



Bijan Bidabad

Rastin Banking

New Operational Islamic Banking System

Volume One
Theoretical Foundations

 **LAMBERT**
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121

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Volume One

Theoretical Foundations

Bijan Bidabad

Partially Revised Edition

*In the Name of Allah
The Most Gracious The Most Merciful*

*Be glorified we have no knowledge saving that which Thou hast
taught us Thou only Thou art the Knower, the Wise*

Glorious Qur'an, Sūrah of Al-Baqarah, Verse 32

Dedicated to:

*The Knower, the Wise,
His Holiness Haj Dr. Nour Ali Tabandeh
Majzoub Ali Shah The Second,
The Master of Nimatollahi Gonabadi Sufi Order*

*His Merciful Spiritual Protection and
Compassionate Guidance Inspired the Author to
Bring Forth Rastin Banking.*

Interested readers may contact the
author for the latest revisions.

Table of Contents

Preface.....	19
Overview	25

Chapter One

Jurisprudence of *Riba*

Introduction	41
Jurisprudence and Knowledge (الفقه و العلم)	41
<i>Quran</i>	44
<i>Tradition (Sunna)</i>	45
<i>Consensus (الاجماع)</i>	47
<i>Intellect (العقل)</i>	48
<i>Fame (الشهرة)</i>	49
<i>Intellectuals' Way of Life(السيره)</i>	50
<i>Analogy (القياس)</i>	50
<i>Preference(الاستحسان)</i>	51
<i>Considering Public Interest(الاستصلاح او مصالح المرسله)</i>	51
<i>Blocking the Means(سد الزرايع)</i>	51
Interest.....	52
Usury (Riba).....	54
<i>Exiting Usury Bound</i>	57
Consumption and Investment Loans.....	58
Summary	65
Resources.....	66
<i>English References</i>	66
<i>Farsi References</i>	66
<i>Arabic References</i>	68

Chapter Two

Non-Usury Bank Corporation

Introduction	73
Non-Usury Bank Corporation	74
<i>Organization and Corporate Governance.....</i>	<i>76</i>
<i>Economic Performance and Functioning</i>	<i>81</i>
<i>Permitted Islamic Contracts</i>	<i>88</i>
<i>Foreign Exchange Transactions.....</i>	<i>90</i>
<i>Bonds and Commercial Papers Transactions.....</i>	<i>90</i>
<i>Precious Metals Transactions.....</i>	<i>91</i>
<i>Cash and Draft Operations.....</i>	<i>91</i>
<i>Credit Operations</i>	<i>91</i>
<i>Beneloan Accounting.....</i>	<i>92</i>
<i>NUBankCo Advantages</i>	<i>94</i>
Summary	95
Resources.....	96

Chapter Three

Joint Stock Company with Variable Capital (JSCVC)

Introduction	101
Joint Stock Company with Variable Capital (JSCVC).....	103
Account Clearing Arrangements.....	104
Application in Financial Institutions.....	105
<i>Application in Investment Funds and Mutual Funds.....</i>	<i>106</i>
<i>Application in Credit Unions.....</i>	<i>107</i>
<i>Application in Interest-Free and Rastin PLS Banking.....</i>	<i>107</i>
<i>Application in Saving and Loan Association (S&L)</i>	<i>110</i>

<i>Application in Pension Funds</i>	111
<i>Application in Provident Funds</i>	112
Summary	112
Resources	113

Chapter Four

Banking and Business Cycles

Introduction	119
Business Cycle Theories	120
Role of Banks in Creation of Cycles	124
Empirical Investigations	144
Summary	150
Resources	151

Chapter Five

Fluctuation Dampening and Banking

Introduction	157
Crisis	158
Crisis Removal by Money Market Reform	162
Profit and Loss Sharing (PLS) Banking	164
Rastin Certificates	167
Interest-Free Bonds	168
Squandering and Ethic Economics	173
Summary	176
Resources	177

Chapter Six

Squandering and Ethic Economics

Introduction	181
Consumer Behavior and Squandering.....	184
<i>Squandering and Market Demand</i>	192
Producer Behavior and Squandering.....	193
<i>Squandering in Production</i>	196
<i>Squandering of Non-Optimal Factors Combination</i>	198
<i>Production Damages</i>	199
<i>Deterioration and Corruption of Product</i>	200
Knowledge-Based Economics and Ethic Economics	201
Conclusion.....	203
Resources.....	206

Chapter Seven

Overconsumption in Ethic Economics

Introduction	211
Sustainable Development.....	212
Carrying Capacity.....	216
Overconsumption in Quran	218
Squandering and Sustainable Development.....	221
Overconsumption and Sustainable Production.....	225
Overconsumption and Public International Law	227
Conclusion.....	229
Resources.....	231

Annex

Global Hunger and Food Squandering.....	235
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Chapter Eight

Asset and Liability Management (ALM)

Introduction	245
Economic Theory and Islamic Banking	245
Assets and Liabilities Structures in Islamic Banking	246
<i>Cash</i>	<i>248</i>
<i>High Liquid Assets</i>	<i>250</i>
<i>Receivable Accounts and Notes</i>	<i>250</i>
<i>Claims</i>	<i>251</i>
<i>Financing Based on Islamic Contracts</i>	<i>251</i>
<i>Direct Investment</i>	<i>254</i>
<i>Money Resources for Investment based on Debt (Deposits)</i>	<i>254</i>
<i>Capital</i>	<i>255</i>
Economic Value Added in Islamic Banking	256
<i>Comparison of Financial Indices</i>	<i>260</i>
Conclusion	264
Resources	266

Chapter Nine

Central Banking

Introduction	269
Sharia Allowances of Monetary Policy	271
Money, Interest and Economic Fluctuation	272
Monetary Instruments and Islamic Considerations	274
Financial Papers	278
Summary	284
Resources	285

Chapter Ten

Insurance and Bankruptcy

Introduction	289
Chain Bankruptcy Theory	293
Insurance and Chain of Bankruptcy.....	297
Summary	299
Resources.....	299

Chapter Eleven

Social Takaful

Introduction	303
Qard-ul-Hasanah.....	304
Social Takaful, Qard-ul-Hasanah, and Insurance.....	306
Social Takaful in Islam	307
Mobilizing Resources in Social Takaful.....	311
Allocation of Resources in Social Takaful	312
Strategies for Support and Custodianship	314
Banks and Protecting Organizations.....	317
Summary	319
Resources.....	320

Chapter Twelve

Information and Communication Technology

Introduction	325
Non-usury Banking Role in Financial Markets	326
Microlink Banking Solution (MIBS).....	328
Customer Information File (MIBS/CIF)	329
Non-usury Banking Products and Services	338

Non-usury Bank and Depositors.....	342
Database Design in New Non-usury Banking.....	348
IT in Non-usury and Usury Banking.....	351
Conclusion.....	355
Resources.....	356

Chapter Thirteen

Finance and Information and Communication Technology

Introduction	361
Borrowed Financing.....	362
<i>Securities or Musharakah Bonds</i>	<i>363</i>
<i>Certificate of Deposit (CD)</i>	<i>363</i>
Non-Borrowed Financing	364
<i>Sukuk</i>	<i>364</i>
<i>Islamic Zero Coupon Bond.....</i>	<i>365</i>
<i>Direct Investment</i>	<i>365</i>
<i>Indirect Investment</i>	<i>366</i>
Buyback.....	366
Public Private Partnership (PPP).....	367
Civil Partnership (Musharekate Madani)	367
IT Infrastructure Requirements.....	367
<i>Electronic Fund Transfer (EFT).....</i>	<i>368</i>
Automated Clearing House (ACH)	368
Real Gross Settlement System (RTGS).....	368
Scripless Security Settlement System (SSSS).....	369
<i>Authentication Mechanism.....</i>	<i>369</i>
International Bank Account Number (IBAN).....	369

Basic Bank Account Number (BBAN)	369
<i>Electronic Funds Transfer (EFT) Experience</i>	370
SWIFT	370
Interbank Information Transfer Network.....	370
Arab Payments and Securities Settlement Initiative (API)	371
PayPal	371
Rastin Certificate Market (RCM)	372
Conclusion.....	374
Resources.....	375

Annex

Rastin Banking Documents

<i>Rastin Banking Bill and Executive Regulations</i>	379
<i>Rastin Banking Books</i>	380
<i>Rastin Banking Generals</i>	382
<i>Rastin Banking General Topics</i>	383
<i>Rastin Banking Detailed Documents</i>	391
<i>Rastin Banking Base System</i>	395
<i>Rastin Banking Financial Subsystems</i>	399
<i>Complementary Systems of Rastin Banking</i>	405
<i>Financial Instrument in Rastin Banking</i>	408

ندانم که ای هر چه هستی تویی

خداوند بالا و بستی تویی

Thee art the Owner of up and down

Do not know who thou art, but, whatever thou art Thee art

Hakīm Abul-Qāsim Ferdowsī Tūsī

(Persianpoet ; 940 – 1020 CE)

Preface

Many economists around the world have done their best to eliminate *Riba* from banking activities, but have not achieved much. In this direction, Rastin Banking, in compliance with *Sharia* commands, has been compiled not to only eliminate *Riba*, but also to institutionalize various teachings of justice and Islamic ethics in banking activities. Good points of Rastin Banking in all fields of banking, financial, economic, ethical, social and international activities are so expanded that it can be regarded as a base to improve banking structure of country. I adopted the name “Rastin” for my proposition as “Rastin Banking”. “Rastin” means “true” and “real” in Persian language and it also refers to the name of my first dear spiritual mentor Mr. Haj Mohammad Khan Rastin a Sheikh of Nimatollahi Gonabadi Sufi Order who taught me how to think and see the world. This is my least appreciation to his uncountable kindness.

To increase the compliance of banking system with principles and regulations of Islamic religion, and better access to safe financial activity

and helping the economy to bloom, fair distribution of possibilities and opportunities, job creation and increasing the welfare of the society, the Rastin Banking System was designed and all banks can carry out their activities on this basis.

Designing financial systems are principally complex and when combined with ideological subjects, the complications increase. Usually parts, internal and external processes and subsystems of this kind of systems are facing various problems that cannot be covered easily. By increase of complexity, management of the system needs complex and especial tools and since the subject of the system is financial issues and pecuniary matters are beloved by people, by considering the most pessimistic conditions, all probable types of failures to fulfillment of obligations should be recognized and predicted in advance to reduce all cases of dishonest behaviors. Because of this issue, even well-equipped rich banks throughout the world, in spite of knowing Islamic banking advantages, have not been able to fully implement the task; or changed their minds and returned back to interest-based banking to escape the complexities of real Islamic banking and went back to prefixed interest rate banking processes, instead of profit and loss sharing.

Designing true Islamic banking needs comprehensive knowledge of ideological (*Feqh*, Sharia principles, commandments and logic), philosophic (individual rights and social justice concepts), economic (individuals, firms and market behaviors), financial (accounting, auditing, financial engineering), banking (project assessment and supervision, credit operation, transactions, investment and risk), legal (laws and regulations, contracts, legal and arbitration procedures), informatics (computer systems, networks, communications, programming), organization (pillars and institutions), management (administration, control, supervision,

assessment), mathematics (applied mathematics, financial mathematics, mathematical modeling), financial instruments (prevailing financial papers and securities in financial markets), business and trade (business administration, marketing, international trade), capital market (capital market structure, laws and regulations), insurance (commercial, responsibility, assets, and accident insurances), standards (commodity and production) issues; and in addition, should be aware of the sociology and individual and social psychologies and their corresponding problems and many other various issues.

Regarding the above subjects, Rastin Banking System was designed in Bank Melli Iran. We tried to consider the processes, procedures, rules and organization of the system comprehensively and after many years of continuous work designed a total solution for Islamic banking which is unique and distinguished at international level. Rastin Banking system has all banking operations in itself. Establishment of the first profit and loss sharing branch (*Ghoba*) in Nov. 2010 clarified the defects of the system and new financial subsystems and complementary systems were designed and connected to Rastin Banking system because of derived operational feedbacks. Development of Rastin Banking came to a phase that other banks were interested to apply it in their own banks. Therefore, the "Compiling Committee of Operational Rules and Regulations of Rastin Banking" was established to compile the legal draft bills.

Rastin Banking is a new operational Islamic banking, which has studied the theoretical and operational difficulties of Islamic banking system and offer legal and operational solutions on the basis of the latest scientific and operational achievements. Each subsystem, instrument, innovation and operational procedure of Rastin Banking has been designed to remove an especial difficulty and satisfy markets and peoples' needs.

Rastin Banking fulfills all ethic definitions ever defined for ethic finance and even more. It holds the virtues of justice, charity and generosity regarding dispositions to act in ways that benefit both the person possessing them and the person's society.¹ Hence, Rastin Banking benefits both the financial institution that adopts it and broader society. In Rastin Banking humans are bound, from knowledge of their duty as rational beings, to obey the categorical imperative to respect other rational beings.² This is extended in Rastin Banking that everybody has specific duties in relation to his role and endowed ability for financial intermediation. Moreover, in Rastin Banking, based on utilitarianism³ that asserts the guiding principle of conduct should be the greatest happiness or benefit of the greatest number is observable. In this context, Rastin Banking has been developed to ensure the facilitation of benefit for the greatest number of people, while not harm to anyone. Rastin Banking fulfills Islamic principles of ethics, wherein individuals and bank are duty bound to be accountable for each and every actions conducted by them and to do right in the context of God's laws.⁴

Some parts and modules of Rastin Banking have been implemented in Bank Melli Iran. The installed parts of the system are now functioning and have attracted depositors and investors, and since the procedures and instructions are well defined, the bank's staff is performing its procedures easily. The results of the test system are very satisfactory.

Rastin Banking is a national wide project with lots of subtle technical

¹ Definitions from the Oxford Dictionary.

² Kant definition.

³ Utilitarianism approach.

⁴ Accounting and Auditing Organization for Islamic Financial Institutions (GSIFI) Governance Standard No. 7: Corporate Social Responsibility Conduct and Disclosure for Islamic Financial Institutions.

points. This system is an open-source⁵ banking model and all banks around the globe can easily install and use it. We wish Rastin Banking could put important steps to remove *Riba* and establish Islamic banking throughout the globe.

