Istisna'.

In conclusion, the increase in Islamic finance investments due to the increase in money supply in the form of derivative investment-accounts and derivative demand-deposits would have no significant effect on inflation. This is contrary to conventional finance which is mostly directed to demand and can easily be inflationary.

I might add in this respect, that Islamic banks, when properly regulated, should be prohibited from financing risk -trade transactions, e. g., speculation in the

213 In a multiple finance system (conventional and Islamic), some funds will flow out of Islamic into conventional banks and vice versa.



stock market or trading in derivatives[214]. This would be an additional measure to prevent money created by Islamic banks to lead to inflation and/or instability.

In contrast, conventional finance provides financial resources to those who trade in risk. Risk trading is done mostly for gambling purposes. It hits the economy from time to time with instability and contagion. Risk trading redistributes wealth haphazardly, and could influence consumption demand directly.

The phenousnon of collective money creation by conventional banks and its effect on the price level, the cost of real balances and wealth redistribution against the public and in favor of banks would all justify regulations in favor of total reserves. However, collective money creation by Islamic banks may have less influence on the price level and the cost of real balances, but would still have the same redistributive effects in favor of banks. The enforceusnt of total reserves would still be in order. Meanwhile, more transparency is required in the governusnt use of seigniorage.

THE ULTIMATE LIQUIDITY PROVIDER

Should the monetary authority claim final responsibility for the aggregate liquidity of the economy, it must stand ready to play the role of the last liquidity provider to banks. However, the role of the lender of the last resort does not seem to apply equally to Islamic banking. The reason is that most monetary authorities regulating and supervising Islamic banks in a mixed financial system do not have the tools to act as the ultimate liquidity provider to Islamic banks.

Monetary authorities perform the function of the ultimate lender through a single conventional means, nausly, the discount window; banks requiring extra liquidity can discount some of their governusnt-debt holdings. This would not be acceptable for Islamic banks. The alternative is that the governusnt or monetary authorities issue Islamic investment certificates (e.g., Mudaraba certificates) whose proceeds are invested either directly or through Islamic

214 This brings up the question of regulating financial markets under Islamic finance. Obviously, there are several ways of preventing speculation in stocks and trading in derivatives. What concerns us here is that Islamic banks regulations should block any attempts of Islamic banks to finance speculative or risk-trade transactions.

banks. Banks holding such certificates would sell them in the open market or to the monetary authority to obtain liquidity relief.

CONCLUSIONS

Islamic banking dependence on mixing and matching between sixteen contracts may appear to bankers, originally trained in conventional banking, as cumbersous and costly. Yet, it has several advantages over conventional finance especially in the areas of information asymustry, efficiency, stability and debt sustainability. Most of such advantages are reflected as external effects in the form of macroeconomic and long-run benefits. Islamic bankers, failing to internalize such benefits, have little incentive to adhere strictly to the Islamic finance paradigm. To the contrary, they have every incentive to mimic conventional finance, with a view to reduce costs and streamline operations. Regulations are therefore required to change such behavior in a way to allow the economy to reap the benefits of Islamic finance.

Regulation that ignores the special characteristics of Islamic finance would hinder the growth of Islamic banks and deprive them from their comparative advantage in handling finance relative to conventional banking. Worse still, such regulation would lead Islamic banks to slip gradually into the practices of conventional finance, ultimately forcing one-sided convergence between Islamic and conventional finance. Islamic finance would then lose its *raison d'être* and become totally meaningless.

Regulatory and supervisory authorities must seriously consider how differently Islamic banks handle market imperfections in order to design their proper regulation.

Both Islamic and conventional banks benefit from economies of scale in screening custousrs. However, Islamic banks have a comparative advantage in screening the seekers of sale finance, because of the absence of information asymustry. Regulation of Islamic banks must verify the existence of proper procedures to offer sale finance and to ascertain the use of financed commodities and their availability as collateral until the finance is fully repaid.

Screening investors seeking finance by Islamic banks requires procedures to verify investment feasibility. Regulation must ascertain that Islamic banks have the capability and resources to perform such function.



Regulation must insure that banks properly monitor their custousrs and depositors and investment account holders monitor their banks. Islamic banks face no information asymustry in sale and Musharaka finance. The monitoring problem is automatically solved, hence. Monitoring partnership finance through PLS and Wakala requires procedures to make it less costly. The paper offers such procedures.

Investment account holders in Islamic banks must monitor their banks because their accounts, unlike demand deposits, are not guaranteed. Regulations must allow for proportionally representing investment account holders on the board of directors of Islamic banks in order to reduce the risk of moral hazard. Regulation must set minimum size and maturity requireusnts for the representation of account holders.

Both Islamic and conventional banks face maturity mismatch between assets and liabilities. Islamic banks have more tools than conventional banks to close this gap. Regulations must therefore make sure that Islamic banks use such tools to the extent that maturity mismatch becomes negligible.

Conventional banks face greater instability than Islamic banks. Time and saving deposits in conventional banks are guaranteed, both principal and interest. Risk is therefore concentrated in the hands of conventional banks. They tend to shift back this risk to custousrs at times of crises, by charging higher margins on loans. This behavior includes a higher degree of coordination between banks at times of crises.

Islamic banks, meanwhile, share risk in proportion to their shareholders' equity. Investment account holders face risk in proportion to their account balances. Risk is therefore distributed more uniformly in Islamic finance. Islamic banks use the profit stabilization reserve and the investment risk reserve as cushions during times of low profits in order to pay a competitive rate of return on investment accounts.

Regulation must ascertain the buildup of sufficient cushions during good times and their proper use during adversity. They must also make sure that the rate of return on investment accounts is sufficiently higher than the interest rate paid on time and saving deposits, to compensate for the higher risk taken in financing real economic activities rather than providing collateralized loans.

While regulation must provide Islamic banks with procedures to tighten their monitoring of PLS and Wakala investment, the quality of their assets hinges upon product structuring in order to benefit from the risk mitigation advantages of the majority of Islamic finance and investment contracts. Regulation must therefore make sure that banks internal processes include product structuring. Product structures must be tested internally for both business viability and compliance.

Regulation can help Islamic finance deal with the public goods problem. It can set guidelines for the use of Amana finance (PLS and Wakala) in order to facilitate their use in conjunction with Musharaka. In order to prevent the products of ill repute, regulations must clearly define all permissible and non-permissible products and add their definitions in the relevant laws. The regulator must establish a Shari'ah supervisory board in the regulatory agency, while doing away with Shari'ah boards in each Islamic bank

Regulations can prohibit providing subsidies to Islamic banks that face bankruptcy risks. Instead, regulators should offer assistance to custousrs who face temporary insolvency. In addition, heavy penalties should be imposed on delinquent custousrs.

In Islamic finance, the governusnt would have to compete with the private sector in order to obtain finance for its economic activities from Islamic banks using the Islamic finance and investment contracts. The monetary authority seigniorage is balanced by providing finance to the governusnt through market uschanism on equal basis with the private sector and enforcing transparency and disclosure rules on the seigniorage use by Treasury.

The role of the monetary authority to protect aggregate liquidity depends on whether banks are allowed to produce collectively derivative investment-accounts and demand-deposits through the imposition of fractional reserves. The "liquidity" created by Islamic banks may have a different effect on the price level due to the fact that Islamic finance does not finance the demand side only, but extends its finance to both the demand and supply sides. Finally, the regulation of Islamic banking based on "supervising liquidity" would require the regulator or the monetary authority to properly equip itself to act as the ultimate "liquidity provider"; a role that is parallel but not similar to that of the "ultimate lender" in conventional banking.

CHAPTER XIX

THE ISLAMIC MACROECONOMIC MODEL

THE ISLAMIC MACROECONOMIC MODEL

AGENT-BASED MODELS

Neoclassical economics base their macroeconomic models on homogenous agents who are *extraordinarily rational, well-inforusd, and super-calculative*. Being critical of this approach, Herbert Simon (1959) proposed the concepts of limited or bounded rationality and learning. The usre use of heterogeneity and bounded rationality should save economics from the pit of a static equilibrium analysis, enabling them to move to a dynamic disequilibrium analysis. However, modeling under the alternative concepts would admittedly be a real challenge. However, ways must be found to handle such complexities instead of using them as an excuse to provide a meaningless theory.

At the micro-level, markets have long been thought of as black-boxes that could be represented by the intersection of a supply and a demand curve. Hence, the heterogeneity of markets and of their dynamics, already emphasized by Marshall (Leijonhufvud 2006), has not been embedded in most micro-economic models, nor has been the impact of institutions or of social phenousna such as as beliefs, imitation or loyalty. I have presented in chapter XI of Voluus I, a frauswork for floating disequilibrium.

At the macro-level, common neoclassical use of the representative agent in macroeconomic models has been a way to coverup the failure of the Warlarisan model to provide a credible case for equilibrium analysis on the one hand. On the othe hand, it is a symptom that many *non-Walrasian equilibrium models* do not provide a convincing alternative approach to economic dynamics underlined by the Arrow-Debreu frauswork that uses price rigidities as a source of disequilibrium while capable of using data for policy analysis (De Vroey and Malgrange, 2011).

Efforts by Scarf to construct a computational frauswork for an applied general equilibrium theory (Scarf 1967; Mitra-Kahn 2008), most of the "non-Walrasian equilibrium" contributions (e.g Barro and Grossman 1971; Benassy 1975; Drèze 1975) remained at a rather abstract level and mainly focused on the existence and the (in-)efficiency of equilibrium with rationing and price rigidities.

The failure to incorporate dynamics and heterogeneity in economic models is possibly related to the use of inadequate mathematics. As pointed out by Gell-Mann (1995), twenty years later "In much of today's research on complex adaptive systems, mathematics play a very significant role, but in most cases it is not the kind of mathematics that has traditionally predominated in scientific theory [...] The kind of mathematics that is often used in the simulation of complex adaptive systems resembles the discrete mathematics used on a digital computer to approximate continuous differential equations, but now the discrete mathematics is used for its own sake and not just as an approximation."

Built upon this new mathematics and supported by the developusnt of new computational paradigms, agent-based models (ABMs) could play a central role in the search for alternative economic models. They have allowed to embed insights about imperfect information, technological change and bounded rationality into large-scale macroeconomic models that can replicate both macroeconomic and cross-sectional stylized facts: they provide a dynamic frauswork fit for policy analysis.

ABMs combine eleusnts of gaus theory, complex systems, computational sociology, evolutionary programming, and artificial intelligence. The two first and important characteristics are that agents are nuusrous and interact in market relations but also possibly in non-market relations (i) and that they are heterogenous (ii), by design.



The neoclassical macromodel has failed empirically to demonstrate stability or equilibrium. I have accepted that challenge and offered a comprehensive Islamic macroeconomic model, that is built around equity-based money and is distinctively characterized with the absence of the classical lending model.

THE ISLAMIC ECONOMIC MODEL

OUR MAIN POSTULATES

LENDING-BASED VS. PRODUCTIVITY-BASED ECONOMIC PROCESSES

In a conventional economy, money is produced by the central bank, which issues currency against governusnt debt to finance its deficit, and to banks, to lend it to to banks. Such cash balances filter down to commodity suppliers. money reaches banks as demand/time deposits. It can be useed to lend to borrowers, through derivative deposits. Newly created money is loaned to users. Creating and then allocating money is lending-centered or lending-based.

Money eventually filters down to households as suppliers/finance users. They can invest directly into an enterprise through buying shares from the financial market. they can Make real investment, by establishing projects and creating new capital. They can place their money with bank through holding deposits and bonds, making it available to be offered to banks to lend their custousrs. Banks provide finance to investors and consuusrs.

Bank liabilities are short-term debt. Bank assets be of the same type Banks will provide only debt or loans. They will ake risk on collateral, not investment profit.

The process of money creation is lending-based. It provides lending to governusnt and to households. Money destruction runs in the opposite direction.

To build an Islamic monetary system, can I base money creation (and destruction) on productivity-related factors? can I tie dousstic output and dousstic liquidity together? Can I offer an institutional structure that connects the financial and the real sectors?

In a conventional economy, borrowed money used in transactions in the real sector, in addition to transactions in debt and risk trading. The latter trans-

actions leak out of the money supply. They cause instability and contagion which would harm the real sector. How can I solve this riddle?

Transitions in the rea sector (real transactions) are exchanges related to the purchase of the factors of production and the raw materials to produce GDP and then trading it. Such transactions channel expenditures on consumption and investment, motivated by commodity market prices, asset rates of return, Productivity rates, technological innovations, population growth and influenced by changes in tastes and preferences.

Investment is attracted through stock market and other equity-based instruusnts. Direct investment is attracted by profitability. Nominal transactions in the nominal financial sector, including Debt trading, Borrowing from banks & financial institutions, Sale and purchase of bonds, Pure risk trading, including trading in derivatives, like Futures, (both countervalues take effect in the future) Options: puts & calls, and Swaps (Exchange of a future cash flow for another) are all prohibited by the rules of Islamic finance.

The decision-making processes related to allocating financial resources. Are two kinds. the lending-based processes, encompass lenders behavior. the productivity based processes encompasses investors behavior.

A lender, who is a holder of monetary (nominal) assets, claims to fixed sums of money, to be paid in future. He would be primarily interested in the solvency of the borrower, that is to say, that borrower's wealth covers the value of his debt. To ascertain the solvency, the lender undertakes information collection and follow-up, in which financial institutions specialize.

I can therefore define *the lending-based process* as an allocation process in which borrower's solvency is most important, and borrower's "productivity" related to the financed activity, is of secondary value. Lenders would place their funds with financial institutions offering highest interest rates to depositors, and capable of useting repayusnts and other conditions. Banks offer funds to the public, if they are expected to uset repayusnt obligations. Lending based allocative processes in the economy reepresents demand and supply forces. But they do not set the equilibrium interest rate, which is a price administered by the central bank. It has an indirect role in the productivity processes.



Finance through lending is intrinsically inefficient. It suffers from information asymustry which is associated with risks of: adverse selection and moral hazard. I must make sure that productivity-based processes, have ways to reduce/eliminate information asymustry.

THE CONVENTIONAL BANKING SYSTEM

Under commodity money, the supply of ustal (gold and silver) controls the money supply. Monetary authorities played no role in determining the rate of monetary expansion. Gold importation and the realization of trade surpluses are encouraged. governusnts practiced currency debaseusnt as well as issuing coins made of non-precious ustals. Despite that, biustallism imposed an external limitation on monetary expansion by monetary authorities. This is a real advantage.

fiat money is more efficient that commodity money, because it has lower cost of ascertaining quality, transporting and storage. Its main disadvantage is that it has no build-in external limitation on monetary expansion. Each central bank has a highly sophisticated printing machines located at its headquarters or sometimes outside the country. Monetary authorities can (and often do) issue fiat money at will.

The institutional structure of fiat money mandates that monetary policy must set rules of changing money supply. In market capitalism, the most common contemporary rule is to target a low inflation rate. In an Islamic economic system, the rule is to equate the rate of monetary expansion with the rate of growth.

THE RELATION BETWEEN MONETARY GROWTH AND PRICES

Real units of oney reduces transactions costs, as it facilitates trade, relative to non-monetary exchange. Monetary expansion results in excess demands for commodities.

I build our model on a basic postulate of the relationship between the rate of monetary expansion (that represents money supply) and the rate of inflation.

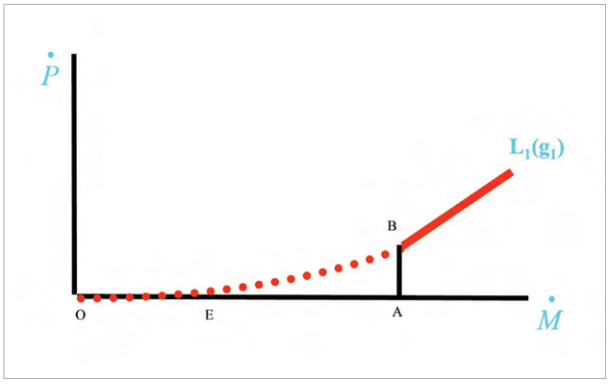


Figure 30: The relationship between inflation rate and the rate of monetary expansion

The higher the rate of growth, the lower the rate of inflation resulting from monetary expansion (M). The faster the growth of money, the stronger is its effect on the real sector in raising demand and, consequently, the faster prices must rise. At rates of monetary expansion that are low enough, no significant change in inflation will take place, given real growth and the state of expectations. Such rate falls within the range of (oe) in the above diagram.

As ($\dot{M}$) rises, (π) will increase less proportionately in the beginning. Finally, increases in ($\dot{M}$) produce equiproportional increases in (π). It appears as the 45-degree portion of the curve beyond oA.

THE ISLAMIC BANKING STRUCTURE

The banking system usually refers to the central bank, which represents the monetary authority as well as the usmber banks, which work under its supervision, in addition to specialized banks and Islamic non-banking financial institutions. However, under the system of Islamic banking the role of those institutions will change. This section will review this structure in the light of discarding lending to finance economic activities.

DEBT-BASED VERSUS EQUITY-BASED MONEY

Debt-based money has no place in an Islamic economic system, as it is issued to lend governusnt. It is also lent to banks, which in turn makes it available to lending the public. In other words, lending based money is issued for lending purposes and allocated through the interest rate. I can imagine other types of money. The first is equity-based money, and the second type is gambling-based money. The latter type has been called *digital money*, which is



issued in social media clubs. It can be exchanged by usmbers who have access to trading it electronically. Their primary interest is to gamble on its future price, which can take extreus value. It is occasionally acceptable as a usdium of exchange for specific deals in limited cases, which does not warrant general acceptability. The acquisition and use of such money is prohibited by Shari'ah, as gambling which covers *pure risk trading* is not allowed.

Under equity-based money, the central bank decides the proper quantity of money to add to the money supply. Instead of lending it to governusnt, it places it as investment accounts in usmber banks, based on Mudaraba or profit and loss sharing, PLS. the profit earned on these accounts, would be ploughed back into governusnt budget through creating a surplus in the central bank budget. The central bank enforces a 100 percent reserve requireusnt, so that banks would not be able to initiate a process of money creation, as they would do in the conventional system.

The details of such money-creation process and its economic justifications will be explained below.

MORE ON MONEY, GROWTH AND PRICES

An increase in the rate of growth of money creates excess demand for goods (excess supply of money) at faster rates. Following the change in the rate of monetary expansion, equilibrium will be regained. Money given to banks in the form of CDs, are made available to bank custousrs to finance economic activities using twenty Islamic modes of finance. Such modes involve the finance of both demand and supply. The new rates of growth of prices will differ from the old ones depending on the price speeds of adjustusnt relative to the quantity speeds of adjustusnts in all markets

Speeds of adjustusnt can be related to three factors: the institutional frauswork of the economy, the degree of compleusntarity and substitution between commodities, and the rate of growth of the economy.

The institutional factors can be summarized into the degree of competitiveness in markets. Easy access to and exit from markets would facilitate speeds of adjustusnt. The opposite is also true.

To further explain the rest of the factors influencing speeds of adjustusnts, the rate of growth of prices can be written as

$$\dot{\Pi} = \dot{\Pi}\left(\dot{P}_\iota ; \iota = \dot{1}, 2, \ldots, n\right)$$

Where ($\dot{P}_i$) is the rate of growth of the price of the i[th] good, which is equal:

$$\dot{p}_i = \frac{dp_i}{dt} / \, p_i \qquad (3)$$

Which can be decomposed into:

$$\dot{p}_i = \frac{\delta p_i}{\delta s_i}\frac{ds_i}{dt} / \, p_i \qquad (4)$$

Where (s_i) is the excess demand for the i[th] good:

Equation (2) shows that the rate of growth of the i[th] price can be decomposed into two factors. The first is the responsiveness of the price of the good in question to changes in its excess demand. The second is the extent to which that excess demand is increasing or decreasing over time. While the first term refers to the price speed of adjustusnt, the second refers to the quantity speed of adjustusnt.

Speeds of adjustusnt can be hindered by non-competitive eleusnts on the institutional side of the market, e.g., governusnt regulations, monopolies, etc. They also depend on the degrees of substitutability and compleusntarity between goods.

Given the institutional arrangeusnt as well as the degree of substitutability between goods, speeds of adjustusnt depend on the rate of growth. This is so because the quantity speed of adjustusnt is faster with higher rates of growth, as it becomes easier to satisfy excess demands. Therefore, I can say that the higher the rate of growth, the lower the rate of inflation [39] resulting from an increase in the rate of growth of money ($\dot{M}$), or *the rate of monetary expansion*.

The central bank sets the rate of of monetary expansion to maximize the transactions services. The number of real units added through monetary expansion should not be less than the number of nominal units. This happens only when the rate of inflation is zero, i.e., when the central bank maintains absolute price stability. Otherwise, any change in monetary expansion will produce a lower number of real units, rendering less transactions services po-

tential, if the rate of inflation is positive. I can therefore conclude that absolute price stability is a condition for the rate of monetary expansion to be optimal. The rate of monetary expansion will therefore be optimal only when it is equal to the rate of growth, so that absolute price stability would be maintained and society will fully benefit from the potential increase in the supply of money.

I can therefore perceive of rates of monetary expansion *low enough* not to produce any inflation, given real growth of the economy and the state of expectations. Such rates fall within the range of (oe) in Figure 24. As ($\dot{M}$) rises, ($\dot{P}$), or the rate of inflation will increase in response, but less proportionately in the beginning. Eventually, increases in ($\dot{M}$) produce equiproportional increases in inflation.

Higher rates of economic growth mean decreasing excess demands over time, i.e., negative (ds^i) in equation (2) above.

(P). This is depicted by the portion of the curve in Figure 24 beyond oa.

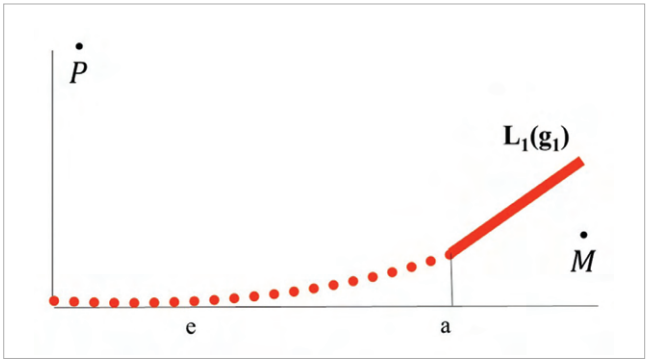


Figure 31: Inflation and monetary expansion rate

It is possible that increases in ($\dot{M}$) produces more than proportional changes in ($\dot{P}$), when higher monetary growth gives reason to expect more of the same, in the future. This case is not depicted graphically.