Some colleagues proposed me to write book as a general text for more debates and discussion about Rastin Banking to introduce and promote its acceptance and technicalities at international level. Their proposition was desirable and I started to write three volumes books about the subject. The three volumes consist of theory, application and operation aspects of Rastin Banking, and the presented book is the first volume of the series. Moreover, I intended to insert meeting my Sunnite Muslim brothers in my plan to Hajj pilgrimage in order to get their opinions about Rastin Banking.

I dedicate my sincere appreciations to my Great Sage His Excellency Haj Dr. Nour Ali Tabandeh The Master of Nimatollahi Gonabadi Sufi Order and distinguished professor and scholar of Islamic and comparative law. His spiritual protection and apparent teaching were dominant factors to bring forth the Rastin Banking. I also indebted to my other teachers Dr. Naser Katouzian, emeritus professor of civil law and Dr. Ali Azmayesh full professor of criminal law for their kind guides. Moreover, I should give my thanks to my hundreds colleagues in Bank Melli Iran that citing their names lasts long; specially to my assistant and colleague Mr. Mahmoud Allahyarifard in Research, Planning and Risk Management Department of Bank Melli Iran. Each one of them had continuous sincere cooperation with me in their fields of expertise and experiences that lasted to completion and execution of Rastin Banking. Some of them have written lots of joint papers and detailed reports with me and those documents are the main

⁵ Interested readers can access detailed technical documents through:
<http://www.bidabad.ir>

sources for compilation of Rastin Banking as well as this book. Their names are cited in the last part of this book by listing the documents of Rastin Banking.

Rastin Banking is the fruit of my last one and half decade hard working on Islamic Banking and is gifted to all people of the world who seek to improve their lives' conditions and those who are interested to follow the command of God to wash out Riba whether Muslim or non. I am sure that, applying this system will promote the life of all the people around the world; and whenever the flow of money in the economy be established correctly, all other sectors of income, employment and welfare would flourish.

Bijan Bidabad⁶

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⁶ Email: bijan@bidabad.ir bidabad@yahoo.com Web: <http://www.bidabad.ir>

Overview

As a brief description, the principles and characteristics of Rastin Banking are based upon the following bases and principles:

- 1. Operational Principles:** By elimination of *Riba* from banking operations, Rastin Banking forbids superficial application of Islamic contracts and applies them in their real form and bank acts as intermediate between depositors and those who receive finance and bank earns income through offering capital management services and not through interest rates spread. By allocating yield to the money source, the assets owners receive their share of profit or loss. All activities will be carried out mechanically and transparently through internet according to compiled documented regulations. While safeguarding the interests of depositors, bank is the trustee of the related parties and the entrepreneur is certain that in the case of loss will not become bankrupt because of insurance coverage safeguards to depositors' deposits. Assessment, supervision and operation of projects will be based on specialty, responsibility and independent decision and position of assessor and trustee. The capability and credibility of entrepreneur will be measured considering his previously tax payments records. Entrepreneur is responsible to his prepared information in his submitted project proposal.
- 2. Financial Principles:** No bad or delayed loans will be created and bank will not bankrupt during crisis. Because of lower involved risk, bank's capital adequacy rate decreases and bank free reserves increase; and regarding depository characteristic of the bank resources, the legal and precautionary reserves of banks beside central bank will decrease.

Depositor, entrepreneur and bank will receive their fair share of the yields of sharing. Various financial instruments and banking processes satisfy society different needs; and by relating Rastin Certificate prices to real sector returns, their prices are stabilized and not only bubble prices emerge, people with various risk tastes are attracted and increase the positive interaction between return and risk. Without needing any intermediary, everybody can enter Rastin Certificate Market. Information transparency will make the related systems such as tax and social security systems transparent regarding economic activists. Reliable assessment mechanisms have been defined and reliable supervision background has been provided. Entrepreneur is obliged to observe information disclosure rules relating his project; and by supervision on his operations, corporate governance rules are applied to entrepreneur's company, which leads to transparency of all information and operations related to the project and asymmetric information and informational rents will be prevented and by applying insurances, risks are minimized. While facilitating and speeding up the operations, it prevents money laundering and strengthens auditing and internal control of entrepreneur's company. Online impalpable inspective monitoring prevents bank staff breaches. By separating the accounts, the account of each project and depositor will be kept separately and credibility of bank and banking operations increase.

- 3. Economic Principles:** Rastin Banking decreases capital market deficiencies and contradictions of capital and money markets, and expands and strengthens insurance sector in the economy. The increased confidence because of bank supervision on entrepreneur and internet accessibility to Rastin Certificate Market provide capital absorption and attraction capability and provides a safe competition environment for entrepreneurs, depositors, transactors and banks with

the rivals. New financial instruments diversify financial assets and by assigning Rastin Certificates to specific projects, goods or assets, paper markets are not generated. The involvement of capital in project prevents quick movement of assets, which create financial crisis because of liquid flow of funds and by eliminating superficial paper market prevents debt-leverage based crisis. Whoever is capable of conducting economic activity can receive financial fund or be employed in job vacancies created by entrepreneurs of the financed projects. Moreover, application of various financial expertises expands related job opportunities and all of these provisions improve investment, employment, production and social welfare and restrict economic and financial fluctuations.

- 4. Ethical Principles:** Obligation to release real and precise information and documents will persuade honesty and personal peace, and conformity of word and practice, and application of true supervision and decrease of uncertainty and social and individual mental tensions. Forbidding tricks and decrease of financial corruption because of the designed method of assessment, supervision and monitoring systems and removal of moral hazards potentials lead to put everything in its right place and remove injustice. False devour, incurring loss to others, betray, gambling and lottery, unfairness, grabby, extortion, waste and squandering and speculation, conspiracy and bribery all are forbidden in Rastin Banking and will be fight against systematically. Observing the rights of weak, implementing financial justice, honoring and respecting rights of people increases mutual consent and benevolence and prevents openly *Riba* and waste debaucheries.
- 5. Social Principles:** Conducting activities according to pre-described procedures and rules provides necessary background for regulating right financial behaviors of people of society and obliges individual

discipline. No discrimination, difference or priority among those with similar characteristics is accepted in Rastin Banking. It teaches people to plan, forecast and design their financial activities.

- 6. Legal Principles:** Respecting property rights and individual rights in Rastin Banking is strong. By specifying various aspects of obligations of contracted parties, there will be less reason for juridical settlements; and arbitration facilitates dispute settlement among dissident parties. Moreover, queries of online databases restrict abuses. New method of execution of enforceable documents in bank facilitates collection of claims.
- 7. International Principles:** 7×24×365 internet accessibility to banking services throughout the world facilitates foreign investment absorption, which provides international mutual interests and political stability background. The virtues of Rastin Banking system introduce it as an operational ideal banking model at international level and development of Rastin Certificate Market at international level provides stable assets' anchor.
- 8. Organizational Principles:** Commensurate of organization to needs, together with proper position appointment and promotion, and generally meritocracy including assignment of qualified persons, organizational communications, duties, responsibilities of personnel and effective punishment and award system are considered and defined in Rastin Banking. Organizational evolution, change and stability are accompanied with standardization and documentation. Responsiveness of all personnel for their granted authorities prevents appearance of harmful effects of unofficial organizations and political pressure.

To facilitate legal activities of Rastin Banking, some improvements have been carried out on auxiliary Islamic contracts. To fulfill the necessary legislative needs of bank sharing activities, joint investment

funds and facilitating social insurance activities some new legal institutions are also defined as "Fund with variable capital". To distinguish profit from *Riba* certain measures were also defined.

To prevent squandering (*Israf*) and to reform banking sources consumptions, which have worse economic and social consequences than *Riba*, and to increase efficiency, bank is obliged to follow specific regulations concerning its activities and finance only those projects, which have observed certain considerations and criteria in their project proposal.

Bank can finance projects of restoring uncultivated lands by supporting qualified applicants for promotion of employment and development of agriculture, industry, mining, housing and tourism in development of different regions of the country.

Bank and parties involved in Rastin Banking contracts should observe the supervisory compiled regulations concerning financial transparency, information disclosure and corporate governance. All contracts with bank are considered as official documents and enforceable. These contracts will be carried out by unit of execution of enforceable documents in bank.

In Rastin PLS banking as the main subsection of Rastin Banking, on behalf of depositor, bank finances entrepreneur for investment according to compiled regulations and at the end project, entrepreneur will distribute the profit/loss of the project in proportion to capital and duration of using that capital with the depositor.

Rastin PLS Base system refers to the main process and general regulations of Rastin Profit and Loss Sharing (PLS) Banking system. On request and on behalf of depositor, bank invests his fund in one of Rastin PLS products and instead, gives Rastin Certificate of the selected project to

him and allocates his fund to selected project of entrepreneur; and supervises the implementation and execution of project. At the end, after deducting its own commission, bank divides the profit/loss (if any) among engaged sides (depositors and entrepreneur). Bank is agent of depositor, and is responsible for observing his rights (depositor). He must use all his expertise to reach this end.

Fixed profit rate is eliminated in Rastin PLS banking and return rate is calculated according to the real return of capital in real economy. Most of the regulations of Rastin PLS Base system are extended to its financial subsystems. This system has its own organization, structure and working process.

Rastin PLS financial subsystems refer to specific financing methods or services in Rastin PLS Banking. These subsystems work under general regulations of Rastin PLS Base system:

1. Joalah Financial Sharing (JFS): is a method in which, bank finances entrepreneur (producer) from depositor's resources or the provided sources by buyer.
2. Mudarabah Financial Sharing (MFS): is a kind of *Mudarabah* under Rastin PLS banking in which bank introduces the entrepreneur project proposal in the field of trade or transaction of commodities (commerce) to depositors.
3. Installment Financial Sharing (IFS): in IFS, installer (depositor) will finance a portion of the needed fund of entrepreneur through the bank for a certain period of time (amortization period). The entrepreneur will pay back his share by installments and will own the total property of the project and IFS ends.
4. Rent Financial Sharing (RFS): entrepreneur temporarily donates the ownership of a part of his productive asset (assets of an operating firm),

rental asset (those assets, which can be let) or dead asset (non-operating or suspended firms or uncultivated lands assets) to depositor who finances him but keeps it as mortgage. Then pays back the fund received from the yields of the asset proportional to depositor's share to depositor at the end of contract, or periodically. The original deposit of depositor will be given back to him after the end of project. The profit of the project will be given to depositor periodically or in a lump.

5. Bail Financial Sharing (BFS): is the application of deposit of depositor by entrepreneur to produce a defined commodity and delivering the commodity or paying back its value in future specific time.
6. Rastin Group Funding (RGF): is collecting of deposits of specific depositors for specific beneficial project under the regulations of Rastin Banking. In RGF, Rastin certificate is not issued.
7. Rastin Personal Security (RPS): to create competitive conditions and to increase the efficiency of social security insurance and diminishing antitrust of social security systems and pension funds, private and public pension funds are established according to Rastin Banking regulations. People and firms can allocate a portion of their obligatory (or optional) insurance premium payments (for himself or his employees) for social security to the funds that operate under Rastin Personal Security (RPS) and enjoy its benefits. Therefore, they will be exempted from obligatory insurance premium payments equal to the payment they have paid to these funds.
8. Rastin Social Takaful (RST): benevolent people can deposit their funds at banks for charity purposes, and bank will be allowed to pay profit (or the principal as well) of deposit to needy people, in form of loan or non-returnable payments (according to the depositor request).
9. Sponsor Crowd Funding (SCF): is the process of collecting non-returnable funds for a specific protective goal of entrepreneur through

the bank via social networks. In SCF, Rastin certificate is not issued.

10. Peer to Peer Loan (PPL): is the process of collecting funds for loan-financing the entrepreneur through the bank and via social networks. In PPL, Rastin certificate is not issued.

11. Rastin Swap Bond (RSB): is based upon *Mubadalah* (swap) contract between *Mobadil* (swaper) and *Motebadil* (swapee) in which the durations and substances of swaps are equal for first and second swaps. *Motebadil* (swapee) issues the bond and owes to *Mobadil* equal to the nominal value of bond; and should pay this amount (*badal*) to *Mobadil* (swaper) at maturity. The issuer (*Motebadil*) is obliged to give the *mobaadal* for the same amount and period as *badal* to *Mobadil*. He can choose a combination of amount and period that the multiplication of amount by period of *Mobaddal* be equal to that of *badal*. At second maturity, *Mobadil* is committed to return *Mobaddal* to *Motebadil*.

No interest rate is involved in these bonds and they are of four kinds: Central Bank Rastin Swap Bond, Treasury Rastin Swap Bond, Bank Rastin Swap Bond, and Commercial Rastin Swap Bond. They can be in domestic money or foreign exchange.

12. Rastin Swap Deposit (RSD) is a new banking deposit account, which is interest-free and is based on Swap Contract in Rastin Banking. In this depositing by opening the deposit, depositor is entitled to use interest-free loan to the amount and duration that his resources has been being deposited and then return the money back to the bank. Depositor and bank agree that a combination of money and duration to be selected in such a way that the products of amount and duration in both operations of depositing and loaning be the same. From the time of depositing to the first maturity (the date that depositor requests loan), depositor is lender and bank is borrower; and from the time of first maturity to second maturity (the date that depositor returns the money back to the bank)

depositor is borrower and bank is lender.

13. Rastin Swap Card (RSC): is a bankcard, and has no interest rate and is issued based on the Swap Contract in Rastin Banking. In Rastin Swap Card there are two periods. In the first period card issuer lends money to card holder; and in the second period borrows money from card holder instead. At the first stage card issuer credits a certain amount of money for specific time duration to the card of cardholder and requests the cardholder to deposit the same amount for the same period at the end of the cited time duration (first maturity) in the issuer's deposit account. Card issuer and cardholder can agree for a combination of amount and duration for which the product of them (amount by duration) be equal for both operations of lending money by issuer and depositing by card holder. Rastin Swap Card can be issued in both local and foreign currencies. Bank receives fee by offering Rastin Swap Card service.

Rastin Certificates are collection of designed certificates in Rastin PLS Banking Base system and its financial subsystems. These certificates can be anonymous or named papers, which are transferable and negotiable online through the website of bank and are issued with a nominal price and for a certain period. The owners of these certificates share the results of the project proportional to nominal price and participation period of certificate.

Various Rastin Certificates and their characteristics according to the kind of participation in the PLS Base system or its financial subsystems regarding the type of project and the asset are used as:

- PLS Base: *Musharakah* (Participation) and *Pazireh* (Subscribed) Certificates.
- JFS: Future Certificate.
- MFS: *Mudarabah* and Periodic *Mudarabah* Certificates.

- IFS: Ordinary *Mughasatah* (installment), Rental *Mughasatah* and *Musharakah Mughasatah* Certificates.
- RFS: Mortgage Sharing, Periodic Mortgage Sharing, Mortgage *Mudarabah* (commerce), Periodic Mortgage *Mudarabah*, Mortgage *Muzaraah* (cultivating), Periodic *Muzaraah*, Mortgage *Mugharasah* (planting), Periodic Mortgage *Mugharasah*, Mortgage *Musaghah* (irrigation), Periodic Mortgage *Musaghah*, Mortgage *Istisna* (industrial/manufacturing), Periodic Mortgage *Istisna* and Rental Certificates.
- BFS: Bail Certificate.
- RPS: Social Security, Personal Security and Pension Security Certificates.
- RST: Takaful and Loan Certificates.

Complementary systems of Rastin Banking refer to innovations, platforms and supplementary Rastin Banking methods and include the following systems:

- 1- Rastin Certificate Market (RCM): is a web-based settlement system for transaction of interest-free Rastin Certificates and Rastin Swap Bond in Rastin PLS bank.
- 2- Crowd Funding System (CFS): this system is a web-based system, which collects funds for Sponsor Crowd Funding (SCF) and Peer to Peer Loan (PPL) projects via social networks.
- 3- Operation Control and Monitoring System (OCM): is a computerized web-based system that provides the possibility of online inspection and control of bank personnel activities.
- 4- Mortgage Securitization System (MSS): this system facilitates people to change their assets into Guarantee Certificates through the bank.
- 5- Collateral Registration System (CRS): is an online web-based

integrated system for registering movable and immovable assets.

- 6- Serial Commitments Clearance (SCC): provides the necessary arrangements for settlement of obligations of people who are in debt to someone from one hand, while they are creditors to someone else in a chain of debits and credits in a set of people.
- 7- Interbank Withdrawal Protocol (IWP): is an interbank agreement that allows the bank to withdraw its claims online from other debtor's accounts o at different banks when the debtor's account at the agent bank is empty.
- 8- Non-usury Scripless Security Settlement System (NSSSS): this is an online-integrated web-based settlement system at central bank for transaction of Rastin Certificates and Rastin Swap Bonds coordination and supervision.
- 9- Money Laundering Detection System (MLD): provides necessary structural and electronic bases to compare tax information and bank information to discover money laundering.

"Draft of Rastin Banking Bill" has the following chapters:

Chapter 1: Principles and definitions

Chapter 2: Generalities

Chapter 3: Contracts

Chapter 4: Entrepreneur

Chapter 5: Depositor

Chapter 6: Assessment and supervision

Chapter 7: Rastin Certificate

Chapter 8: Rastin Swap Bond (RSB)

Chapter 9: Rastin Swap Deposit (RSD)

Chapter 10: Rastin Swap Card (RSC)

Chapter 11: Rastin Certificate Market (RCM)

- Chapter 12: Operation Control and Monitoring System (OCM)
- Chapter 13: Collateral Registration System (CRS)
- Chapter 14: Mortgage Securitization System (MSS)
- Chapter 15: Interbank Withdrawal Protocol (IWP)
- Chapter 16: Non-usury Scripless Security Settlement System (NSSSS)
- Chapter 17: Rastin Personal Security (RPS)
- Chapter 18: Rastin Social Takaful (RST)
- Chapter 19: Correcting consumption pattern
- Chapter 20: Wasteland reclamation
- Chapter 21: Transparency, information disclosure and governance
- Chapter 22: Enforcement of contents of documents
- Chapter 23: Money Laundering Detection system (MLD)
- Chapter 24: Safeguarding

"Operational Bylaw of Rastin Banking" has the following chapters:

Section One: Rastin Profit and Loss Sharing Base System (PLS)

- Chapter 1: Definitions and generalities
- Chapter 2: Organization
- Chapter 3: Professional behavior of assessor and trustee
- Chapter 4: Project proposal
- Chapter 5: Assessment
- Chapter 6: Guarantees, collaterals and contributions
- Chapter 7: Insurance
- Chapter 8: Preparing contract
- Chapter 9: Supervision
- Chapter 10: Entrepreneur
- Chapter 11: Entrepreneur financial transparency
- Chapter 12: Entrepreneur information disclosure
- Chapter 13: Entrepreneur governance

- Chapter 14: Auditing
- Chapter 15: Rastin Sharing Accounting
- Chapter 16: Change in timing
- Chapter 17: Settlement
- Chapter 18: Bank's receipts
- Chapter 19: Transform of Subscribed Certificate to Musharakah Certificate
- Chapter 20: Commodity inspection and standard
- Chapter 21: Delivery of commodity
- Chapter 22: Auxiliary financial instruments
- Chapter 23: Force majeure
- Chapter 24: Arbitration

Section Two: Financial Subsystems of Rastin PLS banking

- Chapter 25: Joalah Financial Sharing (JFS)
- Chapter 26: Mudarabah Financial Sharing (MFS)
- Chapter 27: Installment Financial Sharing (IFS)
- Chapter 28: Rent Financial Sharing (RFS)
- Chapter 29: Bail Financial Sharing (BFS)
- Chapter 30: Group Crowd Funding (GCF)
- Chapter 31: Rastin Personal Security (RPS)
- Chapter 32: Rastin Social Takaful (RST)
- Chapter 33: Sponsor Crowd Funding (SCF)
- Chapter 34: Peer to Peer Loan (PPL)
- Chapter 35: Rastin Swap Bond (RSB)
- Chapter 36: Rastin Swap Deposit (RSD)
- Chapter 37: Rastin Swap Card (RSC)

Section Three: Complementary Systems of Rastin Banking

- Chapter 38: Rastin Certificate Market (RCM)
- Chapter 39: Crowd Funding System (CFS)
- Chapter 40: Operation Control and Monitoring System (OCM)
- Chapter 41: Mortgage Securitization System (MSS)
- Chapter 42: Collateral Registration System (CRS)
- Chapter 43: Serial Commitment Clearance (SCC)
- Chapter 44: Interbank Withdrawal Protocol (IWP)
- Chapter 45: Non-usury Scripless Security Settlement System (NSSSS)
- Chapter 46: Enforcement of the purports of binding bank documents
- Chapter 47: Bank's financial transparency, governance and information disclosure
- Chapter 48: Money Laundering Detection System (MLD)

Chapter One

Jurisprudence of *Riba*

Introduction

Interest rate is critical economic and juristic debates. Certainly, concrete results in this debate may improve the functioning of Islamic banking; because, non-usury banking is based on the juristic approach to define usury. In this chapter, we examine the interest and usury from the economic and juristic points of views. We try to examine this hypothesis: whether is the received interest from a loan for any purposes usury or not? On the other hand, we may distinguish consumption loans from investment loans. The former is usury and the latter is not. To analyze this hypothesis we try to investigate the methodology of deducting commandments in Islamic jurisprudence.

Jurisprudence and Knowledge (الفقه و العلم)⁷

Jurisprudence in Arabic philology comes from “understanding” and Quran relates this term to heart:⁸ “*They have heart but they cannot understand*”.⁹ This means that the “heart” is location of “understanding”. By the other way, it means that jurisprudence should come from deep thinking. Generally, knowledge in original Islamic law (original Sharia) and all other original religions is distinguished from the knowledge in public terms. Surveying the life history of God’s messengers and prophets reveals that all of them were illiterate but educated. They were (illiterate) distinguished scholars in their ages. Thus, their knowledge should come

⁷ For explanatory discussions about this topic see the books of His Excellency Haj Sultan-Mohammad Soltanalishah Gonabadi. <http://www.sufi.ir>

⁸ The “heart” in Arabic language is used to introduce both the “spirit of mind” and the “physical heart”. The special Arabic term for “physical heart” is “Foad” (فؤاد).

⁹ Aaraf: 179. هُمْ قُلُوبٌ لَا يَفْقَهُونَ بِهَا

from other sources. In Quran, it is addressed to the prophet: “before this you could not read a book and you had no hand- writing”¹⁰. The prophet emphasizes that all Moslems should observe learning knowledge. But he, himself was illiterate. I mean the knowledge and literacy are two different things. In defining knowledge, the prophet says: “knowledge is not something which can be procured by excess teaching, but it is a light which God may insert in the heart of those who may want”¹¹.

In Quran, knowledge is restricted to piety: “get piety, Allah will educate knowledge to you”¹² Thus the knowledge-based deduction should be different from the deduction based on the literacy. And jurisprudence should be based on knowledge not literacy. Knowledge goes through heart (of mind) but literacy gets some location in the memory area of the brain not the thinking core or heart of brain. Some researches classify jurisprudence reasoning as techniques of deducting religious commandments.¹³ This technique itself needs deep thinking and reasoning, to deduce commandments. Shahid Thani a Shiite jurist says: “Jurisprudence is not the written texts of the books, it is: observation of God’s light with all things/objects, and jurist is a man who has become entitled to the verse: “wherever look, observe the face of Allah”¹⁴. Thus, jurist by this definition can analyze the prophet sayings, traditions and narrations. This Mystic stage is conditioned to God’s permissions and must be allowed by other men who were allowed by God’s representative before. Generally, all mystic stages need God’s permission. In Quran, it has been

¹⁰ Ankabout: 48. *و مَا كُنْتُمْ تَتْلُوا مِنْ قَبْلِهِ مِنْ كِتَابٍ وَ لَا تَخْتُطُّهُ بِيَمِينِكَ*

¹¹ *لَيْسَ الْعِلْمُ بِكَثْرَةِ التَّعَلُّمِ إِنَّمَا هُوَ نُورٌ يَقْدِفُهُ اللَّهُ فِي قَلْبٍ مَنْ يُرِيدُ أَنْ يَهْدِيَهُ. بحار الانوار، محمد باقر المجلسي، ج ٦٧ ، باب ٥٢ ، ص ١٣٩ و منية المریدین، الشهيد الثاني، ص ١٥٩ ، في التوكل علي الله تعالي و الاعتماد.*

¹² Baqarah: 282. «اتقوا الله يُعَلِّمُكُمُ اللَّهُ»

¹³ اصول فقه، دفتر الاول، مصطفى محقق داماد، مركز نشر علوم اسلامي، چاپ دهم، ص ٩.

¹⁴ Baqarah: 115. *أَيْنَمَا تُوَلُّوا فَثَمَّ وَجْهُ اللَّهِ*

cited: “nobody can intercede to God except those people who are allowed”.¹⁵ And as a conclusion to this statement, we should say that people must obey only, those men who are allowed by God. Quran explicates: “Obey Allah, and obey the prophet and obey those from yourself whom are allowed”.¹⁶ This means that if a jurist deduces some even partial ordinances/commandments without the permission, then resulted rules and decrees are not qualified to be obeyed.¹⁷ Quran explicates: “You decided some of it forbidden and some lawful; say: has Allah permitted you to say so or do you forge to lie against Allah”¹⁸.

By this discussion, we reach the question: what is our duty and whom may be asked for religious rules and commandments? Quran explicates: “I (God) appoint a divine governor on the earth”¹⁹ and in the other verse: “There are divine leaders for all communities”²⁰ and in the other one: “For all nations there are messengers”²¹. Thus the obedience of this governor is lawful and no one else may be adopted to be obeyed. This governor must be alive. That is we are not allowed to obey those governors who have been assigned and died before. This pronouncement is accepted by all Shiite and Sunnite peoples. That is my Sunnite and Shiite brothers all believe and decree that the God’s divine governor must be alive and obeying dead

¹⁵ Baqarah: 255. «مَنْ ذَا الَّذِي يَشْفَعُ عِنْدَهُ إِلَّا بِإِذْنِهِ»

¹⁶ Nisa: 59. «أَطِيعُوا اللَّهَ وَ أَطِيعُوا الرَّسُولَ وَ أُولِي الْأَمْرِ مِنْكُمْ»

¹⁷ الحديث النبوي مقبول لكل مذاهب الشيعة و الاهل السنة: «إِنِّي تَارِكٌ فِيكُمْ مَا أَنْ تَمَسَّكُمْ بِهِ لَنْ تَضِلُّوا كِتَابَ اللَّهِ وَ عِزَّتِي أَهْلِ بَيْتِي». الصحيح المسلم، جزء ٦ ص ١٢٢. السنن ترمذي جزء ٢، ص ٣٠٧. في كتب الاحاديث الشيعة بانشاء: «إِنِّي تَارِكٌ فِيكُمْ أَلْتَقِلِينَ كِتَابَ اللَّهِ وَ عِزَّتِي». بحار الانوار، ج ٢، ص ١٠٣، باب ١٤ من يجوز اخذ العلم منه. و ج ٢٣، ص ١١٤، باب ٧، فضائل اهل بيت ع.

¹⁸ Yunus: 59.

«قُلْ أَرَأَيْتُمْ مَا أَنْزَلَ اللَّهُ لَكُمْ مِنْ رِزْقٍ فَجَعَلْتُمْ مِنْهُ حَرَامًا وَ حَلَالًا قُلْ ءَ اللَّهُ أَدْنَىٰ لَكُمْ أَمْ عَلَى اللَّهِ تَفْتَرُونَ»

¹⁹ Baqarah: 30. «إِنِّي جَاعِلٌ فِي الْأَرْضِ خَلِيفَةً»

²⁰ Raad : 7. «لِكُلِّ قَوْمٍ هَادٍ»

²¹ Yunus: 47. «وَ لِكُلِّ أُمَّةٍ رَسُولٌ»

governor is not allowed. The conclusion of this debate may be summarized to the fact that the deductive reasoning to find religious commandments of religion in now-a-days formed shape cannot be acceptable and thus the methodology should be revised.