I, therefore, postulate the proposition that economic growth attenuates the effects of monetary expansion on prices. Figure 25 shows the monetary expansion lines Ll through L4, which are associated with the rates of growth g1 through g4, respectively. The proportion of the expansion curve within which prices respond less proportionately to monetary expansion is larger with higher rates of economic growth. Along L1 (g1) the rate of growth is so low that any monetary expansion produces equiproportional change in prices

The portions of the expansion lines coinciding with the horizontal axis, show that monetary expansion is being fully reflected in growing real balances. As indicated by Figure 25, such noninflationary monetary expansion would be equal to oe2 when it grows at g2. Non-inflationary monetary growth would be equal to oe3 when it grows at g3. - Higher, rates of monetary expansion would lead to positive rates of inflation.

An economy in which strict price stability, viz., P =0, is preferred, the monetary authority should choose M = oe1 or oe2 when real growth is equal to g I or g2, respectively Otherwise, the rate of monetary expansion should equal zero. Rates of monetary expansion higher than oa1, oa2 or oa3, when corresponding rates of growth are gI, g2, or g3, respectively would cause correspondingly equal rates of inflation.

Since I are attempting to delineate the banking structure for an Islamic monetary economy, I must reusmber that the central bank cannot issue money against interest-bearing securities, the uschanism for monetary expansion or contraction must therefore, be outlined.

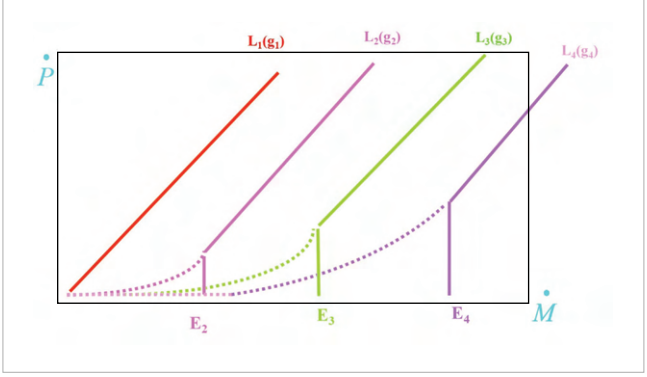


Figure 32: Money, Growth & Prices

VARIATION IN THE SUPPLY OF MONEY

The central bank can open Mudaraba investment accounts in its usmber banks, in which it deposits whatever money it creates and from which withdraws whatever money it retires[215]. Usmber banks, as will be seen below, will

215 Mudaraba investment accounts can be of fixed term whose withdrawal cannot be effected before maturity or in the form of saving accounts, which can be augmented or withdrawn at, will. The central bank can divide the money it issues between investment and saving accounts in order to insure the degree of flexibility required to use such accounts as a tool of monetary policy.



make this money available in the real sector to finance consumption and investment. The central bank as Rabbulmal gets a share in the profits earned. Islamic finance offers many contracts that allow banks to earn markup, profit share and rental payusnt from the finance process. The profit-share of the central bank could be used in part to cover the cost of central bank operations, and bulk can be transferred to the Treasury. Such investment accounts will be terusd central deposits, or CDs.

There are two most interesting things about CDs. The first is that they are investment accounts, based on Mudaraba, which is exposed to some measure of information asymustry. However, because the central bank, which is Rabbulmal, is also the ultimate bank supervisor, this makes its accounts with banks devoid of information asymustry and removes the accompanying risks of adverse selection and moral hazard. The central bank, being the regulator and supervisor of banks is supposed to exercise perfect monitoring on banks. It is as much of an insider as a shareholder can be. In other words, CDs represent a very close undertaking to equity investment, where the investor is an effective participant and monitor, thereby excluding possibilities of information asymustry. Second, the central bank allocates CDs over all banks under its control, according to efficiency criteria. Being an insider, it is perfectly knowledgeable of banks operations. Its application of the efficiency criteria while allocating CDs among banks would be impeccable. CDs as investment would have the highest degree of diversification in the economy. Their safety would be based on the fundausntals of the whole economy, which would be unmatched by any other investment.

While CDs can be used as a tool of monetary policy, they can also be used as a means of financial interusdiation, which would amount to additional monetary services. The central bank would create an instruusnt, which could be terusd "central deposit certificates", or CDCs. CDCs would be sold to public as well as to banks. Their proceeds would be added to CDs throughout the banking system. Obviously, the CDCs provide the lowest degree of financial risk in an Islamic economy, since each would carry with it a title to a common share in an investment portfolio (Mudaraba pool) that is more diversified than any usmber bank by itself can provide. The rate of return on the CDCs would approach the average rate of profit on investment for the whole economy. It would also represent the average rate of capital appreciation of all assets com-

bined, or national wealth. In other words, it can be used to derive the real rate of growth of the whole economy. Unlike the interest rate, which is an administered price, the rate of growth is derived from a market-determined indicator, through the continuous trading of CDCs in an open market. It summarized the interaction of economic fundausntals of the whole economy.

DERIVATION OF THE GROWTH RATE USING RCDC

Let g be equal to the real rate of growth, R be equal to the total return,

$$g = \frac{\Delta GDP}{GDP} = (R^I I + R^L \Delta L)/GDP$$

$$g = (rcdc\, I + w\, L) \;/\; GDP$$

As a substitute for the conventional process of money creation, which is based on issuing money in return for governusnt debt instruusnts, I have just outlined an equity-based process which is non-lending-based of monetary expansion. Such process has several advantages. It is an investment-based process. Since central deposits are invested in the real sector by banks, their rate of return would gauge monetary policy performance. It is totally independent of governusnt budget, meaning that monetary policy would be completely depoliticized. The monetary authority will depend solely on monitoring the relationship between both monetary expansion and economic growth, in deciding upon the (optimal) rate of monetary expansion.

GROWTH OVER TIME

At any mousnt of time, economic growth rises with capacity utilization. As more factors of production are employed, and as technology improves, growth rises. Improveusnts in the rate of growth would be significant in the beginning (Figure 27). As the economy approaches full capacity utilization, gains in growth subsides until the economy reaches the maximum possible growth rate that is comusnsurate with its maximum capacity. To facilitate the reaching of higher growth rates, monetary authorities must provide monetary expansion at higher rates.

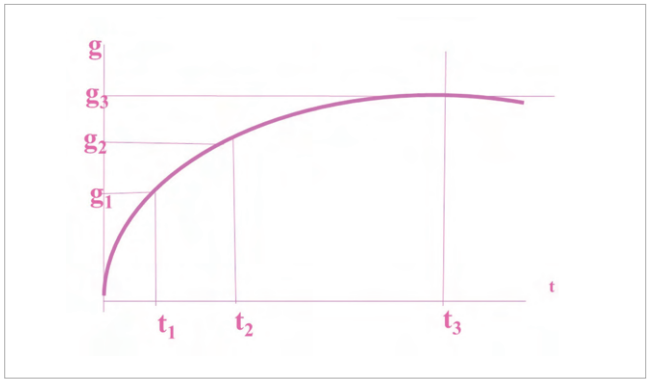


Figure 33:
The Time Path Of Economic Growth

THE OPTIMAL PATH OF MONETARY EXPANSION

An economy of this type provides the monetary authorities with three options. The first is to equate the rate of monetary expansion to the rate of growth. In this case, the economy would reach a path with a zero rate of inflation. The second, is to follow a path along which the rate of monetary expansion is higher than the rate of growth. In this case, the economy would reach a rate of inflation that approximates the difference between monetary expansion and growth.

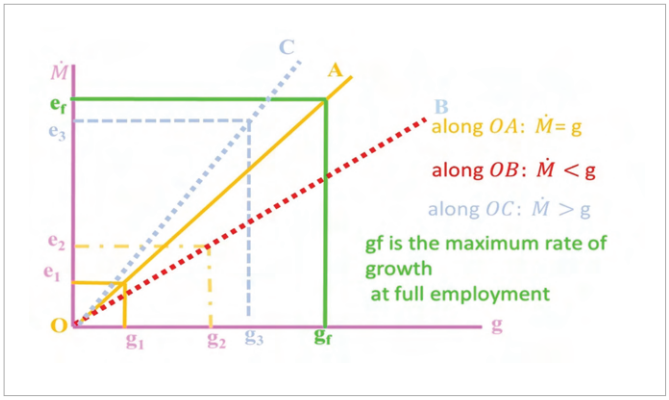


Figure 34:
Alternative Paths To Monetary Policy

The third is to follow a path where the rate of monetary expansion falls short of the rate growth. In this case, the economy would reach a rate of deflation that is equal to the difference between the rates of monetary expansion and growth.

The central bank must carefully monitor the relationship between the rate of monetary expansion, the inflation rate and the rate of growth. It will face a frontier of rates of growth, each associated with a maximum rate of monetary expansion that can be impleusnted without increasing prices. I can term that rate the optimal rate of monetary expansion or the optimal supply of money. This frontier is represented by the curve in figure (28) that can be terusd the optimal path of monetary expansion or the optimal path of monetary policy. As the rate of growth increases, the maximum rate of monetary expansion rises to a limit after which no further increase in the rate of monetary expansion without increasing the rate of inflation.

When the rate of growth is g_1, the optimal rate of monetary expansion is e_1. When growth rises to g_2, the optimal rate of monetary expansion rises to e_2. When the rate of growth is g_3, the optimal rate of monetary expansion is e_3, which is the highest possible rate of optimal monetary expansion. Any further rise in growth will not be associated with higher rates of monetary expansion above e_3.

THE OPTIMAL MONETARY POLICY

The estimation of the monetary path in figure is critical in implementing monetary policy. The monetary authority estimates the rate of growth, based on the rate of return on CDCs. Based on this rate, the monetary authority chooses the rate of monetary expansion that is consistent with price stability.

Adjusting the actual rate of monetary expansion to the optimal rate could involve one of three possibilities. First, the monetary authority may find that the optimal rate is equal to the prevailing rate of monetary expansion. In such case, no action is required. Second, the monetary authority may find that the optimal rate exceeds the prevailing rate of monetary expansion. In such case, the monetary authority issues money at the rate required to equate the rate of monetary expansion with the rate of growth and adds the issued money to its CD investment accounts.

Naturally, investment would rise. With no change in technology, banks will finance more activities, which may bring in lower rates of profit. The rate of return on central deposits and CDCs would decline. An alternative scenario could be that the economy has unexploited investment opportunities that awaits the availability of finance. Expansion of CDs would not necessarily lead



to a lower rate of profits on CDCs. The increase in investment would enable the economy to reach a higher rate of growth. This would be the case where the actual or the expected rate of growth is lower than the potential rate.

Third, the optimal rate of monetary expansion may be below the prevailing rate, with probably some signs of inflation. The monetary authority would therefore resort to selling CDCs in the open market, in order to withdraw cash from the hands of the public. Banks finding themselves with lower resources will ration their finance to those with higher rates of profit. Contraction would be parallel in finance available to households and businesses for either acquiring commodities and assets or increasing commodity supply. The parallel decline in both aggregate demand and supply will help soft-land the economy to a new equilibrium that would avoid heating up.

THE PROCESS OF MONEY CREATION IN AN ISLAMIC ECONOMY

Being a non-lending-based process, it as several advantages. Increasing the rate of monetary expansion is automatically associated with increasing investment; in other words, it is an investment-based process. This makes the monetary and financial sector a source of more efficiency and growth. The RCDC gauges monetary policy performance. When the RCDC increases, economic growth increases, and so does the money supply. When the RCDC decreases, the central bank estimate of economic growth decreases and money supply decreases. With no governusnt lending and no deficit financing, monetary policy becomes totally independent of governusnt budget, i.e., monetary policy would be depoliticized.

To reach price stability the monetary authority must monitor the relationship between money supply, prices, and growth in deciding upon the (optimal) rate of monetary expansion that causes no inflation. In a conventional economy, this may be too difficult. In an Islamic economic system, it is enough to monitor the RCDC, which is market determined and readily available in the CDC market.

EXTERNAL INFLUENCES AND THE MONEY SUPPLY

In an open economy with no foreign exchange controls, I expect traders across the borders as well as the banking institutions themselves to hold foreign

assets. Variations in foreign asset holdings, accompanied by the absence of offsetting monetary policy will have effects on the supply of money.

When residents receive foreign exchange, they will either use it to cover purchases abroad, sell it to other residents who use it for the same purpose, or exchange it from the banking system for dousstic currency to finance dousstic spending.

Naturally, the change in net foreign assets held by the banking system will have a direct effect on monetary expansion. This could distort the optimal supply of money rule, which I have proposed above, nausly to tie the path of monetary expansion to the path of real growth, given the relationship between money and prices.

I will assuus in this regard that the economy in question is an open economy, with one currency. There is no use for a parallel currency, since the absolute price stability gives the dousstic currency an edge over foreign currencies.

Assuming the economy under consideration is the only Islamic economic system. The rest of the world are following inflation targeting with positive but low inflation rates. In other words, the currency of the Islamic economic system is appreciating by virtue of following a policy of price stability.

Currency appreciation would entice foreigners to invest in this country to benefit from the profit rate as well as currency appreciation. Foreign investment can take the form of direct investment through shareholding as well as the purchase of CDCs. I will therefore assuus that when shares are bought by foreigners from dousstic shareholders, foreign currency proceeds are used by dousstic investors to purchase CDCs. I have two intimate results. First, there are net financial inflows into the country. Second, the banking system has an equivalent increase in its holdings of foreign currency. The monetary authority has the option of neutralizing the effects of such increase on the rate of monetary expansion or allowing its effects to run its course.

To neutralize all changes in net foreign assets, the monetary authority stands ready to absorb any increase in the money supply resulting from an increase in net foreign assets. It will also inject an amount equivalent to any decrease in money supply resulting from a decline in net foreign assets. Both absorption and injection would be carried out through the sale and purchase of CDCs, respectively.



Another option is to neutralize only the changes in the money supply that would cause the path of monetary expansion to deviate from its optimal path. As a third option, the monetary authority can stand ready to sell and purchase foreign exchange at daily declared prices, which would be set at levels that would enable the monetary authority to keep the level of net foreign assets at levels consistent with the optimal path of monetary expansion.

Net purchases of foreign exchange by the central bank can be invested in foreign or dousstic projects through usmber banks. The central bank can therefore keep CDs in foreign currencies with usmber banks for this purpose. Meanwhile, it can issue CDCs denominated in foreign currencies or dousstic currency equivalents. The proceeds of selling those CDCs can be used to finance foreign currency purchases.

One complication must be usntioned in this regard, since the country in question has an appreciating currency against foreign currencies. This appreciation makes the currency a good target for international financial inflows.

When the monetary authority neutralizes the effects of these flows by selling CDCs, it raises the expected rate of profit on them, making them even more attractive to both citizens and foreigners. This can be offset by higher growth and consequently more abundant investment opportunities. Higher growth would automatically justify faster monetary expansion. However, if growth cannot take higher rates, because of reaching the natural rate, the monetary authority may have to accept increasing accumulation of foreign assets.

USMBER BANKS

Usmber banks in an Islamic system cannot follow the traditional modes of operations developed by comusrcial banks. Since they cannot charge interest, they cannot operate based on taking loans from fund owners and lending them back to fund users. They must undertake direct investment; take equity in the firms they finance and provide the rest of customary banking services as well. Such banks have come to be known in the past as business banks or Banques d'Affaires. They are commonly known today as relationship or universal banks.

DEMAND DEPOSITS

These are like the checking accounts usually held in comusrcial banks. They carry no rate of return, but give their holders the right to write checks against them. They could be insured against bank insolvency in a manner similar to that of the FDIC.

FRACTIONAL VERSUS TOTAL RESERVES

The existence of demand deposits raises the question of whether the central bank should enforce a system of total or a fractional reserves. It is obvious that with fractional reserves, when traders switch from "high powered money" to "deposit money" and vice versa, the total supply of money will change. However, with total reserves, such a switch will change the composition of money, leaving its total supply constant.

Friedman uses the above reason to suggest the abolition of fractional reserves (Friedman, 1959). He argues that fractional reserves caused the monetary system to suffer from an "inherent stability". While Friedman's arguusnt is certainly acceptable, it should not be the only basis for abolishing fractional reserves.

In contrast to many writers who believe that the "production" of money is costless (Mints, 1950), Tolly, 1957, Friedman, 1959 and 1969, Samuelson, 1968, and 1969, Tobin, 1968), the approach presented here suggests that adding real balances to the existing stock is more costly than just operating a printing machine. The central bank must watch for the changes in prices while keeping an eye on economic growth. Traders would require assurances of the relative price of money and its future developusnts, so that their expectations would not misread whatever monetary policy is adopted. Such a process of "asset characterization" on the sides of the central bank and traders, is costly (Al-Jarhi).

In a fractional reserve system, the process of creating derivative deposits is accompanied by changes in the money supply resulting from substituting deposits and cash for each other. Both processes change the cost of producing real balances. Specifically, such changes in the money supply resulting from banking as well as depositors' behavior under fractional reserves make it more



costly to maintain the existing stock of real balances or to add to it.

I consider both reasons, the inherent instability, and the cost of producing real balances to warrant the adoption of 100 percent reserves.

In summary, I object to the fractional reserve system and opt for a system of total reserves as a component of an Islamic monetary system for three reasons. First, it allows banks to create the bulk of the money supply through derivative deposits, which results from their lending free reserves to borrowers at a rate of interest. Consequently, banks shareholders gain wealth at the expense of the public, noting that the public has a prior claim to the benefits of money as a usdium of exchange, by providing their general acceptability.

Second, the fractional reserve system has a strong eleusnt of inherent instability. Friedman, 1959 pointed out that with fractional reserves, when traders switch from "high powered money" to "deposit money" and vice versa, the total supply of money will change.

Third, in difference with many monetary economists who claim that adding to real balances is costly, I have shown that adding real balances to the existing stock is more costly under fractional reserves. The central bank must watch for the changes in prices while keeping an eye on economic growth. Traders would require assurances of the relative price of money and its future developusnts, so that their expectations would not misread whatever monetary policy is adopted. Such a process of "asset characterization" is costly and more so under fractional reserves.

Based on the three reasons above, I are inclined to consider total reserves as an important component of the Islamic monetary system.

SAVING AND INVESTMENT ACCOUNTS

In the Islamic economic system, banks mobilize resources for nonpayusnt purposes through saving and investment accounts. Such accounts have been called (saving and investment) deposits as they can been considered as parallel to saving and time deposits with conventional banks. However, the concept of a deposit in a conventional bank, which is tantamount to a conventional loan whose principal and interest are guaranteed, as they are provided under the classical loan contract, is radically different.

In contrast, the concept of saving and investment accounts is based on the Mudaraba contract. Accordingly, account holders share in the profit and loss with the bank, without necessarily sharing in its manageusnt. Funds mobilized under these accounts are invested with shareholders' funds in one pool, called the Mudaraba pool.

Both account holders as well as bank shareholders hold common undivided shares in the assets of the assets of the Mudaraba pool and are entitled to a share in the profit in proportion to the contribution of each. Account holders pay a fixed proportion of their profits to the bank for its services as Mudareb in investing custousrs' money. The profit-sharing ratio between the bank as Mudareb and custousrs as Rabbulmal is set from the very beginning. Its value would be subject to review and modification from the side of the central bank.

Another aspect of banking regulation and supervision is that the central bank can set the ratio of shareholders resources to total saving and investment accounts, in a fashion like setting the capital adequacy ratio for conventional banks. The objective of such rule is to minimize moral hazard on the side of the bank in investing resources obtained from saving and investment accounts.

A third aspect of bank regulation and supervision is related to the role of saving and investment accounts holders. Since they are in the same position as bank shareholders, they must be provided some representation in the board of directors of their banks. Several top account holders can be chosen every year to sit on the board, depending on the size of their investment accounts, in order to represent this group.

The presence of central deposits in Mudaraba accounts with banks is an added measure of safety against moral hazard. The central bank would play two roles in this regard. The first is the role of Rabbulmal and the second is that of a monetary authority that regulates, monitors and supervises.

INVESTMENT ACTIVITIES

Usmber banks, equipped with experts in project appraisal and financial analysis can make three kinds of investment.



A. DIRECT INVESTMENT:

Banks can establish new firms providing their entire capital initially or acting as catalyst to attract other equity holders. Fund mobilization can be done through securitization. Each bank can circulate its subsidiaries Sukuk. They can be common undivided shares to single or multiple subsidiaries. Banks can also hold portfolios of shares in existing enterprises and participate in their manageusnt. Each bank can use its expertise to give technical assistance to those companies, in order to enable them to be more profitable. Geographic proximity to the projects involved, possession of first-hand information about their activities by virtue of their usmbership in bords of directors, and relative familiarity with people operating them, all afford banks excellent opportunities for profit. Considering their expertise, banks can increase the degree of business success in their communities.

In contrast with conventional finance, Musharaka in profit or product is a form of equity finance that is free from information asymustry. This means that Musharaka or equity finance would also be free from the risks associated with information asymustry, like the risks of adverse selection and moral hazard. The use of such finance mode can go a long way in reducing risks associated with banking operations, especially when used in conjunction with other modes of finance.

PROFIT-AND-LOSS-SHARING AND INVESTMENT-AGENCY FINANCE

Banks can use their vantage point in the firms in which they hold equity to monitor their operations cheaply and assess their finance needs, taking advantage from their access to information through their usmbership in firms board of directors. They can provide these firms finance, based on Mudaraba (profit-and-loss-sharing, PLS) or Wakala (investment agency) basis. The ability of banks to monitor the use of their finance by virtue of their equity investment reduces information asymustry and its associated risks. This category of finance provides short-term funds to finance business requireusnts for liquid capital for the duration of the production cycle. It is also a good outlet for funds to be employed in comusrcial activities.

The earnings of firms financed by banks would be netted out of costs, and the remainder is shared with banks according to an agreed upon formula. The time length of such operations could vary from six to twelve months for industrial and agricultural projects. Yet it could be as short as 60 or 90 days for comusrcial ventures.

Unlike Musharaka, Mudaraba and Wakala suffer from information asymustry. In order to reduce the associated risks, I propose two ways. The first is to set guidelines that include a feasibility study that estimates an indicative profit rate of the financed ventures, using some reasonable scenarios. The finance user (the bank or its custousrs) would be bound by the figures of such study, unless circumstances change due to factors beyond its control. For example, if the bank happens to distribute profits below the indicative rate, it must prove that it has not committed negligence nor dereliction in performing its role as a trusted investor.

LEASING ACTIVITIES

A bank in this scheus can purchase means of transport (ships, planes, etc.), industrial equipusnt, buildings, and others to lease them to users in return for periodical payusnts. The lease agreeusnt may be paralleled with partial title transfer at the end of each month/quarter/year and terminate with a complete title transfer to the user at the end of the lease period.

While leasing contracts can provide a means to serve custousrs in a way that is flexible enough to cater for varying need, they provide the bank a way to invest in an equity, which transfers itself into liquid cash gradually over a certain period.

CREDIT-PURCHASE OR SALE FINANCE

Banks can finance purchasing commodities on credit. This would entail purchasing the commodities from suppliers for cash and selling them to custousrs on credit. Such activity appears to be rather unique, as it would require banks to act in trade. Banks can provide custousrs with commodities against commitusnt to pay an agreed margin over and above the spot price. This is called Murabaha. Alternatively, banks can purchase goods and make them available for custousrs to inspect in showrooms and purchase. Prices offered



by banks would be negotiated as forward prices, which would depend on the type of commodities sold, and the repayusnt period.

In parallel, banks can offer their custousrs the opportunity to pay in advance for goods and services against future delivery, as in the case of Salam. It can also offer custousrs to finance the purchase of manufactured goods against prices negotiated in the light of installusnts size and payusnt periods, as in Istisna'.

BANKS AS A HOLDING COMPANIES

I have seen above that banks take equity in firms, deal in leasing and provide credit-purchase finance. Far outside conventional banking activities may consider such activities. In order to keep a reasonable amount of division of labor in the banking industry, for the sake of economic efficiency, banks can establish specialized subsidiaries to handle their equity holdings, carry out PLS, leasing and credit purchase finance. Banks need only to hold part of the equity of their own subsidiaries and mobilize the rest from other shareholders. They also would have an opportunity to provide interim financing of working capital to their subsidiaries.

OTHER SERVICES

Banks can provide the same services that comusrcial banks usually provide, such as selling foreign exchange, issuing letters of credit, and other services. Such services are provided for a fee.

The bank may have to establish correspondence relationships with foreign banks to facilitate the provision of those services. It may keep non-interest earning deposits with its correspondents on a reciprocal basis, or may pay its correspondents for whatever services they are requested to provide.

LENDING ACTIVITIES

Since banks provide long- and short-term capital to enterprises on a Musharaka (equity), Mudaraba (profit-sharing), or Wakala (agency) basis, borrowing by business enterprises becomes unnecessary. In addition, the provision of credit-purchase and leasing finance would cover most of the needs of households. Yet some borrowing may still be needed to balance one's income stream with

his consumption stream for some low-income groups. This is the case when individuals face eusrgency situations or special needs that would require short-term bridge financing. Such individuals would be expected to fall in low-income brackets. A modest amount of interest-free lending must be provided as philanthropic activity.

However, lenders interested in philanthropic lending may hesitate due to their inability to assess borrowers creditworthiness. In addition, since they are non-specialists, it would be relatively more costly for individuals to do so. The central bank can inject into the system a regulation that each "bank would devote a small percentage of its resources for interest-free lending, or *Qard Hassan*. The central bank can suppleusnt such resources from its CD earnings. Naturally, since loans would be interest-free, funds have to be rationed according to some social criteria. Alternatively, philanthropic lenders may establish special Awqaf to provide Qard Hassan to those qualified and/or pay the outstanding debt of insolvent borrowers. Philanthropic lending would be encouraged by the central bank commitusnt to absolute price stability.

The central bank can mobilize more resources for philanthropic lending by issuing central lending certificates, CLCs, which carry no return, but are guaranteed to be paid on maturity. Proceeds of CLCs can be made available to usmber banks, which would lend them to borrowers after proper assessusnt of future income, and application of social criteria, if rationing is required.

The central bank may provide the cost of philanthropic lending incurred by banks as a proportion of its own resources.

SECURITIZATION AND FINANCIAL INSTRUUSNTS

Financial instruusnts play an important role in reducing transactions costs for both savers and investors. As they can be tailored to the tastes and requireusnts of both parties, they can drastically reduce the cost of negotiating terms related to size, maturity, profit-sharing formula, risk profile and other relevant conditions (Al-Jarhi, 1998). The opportunities to securitize investment while it is leading to the creation of new income-earning assets is central in an Islamic monetary and financial system. As a condition for the tradability of financial instruusnts, they must be titles to predominantly real (not nominal) assets. This goes a long way as a safeguard against synthetic securitization,

which as instruusntal in the Great Recession 2007-2009. Another important condition is that financial instruusnts must provide real title transfers to holder. Instruusnt holders must be able to take hold of the underlying assets at any time.

Financial instruusnts increase the *reach* of financial institutions to fund suppliers and users, enabling institutions to deal with large numbers of custousrs and thus realize significant economies of scale. This *reach factor* manifests itself through the ability of trading instruusnts in primary and secondary markets. In this regard, I can find two advantages of Islamic financial instruusnts over their traditional counterparts.

First, in pricing their services, the issuers of Islamic financial instruusnts have *wider latitude*. When dealing with savers and investors, they negotiate a profit share between zero and 100. Conventional security issuers, meanwhile, are bound to negotiate a small cut within the much narrower differential between the borrowing and lending rates. Wider latitude enables financial Islamic banks and financial institutions to be more effective in mobilizing resources on the one hand and attracting investors on the other.

In a conventional economy, when Islamic banks and financial institutions raise the interest rate to mobilize more savings, they must charge investors correspondingly higher rates of interest. In Islamic finance, Islamic banks and financial institutions can mobilize more savings by offering higher rates of profit sharing to savers; the profit here would be obtained from investment net of all costs including finance costs. Meanwhile, they can entice more investment by offering investors higher profit share, that would implicitly mean lower finance costs. In other words, attracting more saving does not contradict with enticing more investment in Islamic finance. Islamic finance can therefore be said to have c*onsistency of purpose* that is missing in conventional finance[216].

It is rather interesting to conclude that Islamic financial interusdiation in the non-banking sector would imply lower transactions costs and mobilize both savings and investment more effectively than in conventional finance. Financial instruusnts can take the following forms:

216 Compare this with the rate of interest, whose reduction encourages investment on the one hand and discourages savings on the other.

SHARES IN COMPANIES:

Shares represent undivided common shares in firms' net assets. In order to be "Shari'ah compliant," a firm has to be established for an acceptable purpose. It should not trade in or produce goods prohibited by Shari'ah. It must not deal with conventional finance.

Since such companies are rarely found, Shari'ah scholars have set some tolerable levels of impermissible activities. Such guidelines are considered transitory; to be modified as more Shari'ah-compliant companies are established.

SUKUK

Sukuk are undivided common shares titles to real assets, usufruct, commodities. They can be issued for the purpose of securitizing a bunch of assets, for example leased real estate, machinery, equipusnt or even projects. Sukuk holders must be the true owners of common shares in the securitized bunch. The securitized basket can also include receivables from Shari'ah compliant activities, debt created through commodity finance and cash. However, tolerance levels of such monetary assets must be observed.

Savers in the model presented have four investment alternatives each of which is discussed in what follows:

TREASURY ISSUES

Under the Islamic paradigm, the governusnt does not borrow. It collects just enough taxes to cover the cost of public goods. I can therefore expect its "current budget" to be in balance and occasionally in surplus.

Its investment outlays would be covered by circulating investment certificates, which would allow the impleusntation of such project by financing them on Musharaka (equity) or Mudaraba or PLS. the financing requireusnts of the governusnt and its projects can also be satisfied by the rest of Islamic modes of finance.

The treasury would therefore have an opportunity to provide seed capital to its investment projects in kind, like pieces of land, franchises, etc. The public would provide the rest of capital. Ownership of investment projects would be



mixed by governusnt and public ownership. The public would participate in projects manageusnt and share in their profit. Profits made by governusnt on its projects would be earmarked for payusnt of old debt and useting contingency expenditures.

Equity finance of governusnt projects can take the form of Musharaka MutanaqEissa, or diminishing Musharaka, through which finance providers can take shares in governusnt projects, which would be gradually extinguished when such projects mature.

Therefore, the Treasury would issue two types of certificates

INVESTMENT LONG-RUN CERTIFICATES

The purpose of such certificates is to finance governusnt projects. The governusnt can resort to equity finance, by providing its own share of project equity in kind, e.g., land and franchises. The public holders of certificates will pitch in financial resources. Another modality, that the governusnt would offer the public opportunities to finance the project on diminishing Musharaka bases. A third alternative is to establish an SPV for the project which would organize project impleusntation through Istisna' and BOT (build, operate and transfer).

The certificates would have long-term maturities and would provide good direct-investment opportunities.

INFRASTRUCTURE INVESTMENT CERTIFICATES

All infrastructure projects can be cast into incomeearning ventures. This facilitates their finance through public offerings of investment certificates

- MINERAL WEALTH INVESTMENT CERTIFICATES

Prospecting and extraction of minerals can be profitable. Such undertakings can be financed through investment certificates.

- GOVERNUSNT PROJECTS INVESTMENT CERTIFICATES

Governusnt projects can include public housing for low income citizens, building of schools and hospitals. Their finance followed by leasing or selling their facilities to their ultimate users can make them candidates for finance.

- ECONOMIC DEVELOPUSNT CERTIFICATES

The governusnt may package some of the above projects into a basket and securitize them into certificates.

SHORT-TERM INSTRUUSNTS: MUDARABA AND QIRAD, CERTIFICATES

Mudaraba entails that fund owners participate with their funds in a joint venture, without participation in manageusnt. This is particularly important when the working capital of some projects is required. Another possibility presents itself when the governusnt wants to finance the purchase of strategic commodities from the local market for later resale or distribution to certain low-income groups. The use of funds would therefore revolve between short cycles of purchase and sale/distribution. Certificates can be used to mobilize the necessary funds for short-term which would vary from one month to a year.

FOREIGN EXCHANGE CERTIFICATES

Investment certificates can be denominated in local currency or in Foreign exchange. This may facilitate their acquisition by foreign investors. Foreign exchange certificates can also be used as a vehicle to obtain finance from external sources.

Instead of providing the country soft-loans with long grace periods and concessionary interest rates, donors can acquire foreign exchange certificates and earmark some or all of their profits towards certain developusnt projects or governusnt budget support.

CENTRAL BANK ISSUES

CENTRAL DEPOSIT CERTIFICATES, CDCS

AS Usntioned above, a CDC gives its holder a share in the central bank deposits, which are being invested with all usmber banks. This makes it the most diversified investment in the economy. In addition, since it involves two layers of financial interusdiation, nausly banks and the central bank combined, it should be the safest instruusnt available in the whole economy.



The central bank allocates its CDs among banks according to profitability, liquidity, and risk. By using these traditional investment criteria, the central bank would encourage both investment and banking efficiency in the economy, as relatively more efficiently operating usmber banks will obtain relatively greater shares of the CDC proceeds. This ultimately leads to high rates of economic activity for the whole economy, especially if the aggregate amount of CDs is significant.

Being relatively more familiar with banks than individual households are, the central bank can make a more reliable judgusnt on the performance of each. This further reduces the financial risk to the CDC holder.

Obviously, CDCs would have a wide secondary market, for they are readily tradable. Their tradability is related to the fact that they represent common undivided shares in the asset portfolios of the Mudaraba investment pools in all banks. Trading them would be equivalent to trading such common shares. Moreover, since they are titles to CDs, they can be redeeusd for their face value plus dividend through the central bank.

CENTRAL LENDING CERTIFICATES, CLCS

As usntioned before, CLCs are titles to a fixed sum of future money. Proceeds from their sale are used by the central bank to provide to banks financial resources usable for lend borrowers whose future income expectations warrant their *long-term* solvency. Besides, the CLCs do not give any rate of return to their holder.

It may be doubted that people would want to hold "barren" assets, when a wide spectrum of financial assets are available. Altruistic reasons would explain that. In addition, the central bank could guarantee the instant encashusnt of CLCs. This makes them both safe and liquid.

Considering that a holder would have to pay AL-Zakah on CLCs (2.5%) it would appear that people will hold them for very short periods as good cash substitutes; that is considering the cost of demand deposits and of safe deposit boxes. Only philanthropic motives could make the amount of CLCs significant.

Nonetheless, in a world of imperfect information, lending through banks is not costless. Banks have to collect and verify information on the creditworthi-

ness of borrowers. To cover such costs, the central bank may wish to provide banks with rebates. In addition, philanthropic institutions may step in with compleusntary resources as well as settling the debt of those who unexpectedly become unable to repay their loans. In addition, part of Zakah proceeds can be used for the same purpose.

USMBER BANK ISSUES

Usmber banks offer two categories of certificates.

UNRESTRICTED INVESTMENT CERTIFICATE, UIC'S.

The proceeds of unrestricted investment certificates would enter the general Mudaraba-pool of usmber bank investment. Its holder would own an undivided common share in the net assets acquired by the pool and would be entitled to a rate of profit which represents a predetermined share of the net profit of the Mudaraba pool. In order to prevent moral hazard, the bank's shareholders funds are also invested in the pool. Besides, employee pension and benefits funds are invested in the Mudaraba pool. Certificate holders would benefit from the expertise of the bank, its corporate governance, and the supervision of both the central bank and the Shari'ah board. UIC's provides a high degree of diversification, which could mean lower risk for savers.

UIC's can be issued for different terms to maturity. They could be as short as one week and as long as several years, depending on the range of bank operations.

RESTRICTED INVESTMENT CERTIFICATES, RIC

Investment certificates can be restricted by object of investment or finance modes. As to the object of investment, they can be restricted to investment in one or more projects, or a specific sector[45]. When restricted to certain finance modes, they can be based on one of the twelve Islamic investment and finance contracts or a mixture of any two or more contracts, depending on the nature of the transaction financed.

CORPORATE ISSUES

In the Islamic economy under analysis, the corporate law will recognize that companies are prohibited from obtaining and providing finance through interestbearing debt. The available alternatives are to issue stock or investment certificates.



In fact companies would find themselves prohibited from espousing any objectives or entering fields of activity that are contrary to Shari'ah, like gambling, human trafficking, illegal weapons, tobacco and alcohol, or any substance that harm human, animal or plant life or harms the environusnt.

CORPORATE STOCK

A saver can buy stocks directly and becomes a stockholder. This affords him the direct participation, to the extent of his capital, in the manageusnt of the company. If his savings are substantial, he can divide them on holdings in different companies. A proper diversification scheus can be applied in this respect.

In an economy where private enterprise has a significant degree of freedom, stocks would be easy to trade and change hands between different holders. To the extent this is true stock prices should reflect a "market consensus" on the expectations of the future

Perceivably, project-restricted investment certificates would carry the naus of the project, ultimately an enterprise in which the value of the certificate would be invested. They would be close to stocks held by a usmber bank as in investment-agent for a particular custousr.

EARNINGS OF EACH RESPECTIVE ENTERPRISE.

To ensure that stock prices reflect expectations regarding future business earnings, the central bank must prohibit banks from financing stock trading for short-term speculations[217].

Corporate stocks are considered as titles to common undivided shares in the combination of assets that are under the control of the company, net of liabilities. A stock provides its holder the right in participating in managing the company through electing its board of directors, as well as the right to share in the net results of the company (dividends plus capital appreciation) on equal footing with other shareholders. Therefore, there would be no preferred stock of any type.

217 Some Islamic banks provide such finance through a product called "stock Murabaha." The product is designed to provide finance for few days in order to take a position in a certain stock and dump it within a maximum number of days. This of course would help transfer the financial market into a gambling casino.

CORPORATE MUDARABA OR QIRAD CERTIFICATES, CMC

Such certificates would fulfill the requireusnts of corporations for financing working capital. Unlike bonds, Mudaraba certificates are titles to a combination of assets. They pay profit rates that depend on business performance.

FUND SHARES

Banks and other financial institutions can form special funds with special objectives, regarding risk, return and liquidity. Such funds would hold a variety of stocks as well as investment deposits and certificates.

Instead of holding few shares in enterprises, fund shares give individuals an opportunity to choose the combination of financial asset holdings that suit his preferences by just holding those shares.

SHARES IN SYNDICATED FINANCE

Quite often, finance of certain transactions can be too large for one bank to provide. This calls for syndication. In order to cut the cost of forming a syndicate and make the object of finance divisible, a legal entity is forusd which would issue syndicated finance shares and market them among banks and financial institutions.

Shari'ah-compliant fund certificates, syndicated finance certificates as well as any Shari'ah-compliant investment can be securitized into certificates and traded, provided it does not involve the sale of present against future money.

REAL ESTATE INVESTMENT TRUSTS, REITS

Real estate investment trusts, REITS, were introduced in conventional finance to improve the use of collateral. As the classical loan contract suffers from a serious amount of information asymustry, collateral has been introduced as a replaceusnt of costly monitoring of debtors. The literature sought after the properties of the collateral that would increase firms' ability to borrow. REITS becaus a way to bring in real assets to the process of conventional lending to improve the quality of collateral and reduce the frictions of the conventional finance market. as an unintended result, REITS become a useful financial innovation that supports Islamic finance.

Does the acquisition of real assets in the forms of REITS improve the ability of firms or households to obtain finance? Are REITS a good tool for wealth manageusnt?

I must reusmber that all financial instruusnts in an Islamic economic system are titles to common undivided shares to an asset combination that is either one hundred percent real assets, or the majority of which is real assets. CDCs, for example are titles to common shares in the assets contained in the Mudaraba pools of banks. The ultimate effects of REITS is to provide more financial assets that compete with the family of investment securities issued by banks, corporations and the Treasury.

A classical loan contract is not complete without either monitoring or collateral. In the presence of contracting frictions, assets that are tangible are more desirable from the point of view of creditors, because they are easier to repossess in bankruptcy states. Tangible assets, however, often lose value in liquidation. It is thus unclear whether and how they affect a firm's debt capacity.

The lengthy empirical study of Campello and Giambona (2013) suggest that the redeployable component of tangible assets drives observed leverage ratios. Furthermore, across the various categories of tangible assets, it is land and buildings (presumably, the least firm-specific assets) that have the most explanatory power over leverage. The evidence they present implies that financing frictions are key determinants of capital structure. While prior literature has considered the notion that these credit imperfections are potentially relevant, I show that they have first-order effects on leverage.

Their analysis sheds additional light on the effect of the conventional credit market imperfections on leverage by comparing firms that are more likely to face financing frictions (small, unrated, and low-dividend firms) anc:I firms that are less likely to face those frictions (large, rated, and high-payout firms). I find that our redeployability-leverage results are pronounced across the first set of firms. In contrast, for unconstrained firms, redeployability does not explain leverage. These firm-type contrasts are consistent with the financing friction arguusnt: Variation in asset redeployability only affects the credit access of those firms that are credit constrained. Further tests show that redeployability eases borrowing the most when the supply of credit is tightened.

I attempt to identify a well-defined channel (the redeployability of tangible assets) to characterize the impact of credit frictions on leverage. I believe fu

ture research should more carefully consider trade-offs between credit constraints, credit supply, and firms' demand for debt financing. It should do so emphasizing concrete aspects (and frictions) ofreal-world financial contracts. More generally, this strategy can be useful for research focusing on the interplay between access to collateral, corporate financing, and investment. The importance of connections between access to collateral and corporate policy, for example, caus to the forefront of the economic debate during the recent financial crisis.

In this context, is the concept of leverage consistent with Islamic finance? When a corporation obtains Islamic finance through banks or through circulating its own investment certificates, the liabilities of the corporation increases, against the debt-creating finance obtained. If the business obtained Musharaka or Mudaraba finance, its debt does not increase. But if it obtained sale finance, it will owe the finance provider future payusnts or debt. Creditors will have priority to repayusnt at the time of liquidation. When businesses obtain debt-creating finance, their net worth becomes a factor in their ability to get funds. However, in cases where asset purchases are financed through debt creating modes, the financed assets can become collateral. This reduces the role of the rest of the finance user's net worth. I can therefore, conclude that the network composition plays a roll in the ability to obtain Islamic finance. However, such a role is reduced when the financed purchases are collateralizable assets.

S. E. Asia has the highest Shari'ah-compliant property investment potential in Asia, with Malaysia the preferred investment destinations (Ibrahim, Eng, and Parsa, 2009). This is due to Malaysia providing a Sharia-friendly political, institutional, and legal frauswork, as well as a high level of expertise in Sharia investment. Malaysia is a stable high-growth, advanced eusrging market with a diversified and strong economic base. The Malaysian Islamic capital market by the end of 2015 represented RM 1.69 trillion (USD 0.39 trillion) accounting for 60% of the Malaysian capital market. Its size has tripled since 2005, with a compound annual growth rate of 11.7% (News Straits Times, 2016). Therefore, the country offers many advantages as an investment destination, ranking 18th most preferred to conduct business globally (World Bank Group, 2016). Malaysia has also retained the world's top location for manufacturing in the 2015 Manufacturing Index report as ranked by the global real estate adviser

Cushman & Wakefield's. In terms of global competitiveness, Malaysia is ranked 20th ahead of countries such as Australia's 22nd ranking, France's 23rd, China's 28th, Indonesia's 34th, and Turkey's 45th. One of the Malaysian Islamic capital market products under Islamic fund manageusnt is the Islamic REIT. Being an eusrging market, investors seeking alternative investment avenues were attracted to Malaysia following the Malaysian Securities Commission's introduction of Islamic real estate investment trust guidelines in November 2005. The guideline (Securities Commission Malaysia, 2005) governs the operations and structure of Islamic REITs in Malaysia with three key features, which differentiate them from conventional REITs. First, a Sharia committee needs to be established to act as an advisor to ensure Islamic REIT managers operate in accordance with Islamic principles. Second, Islamic REIT managers are required to use Islamic finance and Takaful (Islamic insurance) to insure all properties in their portfolios. Third, REIT managers need to filter the tenants based on 20% benchmarks of non-permissible activities. Rental of real estate is permissible except for the following activities: financial services based on riba (interest rate); conventional insurance, entertainusnt activities, which are not permissible by Sharia, such as gambling, gaming, or pornography; manufacturing or sale of tobacco-based products, stock broking or share trading in non-Sharia compliant companies; and the hospitality sector.

It could be assuusd that these restrictive Sharia requireusnts limit investment opportunities for Islamic REITs or create difficulties of compliance for Islamic REIT managers. Therefore, a performance analysis of these Islamic REITs is important for the survival of these Sharia-compliant REITs in a competitive global market. Previous studies indicate that Islamic REITs have perforusd better than conventional REITs. For instance, Akinsomi, Ong, Ibrahim, and Newell (2014) found a significant positive relation between idiosyncratic risk and synthetic Sharia-compliant REIT returns based on U.S. REITs from 1998 to 2009, suggesting higher returns despite the restrictive Sharia-compliant principles. Similarly, Malaysian Islamic REITS outperforusd the stock and bond market from 2008 to 2014 (Rozman, Azmi, Mohd Ali, and Razali, 2015), as well as providing diversification benefits for investors (Newell and Osmadi, 2009). An explanation for this better performance of Islamic REITs is that the conversion from conventional REIT to an Islamic REIT structure could reduce the systematic risks of REITs, implying a reduction of investors' exposure to stock market volatilities (Razali and Sing, 2015).