Quran

The main juristic sources in jurisprudence principles are: Quran, tradition, consensus and intellect. In prevailed juristic texts, these four items are cited as the main sources of jurisprudence. The main source which is the divine governor of God has been forgotten or ignored! Quran is not a simple book for all human being to find out its description and prescription or explicitly meaning. Quran itself says: *“nobody knows the meaning of Quran except Allah”*.²² So the absolute meaning of Quran is at hands of Allah. Only those people who got the knowledge, only, may be asked for the relative (and not absolute) meaning of Quran and implication of commandments. It should be noted that knowledge as cited before is different from literacy. Knowledge comes from understanding /comprehending due to observing the light of Allah in all of things/objects; but the prevailed meaning of knowledge – literacy – is due to getting presence at schools/universities. Therefore, without knowledge, our finding and understanding are some kind of doubt and presumptive opinion. Quran explicates: *“They who know not the book, but (see therein their own) desires and they are only doubters”*.²³ There may be knowers who are illiterate versus literate people who have passed many religious schools or universities but are ignorant. Quran explicates: *“If you do not know ask possessors of edifications, men who study and remember the name of*

²² Ale Imran: 7. «مَا يَعْلَمُ تَأْوِيلَهُ إِلَّا اللَّهُ»

²³ Baqarah: 78. «لَا يَعْلَمُونَ الْكِتَابَ إِلَّا أَمَانِيٍّ وَإِنْ هُمْ إِلَّا يَظُنُّونَ»

Allah”.²⁴

Despite of this debate, in exploring the religious commandments we see that the jurists refer to Quran less than the prophet’s sayings, narrations and stories.

Tradition (Sunna)

Validity of tradition as a source of commandment deduction is doubtful. All types of tradition including “practical tradition” and “assertional tradition” and “argumental tradition” suffer from validity.

In “practical tradition”, the practice of prophet leads to its lawfulness (or unlawfulness). It is important to say that prophet action does not necessitate validity, because the prophet special advice may meliorate someone but the advice may be harmful for other person. Since his advice is similar to a medicine which may recover someone to life or kill others.

“Assertional tradition” is based on disclaim of prophet against a witnessed action. This tradition does not necessitate validity because we may visualize prophet or impeccable in cases of precautionary dissimulation. That is he should dissimulate the truth regarding dangers. This is also the case for homonymy, amphiboly and paronomasia.²⁵ Thus their silence does not lead to validity of action.

“Argumental tradition” is based on sayings, stories, narrations and etc.

²⁴ Anbia: 7. «فَسْئَلُوا أَهْلَ الذِّكْرِ إِنْ كُنْتُمْ لَا تَعْلَمُونَ»

“The men whose works are thinking” refers to those people who try to survey and analyze and remember the name of God. This world and all of things are the names of God. In philosophical terms, name is anything who leads to its named. And the named of all existing thing is God. That is we say: In the name of God.

²⁵ «التَّقِيَّةُ دِينِي وَ دِينِ آبَائِي وَ لَا إِيمَانَ لِمَنْ لَا تَقِيَّةَ لَهُ» الاصول الكافي، الجلد الثاني، ص ٢١٩. الوسائل الشيعه، جلد ١٦، صفحة ٢٠٤.

This tradition has a wide discussion in jurisprudence and all stories and narrations are classified according to their narrators or tellers. This tradition suffers from many doubts in stories and narrations.²⁶ Many narrators and story tellers have inserted wrong and pseudonym stories in the religious literatures. Distinguishing correct story from incorrect stories should be compared with Quran and if it was not in line with Quran it is false. This tradition as noted before does not guarantee that prophet or speaker had exposed the proposition for all people. It may be particular for audience of that session not for all people and all times. That is, their speech may not be used for other people who had not been there. It should be added that narration transmission is restricted to divine permission. That is, nobody has right to transmit the speech of prophet or impeccable without their leaves or permission. As it is prevailed among jurists, every jurist must receive permission from the previous jurist and this permission must back reach the prophet. In opposite case -without permission- transmission of their speech may be encountered as some kind of impoliteness to the prophet. That is, some kind of eavesdropping might be occurred.

Therefore, the stories and narrations are all doubtful and Quran explicates: *“And most of them do not follow truth, and follow doubts and conjectures. Certainly, conjecture and doubts cannot avail anything against the truth”*.²⁷ In other side, the prophet and impeccable are human beings. In Quran the Prophet himself explicates: *“I am human being similar to you”*.²⁸ This means that some of their speeches are regular human being speeches and do not relate to their divine duties and comes from their fancies or niceties or tastes. On the other hand, sophists believe

²⁶ الْحَبْرُ يَحْتَمِلُ الصِّدْقَ وَالْكَذِبَ.

²⁷ Yunus: 36 and also see: Najm: 28. «وَمَا يَتَّبِعُ أَكْثَرُهُمْ إِلَّا ظَنًّا إِنَّ الظَّنَّ لَا يُغْنِي مِنَ الْحَقِّ شَيْئًا»

²⁸ Kahf: Last Verse. أَنَا بَشَرٌ مِّثْلُكُمْ

that all religion's messengers/prophets/imams/leaders must be permitted by the previous allowed person, and this is an inevitable chained order and rule of leaves.

Consensus (الاجماع)

The third source of jurisprudence deduction is consensus of jurists. According to our Sunnite brothers' opinions, this source is the first source of juristic deduction. Original (not pseudo) Shiites believe that consensus may not be valid. They believe that any religious pontification must be restricted to permission from the previous permitted person. However, this is not the case in Shiite societies and only few orders of sophists believe and practice this rule.

Generally, consensus of majority should not validate a juristic commandment. Since, majority of people are not qualified and the qualified persons are not accessible, because we do not know them. In Quran there are lots of verses which expose:

“But very few of my worshippers are (practically) grateful.”²⁹

“Majority of peoples are (practically) not thankful.”³⁰

“That, man is indeed in grave loss.”³¹

“The majority of people are ignorant.”³²

“Their majority do not know.”³³

“Their majority do not think.”³⁴

²⁹ Saba: 13. «فَلِيلٌ مِّنْ عِبَادِيَ الشَّكُورِ»

³⁰ Yusuf: 38. «أَكْثَرُ النَّاسِ لَا يَشْكُرُونَ»

³¹ Alasr: 2. «إِنَّ الْإِنْسَانَ لَفِي خُسْرٍ»

³² Saba: 28 and Araaf: 187. «أَكْثَرُ النَّاسِ لَا يَعْلَمُونَ»

³³ Yunus: 55. «أَكْثَرُهُمْ لَا يَعْلَمُونَ»

*“Their majority are ignorant.”*³⁵

These verses clarify that majority is not a consolidate base for juristic deductions. Knowing qualified jurists is a difficult problem. Philosophically, nominator should be superfine than nominative. That is lower jurists cannot nominate higher jurist. The only logical solution to this rule is that higher jurist nominate lower one. This is the main debates that sophists insist. That is the jurist must be allowed by higher pervious leave or permission. Otherwise, consensuses of majorities are due to wrong decisiveness, as Quran explicated.

Intellect (العقل)

Shiite more or less accepts intellectual/rational demonstration or proof as a source of juristic deduction. The Sunnite brothers restrict commandments sources to traditional verities.³⁶ Thus, the intellect locates in a wide range from acceptable and credible to unacceptable and incredible source to juristic reasoning. All different sects have special treatments to intellect. The discussion among their defenders more or less had been reached to anathematization and excommunication of the others.

Rational demonstration refers to any rational commandment that determines a juristic commandment. Rational demonstration is classified to two categories of rational independencies and dependencies. In the former category, intellect issues a commandment independently and the latter includes those realms of demonstrations that intellect issues a

Footnote is continued from last page:

³⁴ Hojrat: 4. «أَكْثَرُهُمْ لَا يَعْقِلُونَ»

³⁵ Anam: 111. «أَكْثَرُهُمْ يَجْهَلُونَ»

³⁶ جلال الدين سيوطي الشافعي، الحاوي، جلد دوم، صفحه ۱۵۹.

commandment following a juristic judgment.

Responding this question that: is it possible to accept intellect as a deduction source, is not simple. But as a reservation, it should be noted that intellectual power is different in different people and the criterion of intellect and ration is not absolute. This causes rational demonstration to be proved by one and to be negated by the other. By the way, this conclusion is to be raised that the intellect of who should be used as juristic source. The response to this question is: intellect of the perfect man who has refined and purified himself and has reached transcendental mental characteristics would be the juristic source. Certainly, he will be quite different from a person who has passed the school/university courses about juristic deduction. His (perfect man) intellect is defined as: “instrument of Allah servitude and finder the secrets”³⁷. This intellect is different from prevailed idiomatic intellect. This intellect classifies as prophetic intellect.

Thus debate on this juristic source conveys us again to this claim that only the perfect man with prophetic ration is the main source of jurisprudence.

Fame (الشهرة)

Some partial sources of jurisprudence as fame or publicity suffer from their own deficiencies. Decreeing fame (lots of decrees of different jurists on unique subject) and practical fame (based on the fame practices of jurists against unique subject) all defect from validity as we talked before in criticizing consensus. That is the fame opinion of majority does not necessitate validity in juristic deductions.

³⁷ The book of Alkafi, Vol.1, section:1, p.11. «الْعَقْلُ مَا عِبِدَ بِهِ الرَّحْمَانُ وَ اكْتَسِبَ بِهِ الْجَنَانَ»

Intellectuals' Way of Life (السيرة)

Intellectual way of life in jurisprudence means the continuous operational way of life of intellectuals and Moslems and may be of juristic source necessitating prophet or impeccable agreements. Validity of this source is defective.

Analogy (القياس)

Analogy is: to prove a commandment in a subject because of its proof in other subject based on their analogies. Sunnite's brothers insist on validity of analogy in juristic deduction. Shiite jurists introduce "rational analogy" as a source of jurisprudence. That is they use rational analogy based on appointed reason as a juristic source. In this kind of analogy, logical minor and major are defined and the commandment is derived from. This analogy in all situations is not deterministic.

Another type of analogy is "aprioristic analogy". In logic, this analogy is named by reason connotation or signification. For example if one has no right to get in the house using the door, he has not right getting in by climbing the wall too.

Deductive reason analogy (complexity reexamination) is the case that the reason of the commandment has not been explained by legislator and jurist simulates the similar reason by analogy. Since reasoning is based on the opinion of jurist and not legislator's, may be source of probable errors. This is the fame case of: "*The first who analogized was Satan.*"

Preference (الاستحسان)

By different definitions, the preference rule means deviation from analogy to prefer a particular publicly good solution. The notions of different Islamic sects to preference are not unique. Shiite and Shafiite and Zaherite do not disagree with, but Hanafite and Hanbalite and Malekite sects try to validate it.

Considering Public Interest (الاستصلاح او مصالح المرسله)

Considering of public interest (transmitting expedients) means the expedient that legislator has not talked about and cannot be found in any partial or general commandment of legislator and jurist deems advisable or proper. Malekite and Hanbalite sects accept expediential reasoning in the case of no written text or consensus. But Shafiite sect validates expediential deduction. Shiite jurisprudence does not validate public interest consideration same as preference.

Blocking the Means (سد الزرايع)

Blocking the means implies: those actions causing destruction should be prevented. Shiite jurists refer to “Obligatory preliminary”. It means an action antecede another action and by referring to legislator rule on the first action to prevent destruction from the second action explore the “blocking the means” rule. This rule may not be general to be performed in different subjects.

To summarize the juristic deduction, we should conclude that the rule and permission of legislator to deduce the divine commandments is not

neither tradition and nor intellect and consensus and analogy and preference and transmitting expedients and blocking the means. But the direct divine command of Allah by his representatives who are allowed to deliver the commandments is the main source of jurisprudence. Quran explicates: *“Obey Allah and obey the prophet and obey those people among yourselves who are allowed.”*³⁸ The obedience of these people is lawful. Otherwise, we may assert a commandment erroneously and assuming that it is the God’s commandment. There is no guarantee that it is the God’s commandment.

Interest

There are lots of definitions for interest in economic point of view. One of the old definitions defines interest as price of money. Though this definition is public, but, analytically is defective, because, price of one unit of commodity is equal to the value of one unit of the same commodity.³⁹ This does not satisfy for money. Value of one unit of money in a period of time is equal to the value of one unit of money at starting point of period plus interest value. Therefore interest is an excess that creates surplus value during the time period, and not price of money. If interest were price of money, it would be equal to value of one unit of money. But in different time periods interest may be less than or equal or greater than value of one money unit which does not conform to price implication.

Other different definitions of precedent economists often are related to capital essence of interest. On the other hand, the derived income resulting from different assets such as capital goods, financial resources, wealth,

³⁸ Nisa: 59. أَطِيعُوا اللَّهَ وَ أَطِيعُوا الرَّسُولَ وَ أُولِي الْأَمْرِ مِنْكُمْ

³⁹ Tugot A. R. J (1727-1781) does not agree with this definition too. He defines interest as the value of an asset in definite period of time.

human capital, entrepreneurship has different definitional ambiguity. Since, capital similar to interest has different meanings. Capital functioning also increases vagueness of the problem. For example, in one problem, technology and land may be classified as factors of production and different from capital. In another problem may be classified as capital.

Neoclassical economists interpret interest as the surplus resulted from postponement of consumption. On the other hand, capital owner postpones his consumption and loan it till at the end of period by his capital and the derived interest will get more consumption. This may be defined as supply of investment sources incentive. At demand side, the investor demands financial sources to produce value added. Thus, whenever the interest rate is less than capital rate of return, investor demand for receiving loan increases. This simple mechanism is the base of incentives for requesting and granting loans which has sophisticated mathematical presentation in related literatures.

Let us assign the term “interest” to financial capital. Financial assets are credible capitals and include valuable papers and notes and coins which are physically invaluable but possess high credible values. We assign productivity to all kind of capitals, this means that capital is a production factor and accompanying with other production factors produces value added. Financial asset/capital can be treated as a kind of capital -in general definition.

Now, other element is defined as monetary intermediary or bank. His duty is to intersect demand and supply schedules of financial resource at the market. Banks or financial intermediaries are responsible for collecting financial resources of suppliers and sale them to investment demanders.⁴⁰ If

⁴⁰ See: M.N. Siddigh (2000).

bank operated as an intermediary, that is: receiving only a percentage of demander interest paid to supplier of resources from one side or both sides of transaction, we would had a simple model of financial transaction, and many juristic problems would be removed. However, bank operates as profit-maximizing firm and does not work as pure intermediary. This means that in financial market instead of one supply and one demand we have two supplies and two demands schedules. That is bank is a supplier and demander. When bank comes into account, we will have two markets naming saving market and loan market. In the former, bank demands and in the latter, supplies financial resources.

Bank's endeavor as profit-maximizing firm is to widen the banking spread (difference of loan and saving interest rates). Widening banking spread causes the banks revenue to be increased and banking competition tightens the spread. Thus, bank in saving market is demander and in loans market is supplier. In the first market saving interest rate and in the second market loan interest rate are determined.

Now we try to investigate the bank's behavior in these two markets by a juristic-economic approach. To analyze this, we are going to compare the concepts of interest, usury and profit.

Usury (Riba)

Usury in Arabic terminology⁴¹ means "excess". There are lots of discussions about this term in the literature and all of them more or less imply usury as: excess of property over the capital regarding a time

⁴¹ لسان العرب، ابن منظور، جلد ۱۴، ص ۳۰۵

repayment.⁴² Ragheb Isfahani⁴³ means usury in Islamic legislation as: “excess of property with no acceptable reason”.⁴⁴ In Quran, the following verses are about usury:

*“That which ye give in usury in order that it may increase (other) people’s property hath no increase with Allah; but that which ye give in charity, seeking Allah’s countenance, hath increased manifold”*⁴⁵

*“And of their taking usury when they were forbidden it, and of their devouring people’s wealth by false pretenses. We have prepared for those of them who disbelieve a painful doom”*⁴⁶

“O ye who believe! Devour not usury, doubling and quadrupling (the sum lent). Observe your duty to Allah, that ye may be successful”.⁴⁷

“Those who swallow usury cannot rise up save as he arises whom the devil hath prostrated by (his) touch. That is because they say: trade is just like usury; whereas Allah permits trading and forbids usury. He unto whom an admonition from his lord cometh, and (he) refrains (in obedience thereto), he shall keep (the profits of) that which is past, and his affairs

^{٤٢} المحقق الحلبي في مختصر النافع: وَيَثْبُتُ [الرِّبَا] فِي كُلِّ مَكِيلٍ أَوْ مُوزُونٍ مَعَ الْجُنْسِيَّةِ وَ ضَابِطُ الْجُنْسِ مَا يَتَنَاوَلُهُ إِسْمٌ خَاصٌّ. وَ فِي شُرَايِعِ الْإِسْلَامِ: وَ هُوَ يُثْبِتُ فِي الْبَيْعِ مَعَ وَصْفَيْنِ: الْجُنْسِيَّةُ وَ الْكَيْلُ أَوْ الْوَزْنُ، فِي الْقَرْضِ مَعَ إِشْتِرَاطِ نَفْعٍ. الشَّهِيدِ الْأَوَّلِ فِي لَمْعَةِ الدَّمَشْقِيَّةِ: الْمَتَّجَانِسَانُ إِذَا قُدِّرَا بِالْكَيلِ أَوْ الْوَزْنِ وَ زَادَ أَحَدُهُمَا.

^{٤٣} رَاغِبِ إِصْفَهَانِي، الْمَعْجَمُ الْمَفْرَدَاتِ الْفَاطِظِ الْقُرْآنِ، ص ١٩٢، إِتْسَارَاتِ دَارِ الْفِكْرِ بَيْرُوتَ، لُبْنَانِ.

^{٤٤} الزِّيَادَةُ عَلَي رَأْسِ أَلْمَالِ مِنْ أَحَدٍ مُتَسَاوِينَ جِنْسًا مِمَّا يُكَالُ أَوْ يُوزَنُ. ادوار فقه استاد محمود شهابي، منقول من الكنز العرفان.

⁴⁵ Rome: 39.

مَا آتَيْتُمْ مِنْ رَبًّا لِيَرْبُتُوا فِي أَمْوَالِ النَّاسِ فَلَا يَرْبُوا عِنْدَ اللَّهِ وَ مَا آتَيْتُمْ مِنْ زَكَاةٍ تُرِيدُونَ وَجْهَ اللَّهِ فَأُولَئِكَ هُمُ الْمُضْعِفُونَ

⁴⁶ Nisa: 161.

وَ أَخَذِهِمُ الرِّبَا وَ قَدْ نُهُوا عَنْهُ وَ أَكَلِهِمْ أَمْوَالِ النَّاسِ بِالْبَاطِلِ وَ أَعْتَدْنَا لِلْكَافِرِينَ مِنْهُمْ عَذَابًا أَلِيمًا

⁴⁷ Ale-Imran, 130-132.

يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَأْكُلُوا الرِّبَا أَضْعَافًا مُضَاعَفَةً وَ اتَّقُوا اللَّهَ لَعَلَّكُمْ تُفْلِحُونَ وَ اتَّقُوا النَّارَ الَّتِي أُعِدَّتْ لِلْكَافِرِينَ وَ أَطِيعُوا اللَّهَ وَ الرَّسُولَ لَعَلَّكُمْ تُرْحَمُونَ .

(henceforth) is with Allah. As for him who returns (to usury) – such are rightful owners of the fire. They will abide therein”⁴⁸

“Allah hath blighted usury and made almsgiving fruitful. Allah loves not the impious and guilty.”⁴⁹

“O ye who believe! Observe your duty to Allah, and give up what remains (due to you) from usury, if ye are (in truth) believers. And if ye do not, then be warned of war (against you) from Allah and his messenger. And if you repent, then ye have your principal (without interest). Wrong not and ye shall not be wronged. And if the debtor is in straitened circumstances, then (left there be) postponement to (the time of) ease; and that ye remit the debt as almsgiving would be better for you if ye did but know”.⁵⁰

Shiite and Sunnite jurists are unanimous in usury commandments and recognize it as unlawful by referring to Quran, tradition, and narratives and consensus. As a juristic idiom, usury is receiving excess in transaction of two commodities of the same kind, which are weighable or measurable, or receiving of excess in loan. According to this definition, usury can be classified to “barter usury” and “debt usury”. In the former, the loaned commodity is returned back to lender with some excess of the same commodity (not other kind of commodity). In the debt usury, any

⁴⁸ Baqarah: 275.

الَّذِينَ يَأْكُلُونَ الرِّبَا لَا يَقُومُونَ إِلَّا كَمَا يَقُومُ الَّذِي يَخْحَبُهُ الشَّيْطَانُ مِنَ الْمَسِّ ذَلِكَ بِأَنَّهُمْ قَالُوا إِنَّمَا الْبَيْعُ مِثْلَ الرِّبَا وَأَحَلَّ اللَّهُ الْبَيْعَ وَحَرَّمَ الرِّبَا فَمَنْ جَاءَهُ مَوْعِظَةٌ مِنْ رَبِّهِ فَانْتَهَى فَلَهُ مَا سَلَفَ وَأَمْرُهُ إِلَى اللَّهِ وَمَنْ عَادَ فَأُولَئِكَ أَصْحَابُ النَّارِ هُمْ فِيهَا خَالِدُونَ.

⁴⁹ Baqarah: 276. يَمْحَقُ اللَّهُ الرِّبَا وَيَزِيهِ الصَّدَقَاتِ وَاللَّهُ لَا يُحِبُّ كُلَّ كَفَّارٍ أَثِيمٍ

⁵⁰ Baqarah: 278-280.

يَا أَيُّهَا الَّذِينَ آمَنُوا اتَّقُوا اللَّهَ وَذَرُوا مَا بَقِيَ مِنَ الرِّبَا إِن كُنْتُمْ مُؤْمِنِينَ فَإِن لَّمْ تَفْعَلُوا فَأْذَنُوا بِحَرْبٍ مِنَ اللَّهِ وَرَسُولِهِ وَإِن تُبْتُمْ فَلَكُمْ رُؤُوسُ أَمْوَالِكُمْ لَا تَظْلِمُونَ وَلَا تُظْلَمُونَ وَإِن كَانَ ذُو عُسْرَةٍ فَنَظِرَةٌ إِلَى مَيْسَرَةٍ وَأَنْ تَصَدَّقُوا خَيْرٌ لَكُمْ إِن كُنْتُمْ تَعْلَمُونَ

conditioned excess in loan is usury, even the excess be in any kind of commodities, services or gains of using the loan. In debt usury, there is no difference between weighable, measurable, numerable and observable.

Exiting Usury Bound

Jurists do not identify juristic trick to exit usury bound as allowable. That is, if the main purpose of lending is receiving usury but tries to apply juristic trick to legalize it by showing that it is a transaction and not usury, is not lawful. This means that he tried to fraud Allah. This trick has two sins, one for usury and one for fraud. To defend this proposition they refer to two important rules. The first is: “contracts are subjected to the purposes”. And the second: “actions are due to intents”.

In juristic texts, there are some exceptions to escape from committing usury. The first group is called “commandmental exit” such as usury between father and child, wife and husband, Moslem and pagan who pertains to war. However, the latter does not sense in these ages⁵¹. That is according to Quran definitions, impious pertaining to war does not exist.

The second group is called “subjective exit”. That is to act in a way that the subject of usury does not conform to the action. This category includes; transaction on credit; conditional transaction; currency exchange; annexing non-kind annex; replaced gift; saving in a manner that interest payment is according to borrower’s option. Some jurists believe that subjective exit also can be encountered in restriction of usury in double usury and being lawful in productive lending. There are also lots of explanations to legalize usury in rate of inflation and paying excess in debt transmission (repayment) delay. However, the former is more doubtful but

⁵¹ See: (۱۳۸۳) بیاد آباد

the latter is less erectable.

Consumption and Investment Loans

We focus on non-usury lending in production loans. Intellectual reasons of usury prohibition have been discussed by Islamic economist and many of them are conceivable. The reasons such as fairness and equality establishment financing, full employment and optimal growth of economy, fair redistribution of wealth; economic stability and similar reasons are cited as intellectual causes of usury prohibition. Quran expositors cite other reasons as payment without replacement, prevention of commerce and borrowing and unfair wealth distribution, increasing social class differences, loosing human benevolence; profiteering, and increasing social crises, oppression, moral losses and many similar reasons.

Economically, by considering different opinions we can conclude that the main theosophy of usury prohibition is excess receiving without producing value added. As it cited before in barter usury; transaction is done for a commodity by the same kind of commodity with some excess in weight/measure. Barter usury, simply by annexing non-kind annex becomes lawful. That is one may lend 1 ton wheat and receive 10 ton wheat with 1 gram of something else let's say salt at the end of period. This is completely obvious that the intent of legislator had not been to increase the transaction formalities. The theosophy principle in jurisprudence affirms that legislation of this law has been done for more important causes and not an incremental barter exchange. On the other hand, Islam legislator is wise and theosophist. His approach to usury prohibition is that: if a person does not share in profit or loss of value added production, what would be his share of the produced value added? The answer can be: nothing. This exposition is verified by other verses of Quran as: *“And that man hath only*

that for which he makes effort".⁵² This theosophy is also true for the loan usury. Since one lends money to other and at the end of period receives some excess and this is not lawful. The lawfulness can be explicated in this way that he has not been directly impressed in the process of value added production. If borrower gains or losses, lender receives his excess. This excess is unlawful. This is the elegant difference of usury and other legal Islamic financial contracts as financial partnership (*Mudarabah*) and other Islamic financial contracts. In Islamic financial contracts the share of profit or loss is determined to be paid to lender. But in usury contract the rate of excess repayment (usury) is conditioned a priori. In the former the lender participate in profit/loss of investment and in the usury contract he does not.

The both contracts are the same if the planned profit is equal to actual profit of investments and this occurs seldom, because the non-zero risk rates and market changes and planning deviations are inherent characteristics of investment. This reasoning is also deducible from this verse: "*O ye who believe! Devour not usury, doubling and quadrupling. Observe your duty to Allah, that ye may be successful.*"⁵³ That is, Quran prohibits usury receipt over usury (or compound interest) and this is the case when borrower cannot fulfill or repay his debt and fall in debt compounding inevitably. This is the case in which first: lender is not investment partner and does not participate in profit or loss of investment project; and second: loan has been expended to purchase unproductive goods, or investment was unproductive; on the other hand, the loan has been expended for consumption and not for investment. This is the difference between investment and consumption loans.