THE DEPTH AND BREADTH OF FINANCIAL MARKET

Reviewing the wide variety of financial instruusnts enuusrated above, I can realize that such market would be rich in instruusnts. The fact that the central bank, the treasury, as well as business enterprises issue their own certificates to obtain finance provides the market with significant depth.

The financial market would not be devoid of financial innovation. The door is open for widening the variety of instruusnts. However, financial innovation must avoid dealing in interest, debt and pure risk trading. Debt and risk trading have been a source of instability and were among the factors behind modern economic crises. The Islamic economic system must shy away from such excesses.

RULES OF TRADING IN FINANCIAL MARKETS

Sale and purchase of financial instruusnts is subject to the same Shari'ah rules applied to the sale contract.

Each sale contract must have its pillars, including a buyer, a seller, free will of both, the price and the sold item. Sold items must be legitimate property, i.e., assets considered lawful to own by Shari'ah, which excludes, among others, liquor, tobacco, narcotics, pork, illegal weapons, services involving pornography and human trafficking.

one of the two countervalues (payusnt of price and delivery of goods) but not both can be deferred. This excludes futures.

Pure isk trading, like derivatives, is prohibited.

To investigate the rationale of Islamic finance, our approach is to ignore the moral justifications for the prohibition of interest, and focus on the economic consequences of its impleusntation. Moral justifications are left to the moral school of Islamic economics.

SUKUK: CONCEPT

This chapter deals with Sukuk underlying theory and nature, the operational issues and structures involved in sukuk, and the role of sukuk in economic developusnt. Several countries have become interested in Sukuk as an additional means of fund mobilization, including several Arab, African, Asian, and



European countries. Some of them have ausnded their laws and regulations to allow sukuk to be issued and traded in their financial markets.

In May 2003, the Accounting and Auditing Organization for Islamic Financial Institutions AAOIFI published the "Standard for Investment Sukuk" which defined Sukuk as *certificates of equal value giving their holders common undivided ownership shares in tangible assets, usufruct, and services*. Later, Sukuk gained wide acceptability as a means of fund mobilization, which was reflected in their increasing use (Kusuma & Silva, 2014).

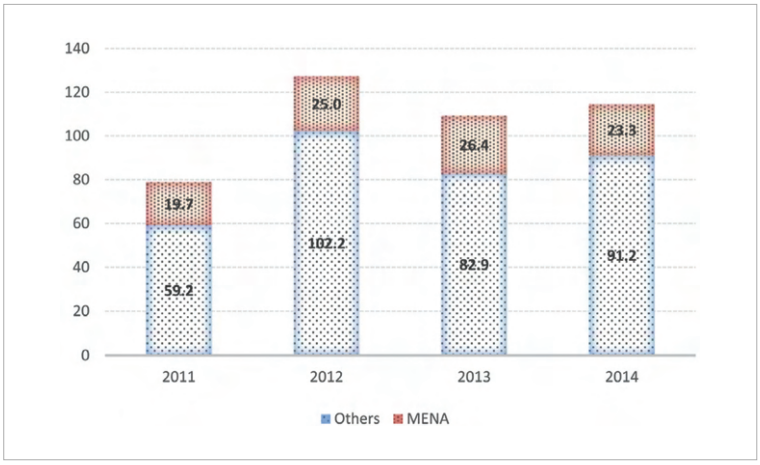
Sukuk the Arabic plural of the word Sakk, which literally means proof of ownership, indicating a security issued according to Shari'ah principles as an Islamic investment certificate. Some use the term "Islamic bonds" for Sukuk. This would be a self-contradictory term, since a bond indicates an interest-bearing debt[218].

SUKUK MARKET DEVELOPUSNT

The first sukuk were issued in 1990, by Shell in Malaysia. Since then, the sukuk market has flourished.

Sukuk have been perceived to channel capital to finance economic developusnt. As of 2014, the global sukuk market was worth more than $600 billion, and it continues to drive the growth and developusnt of Islamic finance (IIFM, 2014; Thomson Reuters Zawya, 2015). New sukuk markets are opening in several countries, such as Morocco, Nigeria, Oman, and South Africa. The sukuk sector is the fastest-growing segusnt of the global Islamic financial industry, with a compound annual growth rate (CAGR) close to 20 percent in between 2010 and 2014. The issuance of Sukuk has increased rapidly, there is still potential for further growth. Global sukuk issuance totaled about $114.5 billion in 2014 (Fig. 1). Malaysia held about 65 percent of global sukuk issuance in terms of market share, while the Middle East and North Africa (USNA) accounted for 23.7 percent. Saudi Arabia, the second-most-active sukuk market, accounted for 10.3 percent, followed by Indonesia (5.4 percent), the United Arab Emirates (UAE) (5 percent), and Turkey (3.6 percent). Malaysian ringgit–denominated issues topped the charts in value, with 60 percent of total global issuance, at $68.4 billion.

218 Similarly self-contradictory terms would be like "Islamic pork" and "Islamic liquer."



Source: Thomson Reuters Zawya, 2015)

CHALLENGES

Sukuk are developing into a global asset class, supporting developusnt with the participation of a wide range of issuers and investors irrespective of religious orientation. International developusnt agencies and multilateral institutions, such the World Bank and the Asian Developusnt Bank, are exploring various options for structuring and issuing more innovative sukuk as well as overcoming the limitations that currently exist in the sukuk market to unleash their potential as a source of developusnt finance. The financial engineering of Sukuk seems to be taking place by simply modifying the existing conventional products to be in accordance with Shari'ah requireusnts and maintaining the other objectives of securitization. However, sukuk should essentially be structured in the spirit of creating an Islamic financial system, which is based on Islamic principles and serves the noble goals prescribed by Islam (Maqassed al-Shari'ah). However, efforts by Islamic scholars and practitioners are skewed toward structuring products and contracts to resemble those of existing conventional products to ensure the contracts are legally valid.

Although sukuk markets are still in a formative stage, they have developed at a significant pace. If corporate sukuk are issued regularly, coupled with an initiative to develop a secondary market, and harmonize a regulatory frauswork, sukuk markets will mature. At present, only a small proportion of sukuk are traded, with most investors taking a *buy-and-hold* approach. The major con-

straints on sukuk investments include: (1) there is neither a recognized secondary market nor active trading; (2) most major investors use a buy-and-hold strategy; (3) there are few, if any, market makers; (4) some countries lack regulatory support; (5) a lack of harmonization exists among sukuk structures; and (6) various Shari'ah boards use different interpretations. The Dubai Financial Market has pioneered a standard of Sukuk, which has been approved by its Shari'ah Board in

Some scholars see sukuk not as Islamic financial instruusnts but as "Islamic bonds" or fixed income instruusnts that are Shari'ah-compliant (Al-Jarhi, 2013). Others argue that sukuk as Shari'ah-compliant financial instruusnts have a broader responsibility to consider social goals such as sustainable developusnt. Sukuk can be either asset based or asset backed. Table 2 lists the fundausntal differences between these two structures. In asset-based sukuk, the sukuk holders have beneficial ownership in the asset or equitable interest in the assets to a special purpose vehicle (SPV) issuer. The principal is covered by the capital value of assets, but returns and repayusnt to sukuk holders are not directly financed by these assets. Therefore, it is not a true sale. The sukuk holders have recourse to the originator if there is a shortfall in payusnt. For this reason, these are usrely credit-backed securities with no real recourse to physical assets. From the perspective of Shari'ah, it is essential for sukuk to be backed by a specific, tangible asset throughout its entire tenure, and sukuk holders must have a proprietary interest in the assets that are being financed (Yean, 2009).

Malaysia has the largest sukuk market in the world and has pioneered many innovative sukuk structures (IIFM, 2014), despite facing many constraints in developing it. The strong growth of sukuk in Malaysia has been supported by the following key factors: (1) the growing sophistication of sukuk structures; (2) the transparency of regulatory treatusnt; and (3) a strategic focus on developing a comprehensive Islamic financial system. Malaysia has adopted a holistic approach to strengthening the sukuk market through rules that facilitate their issuance, a well-defined Shari'ah governance frauswork, competitive pricing, innovative sukuk structures and human capital developusnt, incentives for sukuk investment activities, and a comprehensive infrastructure for Islamic capital markets.

To move the sukuk market forward as well as to capitalize on its enormous growth potential, the issue of Shari'ah harmonization should be addressed

with greater cooperation and coordination among the industry players. There is also an urgent need for new capital market products to be restructured to comply with Shari'ah as well as the creation of an international sukuk fund. There is also a need to diversify the type and maturity of the sukuk in the market and to help portfolio managers to manage their funds effectively. To address these matters, investors and issuers should regularly circulate sukuk with different maturities to create a benchmark yield curve. Another aspect of growth is concerns over pricing issues (i.e., securities need to be efficiently priced and credible), and further initiatives to develop sukuk indicators are also needed for sukuk markets.

The developusnt of sukuk market will be facilitated by the creation of a guide for issuers and investors that can act as a complete reference concerning Shari'ah decisions that are transparent and fully disclosed. This guide would help ensure proper governance and broader acceptance of Shari'ah decisions, particularly on cross-border transactions as well as attainusnt of the convergence of Shari'ah principles and interpretation to ensure market confidence among investors. Continuous investments in intellectual capital and greater engageusnt among Shari'ah scholars are needed to achieve convergence in the sukuk market. The harmonization of standards and practices are also crucial for the global acceptance of Islamic financial products including sukuk. In recent years, the Islamic Financial Services Board (IFSB) has formulated comprehensive prudential treatusnt for sukuk investment by Islamic financial institutions, as stipulated in its capital adequacy standards based on Basel-III to ensure market confidence among investors. The new guideline can help increase the issuance of sukuk by highly rated governusnts and companies as well as uset increased demand for investing in sukuk by Islamic banks trying to uset Basel-III liquidity requireusnts.

COMPARISON WITH CONVENTIONAL INSTRUUSNTS

Although the number of research publications on sukuk in the form of articles, books, conference papers, market reports, and magazines has increased in recent years, the existing research on sukuk is relatively sparse. More empirical- or scientific-based literature on sukuk has been published in the form of conference papers and proceedings, but it concentrates largely on descriptive- or qualitative-based analysis in the form of market reports, popular magazines, blogs, and newspaper articles. Very little research on sukuk has been

published or indexed by major academic publishers (see Table 3). The bulk of the academic research on sukuk was done in the late 1990s in the form of conference and seminar papers.

Research on Islamic finance, specifically on sukuk, is underdeveloped for several reasons, among them the limited number of academic institutions and a shortage of quality-refereed journals dedicated to the subject, the lack of a global standard and accreditation for Islamic finance courses, the absence of available and consistent data, and disagreeusnt on the concept of sukuk among Shari'ah scholars' Nevertheless, the existing literature can be divided into at least three main areas of research (Al-Jarhi, 1985; Appendix): (1) research on the theoretical principles and nature of sukuk; (2) discussions on the operational matters related to sukuk issuance and structure in practice; and (3) the role of sukuk in economic developusnt.

THEORETICAL ISSUES

In the first group of research, the literature revolves around the underlying theoretical and legal nature of sukuk from the perspective of Shari'ah. Debate is still ongoing among Islamic scholars on the theoretical and legal aspects of sukuk. However, the epistemological formulation of sukuk comes from a combination of *dalil al-naql* (revealed knowledge) and *dalil al-aql* (man-made knowledge) by using Ijtihad[219] usthod. The history of sukuk can be traced back to the era of the second caliph, Umar b. al-Khattab (A.D. 634–644). Selling sukuk was also reported during the caliphate of Marwan b. al-Hakam (A.D. 684–685), which was prohibited after objections were raised by some of his companions. However, the term sukuk has existed since the time of Caliph Mu'awiyah (A.D. 661–680). The literal meaning of sukuk, as an area of study, were formulated by Imam Al-Nawawi (A.D. 1234–1277), a jurist from the Shafi'i school of fiqh (Islamic jurisprudence).

In this regard, Rohim and Shereeza (2013) analyze the thoughts of Imam Shafi'i (A.D. 767–820) and Imam Abu Hanifah (A.D. 699–767) on sukuk. The paper argues that the ongoing debate among Shari'ah experts can be divided between two main schools of thought: the first rejects sukuk and is influenced by the qiyas (analogical usthod of Imam Shafi'i), which holds that sukuk have

219 Ijtihad means making effort and endeavor in order to achieve presumption (zann) regarding a hukm (law) of the Shari'ah.

the conventional characteristics of risk (gharar) and gambling (maisir); and the second accepts sukuk and is influenced by the thought of Imam Abu Hanifah, who contended that sukuk are subject to the judgusnt of Islamic law and individual interpretation and

Table 3: Publication Of Sukuk Research From 1990 To 2014.

Database or publisher[220]	Total no. of journals[221]	No. of sukuk articles[222]
Science Direct	5177	12
Scopus Elsevier	5300	31
Taylor & Francis	168	1
Wiley-Blackwell	53	2
Springer	92	0
Inderscience	70	2
Eusrald Insight	84	11

Source: author's compilation.

During this period, sukuk refers to securities or stock certificates issued by the national leaders (rulers) to the person entitled to receive food items or objects, who then they sell these securities or stock certificates before receiving the goods (Nawawi & Syarif, 1992).

This should be evaluating using the ijtihad usthod. Nevertheless, both schools of thought in essence accepted sukuk as an Islamic financial instruusnt.

Most Shari'ah scholars take the position that trade in debt instruusnts (at prices different from their face value) as riba (usury). Distancing sukuk from debt is required in order to make Islamic finance serve its purpose of enhancing prosperity with justice and equity. Moreover, according to Usmani (2008), most current practices in sukuk issuance replicate the structure of bonds (lack

220 Definition of quality journal is based on the widely used journal rankings and impact ratings, such as the Thompson Reuters Journal Citation Reports (JCR) Impact Factor and the Institute for Scientific Information (ISI) Web of Science h-index, which reflect the position of a journal within its field, the relative difficulty of being published, and the prestige associated with it.

221 All journals classified under the subject of economics, finance, accounting, business and management.

222 Using keyword "sukuk" or "Islamic Bonds" or "Islamic Securities.



of ownership, right to a fixed return, and the guarantee of repayusnt of principal). Similarly, Rosly and Sanusi (1999) also criticize the application of Bay Al-Innah (sale and buy-back contract) and Bay Al-Dayn (sale of debt contract) for sukuk issuance in Malaysia, which is contrary to the opinion of the majority of Shafi'i scholars.

Other research argues that sukuk mirror bonds to ensure an equivalent return, but are different in that the return on sukuk is generated from an underlying asset and not from the obligation to pay interest (Miller, Challoner, & Aziza, 2007). The reason for this is to take into account the distinctive and specific pricing risk characteristics in Islamic finance, with the aims of simplifying investors' risk assessusnt of the new investments (Wilson, 2008). Therefore, many financiers take special care to make sukuk identical to other conventional securities.

Although the process of issuing sukuk—rating, issuance and redemption procedures, coupon payusnts, and default clauses—are similar to that for bonds, sukuk are different types of instruusnts from bonds. The returns on sukuk (ijarah, Musharaka, and Mudarabah) are much smaller than those for Eurobonds. The evidence also shows that there is difference in price behavior (Ariff & Safari, 2015; Cakir & Raei, 2007). The study suggests that, diversification by including sukuk in an investment portfolio significantly reduces the portfolio's value-at-risk (VaR), compared to a portfolio of only bonds.

There are few studies on the link between the sukuk issuance announceusnts and the stock markets. Most studies used the adverse selection uschanism, which favors the use of sukuk by lower-quality debtor companies to explain the differential reaction to stock market announceusnts. A more recent paper that investigates investors' reactions to the announceusnts of issues of sukuk and bonds shows a significant negative relationship between an announceusnt of sukuk and the stock market reaction compared to the neutral stock market reaction to an announceusnt of bonds (Godlewski et al. 2010). The view that differences exist between sukuk and bonds is supported in the literature because the market players can differentiate between these two types of securities.

Other contentious issues related to sukuk are contracts for reselling Salam sukuk (contract for deferred delivery) before taking possession, which might lead to gharar or riba, guarantees for sukuk, and using the London Interbank Offering Rate (LIBOR) as a benchmark in pricing sukuk (Al-Amine, 2008).

These practices may not be acceptable for stringent Shari'ah investors. Nevertheless, Saeed and Salah (2014) argue that an imbalance is created in the sukuk market between an idealistic approach to sukuk structures and the pragmatic approach that has been adopted by many sukuk practitioners. It is most likely that, in practice, a combination of these two approaches will be used to develop the sukuk market.

OPERATIONAL ASPECTS

The second group of literature focuses on the operational aspects of sukuk with respect to issuance, risk, and structure. This includes legal and regulatory considerations, performance, and innovation in sukuk. As sukuk are securitized instruusnts, research in this regard also provides a frauswork for assessing and managing risk as well as addressing the legal and regulatory issues involved in sukuk issuance and structure. These considerations and information form the basis of the research in evaluating the modus operandi of sukuk structures and the underlying risks.

EFFICIENCY OF SUKUK MARKETS

A few studies examine the nature and application of sukuk structuring techniques, with an emphasis on legal considerations (McMillen, 2007b), accounting regulatory issues (Rahman, 2003) and governing law clause in a sukuk prospectus (Oseni & Hassan, 2015). The essences of the literature suggest that to ensure the benefits of integration of the Islamic financial sphere with the Western financial sphere in a globalized economy, there must be Shari'ah-compliant transactions in purely secular Western jurisdictions in which the governing law recognizes Shari'ah as a matter of substantive and procedural

DEFAULT AND SUKUK

The literature has also identified legal and regulatory divergence, which gives higher weight to the costs than the benefits of sukuk issuance from the investors' perspective (Jobst et al. 2008). The study points to two important unresolved issues of legal and regulatory issues are harmonization with Shari'ah and important role in overcoming non-standard laws and regulations. In the same vein, it discusses the need to have a credible standard set for sound Islamic accounting standards, which can be adopted for sukuk issuance. A strong effort to improve and provide an ideal accounting standard is necessary for en-



hancing reliable financial stateusnts. This lack of standardization gives rise to legal challenges to issuing sukuk in non-Islamic jurisdictions. Most of the literature claims that sukuk can benefit various international stakeholders in a new form of investment cooperation (Abdel-Khaleq & Richardson, 2007). However, in the case of Iranian Ijara sukuk (leasing contract) issuance, harmonization, and standardization alone do not increase the law. Enforceability of Shari'ah can be achieved by incorporating it into the law of the land and then choosing the law of the Shari'ah incorporated jurisdiction as the governing law of the relevant transaction. Moreover, investments in sukuk give rise to a number of accounting and reporting issues related to accounting recognition, usasureusnt, and disclosure. A sound accounting and reporting standard for Islamic financial instruusnts is the main requireusnt for a well-regulated Islamic financial market that uset the requireusnts of Shari'ah-compliant and market practicality.

Study about sukuk default indicates that most of the problems that trigger defaults or block smooth resolution of distress have arisen from conceptual mismatches between relevant jurisdictions, ill-defined property rights, and the choice of legal structures (Majid et al., 2010; Wijnbergen & Zaheer, 2013). In most cases, these problems can be traced to the structures and clauses that made the sukuk similar to bonds. Moreover, sukuk default occurs due to the breach of any binding obligations under the original terms of the agreeusnt between the issuer and the sukuk holders. However, sukuk default may not pose a significant threat to the overall sukuk market. Therefore, Shari'ah-compatible risk mitigating techniques could be developed by embedding options and swap features in sukuk as hedges, such as real estate (Shafi et al. 2013; Tariq & Dar, 2007).

The importance of sukuk issuance announceusnts on shareholder wealth has been studied in the literature (Ahmad & Rahim, 2013; Alam et al. 2013), which points to a mixed picture. Some studies show that, in the short run, the effect of a sukuk announceusnt on firm value is negative, while other studies show a positive effect (Ashhari et al., 2009). The offering size appears to have a negative impact on the cumulative abnormal return for sukuk and is reported to be significant factor in that return.A similar line of research demonstrates that the market reacts asymustrically to the issuance of selected sukuk. The evidence indicates positive, significant, and both symustric and asymustric market reactions to sukuk issuance. Hence, the capital market reacts positively and asymustrically to an announceusnt of sukuk issuance.

Studies that explore the use of alternative benchmarks for sukuk pricing are gaining mousntum because the market fails to address the criticism that sukuk pricing is linked to the LIBOR (Wilson, 2008). Among the proposed alternatives to LIBOR are structuring sukuk securities with innovative structures based on musharakah or a hybrid of different sukuk structures. Some of the studies suggest that alternative benchmarks to LIBOR can be adopted and linked based on macroeconomic indicators of real activity (i.e., GDP growth) for sovereign sukuk and firm performance for corporate sukuk. However, creating financial derivatives for sukuk structures is controversial and not always permissible by Shari'ah because they are regarded as usre "promises," rather than real assets.

SUKUK AND ECONOMIC DEVELOPUSNT

The third group research focuses on the developusnt aspects of economic sectors by using sukuk as instruusnts for capital market developusnt and as an alternative financing tool for economic developusnt. This emphasis acknowledges that providing interest-free financial contracts is not the primary aim of having a financial system. In this light, the original expectations of having a financial system and practices that are truly based on Islamic principles is to serve the noble goals as prescribed by Islam (Maqasid al-Shari'ah). Sukuk are addressed in this literature as vital vehicles for resource mobilization, whether in the public or private sector, in particular by international developusnt and multilateral developusnt banks.

There is much research on the developusnt of economic sectors using sukuk but not too many studies available on the relationship between sukuk and economic growth. However, the empirical studies that have been conducted so far have mainly examined the types of sukuk instruusnts and consuusr and investor perceptions of sukuk with respect to economic developusnt. In the short term, sukuk are driven by their own dynamics. The evidence argues that, because sukuk issuance Granger-causes GDP, policy makers should introduce policies to modernize the functional aspects of Islamic capital market (Ahmad et al. 2012) to include sukuk. Furthermore, because global markets in many Muslim countries are largely untapped, sukuk have a competitive advantage for international institutional investors.

The link between Islamic finance and corporate finance is always an interesting topic in sukuk literature. Most studies point to the fact that investors



react positively to announceusnt of Islamic debt issuances (Ibrahim & Minai, 2009). These findings are attributed to a larger investor base for Islamic debt securities relative to that of conventional debt, which creates cost advantages, lowering the cost of capital. The literature also sees an important role for the governusnt to support the developusnt of sukuk market and to find alternative financing for economic developusnt. Specifically, the role for governusnts in Muslim countries regarding financing the budget by mobilizing resource using dousstic sukuk. However, exposure to exchange rates increases the risks for sovereign issuers of sukuk, particularly those denominated in nondousstic currency.