⁵² Najm: 39. لَيْسَ لِلْإِنْسَانِ إِلَّا مَا سَعَى

⁵³ Ale-Imran: 130. يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَأْكُلُوا الرِّبَا أَضْعَافًا مُضَاعَفَةً

For this reason in the verse: *“And if the debtor is in straitened circumstances, then (let there be) postponement to (the time of) ease; and that ye permit the debt as almsgiving would be better for you if ye did but know”*⁵⁴, emphasizes that would be better to not receive the loan principle and interest whenever the borrower is in straitens. And to confirm this almsgiving says: *“Allah hath blighted usury and made almsgiving fruitful”*.⁵⁵ And based on this reasons swallowing this property has been negated by the verse: *“And of their taking usury when they were forbidden it, and of their devouring people’s wealth by false pretenses”*.⁵⁶

The reasoning in Quran explanation of Sultan Mohammad Gonabadi⁵⁷ about the verse: *“They say: trade is just like usury whereas Allah permits trading and forbids usury”*⁵⁸ is referring to this point that usury (Riba) in Arab words was not used by the meaning in jurisprudence, and usury had been being used for some kind of debt repayment delay penalty which makes usury unlawful. He says⁵⁹:

⁵⁴ Baqarah: 280. *إِنْ كَانَ دُوْعُسْرَةً فَنَظْرَةٌ إِلَى مَيْسَرَةٍ وَإِنْ تَصَدَّقْتُمْ خَيْرٌ لَكُمْ*

⁵⁵ Baqarah: 276. *يَمْحَقُ اللَّهُ الرِّبَا وَيُرِي الصَّدَقَاتِ*

⁵⁶ Nisa: 161. *وَ أَخَذِهِم الرِّبَا وَ قَدْ نُهُوا عَنْهُ وَ أَكَلِهِمْ أَمْوَالِ النَّاسِ بِالْبَاطِلِ*

⁵⁷ بيان السعادة في مقامات العبادة

⁵⁸ Baqarah: 275. *قَالُوا إِنَّمَا الْبَيْعُ مِثْلُ الرِّبَا وَ أَحَلَّ اللَّهُ الْبَيْعَ وَ حَرَّمَ الرِّبَا وَ حَرَّمَ الرِّبَا*

⁵⁹ ... [ذلك] الأكل منهم بواسطة مغلطة وقعت منهم او ذلك العقاب لهم [بأنهم] قاسوا الربوا بالبيع حيث رأوا جواز البيع بضعفي القيمة السوقية للسعلة فقاسوا هذا البيع في زيادة الثمن عن قيمة السعلة بالبيع الربوي في زيادة العوض عن اصل المال و [قَالُوا إِنَّمَا الْبَيْعُ] بزيادة الثمن [مِثْلُ الرِّبَا] في الزيادة فيصح الربوا كما يصح هذا البيع فالتشبيه إنما وقع في زيادة العوض و الاصل في لذلك هو الربوا لا في الصحة حتى يرد ان الاصل في الصحة هو البيع فينبغي ان يقول ان الربوا مثل البيع و انما شبه البيع بالزيادة عن القيمة بالربوا كناية عن تشبيه الربوا بالبيع في الصحة ليكون ابلغ فأبطل تعالي قياسهم بقوله تعالي [وَ أَحَلَّ اللَّهُ الْبَيْعَ] حال بتقدير قد او عطف [وَ حَرَّمَ الرِّبَا] يعني ان الصحة و الفساد ليسا بالتماثل في الصورة انما هما بأمر الله و نهي، قيل: كان الرجل منهم اذا حل دينه علي غريمه فطالبه به قال المطلوب منه: زدني في الاجل و ازيدك في المال فيتراضيان عليه و يعملان به، فاذا قيل لهم: هذا ربوا قالوا: هما سواء يعنون بذلك ان الزيادة في الثمن حال البيع و الزيادة فيه بسبب الاجل عند محل الدين سواء.

Footnote continues in next page:

“They said the trade by increasing the price is the same as usury in excess, thus usury is ok as trade is ok. Therefore the similarity of these two is in excess of repayment and this excess is Riba (usury) and comparison between trade and usury is not a matter of their correctness and this objection to the correctness of trade is not the case. Thus it deserved to be said: usury is the same as trade and not: trade is the same as usury. Thus this objection is not right. And by this point that they resemble trade to usury in excess of price refers to similarity of trade to usury because of permitted situation of trade and they used this resembling to express their intents more explicit. Thus, Allah broke their analogy and said: “Allah permits trading”. This expression is a response to their proposition. And continued: “and forbids usury”. This means that: correctness and incorrectness are not because of similarity of trade and usury but, is because of normative and negation of God. Some other said: whenever in maturity (due) date owner requested his own, debtor demanded increasing repayment period and excess and agree to postpone the repayment. Whenever it was said to them that this is usury, they respond both are the same. Their intents were that: increasing the price of commodity in time of sale and increasing the loan by lengthening its period are equal. In the age of ignorance (paganism) they traded in this way and loaned a property for a due date with a determined/conditioned profit -as it is prevailed in our age. Then they said this profit that we receive is compensation of the time

Footnote is continued from last page:

اعلم انهم كانوا في الجاهلية يتتجرون و يستريحون بان يدينوا مالاً الي اجل بريح معلوم كما هو ديدن اهل زماننا و كانوا يقولون: هذا الربح عوض تعطيل مالنا عن التجارة، او يدينوا جنساً من مثل الخنطة و الشعير الي اوان بلوغه بازيد من ذلك الجنس و كانوا يقولون ان كان قيمته عشرة معجلاً صح ان يبيعه بخمسة عشر مؤجلاً فصح ان نقرضه عشرة بخمسة عشر مؤجلاً، و لما كان في ذلك الاتكال علي الربح و ترك التوكل علي الله و تعطيل الاعضاء و القوي عن الحركة في طلب المعاش التي هي اعظم اقسام العبادات و تعطيل النفس عن التضرع و الالتجاء الي الله و المسئلة منه و اضرار المدين بأخذ ماله بلاعوض و ترك اصطناع المعروف بالقرض الحسن و كل ذلك كان مخالفاً لما اراده تعالي من عباده نهي الله تعالي عنه و شدد علي فاعله، ...

period that our commodity has not been used in commerce and had been idle. Or loaned a commodity like wheat and barley up to harvesting time and receive more than they had loaned and said cash price is for example 10 drachmas and it is right to credit sale by 15 drachmas and it is right to loan to 15 drachmas. Since this action completely relies on profit/gain and reliance to God is left and body members and powers in searching livelihood which is of the most important worship and adoration had been stopped and left idle and the soul has stopped from supplication and praying God and the debtor has been harmed by receiving his property without compensation/replacement and the good work of “good loan” (loan without excess repayment) is left and all these affairs which are opposite to the God’s will for his bondmen caused the God to prohibit usury and clash to usurer.”⁶⁰

By this explanation about the theosophy of unlawfulness of usury, we can summarize that: if the debt resources are to be expended in consumption is encountered as usury and is prohibited. And if is expended in investment, then the excess receipt is profit and lawful. The above reasoning leads us to the theosophies of the legislator in forming production activities. By the name production we mean value added as system of national and product accounts of United Nations encounters in production and transaction of goods and services in all sectors of economy. In summary:

- | |
|--|
| 1. The loaner must share in profit and loss of the economic activity of loan receiver. |
|--|

⁶⁰ حضرت حاج ملا سلطان محمد بیدختی گنابادی سلطانعلیشاه، بیان السعاده فی مقامات العبادة، چاپ دانشگاه تهران، ۱۳۴۶. ترجمه محمد رضاخانی و حشمت الله ریاضی، سازمان چاپ و انتشارات وزارت فرهنگ و ارشاد اسلامی، جلد سوم، صفحات ۱۵۰-۱۴۹، تهران، ۱۳۷۷.

2. The rate of interest -because of inability to determine the capital productivity rate a priori- should not be determined and conditioned in advance.
3. Receiving interest in consumption loans is usury and not allowed.
4. Foreign currency exchange (without interest) is not usury.

According to these theosophies of usury prohibition, some of Shiites and Sunnites jurists consider non-usury of investment loans.⁶¹ Though, some others encounter this as a trick to exit usury. Summing up different reasoning and scrutinizing the Quran indications and narratives, consolidates the conclusion that it is not a trick to exit usury and reveals wisdom of God's decree. Of course the theosophy of forbidding usury has also been cited from the social viewpoints which we do not touch them here.⁶²

This group believes that in the age of the prophet and legislation of usury, in Arabia, usury was applicable in consumption loans, and majority of loans were financed for consumption needs and Islam prohibited these loans. Thus, loans with interest in production affairs were excluded from usury realm.⁶³ That is, for example one who borrows to construct or to buy house will benefit from this investment and is fully rational to pay some share of this profit to lender. This share may be as some percent of profit or be in different forms of Islamic contracts. Juristic opinion and decrees of Shiite and Sunnite jurists about sale and purchase of note strengthen this

⁶¹ عبدالرزاق سنهوري: مصادر الحق في الفقه الاسلامي، ج ٣. ص ٢٣٣.

⁶² رساله رفع شبهات حضرت حاج سلطانحسين تابنده گنابادي. صفحات ١٥٥-١٥٢. انتشارات حقيقت، ١٣٧٧، چاپ پنجم.

⁶³ حضرت آقاي دكتور نورعلي تابنده، مجموعه مقالات فقهی و اجتماعي، انتشارات حقيقت، تهران، ١٣٨٠.

proposition. The decrees about the lawfulness or unlawfulness of purchasing note have a wide range of fully lawful to completely unlawful. Many jurists believe that notes are numerable and not weighable and measurable, thus its transaction is lawful. They encounter note as commodity. Other group believes that purchasing/sale of note is unlawful because it is debt usury. This group believes that note is an instrument to purchase and sale commodity and is representative to enumerate the commodity value and is not property as itself. Comparison of various conflict decrees leads to an important conclusion. Since, some decree that note lending is legal and some other decree as illegal. That is, some decree that note lending-which is another expression of loan- to lawful and some decree to unlawful. On the other hand, some say usury is legal and some other says it is illegal. These conflicts enlighten two important propositions.

1. The juristic deduction methodology needs revision.
2. Ignorance to theosophy principle of jurisprudence is the main source of conflicts.⁶⁴

Regarding the first paradigm, if we ask this question (usury definition) from “this age divine legislator”, we would receive a unique response that pass over the conflicting decrees and rule them out. Thus, the methods to find out the legislator opinion should be different with prevailed methodology. As it mentioned before, the methodology of juristic deduction has many shortages and necessitates revision. The permitted person who has divine authority is the solution to this problem. On the

⁶⁴ This is also occurred in mulct (blood-money). Murderer has option to pay blood-money as one of the following items: 100 camels or 200 cows or 1000 sheep or 200 cloths or 1000 gold dinars or 10000 silver dirhams. See:

حضرت آقای دکتر نورعلی تابنده، مجموعه مقالات فقهی و اجتماعی، انتشارات حقیقت، تهران، ۱۳۸۰.

other side, the juristic deduction methodology is not a scientific methodology. If it were, its answer to unique particular problem should be unique. But in juristic deduction we find different decrees and solutions to a specific (unique) problem. That is, it does not possess a scientific methodology⁶⁵.

Summary

In this chapter, by analyzing the deduction methodology of jurisprudence commandments, we try to touch the existing shortages in its methodological aspects. By discussing on different sources of Islamic jurisprudence like Quran, Sunna (Tradition), consensus, intellect, fame, analogy, preference, public interest considering, blocking the means, we will explicate that the divine authority (person who is allowed by the messenger or by someone whom messenger has allowed him) has been ignored in religious deduction and thus these different ideas have been emerged in Islamic commandments. In this regards, juristic decrees may be compared which are different and even conflict solutions to a unique problem or question.

By defining and analyzing usury and interest in an economic-juristic frame and specifically in Quran and with respect to wisdom or theosophy principle in jurisprudence to distinguish usury and non-usury finance, we reached to some definite conclusions.

Transformation of credit and deposit markets' oscillations to real sector is the main initiation of real sector economic fluctuations. Respect to wisdom (theosophy) principle of religious legislation and by introducing a mathematical model, we show that usury causes economic fluctuations and

⁶⁵ By a scientific methodology, similar experiments will result unique conclusion. This comes from "scientific law" definition.

by deleting usury from economy, we conclude that real economy will be more stable.

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قمرى.

Chapter Two

Non-Usury Bank Corporation

Introduction

Usury specification is the main point to distinguish Islamic and other types of banking from each other⁶⁶. By inspecting Quran, Torah and Bible and other gospels we will find that all of them prohibit usury, but the definition of usury is not the same in all of them. Many discussions about distinction of usury and non-usury banking come from the usury definition. As it was mentioned earlier, by using theosophy principal of jurisprudence and based on Quran, some criteria can be adopted to distinguish usury from non-usury transactions. It is to be seemed that these criteria may be accepted as ending point to usury definition as described in previous

⁶⁶ Fundamentally this comparison is not correct, because Islam means obedience or surrender to prophet or his representatives or those whom prophet leaved (permitted) them. By this definition, followers of all religions are all Moslem; even we may say that, there is no religion around the world, except Islam. Quran explicates: (Ale-Imran, 85) «*And whose seeks as religion other than the surrender, it will not be accepted from him and he will be a looser in the Hereafter*»:

«وَمَنْ يَبْتَغِ غَيْرَ الْإِسْلَامِ دِينًا فَلَنْ يُقْبَلَ مِنْهُ وَهُوَ فِي الْآخِرَةِ مِنَ الْخَاسِرِينَ».

In the preceding verse (84) Quran explicates on the other hand: «*Say (O Muhammad): we believe in Allah and that which is revealed unto us and that which was revealed unto Abraham and Ishmael and Isaac and Jacob and the tribes, and that which was vouchsafed unto Moses and that Jesus and the prophets from their Lord. We make no distinction between any of them, and unto Him we have surrendered (Islam)*» (Almost identical with Baqarah, 136):

«قُلْ آمَنَّا بِاللَّهِ وَمَا أُنزِلَ عَلَيْنَا وَمَا أُنزِلَ عَلَيَّ إِبرَاهِيمَ وَ إِسْمَاعِيلَ وَ إِسْحَاقَ وَ يَعْقُوبَ وَ الْأَسْبَاطَ وَمَا أُوتِيَ مُوسَىٰ وَ عِيسَىٰ وَ النَّبِيُّونَ مِنْ رَبِّهِمْ وَ لَا نُفَرِّقُ بَيْنَ أَحَدٍ مِنْهُمْ وَ نَحْنُ لَهُ مُسْلِمُونَ»

On the other hand, the religion of Abraham, Ishmael, Isaac, Jacob and the tribes and Moses and Jesus and all other prophets have been surrender/Islam and those people who have surrendered to them or to the allowed persons from them are Moslems. Again in a more preceding verse, Quran generalizes the surrender to «all»: «*Seek they other than the religion of Allah, when unto Him submits (surrenders) whosoever is in the heavens and the earth, willingly, or unwillingly, and unto Him they will be returned:*

«أَفَغَيْرَ دِينِ اللَّهِ يَبْغُونَ وَلَهُ أَسْلَمَ مَنْ فِي السَّمَاوَاتِ وَالْأَرْضِ طَوْعًا وَ كَرْهًا وَ إِلَيْهِ يُرْجَعُونَ» .