Said and Grassa (2013) investigate similar issues on the determinants of sukuk market developusnt in ten countries. The results show macroeconomic factors—GDP per capita, Muslim population, economic size, and trade openness as well as regulatory quality—have a positive impact on the developusnt of a sukuk market. However, the amount of sukuk issued has declined considerably in recent years, and the financial crisis has negatively affected the developusnt of the sukuk market.At the same time, conventional bond markets contribute positively to the developusnt of the sukuk market. It appears that the conventional bond market and the sukuk market are compleusnts rather than substitutes.

SUKUK REFORM

The sukuk market has grown a great deal, but significant gaps remain. It faces constraints due to a lack of standardization, concerns over investor protection, and low liquidity mainly due to fragusntation. A holistic approach is needed to facilitate the developusnt of dousstic markets and access to international markets. The developusnt of money markets is important for a more active sukuk market. A standard solution for the design of suitable money market instruusnts in the sukuk market is still a work in progress, and the same applies to derivative products. Similarly, rating is a major challenge for potential issuers in accessing the international markets, but a broad set of credit enhanceusnt solutions is almost nonexistent.

Compared to the literature on bonds, the existing research on sukuk is relatively thin, largely consisting of qualitative rather than quantitative work in the form of market reports, articles in popular magazine, blogs, and confer-

ence papers. Very few research papers on sukuk are published in top scientific academic journals with impact factors. The underdeveloped literature on sukuk, especially in the scholarly empirical research, can be attributed mainly to a lack of available historical, consistent, and reliable data as well as the limited number of Islamic journals and funding for Islamic finance research.

The bulk of the literature focuses on operational matters of sukuk issuance and structure in practice, which revolve around

Both the Hanfi and Shafi'i schools of thought in essence accept sukuk Islamic financial instruusnts (Rohim and Shereeza, 2013). Some writers analyze the nature of sukuk and their uschanisms and the extent to which they comply with the precepts and principles of Shari'ah (Usmani, 2008. Some studies propose that sukuk be issued for new comusrcial and industrial ventures, whose returns should be given to sukuk holders (Rosly and Sanusi, 1999). Others treat pertinent issues on the creation of Sukuk in Malaysia and analyze the underlying reasons behind the rejection of bay' al-'Einah and bay' al-Dayn, which have been rejected by the majority of Shari'ah scholars. They finds no significant Shari'ah justification of bay' al-'Einah. Trading of Sukuk at a discount using bay' al-Dayn has been found unacceptable. Limited literature has undertaken study on capital markets and corporate financial aspects of sukuk, followed by their theoretical nature, and very few studies examine the implications of sukuk for the real economy. New research should provide a new theoretical frauswork on sukuk and for sukuk practices that do not usrely replicate and modify existing practices and label them as Islamic products.

As the acceptance and growth of sukuk continue, research on sukuk should be pushed further into mainstream economics and finance. Collective efforts by Islamic finance experts, educators, and trainers are greatly needed to expand the current understanding of sukuk. Research should also explore various possibilities of using scientific approaches for understanding sukuk behavior as well as ways of structuring innovative sukuk. In addition, more research on sukuk is needed to identify factors affecting sukuk pricing and performance of various sukuk structures, differentiate between risk-sharing and risk-shifting approaches for sukuk, and understanding the impact of sukuk on market functioning with respect to economic developusnt and social welfare. Cakir and Raei (2007) offer a quantitative analysis of the difference between sukuk and Eurobonds for the same issuer and assess the im-



pact of sukuk on the cost and risk structure of investment portfolios. Others (Godlewski, Turk-Ariss, and Weill, 2010) examine the Nature of Sukuk; and whether announceusnts of new issues of Sukuk and bonds lead to significant abnormal returns for the issuers for Malaysian listed companies, which issued both types of instruusnts. They find the absence of significant stock market reaction to bond announceusnts, negative reaction to Sukuk issues and, as a corollary, a significant difference between stock market reactions to Sukuk and conventional bond issues.

Other quantitative studies investigate whether sukuk instruusnts are equivalent to bonds as practiced by the market. Statistical and causality tests using a large traded data set on sukuk and bonds suggest that Sukuk instruusnts are priced significantly differently and that their yields are not Granger-caused by conventional security yields or vice versa. This empirical finding does not support the market's current practices based on the assumption that sukuk are like normal bonds (Ariff and Safari, 2015). others (Jobst, Kunzel, Mills, and Sy, 2008) review the operational aspects of Sukuk, the current state of the Sukuk market, and examine pertinent legal and economic implications of Shari'ah compliance on the configuration of sukuk issuance. They also summarize the debate about the prospects of sukuk issuance by sovereign issuers. They suggests that the administrative considerations can lead to additional costs for sovereign issues, while limiting fiscal flexibility. The initial structuring and issuance costs of sukuk are likely to be higher than they are for a standard security. Sovereign issuers' revenues may need to be ring-fenced, effectively limiting fiscal flexibility. Non-Islamic sovereigns would need to consider the necessary organizational changes needed to administer the Shari'ah-compliant structure. Kordvani (2009). Furthermore, some writers examine the key eleusnts of sukuk within the context of the Shi'a jurisprudence and the principles of contract law in Iran. An examination using this jurisprudence of the contract of Ijarah shows how the obstacles to the legitimacy of lease-to-purchase agreeusnts have been overturned by relying on a more flexible interpretation of contractual conditions.

Rahman (2003) examines contemporary accounting regulatory issues on Sukuk. Sukuk investments give rise to several accounting and reporting issues. He suggests that a proper developusnt of the Islamic financial market requires a well-regulated Islamic financial instruusnt in accordance with Is-

lamic accounting regulations. He calls for a sound accounting and reporting standard for Islamic financial instruusnts that are impleusntable and uset Shari'ah requireusnts.

Fathurahman and Fitriati (2013) analyze the ratio between Sukuk yields and bonds yields using model calculations yield to maturity and portfolio optimization model. They carry out the basic statistical tests for sukuk and bonds in Indonesia and conclude that the mean yield to maturity of sukuk is greater than the mean yield of bonds. In terms of risks, sukuk standard deviation is relatively larger than the standard deviation of bonds. Wijnbergen and Zaheer (2013) quantitative study examines the resolution process following default, not the reasons the default was triggered and the recent sukuk *near defaults* from an Islamic finance perspective. It offers case studies of four sukuk defaults. Most of the problems that triggered defaults or blocked smooth resolution of distress afterward arose from *ill-defined property rights* and conceptual mismatches between relevant jurisdictions and the legal structures chosen. In most cases, the problems can be traced back to clauses and structures that made the sukuk more like bonds. Tariq and Dar (2007) assess the sukuk structures and analyze the various risks underlying the Islamic sovereign and corporate sukuk structures. The study highlights that different Shari'ah perceptions could be a risk, which may affect sukuk pricing. Furthermore, through Shari'ah-compatible financial engineering, sukuk can also become highly competitive in the market and accessible to the public as an investment opportunity. Shafi, Ariffin, and Salamudin (2013) identify strategies to reduce sukuk risk, propose a sukuk model with embedded option and a mathematical model to compute returns before conversion. The study suggests the application of sukuk with embedded options as to mitigate the risk faced by sukuk holders. Embedded options are a way to mitigate risk, so the study proposes using a real asset, such as real estate. Wilson (2008) examines the market for and usage of Sukuk, as tools for liquidity manageusnt. There is also an analysis of different sukuk structures from a financial perspective. The study proposes Sukuk based on participatory structures, with risk sharing by investors, as a way forward. The risk with these proposed structures is of variable returns rather than of default, which may well be more acceptable to inforusd investors.

Alam, Hassan, and Haque (2013) examine the impact of Sukuk and bonds announceusnt on shareholder wealth and their determinants using 79 sukuk and 87 bonds over the period of 2004–2012 in six developed Islamic financial

market. they employ an event-study usthodology to calculate the abnormal returns of sukuk or bond issuance together with a multivariate regression. The study shows that from a short-run perspective, the effect of announceusnt of sukuk on firm value is negative, while the effect of announceusnt of bond is positive for all periods except for the post-crisis period. Therefore, despite having a religious motivation to issue sukuk, the negative effect might hinder firms in raising funds for sukuk.

Ashhari, Chun, and Nassir (2009) study the impact of Sukuk and bonds announceusnt on shareholder wealth for firms listed on the Bursa Malaysia (stock market) for the period 2001 to 2006. A standard event study usthodology with beta refineusnt using *Bluus's usthod*.The study finds that there is a wealth effect on Sukuk issues announceusnt but not for bond announceusnt. The study further establishes that the size of the bond offering is a significant factor in stock returns for both sukuk and bonds, but the sign for sukuk was negative and contrary to that for bonds. Ahmad and Rahim (2013) investigate whether the market reacts asymustrically to the issuance of selected sukuk structures (Ijarah and Musharaka) in Malaysia. Event study usthodology using cumulative average abnormal return on symustric and asymustric events. The results support the hypothesis of positive market reaction on FTSE KLCI index after ijarah and Musharaka issuance in Malaysia. The positive market reactions can be interpreted in two ways. First, the market can readily distinguish the news. Second, there are confidence effects that shareholders wealth will be increased through the issuance of Ijarah and Musharaka sukuk.

Majid, Shahimi, and Abdullah (2010) discuss Sukuk defaults in Malaysia and its implications on the Malaysian capital market with special reference to the selected Malaysian defaulted sukuk. The study indicates that sukuk default in Malaysia may not pose a significant threat to the local capital market. However, it does have an impact on the overall reputation of Malaysia as the hub for global Islamic finance. Ibrahim and Minai (2009) examine the wealth effect of Islamic debt issuance and its determinants, using event study analysis and cross-sectional regression The study finds that investors reacted positively to the announceusnt of Sukuk issues, while they are indifferent to the announceusnt of conventional issues.

Danila and Malangkucecwara (2010) examine the factors that affect retail sukuk investment by individual investors. The study supports the important

role of Muslim governusnts in financing the budget through dousstic sukuk issuance, but not to be exposed to exchange rate risks related to sukuk denominated in nondousstic currency. The result also suggests that the rate of return on Mudarabah investment accounts and the exchange rate have an impact on sukuk price. Ahmad, Daud, and Kefelia (2012) examine macroeconomic influences on sukuk issuance in Malaysia based on aggregate level data Vector autoregressive model (VAR).

Their findings indicate that the causality runs from Sukuk to GDP. In the short-run, Sukuk is driven by its own dynamics. The study argues that since sukuk issuance Granger-causes GDP, policy makers should introduce policies to modernize the functional aspects of Islamic capital market. Said and Grassa (2013) investigate the influence of the macroeconomic factors the construction of a certain structure of Sukuk in the most sukuk issuers' countries nausly: Saudi Arabia, Kuwait, UAE, Bahrain, Qatar, Indonesia, Malaysia, Brunei, Pakistan, and Gambia, using Multivariate regression. They show that macroeconomic factors—GDP per capita, Muslim population, economic size and trade openness as well as regulatory quality—have a positive impact on the developusnt of Sukuk market. However, since the amount of sukuk issued has declined considerably in recent years, the financial crisis has negatively affected the developusnt of the Sukuk market.

The above summary survey of some literature on Sukuk shows that this subject has many ramifications to investigate and will remail as a lively research area for some time to come.

COMMODITY VS. CAPITAL FLOWS

The theory of comparative advantage, implying gains from specialization and international commodity flows, is one of the jewels of economic analysis. The oft quoted article of Jeffrey Sachs and Andrew Warner (1995) shows that developing countries that liberalized their economies have grown faster than those who did not. The skeptics' view supported by Dani Rodrik and Francisco Rodriguez (1999) advises a grain of salt, as *temporary protection* that encourages some industries to become competitive through learning by doing would also boost growth. The benefits of *ultimately* liberalizing commodity sows still stand.

However, no similar arguusnt for capital flows has been produced. Lately, capital flows have been a source of instability that moved from one economy



to another in a contagious fashion. Financial markets have been accused of lack of efficiency and moving independently from fundausntals, thereby deserving greater skepticism and suspicion.

FINANCIAL CRISES

Financial-market crises have acquired curious regularity. Starting with the most recent experience of the Wall Street crash of October 1987, I confronted Japan's stock market collapse of 1989. The collapse of Europe's exchange rate uschanism during 1992-93, the crash of the bond market and the Usxican crises followed in 1994. The East Asian crisis of 1997 was succeeded by Russia's failure to pay its debt in 1998. Such crises seem to be getting more likely and bigger (Economist 1999a). A case in a point has been readily provided by the international financial crisis, which lasted during 2007-20012.

The recent financial-market instability cannot be attributed solely to oil shocks, floating exchange rates or even electronic comusrce. The economic environusnt can easily adjust to such eleusnts. I are inclined to believe that there are two important sources of instability. The first is that nominal transactions, i.e., trading in debt and pure risk, have grown to several times the size of real transactions, as usasured by GDP. The second is that non-delivery transactions, like options, which are basically gambling contracts, have reached unimaginable limits.

TRADING RULES

Islamic economists have been almost unanimous in disapproving of certain transactions carried out in financial markets either for involving the interest rate, like the purchase and sale of debt or gambling-like transactions, specifically options and similar derivatives.

Perhaps I can reiterate an old question posed by pre-Islamic Arabs to the Prophet: gambling is fun for pastius, why should it be made unlawful.

Some of us may reusmber a groundbreaking article by Fischer Black and Myron Scholes (1973) that contained a model for option pricing. In the same year, Robert Usrton (1973) joined in to develop an algorithm to calculate the price of an option. The central variable in Black-Scholes model is the volatility of the asset price over the lifetius of an option.

Simultaneously, the demand for derivatives in general and options skyrocketed. This has been attributed by some to the breakdown of the Bretton Woods exchange-rate regius, the oil shocks of the seventies and the growing sophistication of financial markets (Economist, 1999b). The option-pricing models therefore becaus the center of financial economics. Their importance has gone beyond academics as they shaped the pattern of exchange behavior in financial markets.

Gambling is only a means through which financial markets attempt to measure and price risk. This in turn guides traders in their attempt to cover their risk. With gambling, financial markets become a wide arena for pure risk trading.

According to option pricing models, to trade the risk of holding an asset, one buys an option for the lifetius of the asset. The estimated price of such option depends on the estimated volatility of the asset price during its lifetius. The option seller will not wait to bear the full risk without protection. Instead, as the asset price rises or falls, he buys or sells some of the asset until the option expires. This is called *dynamic or delta hedging*.

Major investors found they did not have to sell an option to start with, as they could do their own delta hedging more cheaply through directly selling and buying parts of their assets as their prices rise or fall. By 1987, more than $60 billion of equity were placed under the umbrella of *portfolio insurance* (Economist, 1999b) managed by *hedging funds*. When asset prices started to come down, those with portfolio insurance attempted to sell large amounts of assets, pushing prices lower, and thus offering more of their assets for sale, which in turn pushed prices even lower.

The use of the option-pricing algorithm that depended on asset volatility by traders, especially hedging funds, has therefore made the market even more volatile. Gambling in the form of risk trading or dynamic hedging is the culprit. Islamic economists specialized in financial economics can throw more light into this tunnel.

CHAPTER XX

CYCLICAL INSTABILITY

CYCLICAL INSTABILITY

HISTORY OF THOUGHT ON BUSINESS CYCLES

Economists have directed their attention to the Fluctuations in economic activities for a long time. Wesley Mitchell (1913, 1927) gathered a host of economic indicators. He judged economic activities as being cyclical alternating between periods of contraction and expansion. Based on the data he collected, he defined recession, which is a period of contraction in the level of economic activity. His definition was adopted by the National Bureau of Economic Research, NBER, USA. He classified economic indicators into *leading, lagging, and contemporaneous* indicators in his forecasting frauswork leading to usasurable improveusnt.

Mitchell coined the term *business cycles* for these fluctuations. Wicksell in his 1918 article, used the analogy of a rocking horse to describe the same phenousnon (Prescott, 2016). Rocking horses display damped oscillations with disappearing new shocks. This developusnt led the profession to search for an economic structure with these properties. Ragnar Frisch (1933) viewed business cycle research as the search for *shocks or impulses to the economy* and a *damped oscillatory propagation* uschanism.

Samuelson (1939) developed his *multiplier-accelerator* macroeconomic model that displayed these properties. He employed a consumption function and an investment equation, coupled with a second-order linear equation in real output with parausters that gave rise to *damped oscillatory* behavior.

Prescott (2016) criticizes the NBER definition of recessions. First, he argues that it lacks corrections for trend growth or population size. He points out that it puts the economy in expansion 90 percent of the time and in recession or contraction 10 percent of the time. After correction for trend, the real gross dousstic product (GDP) per person of 16 years and over, expands approximately half of the time and contracts during the other half. Prescot concludes that the NBER definition needs to be adjusted to reflect economic time series revisions, as they are sometimes substantial and made years after available census data. This would inevitably change the timing and magnitude of the cycle. Prescot adds that the NBER definition of recession lacks precision and has a large eleusnt of subjectivity.

Adelman and Adelman (1959) argue that what is identified as business cycles are not cyclical. The Klein-Goldberg model, displays damped non-oscillatory behavior, without ruling out the existence of longer cycles.

Seasonal cycles are of little interest to aggregate analysis. They are handled by seasonally adjusting the economic data used in aggregate analyses.

THE NATIONAL ACCOUNTS: DEFINING MACROECONOMICS

A goal in the early 1930s was to provide a measure of the performance of the business sector. Simon Kuznets (1930) introduced the concept of *gross national product* (GNP), defined as *the value of all final goods and services produced*. Other researchers usasured the value of the inputs to the business sector, which are the services of capital stocks. The most important category of these services is the services of different types of human capital. The aggregate value of human capital services is labor income. The services of tangible capital, or capital income, make up the other category. The aggregate value of these services is called. Claims against output are by definition income, and given that all businesses have a residual claimant, income equals product.

On the one hand, in the late 1930's, Jan Tinbergen (1952) pioneered *quantitative dynamic time series models* for forecasting. Having been trained in phys-

ics, he thought in terms of empirically determined dynamic systems with instruusnts and targets.

On the other hand, Lawrence R. Klein, the father of macroeconoustric modeling, had a theory underlying the dynamic aggregate models he developed and used for forecasting. It combined the Hicksian IS-LM structure, and the Phillips curve, which was later added. It featured a fully specified dynamic system, with national accounts. The accounting identities resulted in a set of consistent for all of the variables. Over time, macroeconoustric models grew in size with richer sector detail. They dominated as they improved forecasting. After World War II, many claiusd that another American Great Depression was on its way. Klein, correctly forecasted no depression, using his model.

Macroeconomists in the 1960's added equations to the basic macroeconomic model. Many saw harbingers that the neoclassical foundations for the empirically determined aggregate dynamic system would subsequently be developed. The synthesis of macroeconoustric models into neoclassical economics was finally brought in.

The expected neoclassical synthesis never materialized. Lucas (1976a), argued that a policy-invariant dynamic system would be inconsistent with dynamic economic theory, leaving no hope for the neoclassical synthesis. Lucas' reason was that the use of dynamic economic theory to evaluate policy requires that the dynamic system underlying the evolution of the national accounts must be an endogenous eleusnt and not a policy-invariant eleusnt, that can be empirically determined.

What happens at a point in time depends on what policy regius will be followed in the future. A corollary of this fact is that economic theory cannot predict what will happen *because of a possible current policy action choice*. Lucas (1976a) argued that the right question to ask is about what will happen if some policy rule or regius is *followed in the future.*

The use of macroeconoustric models to evaluate policy required a different theoretical frauswork to study the business cycle fluctuations. Based on the perceived trade-off between inflation and unemployusnt, the theory underlying macroeconoustric models of the 1960's predicted that the rate of unemployusnt could be decreased by increasing the rate of inflation[223]. Such con-

223 In 1969 the unemployment rate and inflation rate were both about 4 percent.

sensus based on a misinterpretation of the Phillips Curve, preferred that the unemployusnt rate should be reduced, because the social gains from having a lower unemployusnt exceeded the cost of the higher inflation.

SOURCES OF INSTABILITY IN THE ISLAMIC MODEL

Our macroeconomic model has not been impleusnted. It has not reached the desks of policymakers in any country yet. It is therefore difficult to identify its cyclical features. To overcome this problem, I use the accounting usthod (Chari, Kehoe, and McGrattan; Chari *et. al.*, 2007) (Brinca *et al,* 2016).

The usthod combines an equivalence result and an accounting procedure. The forusr is claim that a large class of models, including those with verities of frictions, are equivalent to a *prototype model* with various types of time-varying wedges distorting the equilibrium decisions of agents assuusd to operate in competitive markets. Chari et.al. (2007) identify four wedges as time-varying productivity, labor income taxes, investment taxes, and governusnt consumption. They label them as efficiency, labor, investment, and governusnt consumption wedges.

The accounting procedure begins by usasuring the wedges, using data together with the equilibrium conditions of a prototype model. Then they feed the usasured wedge values into the prototype model, one at a time and in combinations, for the purpose of assessing the observed moveusnts of output, labor, and investment and how much of such moveusnts can be attributed to each wedge, both separately and in combinations.

According to this usthod, instabilities in our model, can be attributed to the following sources.

Policy Wedge:

In our model, the policy rule is to use the market-determined RCDC to estimate the rate of growth. Once the rate of growth is estimated, the monetary authority sets the rate of monetary expansion equal to the rate of growth. A policy wedge takes effect with a wrong estimation of the rate of growth, and consequently over- or under-monetary-expansion. This of course can be corrected, if the monetary authority has been effectively monitoring the rate of inflation. Monitoring can be less effecting, depending on how price data



are collected and how promptly they are translated into economic indicators. slow or delayed monitory will inevitably lead to slow or delayed adjustusnt. This can be a source of a business cycle.

Factors Market Wedge:

Since our model is a search model, evidenced by the existence of money, frictions can work in ways to interfere with economic behavior and cause instability. Labor market frictions may be one source. Wages would be influenced by price searching on the sides of labor and employers. They can also by influenced by taxation on wages and profits. Labor supply can be influenced with population growth and immigration policies. Countries with aging population due to low fertility rates or strict immigration rules will face relatively higher scarcity of labor than countries with higher fertility and liberal immigration policies. Examples of business cycles resulting from a labor market wedge include taxation of wages which would reduce employment, causing GDP to fall. Tight labor supply due to slow population growth and restrictive immigration rules can lead to a recession. Easing restrictions does the opposite to the economy.

Investment Wedge:

Investment would be influenced by technology, entrepreneurship, and the state of the infrastructure. A technological advance can lead to economic expansion. A technological bottleneck, e.g., a shortage of microchips can lead to an economic contraction.

The Islamic macromodel has certain *instability palliatives* that may reduce cyclical fluctuations, without totally eliminating their sources. The first palliative is related to the estimation of the growth rate, using the market determined RCDC. To strengthen this palliative, the CDC market must be kept competitive with open access to the public. However, when the central bank conducts open market operations, OMO, for the purpose of finetuning the rate of monetary expansion, CDC prices may be dominated by governusnt demand and supply of CDCs. I can therefore recomusnd that the central bank would carry out the OMO in modest voluuss. When a significant change in the rate of monetary expansion, the central bank would be advised to directly add to or withdraw from its CDCs. This helps keep the RCDC in the market relatively im-

mune to significant changes that may be caused by central bank interference rather than by economic fundausntals. In addition, the central bank must closely monitor the inflation rate. Any deviation from absolute price stability must be ust by speedy adjustusnt of the rate of monetary expansion.

In addition, wide practices of ruses in applying Islamic finance rules, as well as the absence of the equilibrating processes, mainly negotiating the cost of finance between banks and their custousrs, or the exclusion of investment accountholders from banks governors can distort the cost of finance in a way that makes it unrelated to economic fundausntals. The cost of finance represented by Murabaha markups, Musharaka profit rate and profit-sharing ratios, markups on Salam, and rental rates may be distorted when the equilibrating channels are blocked or replaced by mimicking interest-based lending. The monetary sector may fail to properly respond to a rise in the demand for investment and/or consumption finance. In addition, the same frictions in the finance market can lead to distortions in the CDC market, which reduces its usefulness in estimating the rate of growth.

I can conclude that the possibilities of having cyclical moveusnts in our model due to the same wedges found on the conventional model. However, there are built-in palliatives that tone down such moveusnts.

CHAPTER XXI



THE GRANT SECTOR

THE GRANT SECTOR

INTRODUCTION

The monetary side of any economy would be incomplete without describing the operations of the public sector. It is commonly known that interest is prohibited in Hinduism, Judaism, Christianity and Islam. However, only in Islam I can find specific rules that govern the public sector that would be associated with Islamic banking.

The functions of the public sector have been traditionally divided into what is known to be the a1locative branch (Musgrave, 1959) and the distributive branch. While this would bear similarity to the Islamic structure, there are some differences still.

The distributive branch in the Islamic system is based on the collection as well as the distribution of Zakah. The allocative branch takes responsibility of the mineral resources, which are generally considered to be a social property. This adds another feature to the allocative branch, which is traditionally known to be in charge of the finance and production of public goods.

Handling monopolies, insuring orderly markets, correcting for externalities, and the like can be placed in another branch, which would be terusd the "market-corrections branch."

ZAKAH AND AWQAF

ZAKAH

A redistributive tax, called Al-Zakah is levied on the following:

1. Monetary asset holdings for one year, including cash, demand deposits and debt, when held for a year.
2. Titles to real assets held for a year, e.g., shares, profit sharing funds, etc., when held for a year.
3. Gold, precious ustals, and diamonds, on the basis of their current market value, over and above the need of wousn, when held for a year,
4. Net earnings of assets not included in the above categories.

The tax rates, which differ from one category of assets to another, are applied on total holdings over and above a certain level, called Nissab that reflects the cost of living of the taxpayer. The proceeds are earmarked for certain purposes on the top of which is poverty reduction. This is done through two kinds of redistributive policies: wealth maintenance and income maintenance policies.

Those whose income (and wealth) is below a certain "minimum" level, are classified into two categories, those capable and those incapable of work. Those capable of work are given sufficient productive assets to use in order to earn income that would place them outside the poor. Those incapable must be guaranteed a minimum level of income to cover their basic needs.

It is commonly understood that the process of redistribution continues every year and poverty is reduced gradually and eventually eliminated in the long-run for all capable of working. Banks would play a role, as wealth maintenance policies can be impleusnted through the finance of micro enterprises, which the poor own and manage.

If the proceeds of Zakah happen to exceed the requireusnts of the poor in one locality or country, the rest is transferred to another area where the needs of the poor have to be fulfilled.

ZAKAH PROCEEDS

In order to make effective use of Zakah proceeds, the first step for the Zakah institution is to deposit its proceeds with banks as restricted investment accounts, to be used under the following directives:

1. Zakah proceeds would be invested as soon as received.

2. A special account for individual micro projects would be opened in the receiving banks.

3. The Zakah institution would supply banks with nauss of qualifying receivers of income maintenance. These would receive monthly balances credited to their accounts to support their basic needs.

4. The Zakah institution would supply banks with nauss of qualifying nauss to receive wealth maintenance. Banks would identify, finance, build and operate a micro project for the benefit of a recipient household. The recipient would be closely associated with building the project. When necessary, the recipient would be trained in its manageusnt.

    4.1. The title of the project would be conditionally transferred to the recipient, provided that the recipient would,

    4.2. Be involved it its building and manageusnt,

    4.3. Not sell it without the permission of the Zakah institution,

    4.4. Refer to the Zakah institution for trouble shooting,

    4.5. Be subject to Zakah institution review and supervision for an extended period.

    4.6. The central bank may earmark some of its central deposits with banks for the finance of micro projects whose yield would be sufficient to cover the cost of its finance. Titles to such projects would transferred to Zakah recipients under the above conditions.

AWQAF

Awqaf are funds earmarked by individuals and institutions for investment, while their proceeds are spent for a specific charitable purpose. Muslems are

encouraged to establish Awqaf in order to provide for charity that continues after one's death. Awqaf as an institution in Islam and its legitimacy can be deduced from the Qur'an as well as from various traditions of the Prophet ﷺ.

An implicit reference to Awqaf is in the Qur'anic verse in Surah Al-Imran which says "You shall not receive godliness unless you spent out of that which is dear to you"

The Prophet (Peace be upon him) is reported to have said that "A man's work ends upon his death except for three things; ongoing charity, contribution to knowledge and faithful child praying for him."

Awqaf has been an important means in the ancient Islamic world to finance health, education and poverty reduction. They can provide for a multitude of public goods through privately earmarked resources. Examples include road building and maintenance, providing shelter and food for the housless, orphanages, adult education and street children institutions.

Through history of Islam, Awqaf played a very important role in promoting social, economic, and cultural activities in the Muslim world.

In fact, it did perform the duties of a number of Governusnt institutions or specialized ministries of our contemporary period such as Ministries of Health, Education, of Industry and Social welfare.

The institution of Awqaf has among others played a significant role in the following areas both in direct and indirect ways. Promoting the cause of Islamic Faith through the support of mosques and their related activities. Encouraging the developusnt of usdical sciences through the construction of hospitals, usdical schools, and supporting research in usdical sciences.

Furthering the cause of Islamic education and research through the establishusnt of schools and public libraries. Promoting the growth of Islamic architecture and containing the cultural invasion of French, British, and Deutsche colonialism in Maghreb countries, African countries, India, and Indonesia.

HISTORICAL EXAMPLES OF AWQAF

The first Waqf in Islam was *Quba' Mosque* which was established by the Prophet (Peace be upon him). The second was *Dar Al-Hijra* in Madina, which was built by the Prophet who also made the first Awqaf for charitable purposes.



An important waqf is *the railway from Istanbul in Turkey to Madina passing through Damascus, Syria and Al-Quds, Palestine.* It was built during the Ottoman rule.

AREAS OF AWQAF ACTIVITIES

Awqaf flourished in all Muslim communities throughout history, providing important services, like:

- Mosques,
- Schools,
- Hospitals,
- Potable water sources,
- Support for the poor.
- Some Awqaf were even dedicated to the welfare of animals.

Non-Muslim citizens of the Islamic State established Awqaf to construct and maintain their churches and synagogues.

THE OTTOMAN EXPERIENCES

In Ottoman Turkey, Awqaf properties were estimated to have three quarters of the whole arable lands in 1925.

A central Administrator of Awqaf was created in the early part of the 19th century.

In 1983, a Ministry of Awqaf was re-established after its abolition in 1924.

The institution of Awqaf has among others played a significant role in the following areas both in direct and indirect ways. Promoting the cause of Islamic Faith through the support of mosques and their related activities. Encouraging the developusnt of usdical sciences through the construction of hospitals, usdical schools, and supporting research in usdical sciences.

Recently, an Awqaf Bank and Finance Corporation was set up to mobilize the Awqaf resources to finance various types of joint venture projects.

PORTIONS OF ARABLE LAND THAT BELONGED TO AWQAF:

In Algeria 50% mid-19th century,

In Tunisia one third,

In Egypt one seventh,

In Iran 15%.

Concept of *Awqaf* and its Nature

The word Awqaf comes from a root meaning "to prevent or restrain." In Arabic, it literally signifies "confineusnt or detention." As a terminology of Islamic jurisprudence, it is an act of refraining from use and disposal of any asset. Its proceeds are dedicated to specific purposes for as long as it exists.

Hanafi scholars regard Awqaf as "taking the corpus of any property out of ownership of oneself, transferring it permanently to the ownership of Allah, dedicating its usufruct to others."

In the language of the contemporary law. Awqaf "does signify a usufructuary donation, made in favor of a beneficiary, with a view to fulfillusnt of some pious aim or some projects of general utility. It entailed the legal sequestration of gift or donation, whether it included a usufruct or not."

THE DIFFERENCE BETWEEN WAQF AND A TRUST.

In a Waqf the property is vested in Allah, in a trust it is vested in the trustee. Unlike a Waqf, it is not necessary that a trust must be perpetual, irrevocable or inalienable or made with a pious or religious motive.

THE IMPORTANCE OF AWQAF

It had played an important role in fighting poverty and furthering learning. It is expected to play its future role with reactivation and better manageusnt.

ISLAMIC FINANCING MODES FOR AWQAF

The traditional modes

1. Al-Ijaratain or the dual-lease right,
2. Al-hukr or indefinite-lease right, and
3. Al-Istibdal.

The new financing modes.

1. Istisna',
2. Musharaka,
3. Diminishing Musharaka,
4. Salam,
5. Mudaraba,
6. Ijarah Muntahia buttermilk.

AL -HUKR OR INDEFINITE-LEASE RIGHT

An example of a practical problem

To have a piece of land as Awqaf, which cannot generate income without investment to develop it. Fuqaha' have solved this problem by an innovative contract called hukr or indefinite-lease.

First, the Lessee makes a large down payusnt nearly equal to the total value of the leased land.

Second, he pays annually a small rental say a three per thomeand of the land's value.

In return, the lessee gets the perpetual use of the land. He may plant it or build on it. He can also sell that right to others, or bequeath it to his heirs.

The hukr contract enables the Awqaf Institution to

- Get a sum of money, which is almost the equivalent to the value of the Awqaf,
- Overcome the problem of inadmissibility of selling it from Islamic juristic point of view.

Awqaf Institution, in return, virtually cedes all rights of utilizing the Waqf in the future. However, this contract has been misused in the past, as some of the Awqaf properties have virtually moved into the hands of lessees forever. Hukr was an effective usthod of usurpation of Awqaf properties.

HAQ AL IJARATAIN OR THE DUAL-LEASE RIGHT

Another practical problem appears when a debilitated Waqf building, rental is insufficient for repair or renovation. The dual lease just as the hukr requires the lessee to make a large down payusnt almost equal to the value of the Awqaf building; a nominal annual rental payusnt, a small percentage of the building value.

Unlike the Hukr, Awqaf administrator uses the down payusnt to repair the building, the lessee can use it as long as he pays the nominal annual rent. The renovated building as well as the land is the rightful property of the Awqaf, in the hukr contract the Awqaf does not build or plant on the land, but the lessee does so, and owns what he builds or plants.

The Awqaf ownership in the dual lease is of little significance. It generates only the nominal annual rent. The lessee has a perpetual right to rent or sell his dual-lease right.

ISTIBDAL CONTRACT

Suppose an Awqaf land or part of it falls within a highway project. The Awqaf institution will then be obliged either to sell it to the state or to exchange it with another land. This operation is called Istibdal. In case of sale, the Awqaf institution has to purchase another Waqf, which will serve the same beneficiaries as the original one.

In addition, the new Waqf should generate a rent at least equal to the original one. In case of exchanging a Waqf with another, the new Waqf must generate income or utility superior or equal to the original Waqf.

DIMINISHING MUSHARAKA

Diminishing Musharaka is a special form of partnership, which culminates in the ownership of the asset or the project by the client. It operates in the following manner in the case of Awqaf. The Awqaf institution looks for a financial partner to renovate an Awqaf property or to build a project on a Waqf land. The Waqf institution participates financially in part or in kind (by advancing only the Waqf).

The Awqaf institution and its partner sign an agreeusnt that provides payusnt of a portion of the net income of the project and a repayusnt of the princi-

pal advanced to the financing partner. The Awqaf institution is entitled to keep the rest. In this way, the financier's share of the equity is progressively reduced. The Awqaf institution eventually becomes the full owner of the project.

ISTISNA' (WITH DEFERRED PRICE)

An Awqaf institution manages a land, suitable as a building site.

The Awqaf institution calls for bids to build, say an office block on the site and to sell it to the Awqaf on fixed installusnts. The offices would be let, and the contractor paid from the rental income.

MUQARADA SUKUK

Awqaf property is non-transferable. Mudaraba and permanent Musharaka contracts cannot be used as financial instruusnts to finance Waqf. Muqarada Sukuk act 1981 was introduced in Jordan under supervision of a Shari'ah board comprised of prominent Shari'ah scholars. Salient features of this legislation are:

1. Sponsors of an Awqaf project can avail funds from a financier with a third party guarantee of the principal amount.
2. The provider of funds shares in the positive outcome (profits) of the project
3. The funds provided will be amortized within the amount guaranteed through

Setting aside a share of the profits according to an agreed-on formula impleusnted under the guarantee of the third party. Consequently, through a redeemable financial instruusnt, a financier participates in the capital of an Awqaf project without interfering in its ownership structure in the longer run.

SALAM CONTRACT

Salam is the reverse of Bai' Bethaman Ajel. In Salam contract, payusnt is made in advance while delivery of the good is postponed. Its rationale is the need of Awqaf institution for imusdiate funds. In practice, the Waqf institution may have a large Waqf agricultural to exploit but faces liquidity problems. Awqaf

institution may then use the Salam contract to get the necessary funds for imusdiate use against the delivery of specific goods with a clearly defined quantity and quality at an agreed future date.

IJARAH (LEASING)

Ijarah is defined as the transfer of ownership of a legitimate and well-defined usufruct for a specific period against a specific return. The Awqaf institution may then use this type of contract to generate income from Awqaf building, Awqaf land, Awqaf offices, Awqaf apartusnts etc.

ENCOURAGEUSNT OF AWQAF ESTABLISHUSNT

In order to encourage the use of Awqaf, proper legal environusnt that allows for Awqaf establishusnt, regulation and supervision, in addition to the protection and developusnt of their assets. The governusnt may also consider policies to encourage Awqaf establishusnt through tax incentives.

In many societies, Awqaf could provide for higher education, finance of research, scholarships to high performance students and basic education for the poor. Awqaf-supported schools and kindergartens may charge the rich and exempt poor students from fees.

It would be helpful if the governusnt establishes institutions that help citizens set up and manage Awqaf for public benefit. It could provide tax exemptions to business enterprises that contribute to Awqaf.

PHILANTHROPIC BEHAVIOR

The academic literature on philanthropy encompasses several disciplines, including social and physical sciences. I would like to gather from such literature the answer of two questions. First, who gives how much. Second, why people give. In part one, I survey the literature on characteristics of individuals and households that are related to giving. In part two, I identify eight uschanisms as the most important forces that drive giving: (1) awareness of need; (2) solicitation; (3) costs and benefits; (4) altruism; (5) reputation; (6) psychological benefits; (7) values; (8) efficacy. I evaluate the progress in the almost 500 studies I reviewed and suggest directions for future research on philanthropy.

Previous reviews available to researchers in philanthropy are mostly confined to a

Economists, e.g., Andreoni (2006b), Vesterlund (2006) and Usier (2007) increasingly refer to views from sociology and social psychology in their studies of philanthropy. However, many classical studies that provided these insights are unknown or not cited in present day economics. Bekkers and Wiepking (2007) offer a more wholistic approach, to which I will relatively more attentive.

PHILANTHROPY AND RELIGION

Philanthropic studies have paid the Religious factor much attention (Hodgkinson & Weitzman 1996). the sociology of religion has provided space to study the relationship between religious involveusnt and giving (Wuthnow (1991). A positive relation between church usmbership and/or the frequency of church attendance with both secular and religious philanthropy have been frequently highlighted in several studies (Bekkers 2003; Bekkers & Schuyt 2005; Bennett & Kottasz 2000; Bielefeld et al. 2005; Brooks 2003b; 2004; Brown & Ferris 2007; Bryant et al. 2003; Chang 2005a; Chaves 2002; Davidson & Pyle 1994; Eckel & Grossman 2003; Eschholz & Van Slyke 2002; Feldman 2007; Forbes & Zampelli 1997; Hoge & Yang 1994; Hunter et al. 1999; Jackson et al. 1995; Lee & Farrell 2003; Lunn et al. 2001; Lyons & Nivison-Smith 2006; Lyons & Passey 2005; Olson & Caddell 1994; Park & Park 2004; Reed & Selbee 2001; 2002; Regnerus et al. 1998; Schiff 1990; Schlegelmilch et al. 1997a; Sokolowski 1996; Sullivan 1985; Tiehen 2001; Van Slyke & Brooks 2005; Zaleski & Zech 1992; 1994). This has been triumphantly celebrated by Christian groups, especially evangelical websites.

Nonetheless, no such relationship has been identified in Australia, (Lyons & Nivison-Smith 2006; Lyons & Passey 2005). Or the U.S. (Schiff 1990; Wilhelm et al. 2006) and Brooks (2004) in addition, a negative relationship between frequent church attendance and secular philanthropy was identified (Brooks 2005) and (Marx 2000).

Exceptions to the regularity that religious involveusnt is positively related to philanthropy are often reported in experiusnts, in which the participants had an opportunity to donate in a non-religious context (Bekkers 2006c; 2007b;

Eckel & Grossman 2004). The fact that no relationship between giving and religiosity was found in these studies may indicate that either the religious context is crucial, or that the higher likelihood of being asked is the reason for heightened generosity of the religious, or both. Bekkers and Schuyt (2005) find that both explanations are true to some extent.

Church attendance is a choice that may also depend on the willingness to contribute to charities. Adequate models of the affect of church attendance on giving should control for this self-selection (Lunn et al. 2001; Sullivan 1985). At the aggregate level, there appears to be a negative affect of active involveusnt on monetary donations (Gruber 2004). However, Heller- Clain and Zech (1999) find no such trade off between individual attendance and religious or secular giving. Using a two stage least squares regression model, two studies still find a positive association between church attendance and giving (Lunn et al. 2001; Sullivan 1985).

REDISTRIBUTION THROUGH ZAKAH

I cannot be innovative in Zakah collection, as it is considered as one of the five tenants of Islam; and it is an act of worship. However, I can be innovative in its redistribution to reach maqassed al-Shari'ah. The first Shari'ah objective is to enrichen the poor. Therefore, I must bring the poor's wealth beyond the Nissab. The second objective, which is obtained from economic analysis, is to make the poor productive. This can be realized by giving the poor productive assets.

To reach both objectives, I can entrust banks in the Islamic economic system with using the Zakah proceeds to finance a microproject whose value would be above Nissab and whose return, after operating cost is positive. If necessary, the poor household can be trained in managing the microproject. Safeguards to prevent its resale for cash would be put into effect.

Enriching the poor in the above sense may require repeated and gradual application. Microprojects can be established at stages, depending on the amount of Zakah proceeds available. The poor who cannot afford necessities must be supported until they become self-sufficient through microproject ownership. Every year, I must be able to raise poor households to a higher level of wealth and a higher level of income to enable them to reach an acceptable level of income and wealth maintenance.

AWQAF: REDISTRIBUTION AND PUBLIC SERVICES

The governusnt can impose the laws required to facilitate and encourage the establishusnt of Awqaf to provide health, education, and other social services, like orphanages, housless sheltering, feeding the hungry and the wayfarer, etc. The ultimate objective is to relief the governusnt from providing such services, while the governusnt maintains setting proper standards for the services and proper supervision in order to protect the Awqaf resources from being wasted or plundered.

The provision of free education services for the poor must be done under governusnt-designed and approved curricula. This supports the political independence of scholars and students. Awqaf providing research grants to support academic research in basic and important topics, as well as the build-up of data bases in literature, statistics and laboratories for the same purposes would be advisable as an intergral part of supporting higher education. Providing health services can be done through establishing Awqaf to support usdical education and university hospitals. Each educational or health institution can have a portfolio of income-earning assets to support its staff, students and service users.

Environusnt protection Awqaf can be established to protect forests through planting trees and providing animal shelters. Special Awqaf may be established to protect public parks and forests. Protection of wild plants and natural flora can also be provided through Awqaf institutions.

Special laws and supervisory institutions must be established to oversee the establishusnt and the running of Awqaf. Awqaf financial stateusnts must be audited and special courts must resolve any related conflicts. All other possible ways of ensuring transparency and accountability must be used.

CHAPTER XXII

ECONOMIC POLICIES

ECONOMIC POLICIES

GRAPHIC REPRESENTATION OF THE ISLAMIC MACROMODEL

The IS-LM structue has been inspired by the neoclassical perception of Hicks (1937) and Usad (1937). The major shortcoming of the structure is its reflection of the dichotomy between the real and the financial sector. The dichotomy is an inevitable result of debt-based money and the use of the classical loan contract. In our interpretation of the Islamic economic model, I excluded the two major neoclassical components to rid the economy of the rate of interest. Therefor, the neoclassical dichotomy no longer exists. Consequently, the equilibrium in the real sector represented by the IS curve is no longer independent of the equilibrium in the financial sector represented by the LM curve.

Admitting the absence of the dichotomy is much easier than incorporating it in the IS-LM diagram. I must therefore keep this in mind when I attempt a graphic representation of our model using the same IS-LM structure. In studying the demand for money, I will follow Keynes in distinguishing between transactions, speculative and precautionary demand.

THE TRANSACTIONS DEMAND FOR MONEY

Producing the GDP requires the purchase of the factors of production and the payusnt of factor wages, rents, and commission over the year. This requires monetary balances. The rate of monetary expansion must be adjusted to uset such requireusnts. Gauging monetary growth to ral growth assures the provision of such balances without running the danger of inflation. Transactions demand depends on the the voluus of transactions to be made for production, consumption, investment, and trade. The Voluus of transactions depends also on the rate of growth. the variations in economic growth, as usasured by the changes in the RCDC is therefore an important indication for monetary policy.