For critics on these verses see:

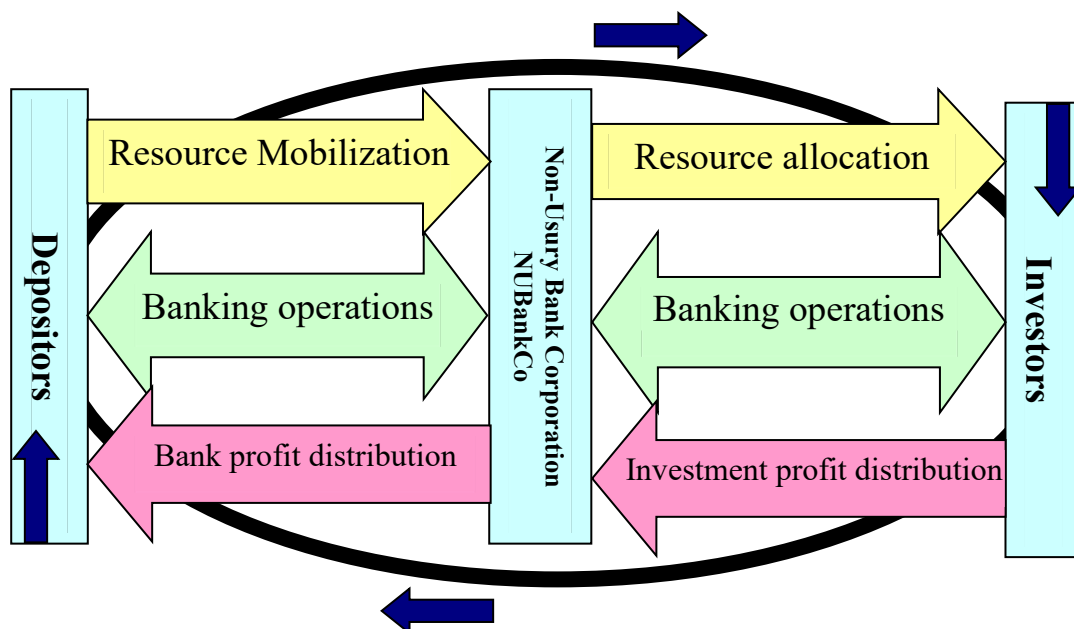
حضرت حاج ملا سلطان محمد بيدختی گنابادی سلطانعلیشاه، بیان السعاده فی مقامات العباده، طبع دانشگاه تهران، ۱۳۴۶ ه.ش.

chapter. Considering the cited criteria, we try to define Non-Usury Bank Corporation.

Non-Usury Bank Corporation

No matter of private or public characteristics of the shareholders and government characteristics of country, we are going to define a non-usury bank which can perform its best duties as financial intermediary.

As it is obvious from the figure, when a bank as a financial intermediary mobilizes the saving resources to bank and then mobilizes them to investing purposes and in return derives some shares from investors' profit/loss and then redistribute them between bank and depositors, then bank has done a Mudarabah transaction. These operations concord with Mudarabah completely, if the bank's financial and



operational characteristics be of some special kinds.

Suppose a bank is established as a joint shared company among

(saving, time or demand) depositors. On the other hand, assume that the bank is a company and their shareholders are its depositors. There are differences between shares at joint-stock company and deposits at conventional bank. But anyone by putting money at NUBankCo as any type of deposit will become the shareholder of the Bank. Every depositor have share of NUBankCo (Non-Usury Bank Corporation) according to the number of days of his deposit holding multiplied by the amount of his deposit. Total capital of NUBankCo is equal to total of all depositors' shares. Total capital and total number of shares of NUBankCo are variable during time and depends to the amounts and durations of deposits. At end of period, the share of each shareholder will be calculated as follows, suppose:

q	Nominal price of each share
m	Number of depositors
D_i	Deposit of the i^{th} shareholder (depositor) ($i = 1, \dots, m$)
t_i	Deposit duration
$\frac{D_i}{q} \times t_i$	Number of shares for the i^{th} shareholder
$n = \frac{1}{q} \sum_{i=1}^m D_i t_i$	Total number of shares

NUBankCo's revenue (R) minus its cost (C) gives bank's profit (π):

$$\pi = R - C \quad (1)$$

NUBankCo will distribute its profit to his shareholders who are depositors according to their relative shares. Profit of each share (r) is calculated by:

$$r = \frac{q \pi}{\sum_{i=1}^n D_i t_i}$$

(2)

Distribution of NUBankCo's profit to shareholder i (π_i) will be:

$$\pi_i = \frac{r D_i t_i}{q} \quad (3)$$

This amount may be added as extra share of depositor to his deposit account at the initiation of next financial period, or may be paid to him. Non-Usury Bank Corporation will have acceptable and elaborated properties as follows:

Organization and Corporate Governance

Corporate governance is most often viewed as both the structure and the relationships which determine corporate direction and performance. The board of directors is typically central to corporate governance. Its relationship to the other primary participants, typically shareholders and management, is critical. Additional participants include employees, customers, suppliers, and creditors. The corporate governance framework also depends on the legal, regulatory, institutional and ethical environment of the community. Corporate governance looks at the institutional and policy framework for corporations - from their very beginnings, in entrepreneurship, through their governance structures, company law, privatization, to market exit and insolvency. The integrity of corporations, financial institutions and markets is particularly central to the health of economies and their stability. Claessens (2003)⁶⁷, summarizes the ways in which corporate governance affects growth and development:

- increased access to external financing by firms
- lowering the cost of capital
- better operational performance
- reduced risk of financial crisis

⁶⁷ Claessens (2003). Corporate governance and development, Global Corporate Governance Forum, World Bank, Washington, USA.

- better relationships with stakeholders

When banks efficiently mobilize and allocate funds, this lowers the cost of capital to firms, boosts capital formation, and stimulates productivity growth. Thus, weak governance of banks reverberates throughout the economy with negative ramifications for economic development. If bank managers face sound governance mechanisms, they will be more likely to allocate capital efficiently and exert effective corporate governance over the firms they fund. In contrast, if banks managers enjoy enormous discretion to act in their own interests rather than in the interests of shareholders and debt holders, then banks will be correspondingly less likely to allocate society's savings efficiently and exert sound governance over firms. Banking crises dramatically advertise the enormous consequences of poor governance of banks. When bank insiders exploit the bank for their own purposes, this can increase the likelihood of bank failures and thereby curtail corporate finance and economic development. Banking crises have crippled economies, destabilized governments, and intensified poverty. Thus, good corporate governance is therefore going to help build confidence in firms, banks and in the economy as a whole.

Corporate governance for Islamic banking has not driven yet, but some endeavor to this important subject is defined by Grais (2004)⁶⁸. He tries to explain that some sound corporate governance rules may help Islamic banking to fulfill its mission. In this regard he emphasizes on the need to supplement general corporate governance principles to Islamic banking. OECD principles⁶⁹ apply to all financial institutions but sound

⁶⁸ Wafiq Grais (2004), Corporate governance challenges of businesses offering Islamic financial services. Proceeding of the 2nd International Islamic Banking Conference. Monash University of Malaysia. 9-10 September.

⁶⁹ OECD (2004), The OECD principles of corporate governance.

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corporate governance for Islamic banking and financial institutions calls for addressing the specific features and complementing the body of generally accepted corporate governance principles. Anyhow, the World Bank, the Global Corporate Governance Forum, the International Corporate Governance Network and the OECD have all influenced the development of corporate governance globally. The OECD issued revised corporate governance principles in 2004 covering:

- Rights and obligations of the shareholders
- Equitable treatment of shareholders
- Role of stakeholders and corporate governance
- Transparency, disclosure of information and audit
- Board of directors
- Non-executive members of the board
- Executive management, compensation and performance

The Basel⁷⁰ pronouncements impact upon all banks, but Islamic banks also have regard to the pronouncements of AAOFI (Accounting and Auditing Organization for Islamic Financial Institutions) and the IFSB (Islamic Financial Services Board). In many ways Islamic banks are ahead in certain areas such as the consideration of social, ethical and

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<http://www.oecd.org/daf/corporate/principles/>

⁷⁰ The Basel Committee on Banking Supervision (BCBS) has taken the view that market discipline is increasingly important in a world where banking activities are becoming more and more complex. This view is reflected in Pillar 3 of the proposed new Accord (commonly known as Basel II), which encourages greater bank disclosure to strengthen market discipline. It is argued that for market discipline to be effective four prerequisites have to be met: First, market participants need to have sufficient information to reach informed judgments. Second, they need to have the ability to process it correctly. Three, they need to have the right incentives. Finally, they need to have the right mechanisms to exercise discipline. See Rifaat Ahmed Abdel Karim, Corporate governance, market discipline, and regulations of Islamic banks. Proceeding of the 2nd International Islamic Banking Conference. Monash University of Malaysia. 9-10 September, 2004.

environmental issues. Whereas corporate social responsibility and socially responsible investment has only gained a higher profile in recent years in non-Islamic institutions, it has been at the core of Islamic banking for many years. However all banks have to take account of risks and this is where it is essential to have good corporate governance and risk management, though, Islamic banking based on non-usury Islamic products suffers less from the market fluctuations. In this category, the NUBankCo seems to be more stable than other Islamic financial institutions. This is the case, because the NUBankCo directly relates investor's demand for financial resources to saving depositors. That is NUBankCo is not a conventional profit maximizer firm. NUBankCo's income comes from the marginal efficiency of investment by engaging in Islamic financial based investment project. Then by reducing bank's operational cost, the profit is distributed to deposit holders. This procedure has its own built-in good corporate governance characteristics. That is, in case of both diffuse and concentrated⁷¹ forms of depositors/shareholders of NUBankCo, this bank will be more efficient than conventional banks. High pressure of fixed interest rates always put bank's directors and managers in risky and nervous positions. This enforces them to do anything –even fraud- to save the bank and hedge themselves from ups and down undesirable fluctuations. Since, NUBankCo depositors participate in benefit/loss of the bank, thus this case is not as acute as conventional banks. This means that there is semi-automated built-in corporate governance in NUBankCo.

Mobility of deposit resources in NUBankCo is less than conventional banks. Because, the calculation of payable interest/profit of depositors will be done at the end of financial period and it is not known in advance to

⁷¹ Ross Levine, (2003), The corporate governance of banks, a concise discussion of concepts and evidence. Global Corporate Governance Forum, World Bank, Washington, USA.

depositors to motivate them for fast mobilization of financial resources. This causes a more stable position for bank in balancing its resources streams. Anyhow, bank also can enforce more restrictions for mobility of resources in some forms of time deposits

In the NUBankCo, there is no price of share similar to stock price and therefore there is less conflicts between large and small shareholders / depositors. It has caps on single owner's contribution and limits the emergence of shareholders' cartels. In this regards increase good corporate governance background.

NUBankCo similar to other corporations is managed by the board of directors under the articles of association and general council approvals. NUBankCo can be established in different countries and can be adapted to different monetary and banking and foreign exchange laws and regulations. This bank can simply be adapted to commercial laws of different countries and parallel to conventional banks.

The ownership form of NUBankCo depends on the nature of its shareholders/depositors as private or governmental or mixed of them and also can be defined a priori in articles of association same as other companies. Articles of association may also devote distinguished shares to founders with some priorities regarding some kind of share preference or etc. Since, in general, the share of private or government deposits at NUBankCo may vary during time by extra depositing/redepositing of both parts, the ownership of NUBankCo may also be volatile accordingly.

FSF⁷² compendium standards⁷³ also will be more compatible with

⁷² Financial Stability Forum (FSF) was convened in April 1999 to promote international financial stability through information exchange and international co-operation in financial supervision and surveillance. The Forum brings together on a regular basis national authorities responsible for financial stability in significant international

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NUBankCo than conventional banks even Islamic banks. Though the latter is more financially stable than conventional banks, in turn NUBankCo will be more stable than prevailed Islamic banks; because, NUBankCo operates Islamic in both side of resource mobilization (deposits) and loan lending (investment) and also other banking operations. But existing Islamic banks try to use Islamic products in lending side of their activities. It will be shown in next chapters that whenever interest rate is omitted from financial transactions, the economy will become more stable. In conventional banking both deposit and loan interest rates exist; in prevailed Islamic banking loan interest rate is going to be equalized to marginal efficiency of investment that is going to be omitted; but in NUBankCo both interest rates are going to be omitted.

Economic Performance and Functioning

To analyze the economic performance of NUBankCo, we try to develop a simple microeconomic intertemporal consumption-saving-

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financial centers, international financial institutions, sector-specific international groupings of regulators and supervisors, and committees of central bank experts. FSF seeks to co-ordinate the efforts of these various bodies in order to promote international financial stability, improve the functioning of markets, and reduce systemic risk.

⁷³ The Compendium of standards lists the various economic and financial standards that are internationally accepted as important for sound, stable and well-functioning financial systems. The compendium highlights 12 key standards which the FSF has designated as deserving of priority implementation, taking account of country circumstances.

Corpus of the compendium standards are organized under three broad headings of: macroeconomic policy and data transparency (including: monetary and financial policy transparency, fiscal transparency, data dissemination, data compilation), institutional and market infrastructure (including: insolvency, corporate governance, accounting, auditing, payment and settlement, market integrity, market functioning) and financial regulation and supervision (including: banking supervision, securities regulation, insurance regulation, financial conglomerate supervision)

investment model⁷⁴. One may regard it as a mesoeconomic⁷⁵ framework and extract macroeconomic implications. Thus, according to this model, consumer postpones current consumption to gain more future consumption. On the other side, saving created by postponed consumption generates financial resource supply. Banks and financial intermediaries offer this resource to investors. Whenever marginal efficiency of investment⁷⁶ is greater than market interest rate then, by increasing interest rate, demand for saving resources increases. This mechanism is done by intermediation of bank. Now, in this case suppose that consumer has a multi-period utility function. By using composite commodity theorem⁷⁷ redefine his utility function in terms of composite commodity consumption expenditures:

$$U=V(c_1,c_2,\dots,c_\tau) \quad (4)$$

where, c_1,c_2,\dots,c_τ are corresponding consumption at market dates of $1,2,\dots,\tau$. Consumer expects to receive the earned-income stream (y_1,y_2,\dots,y_T) on the marketing dates within his planning horizon. By borrowing and lending, consumer can reconcile his two streams of consumption and income. The consumer's total income receipts on the t^{th} marketing date are the sum of his earned income and his interest income from let say deposits (credits) d_t held during the preceding period: $y_t+i_{t-1}d_{t-1}$. His interest income will be positive if his deposit holding are positive and negative if his deposit holding are negative (he credits or is in debt). His expected saving on the t^{th} marketing date, s_t , are defined as difference

⁷⁴ This model is to somehow a modified version of optimization behaviors of consumer and firm over time tailored for evaluating NUBankCo. See Henderson and Quandt (1985), pp. 322-341.