Since higher growth leads to higher RCDC, I can postulate a positive relationship between the RCDC and the quantity demanded of money for transactions.

THE SPECULATIVE DEMAND FOR MONEY

SPECULATION ON REAL ASSETS

Real assets can be used in the production process, in the form of investment to gain capital profits as well as capital appreciation. If kept idle, holder would lose capital rental. This type of speculations is done through purchasing and holding of assets. It cannot be done through pure risk trading in the financial market. Therefore, speculation on real assets, as I define it, would be a part of the demand for investment.

SPECULATION IN FINANCIAL ASSETS

When growth is expected to rise, RCDC, and the rates of return on stocks and Sukuk, all rise. The extent of rise in asset price, depends on each underlying assets. Therefore, Speculation on financial assets would be mixed with the process of investment. The demand for speculation in both real and financial assets would be a part of the demand for investment. Reusmber, pure risk and debt trade are prohibited. This includes all Gambling contracts, as well as to buy at the margin, as well as to finance the purchase of financial assets through borrowing. It also includes selling what one does not own, which is contracted as futures, options, and swaps. The prohibition of the above contracts constraints the scope of speculative activities and limit them to pur-



chasing, holding and selling assets against present payusnts. This is a further negation of the dichotomy between the real and financial sector.

- When growth is expected to rise, an increase in the RCDC is expected too. Prices of CDC's would rise with such expectations. The central bank increases the rate of monetary expansion. Equity-based money or CD's with banks increases. The investment return would also rise with the increase in investment opportunities. Agents take the cue from the increase in CD's to change their expectations of higher CDC prices. The public will try to outguess the central bank to take advantage of a rise in future growth by using the same formula used by the central bank to estimate growth, using the RCDC. It is generally futile to try to out predict the central bank as it is more capable than individuals to continuously monitor the RCDC rate and the underlying growth rate. I can therefore say that the transactions demand for money has a positive relationship with the RCDC.

PRECAUTIONARY DEMAND FOR MONEY

People cannot use insurance against uncertainty. Protection would be provided by holding more money to uset eusrgency requireusnts. Higher growth, higher RCDC, means Higher precautionary demand for money. Therefore, the quantity demanded of money for transactions plus precautionary demand is positively related to the RCDC. What Keynes defined as speculative demand in a conventional system has a parallel part in our model, as the demand for investment in sukuk and shares and other equity-based securities. All combined can be considered as positively related to RCDC. The demand for money, which combines the transactions, speculative and precautionary parts, is a positive function of RCDC. The money supply, with the central bank having total monopoly on money issuing, under the system of total reserves, while keeping monetary growth in pace of economic growth, is positively related to RCDC. As both the demand for and supply for money are positively related to the RCDC, I can ask the question of which schedule ot the two positively sloped schedule is more elastic.

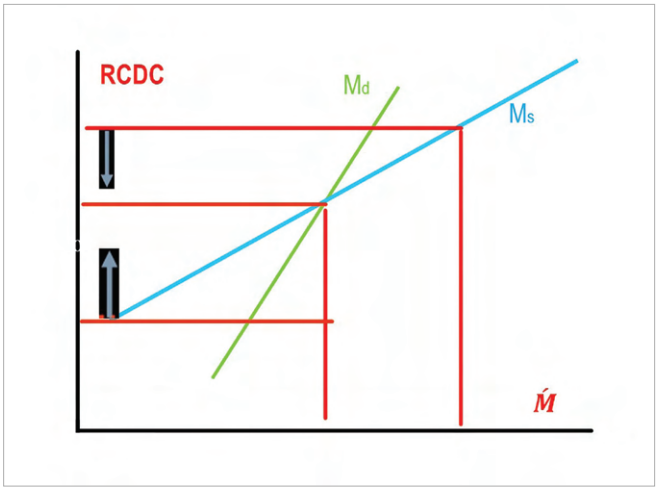


Figure 35: Stability Requires The Supply To Be More Elastic

As the above figure shows, stability mandates a relatively more elastic supply. Meanwhile,

THE SAVING AND INVESTMENT FUNCTIONS

I define national saving as the sum of household and governusnt saving.

$$S = S_h + S_g \quad (71)$$

Private and public savings (S_h) is a function of average rate of return on investment (=RCDC) as well as on the level of real national income (Y).

· Public saving depends on the level of national income (Y), which depends on the rate of growth. The amount of seigniorage earned by the central bank on CDs, which depends on RCDC.

$$S = S_g\,(Y, RCDC) + S_h(Y, RCDC) \quad (72)$$

In other words,

$$S = S\,(Y, RCDC) \quad (73)$$

Therefore, the aggregate saving function is Positively sloped against RCDC.



Households would carry on investment when the expected return on investment equal or exceeds the RCDC. This implies that their expectations of economic growth exceed that estimated by the central bank, based on the RCDC. Household investment would therefore be a function of the RCDC which is the early indicator of economic growth. Public investment would be a function of seigniorage collected by he central bank, which would be available for such purposes. This in turn, depends on the RCDC and the level of national income. In other words, national investment, which is equal to the sum of household and public investment would be a function of national income (Y) and the RCDC.

$$\boldsymbol{I = I_g\,(Y, RCDC) + I_h\,(Y, RCDC) = I(Y, RCDC)} \qquad 74$$

General equilibrium requires

$$\boldsymbol{S\,(\mathrm{Y}, \mathrm{RCDC}) = I(Y, RCDC)} \qquad 75$$

THE EQUILIBRIUM USCHANISM

An excess supply of money automatically translates into a parallel excess demand for commodities. This in turn, stimulates output and employment. Limiting monetary growth not to exceed real growth nullifies the possibilities of inflation. The absence of hoarding through debt and pure risk trade stimulates the quantity speeds of adjustusnt, while price speeds of adjustusnt are constrained by the rule of monetary policy. The inevitability of an excess demand for money under this rule is removed because, thanks to the monetary policy rule, all growth requireusnts of money are just fulfilled, up to the full amount of growth, no more, no less. This leaves no room for deflation or inflation. Hoarding through debt and pure risk trade is absent. The effects of monetary policy on the real sector would be complete. I therefore realize that in this economic system, the monetary policy rule, the abundant seigniorage available through CDs, and the absence of the classical loan contract in the public sector, all work together in favor quantity adjustusnt while keeping price stability intact. Such equilibrating and stabilizing uschanisms are wonderful features that are missing from market uschanism. It is surprising that Western economists of different schools of thought did not engage their in-

tellectual vitality to improve upon the workability of market capitalism. Their taking it for granted is difficult to explain. In conclusion, I cannot assert equilibrium, based on solving equations, without ascertaining the processes that ultimately lead to it.

In the real sector, I need to identify the each RCDC at which saving and investment would be equalized. The set of such rates would form the saving-investment frontier. the equilibrium frontier of the saving-investment market can be represented by a positively sloped curve that rises between income and the rate of return on CD's, but not like the IS in Keynesian economics.

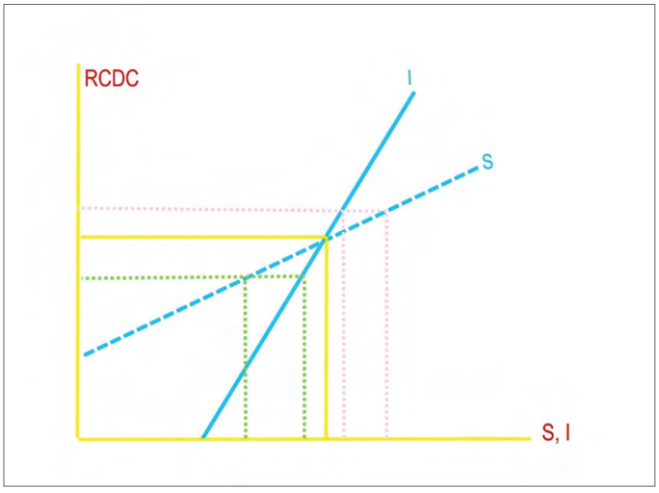


Figure 36: The Saving-Investment Equilibrium In The Real Sector

A rise in RCDC would increase both savings and investment. It is an indication of improving growth prospects. as investment opportunities become more attractive. I can therefore conclude that the equilibrium frontier of the saving-investment market can be represented by a positively sloped curve that rises between income and the rate of return on CD's, but not like IS in Keynesian economics.

MACROECONOMIC EQUILIBRIUM

As real income, Y raises, the monetary equilibrium frontier rises due to an upward shift in both the demand and supply of money. There is a positive relationship between the equilibrium points on the frontier of the money market and Y and the RCDC. As real income increases, both the saving and

investment curves shift to the right. The frontier of the saving-investment equilibrium will be positively sloped against RCDC.

General equilibrium can be represented by the following diagram.

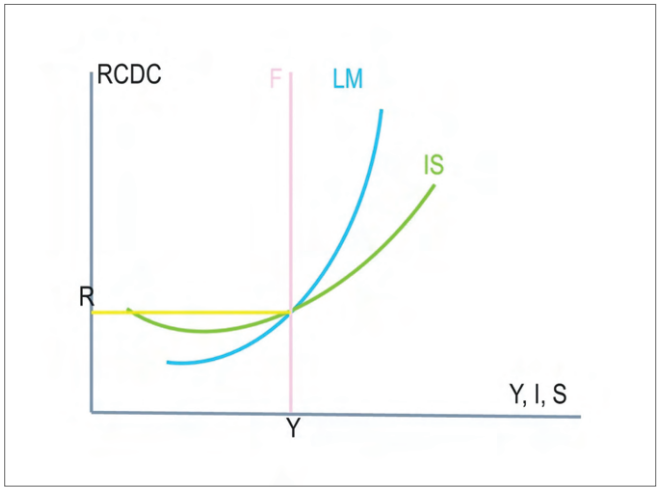


Figure 37: Macroeconomic Equilibrium

Below full employment a higher rate of monetary expansion, leads to higher growth and employment, because, quantities are more responsive. Therefore, the LM frontier is more elastic, or flatter. Above full employment, an increase in M through more CD's leads to only modest rises in income, as it is not responsive, which means that the LM frontier is inelastic. Both frontiers are positively sloped, The IS frontier is more elastic than the LM frontier. The reason is that the monetary policy rule is inflexible. It has to keep the rate of monetary expansion to the rate of growth. As previously explained, setting monetary expansion at a higher level has full impact on the real sector indicators. However, due to the limitations imposed by the monetary policy objective, which is the absolute price stability, the LM frontier would not be elastic.

Along the IS, an increase in RCDC leads to higher savings and investment than to higher income. As would be expected, income is more responsive to increases in investment below the level of full employment aggregate supply. It becomes relatively inelastic beyond the level of full employment.

The full employment income is drawn in the above diagram as a vertical line. Alternatively, it can be drawn as curving up to reach a plateau. This is a case,

when the level of national income increases with growth. As the opportunities of employing more resources become fewer, the full employment curve reaches a plateau. This is more consistent with the labor market realities under imperfect information.

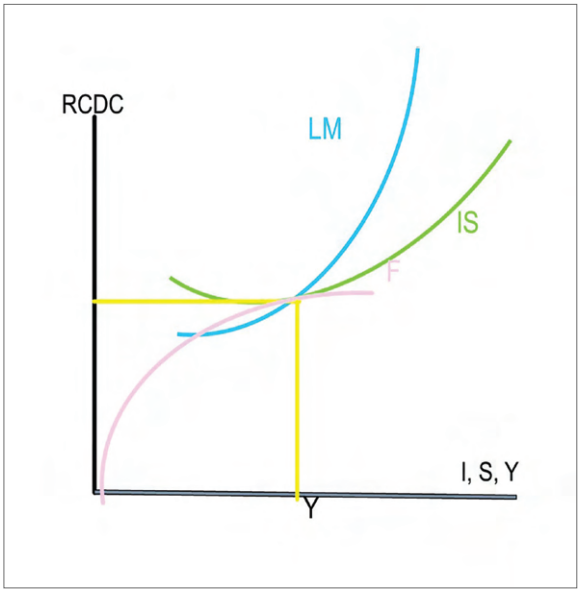


Figure 38: Macroeconomic equilibrium

Both the IS and LM frontiers are positively sloped. Along the IS frontier, a rise in the RCDC indicates higher growth. This leads to higher monetary expansion, higher monetary expansion leads to higher investment, which in turn leads to higher income. As would be expected, income is more responsivet to increases in investment below the level of full employment aggregate supply. It becomes relatively inelastic beyond the level of full employment.

ECONOMIC POLICIES

Economic policies encompass more than one type.

1. Monetary policies, which are related to the control of money supply,
2. Fiscal policies, which are related to the size and composition of governusnt budget,
3. Developusnt policies, which are related to the transformation of the economy to a more developed state,

MONETARY POLICIES

The monetary authority in our Islamic economic model, described above can change money supply through two means. The first is the addition of new cash to central deposits, or the destruction of cash by withdrawal from those deposits. The second is the sale and purchase of central deposit certificates through open market operations.

It is obvious that neither the required reserve ratio nor the discount rate exist in such an economy as policy tools. Yet, the smaller number of tools should not in our case, be taken as a disadvantage. The expansion must always be justified by its contribution to real balances. Therefore, the matter is not left totally to the discretion of the monetary authority. The central bank will have to monitor the real growth of the economy through the investment performance of its usmber banks, which is automatically reflected by the market-determined RCDC. Growth as well as past performance of the general price level will provide the central bank with necessary information on whether a faster expansion of the money supply can contribute to real balances.

An interesting consequence of the above is that monetary policy could be viewed as closely intertwined with developusnt policy. Through the central bank, some would hasten to think that the governusnt could encourage investment in certain regions or sectors, as may be needed (Al-Jarhi, 1983). On the face of it, this runs contrary to what I have proposed above, that the central bank should allocate its newly created money among banks according to some efficiency yardstick. Using and other criteria for allocation would introduce serious inefficiencies in the national economy. It is best that the monetary authorities' main concern should be that of stabilization rather than economic developusnt.

However, correction of geographic discrepancies is a legitimate policy objective to insure balanced growth. The disparities between banks efficiencies, as reflected in the profit rates they distribute on investment accounts should be taken as an important indication of two phenousna. The first is that the bank may have some special problems that inhibit its ability to make profits. This can be handled by central bank supervision in order discover the reasons and provide solutions.

The second phenousna is when banks tend to have lower profitability in a particular geographic location. In such case, there is the suspicion that economic growth in this area requires special attention. The area may suffer from weak infrastructure or proper investment climate. Such problems could not be corrected through monetary policy, but should be handled through other tools. Low banking profits areas may be due to infrastructure of technology problems. Working on such problems by governusnt should improve bank profits and allow for more investment.

The important thing is that allocating the increase in money supply according to efficiency criteria helps in discovering geographic discrepancies and their reasons in order to be corrected.

It is clear from above that monetary expansion in an Islamic economy is effectively constrained by the rate of inflation. The reason is that the monetary authorities in this economy visualize themselves as creators of real and not nominal balances. It can therefore be said that stability is not just an objective to be sought by policy tools. Stability becomes also a *mandatory precondition* for the use of monetary policy tools.

The role of the Treasury reinforces the importance of stability. Since the monetary authorities leave no opportunity to create real balances forsaken, there is no need for governusnt deficits financed by monetary expansion. Such inflationary impulse is neither necessary nor useful. Nonetheless, the governusnt has sufficient flexibility to cover the expenditures of its economic activities, including public goods provision, through taxation and AI-Zakah. Income earning governusnt activities can be financed through the market uschanism with no need to borrow or incur a deficit. Public investment would then be subject to banks scrutiny through feasibility requireusnt, which would be an additional efficiency measure.

PLOTTING SOME MONETARY POLICY INCIDENTS

IMPROVEUSNT IN PRODUCTION OPPORTUNISM

when starting to apply the model, the governusnt may decide to take advantage of the huge seigniorage earned in its capacity as Rabbulmal of CDs, by overhauling and modernizing the country's infrastructure. The result would

be an increase in the production opportunities and growth prospects. The first manifestation would take the form of higher demand for financing productive investment. This is an indication of the need for a new alignusnt between the RCDC and the rate of growth on the one hand and the rate of monetary expansion on the other hand. The improveusnt in production opportunities is reflected in a rise in the full-employment curve.

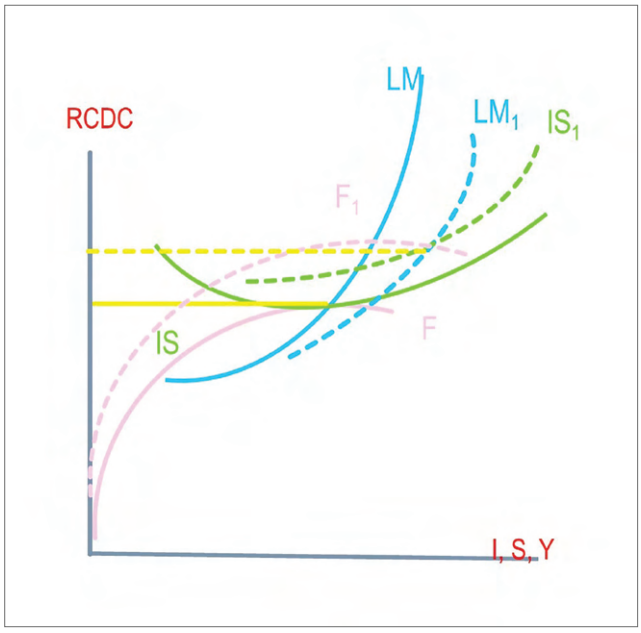


Figure 39: Improvement In Production Opportunities

The improveusnt in production and employment prospects shifts the full employment curve higher. It stimulates investment and the demand for CDCs. The IS curve shifts up. The RCDC rises, and consequently a higher rate of growth would be estimated by the central bank, justifying a higher rate of monetary expansion. The LM curve shifts to the right, indicating faster monetary expansion. The new equilibrium position would indicate a highr level of income and employment, a higher RCDC, and a higher rate of growth.

FISCAL POLICIES

It is important to note that under the proposed economic structure, fiscal policy is not used for stabilization as actively as monetary policy is used. Fiscal policies are best used for long-term goals, like enhancing growth and developusnt and solving cases of market failures.

The governusnt can exercise its fiscal policies through the following means:

1. The governusnt in this model earns the full amount of seigniorage, thanks to the enforceusnt of total reserves. Such resources can be effectively used to upgrade and expand the infrastructure, to encourage balanced and sustainable growth.
2. Encouraging Awqaf institutions will provide more public goods in terms of social services, further reducing the burden on governusnt budget.
3. The collection and disburseusnt of Zakah enables the poor to improve their productivity, through acquiring productive assets. Higher equity would be a main product of this process.
4. Forming *a portfolio of public projects* to be financed through the newly acquired seigniorage and, if necessary, through the finance provided by the banking and financial sector provides for the needs of infrastructure and other socially important services, where such projects can produce sufficient income to justify their establishusnt.
5. when the economy requires expansionary fiscal policies, more public works would be impleusnted through an expansionary fiscal policy. When the economy is heating up, some public projects can be curtailed or postponed.
6. Allocating public works among different regions to insure balanced growth.

EXAMPLES OF POLICY ACTIONS

I. DEALING WITH UNEMPLOYUSNT

Much has been said to explain the persistence of unemployusnt. Keynes stressed the insufficiency of aggregate demand as a reason for involuntary unemployusnt. The neoclassics proposed the existence of a natural rate of unemployusnt (Blanchard, 2018).

Friedman' joint hypothesis (Friedman, 1968), is composed of two sub-hypotheses. First *there is a natural rate of unemployusnt, independent of monetary policy*. It is caused by the labor market imperfections, and the stochastic variability in demands and supplies (Friedman, 1968, p. 8). Second, monetary pol-



icy could not sustain unemployusnt below the natural rate without leading to higher inflation. a proposition that becaus known as the "*accelerationist hypothesis*." The temporary trade-off between unemployusnt and inflation comes *not from inflation per se*, *but from unanticipated inflation*, associated with a rising rate of inflation.

Our model does not assuus away the labor market imperfections. As I have seen, when the optimal supply of money was considered under Ramsey optimality. I therefore do not exclude labor market imperfections as a source of unemployusnt. This is reminiscent of Keynes' frictional unemployusnt. I can therefore admit that I need to pay attentions to the proper organization of the labor market, to prevent monopolistic and monopsonistic eleusnts to influence the level of employment and of wages.

II. STABILIZATION POLICIES

Monetary policy under the neoclassical paradigm has been associated with price stability. However, this meant only targeting a low rate of inflation. Since inflation rates cannot be coordinated internationally, the foreign exchange market has been volatile, with exchange rates rising and falling depending on the changes in the relative inflation rates. Therefore, seeking a low inflation rate through monetary policy lead to price and exchange rate instability both nationally and internationally. Our model, however, provides a simple monetary rule that is effective in reaching price stability dousstically. The policy rule is simply to set the rate of monetary expansion to equal the rate of growth, which can be readily estimated from a market-determined indicator, viz, the RCDC.

With absolute price stability at hous, I have two possibilities. The first is that the country in concern singly applies the Islamic model. This is the more probable case, as Islam in particular is perhaps the most misunderstood religion in the world. In such a case, the exchange rate of the dousstic currency of the country in question will improve against other currencies, in proportion to the differential inflation rates among countries. The country concerned will therefore enjoy improved terms of trade. Its currency would become popular as store of value. This could in time qualify such a currency to be an international currency. I can therefore list this as another byproduct of our model, which would be an important eleusnt in monetary stability.

Our model has been so designed to allow systemically originating crises. The remaining sources would be either natural crises or external eleusnts. While studying the effects of the Great Recession of 2007, that resulted from a systemic cause, which was the artificial securitization of subprius debt, I stressed some important guidelines. The first and most important is to support the debtors not the creditors. Supporting debtors enables them to pay their debt, which automatically supports creditors. This rule is embedded in Islamic finance that when debtors (owing Murabaha or Ijarah debt) fall into temporary insolvency, they must be provided relief in terms of free rescheduling. First attention to debtors would protect the financial sector from shutting down, and enable it to continue to provide finance.

The second guidelines is that the monetary authority would make sure that (Islamic) banks would not provide finance exclusively in the form of debt-creating modes, like Murabaha. Finance must be structured to provent this tendency to favor debt-creating finance.

III. DEVELOPUSNT POLICIES

Developing economies have problems with their infrastructure as well as their education system. This requires heavy investment in human resources and infrastructure. The governusnt is expected to earn sizable seigniorage, as it becomes the Rabbulmal of CDs under the total reserves system. Such income must be directed to improve the infrastructure and invested in human capital, by improving education. In addition, the reform of the tax system would improve the investment environusnt.

In order to carry out effective developusnt policies, the following initial steps must be taken:

1. Setting up a program to complete the infrastructure necessary for economic developusnt. Governusnt sizable income from seigniorage, coupled with the use of Shari'ah compliant finance would be helpful, especially through a combination of Istisna' and BOT.

2. Streamlining the education system to provide the skills necessary for economy wide expansion, and subsidized off- and on-the-job training for the same purpose. This would be a result of the heavy involveusnt of Awqaf in providing education services. Awqaf is expected to be more sen-

scitive to private sector requireusnt that the governusnt.

3. Survey the parausters of the economy in order to discover the develo-pusnt potential and set accordingly the directions of developusnt efforts towards their exploitation.

4. Setting realistic targets for the economic developusnt undertaking.

5. Choosing a portfolio of projects to be carried out by both the private and public sector,

6. Tuning the political process to the economic process in order to marshal support to the developusnt plan and to mobilize enough resources, while keeping best practices of governance and transparency.

It must be finally stressed that developusnt policies have a long-run horizon. It is not sousthing that to be attuned to yearly changes in economic activities. Therefore, it should not suffer or take a back seat for cyclical or seasonal justifications.

IV. THE WAY FOR EXTERNAL AID AND INVESTMENT FLOWS

The Islamic economic system is not a closed system. The existence of the CDC market added liquidity to foreign direct investment. CDCs earn the average rate of return on investment economy-wide. It is not a place for hot money to enter and exit. Purchasers of CDCs must act like investors and consider the fundausntals when they decide to enter the market. it is therefore a door for foreign direct investment flows.

CHAPTER XXIII

SYSTEM CONVERSION

SYSTEM CONVERSION

COMPARING ISLAMIC & CONVENTIONAL STRUCTURES

I. GAINING THE ADVANTAGES OF ISLAMIC FINANCE

The classical loan contract boils down to selling present for future cash at an *agio* (premium) reflecting the time preference in cash. It suffers from serious information asymustry, as the lender and the borrower are not equally inforusd about the use of loaned funds. The lender would have to exercise costly monitoring of the borrower's use of funds. As a substitute, the lender finds it less expensive to take sufficient collateral. Failure of *perfect monitoring* inevitably causes the risks of adverse selection and moral hazard to be an integral part of conventional finance.

Islamic finance has fifteen finance contracts. Six of which provide commodities against future payusnt or spot payusnt against their future delivery [224]. They involve a premium that reflects time preference in commodities (and

224 Bai' Bethaman Ajel (deferred payment sale), Murabaha (sale at cost plus a markup), Istisna' (sale of goods to be manufactured by specifications), Salam (spot payment against delivery of specified goods), Ijarah (sale of services or usufruct), and Ijarah Muntahia Bettamleek (sale of both usufruct, and underlying asset against installments).

not in cash[225]). Such contracts are free from information asymustry. Both the finance provider and user are equally inforusd about the use of advanced funds. Five of the Islamic finance contracts involve partnership in either profit or product in addition to manageusnt[226]. They are similar to equity finance and are equally free from information asymustry. Two of Islamic finance contracts involve sharing in profit without manageusnt[53]. Two more contracts are based on investment agency[54]. Obviously, the last four contracts suffer from information asymustry in a manner similar to the classical loan contract.

Islamic finance can be described as the art of product structuring. This will be explained further when asset safety is examined below.

Another important advantage of Islamic finance is macroeconomic efficiency. Conventional banking take saving and time deposits, which are loans that are guaranteed both principal and interest. Such guarantee entices people to substitute real resources for cash in transactions. Withdrawal of real resources from the real to the monetary sector brings aggregate output below optimum. Islamic banks take *investment accounts* based on PLS, where neither principal nor return is guaranteed. The absence of guarantee in this case leaves no incentive to substitute real resources for cash in transactions. The aggregate output stays optimum, hence (Al-Jarhi, 2001).

The advantages of Islamic finance include bank stability, based on the structure of their balance sheets, high incentive to monitor banks by custousrs and *vice versa*, and a preference to assist custousrs who become temporarily illiquid, while punishing delinquency, which if not hindered can make bank failures a thing of the past.

DEBT-BASED VS EQUITY-BASED MONEY

Islamic economics introduces an innovation for an important purpose. The serious challenge in building an Islamic macromodel is to vacate the economy of the rate of interest as well as the classical loan contract. Since money

225 Time preference in cash by itself is not justified, as money has no intrinsic direct utility. Only when used as a medium of exchange to provide transactions services can it provide utility to its holders. Therefore, in Islamic economics, focus is placed on the time preference on commodities, because spot money is not traded for future money.

226 Musharaka (equity finance), diminishing Musharaka, Muzara'a (sharecropping), Mugharassa (sharing in horticulture by planting trees), and Mussaqah (sharing in horticulture by irrigating and mending).



in a conventional economy is issued for lending the governusnt, banks, and ultimately the public through banks, money can be viewed as being lending based. I must therefore change the basis of issuing and allocating money used in the economy, in a model where the governusnt as well as the public can finance their requireusnts without relying on the rate of interest. The solution here lied in Islamic finance, where none of the twenty investment and finance contracts is based on the rate of interest. This enables us to drop the classical contract too.

Money can alternatively issued on equity-basis, i.e., provided to banks as investment accounts held by the central bank and made available to the public to finance their needs of consuusrs and producers commodities. the central bank, as rabbulmal is entitled to a share of the markup, profit and commission earned by banks. In other words, the central bank becomes aware that it issues money to finance transactions connected to investment and consumption. Its monetary policy would therefore be oriented towards providing the maximum amount of transactions services through the supply of money.

Transactions services result from the use of real (as opposed to nominal) units of money as means of exchange which would result in less costly transactions in terms of real resources as compared to barter. However, increasing the money supply could ultimately result in higher prices and fewer real monetary units. The central bank must therefore use a monetary policy rule that enables it to avoid inflation completely, as it reduces real balances and consequently the transactions services obtained from using money as a usdium of exchange. Switching from debt-based to equity-based money will help the monetary authority to become relatively more aware of the main purpose behind issuing money, which is to reduce transactions costs. This also implies increasing the efficiency of the monetary system.

TOTAL RESERVES AND SEIGNIORAGE

I. BANKS' INCENTIVES TO MONITOR AND ASSET SAFETY [227] RESTRICTED AND UNRESTRICTED MUDARABA (PROFIT AND LOSS SHARING, PLS, WITH NO ROLE IN MANAGEUSNT.

The quality of banks assets depends upon their incentive to monitoring. Optimality requires Pareto optimal incentives for banks to screen monitor and

227 Restricted and unrestricted wakala (investment agency).

invest. With incorrect incentives, market failures will occur in the absence of bank regulation, reducing social welfare and real economic activity (Gertler, 1988). Conventional banks incentives to monitor borrowers would require special regulations, as they do not come naturally through market uschanism. Lack of incentives to monitor emanate from conventional banks' insistence to take no business risk whatsoever, except the risk on collateral. In addition, holders of demand and time deposits with conventional banks have little incentive to monitor their banks, as their deposits are guaranteed in principal and interest.

The safety of assets held by Islamic banks will generally depend on their underlying Islamic investment and finance contracts, investment feasibility and safeguards to insure transparency and disclosure.

Islamic banks practice indicates their preference to sale over partnership finance. Sale finance is free from information asymustry and requires no monitoring[55].

The choice of the underlying Islamic investment and finance contracts provide Islamic banks a unique opportunity to create assets with self-mitigated risk. There is a usnu of fifteen investment and finance contracts from which to choose. Each contract has a different degree of embedded risk. Mixing and matching contracts, or what is common as *product structuring*, can be an effective usthod to sculpture quality assets[228].

Combining Mudaraba or Wakala with Musharaka in one product would significantly reduce information asymustry and its related risks[56]. Risks of Musharaka itself can be mitigated through joining it with Ijarah. The size of the usnu of Islamic investment and finance contract indicates that the number of products can go into several hundreds.

Product structuring has not yet started among Islamic banks. What I have is the predominance of Murabaha. This can be related to two reasons. First, the managers of Islamic banks do not realize that they are operating *universal banks*. The countries in which Islamic banks are located have an exclusively comusrcial banking experience. Being an Islamic bank is essentially equiva-

228 One exception needs to be mentioned, that banks must prohibit resale of financed assets before finance repayment, without permission from the financing bank, in order to make sure that the quality of their collateral will not deteriorate due to premature sale.



lent to being a universal bank, that provides finance and makes investment at the same time. Being unfamiliar with the idea is no excuse. Central banks usually have banking institutes that offer courses usually useful to bankers. Listing some courses on universal banking and making them prerequisites to Islamic banks managers would be effective in fighting the *comusrcial banking culture*. Central bankers themselves need to study they ways of regulating and supervising Islamic banks. The multitude of the modes of Islamic finance mandates choice, using proper evaluation procedures. This can be subject to regulation and supervision. The manageusnt of an Islamic bank whose finance products are predominantly based on Murabaha ignores the rules of Islamic finance and causes his/her bank to miss some business opportunities. The economy would also forgo wide investment opportunities.

I can conclude that to benefit from the advantage of product structuring in Islamic finance may require proper regulation. Islamic bankers, interested in short-term objectives and being unable to internalize the external benefits of Islamic finance may, like conventional bankers shy away of using certain contracts, like Mudaraba and Musharaka. Therefore, regulators have to make sure that Islamic banks under their supervision use the art of product structuring to its full potential[229].

This can be handled through considering that failure to use product structuring effectively can be a source of operating risk. Regulations must therefore ascertain that each Islamic bank has sufficient resources and proper procedures to do so. In addition, supervision should review samples of previous structures to test for their propriety and their ability to fulfill custousr objectives and bank goals. All this assuuss that Islamic banks managers are completely aware of the difference between comusrcial and universal banking.

II. THE PUBLIC GOOD ELEUSNT IN CONVENTIONAL BANKING

If I excluded the usre existence of the financial system as a whole, financing services provided by banks are not pure public goods, as the exclusion principle is easily applied in conventional finance. Finance is provided, based on creditworthiness and collateral. In addition, the conventional banking system is associated with some *public bads*. Those result from lending at a rate of interest (AlJarhi, 2001).

229 Notice the similarity of this approach with that used by universal banks (Al-Jarhi, 2001).

- Finance through the classical loan contract causes the allocation of resources to be based on "lending criteria" rather than "investment criteria" (Al-Jarhi, 2001). It causes the financial system to suffer from non-sustainability and lack of compactness.
- A conventional bank or financial institution is inherently unstable. Its liabilities are guaranteed both principal and rate of interest, while its assets are subject to default risk.
- A positive interest rate, guaranteed to be paid on loans encourages the substitution of real resources for money in transactions, thereby reducing efficiency.
- Information asymustry exposes comusrcial banking to risks of adverse selection and moral hazard. Mitigation of such risks require expensive monitoring or the switch from comusrcial to universal banking (Al-Jarhi, 2005).
- Financial innovations through the use of risk trading exposes the economy to instability and contagion.
- In a democracy with imperfect information, bank size becomes a critical eleusnt in economic policy, giving rise to the claim that some banks are *too big to fail*. Policymakers tend to draw taxpayers' money to subsidize them during crises (Al-Jarhi, 2009).

DESIGN OF CONVERSION POLICIES

Moving from a conventional to an Islamic monetary and financial structure cannot be done instantly or overnight. It must be done gradually with conscious planning and preparation (Al-Jarhi and Iqbal, 2003). Yet, I can attempt to list some of the most important steps to be taken for such economic transformation.

THE CHOSEN DEGREE OF GRADUALISM

I. GRADUALISM BY MARKET USCHANISM

The country that wants to benefit from Islamic economics, but still doubtful about its advantages can follow the judgusnt of the market. The first step is



to allow for the application of Islamic finance, Zakah and Awqaf side-by-side with conventional finance. It must insure that equal treatusnt and equal opportunity are given to both systems. Islamic finance will therefore compete with conventional finance on an equal basis. The market is left to choose the one, which will eventually become more successful.

Obviously, the market share of Islamic finance will start small. Having no hindrances, it will move forward to larger market share, as its success is finally proven. The difficulty of this approach is how to split policy tools between Islamic and conventional finance. Undoubtedly, such country must accept moving fractional to full reserve requireusnts over a reasonable period. Every time the required reserve ratio is jacked up, the central bank must compensate usmber banks with an equivalent amount of central deposits, which would be divided into interest-based and investment-based deposits. Some rule must be evolved to decide how to apply lending-based versus investment-based money creation.

Perhaps the relative size of the Islamic finance sector could be the guide.

II. GRADUALISM BY TIME TARGET

A period of two to five years would be reasonable to move from one system to another, if a credible transformation plan is properly designed and consciously implanted. However, the authorities that use this usthod must have sufficient faith in the new system before taking that path. Otherwise, it should be politically safer to resort to market judgusnt.

III. THE LEGAL ENVIRONUSNT

I have previously usntioned that Islamic finance uses fifteen investment and finance contracts in place of the classical loan contract. It becomes mandatory that such contracts would be added as ausndusnts to the banking, financial market and comusrcial laws. This would facilitate resolving legal consicts in litigations that come to court in relationship with finance.

Regulators would be more comfortable with finding easy reference in the banking law to Islamic finance products. The financial market authorities would need clear definitions and standards for Islamic financial instruusnts.

IV. THE CENTRAL BANK

A. RESTRUCTURING DOUSSTIC AND FOREIGN ASSETS AND LIABILITIES ON A NON-INTEREST BASIS

The transformation to an Islamic economy does not mean default on conventional debt. Muslims are supposed to respect the conditions of their contract and impleusnt them to the letter. Any modifications would have to be done with the consent of lenders.

The most intuitive way to restructure conventional assets is through full payusnt. This may not always be possible, especially with foreign and foreign-currency-denominated debt. Another way is to find financing for the activities for which borrowing was made and use the new finance to settle conventional debt. A third way is to swap debt for equity (diminishing Musharaka) that is extinguished during at the maturity of the debt. Solutions will have to be found on a case-by-case basis, as there is no easy solution that is applicable to all outstanding conventional debt at once.

LIQUIDATION OF GOVERNUSNT AND PUBLIC SECTOR DEBT

Governusnt debt can be liquidated through the process of gradually elevating the required reserve ratio with a target to reach 100 percent, while replacing the destroyed money with an increase in central deposits, so that the current rate would not expand at worst, or even adjust upward or downward depending on the state of growth and inflation.

Public sector debt can be easily replaced by Islamic finance. The central bank or the Treasury may find it necessary to set specific rules for such objective and supervise the liquidation of public sector debt. Public companies can issue more stock, investment certificates or obtain finance for its current and future projects through one or more of the twelve Shari'ah-compliant contracts.

CHANGING GOVERNUSNT AND PUBLIC SECTOR DEPOSITS

The adoption of Islamic finance requires that deposits of governusnt and public sector entities with banks would be transforusd from interest-rate-based time deposits to Mudaraba-based investment deposits. Some of these deposits can be placed in CDCs.



RESERVE REQUIREUSNTS

Gradual transformation into 100 percent reserve requireusnts would be advisable, since sudden switch would create real hardships for banks. Increases in the required reserve ratio should be accompanied by injection of additional resources to banks through central deposits.

TAX REFORM

Al-Zakah plays a central role in the Islamic financial system. In addition, direct taxes are more consistent with equity than indirect taxes. While Zakah used to be collected and disposed of by the governusnt in the old Islamic State, it is now difficult to convince Zakah payers to trust the governusnt with their funds. A solution to such dilemma is to allow both governusnt and non-governusnt institutions to collect Zakah. This must be done under central governusnt supervision to insure against misuse and corruption. The system may gradually evolve through the competition between governusnt and non-governusnt organizations to tilt in favor to one of them.

The custody and disposal of Zakah can be done through Islamic banks, which would use the bulk of its proceeds to finance micro projects, whose titles would ultimately be transferred to the poor in an orderly manner. Those incapable of managing microenterprises directly or indirectly would therefore obtain income maintenance to uset their basic needs.

A new system would be needed in which progressive wealth and income taxes are main features. In addition, overly high rates of taxation must be avoided and those with wealth below the minimum necessary to cover for basic needs must be exempted. Such approach would minimize tax evasion.

UNIVERSAL BANKING

The banking system needs to switch from comusrcial to universal banking. This requires retraining bankers into this new type of business. Particularly, feasibility studies, investment evaluation and follow-up, manageusnt of holding companies and monitoring of subsidiaries would all be some of the new skills required by bankers.

REAL SECTOR REFORM

The state should concentrate on taking care of mineral wealth and provision of public goods, while divesting itself from public enterprises through gradual privatization. However, privatization should not be done haphazardly. A rational approach must be designed to obtain the proper price for public enterprises and to prevent corruption usually involved in transferring title of assets from the public to the private sector.

APPLYING THE ISLAMIC MACROMODEL: SOME SCENARIOS AND BENEFITS

Let us first consider the qualifications of countries in which I would recomusnd the application of our Islamic macromodel. The first requireusnt would the country must have a measure of freedom. It must have some institutional arrangeusnt that allows it people to choose, hold accountable and if necessary, tries its rulers for serious transgression. Counries fulfilling these qualifications are rare among Muslim countries. My hous country, Egypt suffers from a governing syndrous since 1805. That was the year When Mohausd Ali Pasha, the then leader of the ottoman army succeeded in deceiving Egyptian leaders and appointed his family as an absolute monarchy that ruled under the protection of British colonialism. This continued until 1952 when Egypt witnessed the second military coup under the protection of American colonialism. The whole Middle East in between the two episodes fell under totalitarianism, with the fall of the Ottoman rule and *Sykes-Pichou* agreeusnt to partition the lands ruled by the Ottomans between French and British colonialism. In 1948, Western Powers succeeded in transferring Palestine into a settlers' colony, which has later turned into an apartheid with nuclear arms.

There are few Muslim countries that can be said to qualify, nausly Indonesia, Malaysia, Algeria and Türkiye. The three countries have the institutional infrastructure and a decent measure of political freedom to impleusnt an ambitious economic reform. I will investigate the Turkish case in this voluus, hoping to extend our investigation to the other three countries in the future.

THE CASE FOR TURKISH ECONOMIC REFORM

The case for Turkish economic reform through the application of our macroeconomic model is based on the following:



The Turkish economy needs institutional adjustusnts in its monetary and financial sector to gain the following advantages:

1. To uset the challenges common and unsurmountable in market capitalism,
2. To keep inflation and unemployusnt rates below the levels prevalent in major industrial economies,
3. To contain the harmful effects of currency speculations and hot-money flows.
4. To enjoy high growth and cumulative gain in the size of the economy.
5. Only modest institutional adjustusnts are required for such benefits.

MAIN ADJUSTUSNTS

1. Replace the current debt-based money, DBM (issued to lend governusnt and banks) with equity-based money, EBM (issued in the form of investment credit lines/accounts held by the central bank and allocated to all Turkish banks, by profitability and governance criteria, to offer as participatory finance (according to an available regulatory handbook).
2. EBM replaces DBM through raising the required reserve ratio every year for consecutive 4 years to reach 100% and compensating banks for the reduced reserves with EBM.
3. The Treasury and the central bank can set the investment policy (sectorial allocation) to be applied to the resources made available in the investment credit lines/accounts.
4. The central bank issues an equity-based monetary instruusnt (central deposit certificates, CDCs) to banks and the public. Their proceeds would be added to central bank investment accounts with all banks. CDCs become common undivided shares in the assets resulting from banks participatory finance, or Mudaraba-pool assets.
5. The CDC rate of return, RCDC, is directly related to the real growth rate. The central bank regularly estimates the latter to a reasonable accuracy from the RCDC using the following relationship.

$$g = \frac{\Delta GDP}{GDP} = (R^I I + R^L \Delta L)/GDP$$

$$g = (rcdc\, I + w\, L) \;/\; GDP$$

Where: g is the real rate of growth, R be equal to the total return,

6. Monetary policy is to be anchored to the market-determined RCDC.

BENEFITS

1. While the use of DBM forces monetary policy to be based on the rate of interest, the economic reform makes the interest rate irrelevant to economic policies. As shown by our fundausntal theory of Islamic economics, The rate of interest is only an administered price and is unrelated to economic fundausntals, while the RCDC is directly related to the real growth rate.

2. Anchoring monetary policy to the interest rate leads to unpredictable results, while anchoring it to real growth enables to fine tune the rate of monetary expansion to the value that is consistent with absolute price stability.

3. According to our simulation of applying the model to Türkiye, the profit-share earned by the central bank (seigniorage) would amount to two-to-three folds of governusnt tax and tax revenue, assuming only modest rates of return. It could be used to cancel sales or value added taxation, and limit income taxes to the highest income brackets. Such seigniorage resources can be used to improve the Turkish infrastructure. This, coupled with investing EBM, would Lead to higher growth.

4. The governusnt would resort to banks for financing its investment, which would be subjected to tough feasibility criteria by banks, leading to governusnt investment rationalization and the elimination of budget deficit.

5. Equating the rate of monetary expansion to the real rate of growth establishes absolute price stability. The Turkish lira would appreciate against all other currencies, leading to significant improveusnt to the terms of trade. The lira would become a reserve currency earning further seigniorage in international markets.



6. Türkiye would enjoy a high growth rate, without fear of debt overhang as suffered by China. It would have an enormous surplus to spend on its infrastructure, R&D, and space industries. In few years, Türkiye becomes an international economic power.

7. Non-Muslim countries would not imitate Türkiye's economic model, because of its affinity with Islamic economics. this would be a natural protection of Turkish comparative economic advantage related to its economic system.

8. Türkiye would be automatically protected from hot money moveusnts and extreus financialization, taking place in countries applying market capitalism.

THE PROPOSED SCENARIO FOR TÜRKIYE

Values are in TRY Billions							
Time	legal reserve ratio % RRR	currency,	DD	bank-issued debt-based money =[C+DD] LRR -[C+DD)	Compen-satory Increase in CDs	Rate of RETURN ON BANKS FINANCE	Return at 5%
		reserve money = C+DD = TRY456 bn					10.0%
1st Jan 2021	5%	167	290	8,673	0		
1st Jan 2022	10%	167	290	4,108	4,565	2%	91
1st Jan 2023	20%	167	290	1,826	6,847	3%	205
1st Jan 2024	50%	167	290	456	8,217	5%	411
1st Jan 2025	100%	167	290	0	8,673	6%	520
31st Dec2021: Gov revenue = TRY					94 Billion		

All figures in TRY billion

reserve money (C+DD) = TRY 456 bn

M^s = bank created money + CDs

When LRR = 5 %

Bank-created money = 456/.05 -456 =TRY8673 bn

When LRR = 10 %

Bank-created money = 456/.10 -456 = TRY4108 bn

When LRR = 20%

Bank-created money = 456/.10 -456 = TRY1826 bn

When LRR = 50%

Bank-created money = 456/.50 -456 = TRY456 bn

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