⁷⁵ At meso level a Robinson Crusoe's behavioral model is built.

⁷⁶ There are other names for this concept as: marginal internal rate of return, marginal rate of return over cost, marginal productivity of investment, marginal efficiency of capital. See: Friedrich Lutz, Vera Lutz (1951), Irving Fisher (1954), Henderson, and Quandt (1985): p. 336.

⁷⁷ See: James M. Henderson, Richard E. Quandt (1985) pp. 38-39.

between his expected total income and total consumption expenditures on that date:

$$s_t = y_t + i_{t-1}d_{t-1} - c_t \quad t=1,2,\dots,T \quad (5)$$

Where, i_t is the expected rate of interest at t^{th} marketing date. Suppose $d_0=0$ and on each marketing date the consumer will increase the value of his deposit or credit holdings by the amount of his saving on that date:

$$d_t = d_{t-1} + s_t \quad t=1,2,\dots,T \quad (6)$$

Now, consider the case of an individual who save d_t dollars on the t^{th} marketing date and continue to resave both principal and interest until the τ^{th} marketing date. The value of his saving at the beginning of the τ^{th} marketing date is:

$$d_t(1+i_t)(1+i_{t+1})\dots(1+i_{\tau-1}) \quad (7)$$

And total return on this saving is:

$$J = d_t(1+i_t)(1+i_{t+1})\dots(1+i_{\tau-1}) - d_t \quad (8)$$

The average and marginal rates of return ($\xi_{t\tau}$) for this saving are equal and constant:

$$\xi_{t\tau} = J/d_t = \partial J / \partial d_t = (1+i_t)(1+i_{t+1})\dots(1+i_{\tau-1}) - 1 \quad (9)$$

Consumer's planned deposit holding after trading on the τ^{th} marketing date can be expressed as:

$$\begin{aligned} d_1 &= (y_1 - c_1) \\ d_2 &= (y_1 - c_1)(1+i_1) + (y_2 - c_2) \\ d_3 &= (y_1 - c_1)(1+i_1)(1+i_2) + (y_2 - c_2)(1+i_2) + (y_3 - c_3) \end{aligned} \quad (10)$$

and in general using $\xi_{t\tau}$:

$$d_t = \sum_{\tau=1}^t (y_\tau - c_\tau)(1 + \xi_{t\tau}) \quad \tau = 1, \dots, T \quad (11)$$

The consumer's deposit holdings after trade on the τ^{th} marketing date equal the algebraic sum of all his savings, net of interest expense or income, through that date with interest compound on each.

In this multi periods case suppose there is limitation upon the amount of debt that he could amass over his lifetime. The budget constraint can be expressed as a restriction upon the amount of the consumer's terminal bond holdings. He may plan to leave an estate or debts for his heirs, but assume that he is not going to leave his heirs neither assets nor debts ($d_T=0$). Therefore, the consumer budget constraint will be:

$$d_T = \sum_{t=1}^T (y_t - c_t)(1 + \xi_{tT}) = 0 \quad (12)$$

Dividing through by the constant $(1 + \xi_{1T})$ and rearranging the terms:

$$\sum_{t=1}^T y_t (1 + \xi_{1t})^{-1} = \sum_{t=1}^T c_t (1 + \xi_{1t})^{-1} \quad (13)$$

Since:

$$\frac{1 + \xi_{1T}}{1 + \xi_{1t}} = \frac{(1 + i_t) \dots (1 + i_{T-1})}{(1 + i_1) \dots (1 + i_{T-1})} = \frac{1}{(1 + i_1) \dots (1 + i_{t-1})} = (1 + \xi_{1t})^{-1} \quad (14)$$

Consumer lifetime maximization problem will be the solution to the following Lagrange function:

$$\max : V^* = V(c_1, \dots, c_T) + \mu \sum_{t=1}^T (y_t - c_t)(1 + \xi_{1t})^{-1} \quad (15)$$

Set its partial derivatives to zero:

$$\frac{\partial V^*}{\partial c_t} = V_t - \mu(1 + \xi_{1t})^{-1} = 0 \quad t=1, \dots, T \quad (16)$$

$$\frac{\partial V^*}{\partial \mu} = \sum_{t=1}^T (y_t - c_t)(1 + \xi_{1t})^{-1} = 0 \quad (17)$$

Then:

$$-1 - \frac{\partial c_\tau}{\partial c_t} = \frac{(1 + \xi_{1t})^{-1}}{(1 + \xi_{1\tau})^{-1}} = \xi_{t\tau} \quad t, \tau = 1, \dots, T \quad \tau > t \quad (18)$$

Requiring the second order condition to be satisfied, consumer adjusts his subjective preferences to his market opportunities by equating his rate of time preference for consumption between every pair of periods to the corresponding saving deposit rate of return (average and marginal rates of return for saving). It is more convenient if define $\xi_{tt} = 0$ and let $i_t = \dots = i_{\tau-1} = i$. then:

$$\xi_{t\tau} = (1 + i)^{\tau-t} - 1 \quad (19)$$

That can be evaluated from a compound-interest table for specific values of $(\tau-t)$ and i . In this case, we will have:

$$-\frac{\partial c_\tau}{\partial c_t} = (1 + i)^{\tau-t} = \xi_{t\tau} \quad (20)$$

The above conclusion is more obvious in this equation.

Now consider a producer who maximizes his profit from a multi-period production in a similar manner. It is assumed that present and future prices have known and unchanging values. Entrepreneur possesses both

external and internal investment opportunities. Input expenditures and output revenues on each date are treated as composite commodities which are by an implicit investment-opportunities function:

$$H(I_1, \dots, I_L, R_1, \dots, R_{L+1}) = 0 \quad (21)$$

Where, I_t and R_t are composite commodities representing investments and revenues respectively. Entrepreneur desires to draw his investment and production plan to maximize the present value of his profit stream by maximizing the following Lagrange function:

$$\max : \pi^* = \sum_{t=2}^{L+1} R_t (1 + \xi_{1t})^{-1} - \sum_{t=1}^L I_t (1 + \xi_{1t})^{-1} + \mu H(I_1, \dots, R_{L+1}) \quad (22)$$

Setting the partial derivatives equal to zero:

$$\begin{aligned} \frac{\partial \pi^*}{\partial R_t} &= (1 + \xi_{1t})^{-1} + \mu \frac{\partial H}{\partial R_t} = 0 & t=2, \dots, L+1 \\ \frac{\partial \pi^*}{\partial I_t} &= -(1 + \xi_{1t})^{-1} + \mu \frac{\partial H}{\partial I_t} = 0 & t=1, \dots, L \\ \frac{\partial \pi^*}{\partial \mu} &= H(I_1, \dots, R_{L+1}) = 0 \end{aligned} \quad (23)$$

Solution to the above system of equations gives the first order conditions as:

$$\frac{\partial R_t}{\partial I_t} - 1 = - \frac{\partial H / \partial I_t}{\partial H / \partial R_t} - 1 = \xi_{t\tau} \quad t=1, \dots, L \quad \tau=2, \dots, L+1 \quad (24)$$

Requiring the second order condition to be satisfied, the entrepreneur must

equate each of his marginal internal rates of return to corresponding market rate of return.

Comparison of both consumer and entrepreneur behaviors at these models shows that if the consumer's rate of time preference for consumption in period t rather than period τ is equal to saving deposit interest rate, he will reach at his maximum in consumption. On the other side, entrepreneur will reach his maximum profit if he borrows from bank and invest up to the point that his marginal internal rate of return from investment on the t^{th} marketing date with respect to the τ^{th} marketing date are equal to the corresponding loan interest rate. That is:

$$-1 - \frac{\partial c_{\tau}}{\partial c_t} = \xi_{t\tau} = \frac{\partial R_t}{\partial I_t} - 1 \quad (25)$$

On the other hand: consumer's rate of time preference for consumption in period t rather than period τ = marginal rate of return for saving = average rate of return for saving = saving deposit interest rate = loan interest rate = entrepreneur's marginal internal rate of return from investment on the t^{th} marketing date with respect to the τ^{th} date. That is:

Consumption		Bank		Production		
Consumer rate of time preference for consumption	=	Saving deposit interest rate	=	Loan interest rate	=	Entrepreneur marginal internal rate of return from investment

This situation is the case that Islamic Sharia draws and occurs at NUBankCo. Suppose that bank is only an institution who match demand to supply of resources and in this case does not maximize his profit as a profit

maximizer whose maximization problem does not include interest rate as an endogenous variable. That is in this case we are confronting with NUBankCo. By NUBankCo marginal efficiency of investment of investors who demand loans will be equal to marginal rate of time preference of consumers who supply saving deposits. In this case welfare of the society is maximized. That is conventional banking interest rate is omitted, but the financial intermediary role of the bank is active. It can be shown that NUBankCo also establishes Pareto optimality condition in the economy. That is NUBankCo is as efficient as competitive equilibrium condition in the economy and have extra stability during time because of non-usury financial intermediaries. This is what the Islam's legislator (Sharia) is looking for, that is "Non-Usury Banking System".

Permitted Islamic Contracts

NUBankCo will be Islamic in deposit mobilization side. NUBankCo will be Islamic in the loan/credit side if the following Islamic contracts are to be used:

- Beneloan (non-interest loans)
- Civil partnership (if expected productivity rate is not conditioned and determined in advance)
- Equity participation (Financing capital needs of joint stock companies or other NUBankCos)
- Direct investments
- *Mudarabah* (if interest rate is not conditioned and determined in advance)
- Forward delivery transaction (if the price of commodity at delivery date is not determined and conditioned in advance)
- *Joalah* (if interest rate is not determined and conditioned in advance)

- *Muzaraah* (if interest rate is not determined and conditioned in advance)
- *Musaghah* (if interest rate is not determined and conditioned in advance)
- Lease (of durable goods: land, contraction, machinery and equipment ...)

The following contracts are usury and NUBankCo must not enter into them:

- Prize-based saving deposit mobilization.
- Installment sale
- Hire purchase
- Debt sale and purchase
- Compound interest operations

One of the main obstacles to grow Islamic banking is using the Islamic contracts in daily banking operations. To improve these operations banks should increase their activities in financial participation with different investors. To do this it is crucial to NUBankCo to improve its project evaluation and reappraisal department.

Another point to be mentioned is: since Islamic banking and financial products and contract are originally based on joint real and monetary sectors participation in economic activities, it will be of more importance for NUBankCo to be specialized in special activities. In this regards, examples of specialized NUBankCo will be Agricultural NUBankCo, Industrial NUBankCo, Mining NUBankCo, etc. These banks may be more specialized and may be formed as investment banks.

Foreign Exchange Transactions

Foreign currency exchange and related operations in the following items are non-usury and acceptable:

- Spot (over counter exchange of foreign currency)
- Swap (if the interest rate is not used in calculating exchange rate)
- Option (if the interest rate for two currencies are the same)
- Letter of credit

The following transactions are usury:

- Future
- Swap
- Option
- Certificate of deposit

Bonds and Commercial Papers Transactions

NUBankCo can only sale/purchase bonds and commercial papers or any other credible papers that their transactions do not involve any time-based discount. This general rule is applicable to majority of transactions. However, as it is seen majority of commercial papers and bond have due dates and any discount on their transaction will be usury, but payment/receive of commission fees are acceptable and non-usury. Commission fee is amount of proportional excess/reduction in bond, commercial papers and other papers sale/purchase and it is not time-dependent. However, commission fee is also to somehow sharia incompliant and “*Hagh’ol zahmah*” (حق الزحمه) and “*Hagh’ol Joalah*” (حق الجعاله) are sharia compliant and we do not discuss them here.

Precious Metals Transactions

Precious metals transaction (البيع الصرف) by money is not usury, but lease of them is usury. Though, participation with goldsmith or silversmith without conditioning and determining the lease rate are non-usury.

Cash and Draft Operations

Cash and draft operations are done in NUBankCo without any trouble and should be based on *Hagh'ol zahmah*. *Hagh'ol zahmah* is some kind of compensation against the produced services and should not be generally proportional to the nominal amount of monetary engaged in that service - especially for banking services. Since, bank offers a service and should be compensated based on the burden cost of the produced service. For example for a transfer payment of 100\$ banks compensation would be 2\$ and the latter figure (2\$) should be the same for 1000\$ transfer payment. Since the cost of service remains unchanged, therefore the revenue of the service should not be increased too. Contradiction to this problem wherever is acceptable that the cost of service grows up as the amount of nominal money grows up.

However, cash and draft operations use bank free reserves. The bank's income from these operations will be added to other bank's income streams and finally will be distributed to the NUBankCo's shareholder/depositors and anyhow becomes non-usury.

Credit Operations

In contrast to other banks, this operation in NUBankCo is non-usury. The method of credit charging is as follows: Assume that Bank is going to grant credit to his client based on the client's previous deposits. The

question will be: what is the non-usury interest rate to charge the client? That is, what interest rate, bank should adopt to keep his operation non-usury. To respond this question, suppose a client has deposited \$A for a duration of t months (less than 12 months) at NUBankCo, and at present time the financial period has not been completed and NUBankCo accounts settlement has not been occurred. Client is requesting \$B loan credit for duration of s months in excess of his \$A deposit at NUBankCo. The following situations may be encountered:

If $A \times t = B \times s$ Bank should not pay/receive interest to/from client.

If $A \times t > B \times s$ Bank should pay following interest payment to client based on calculation of share (deposit) profit rate (r): $(A \times t - B \times s) \times r$.

If $A \times t < B \times s$ Bank should receive the following amount from his client: $(B \times s - A \times t) \times r$.

Beneloan Accounting

Beneloan is non-interest loan. As it is discussed by Bidabad (2004) receive/payment of interest in consumption loans is usury⁷⁸. In now a days banking beneloan is less observed. That is, there is no incentive for banks to grant non-interest loans. But beneloan is very important to Sharia and Islamic banking accordingly.

Government as a bailing institution should allocate some resources to consumption loans (without interest). In governmental NUBankCo and also mixed private-governmental NUBankCo the method of transparent accounts settlement is as follows: If the NUBankCo is mixed private and

⁷⁸ See:

حضرت دکتر حاج نورعلی تابنده مجذوبعلیشاه (۱۳۸۰ه.ش.)، مجموعه مقالات فقهی و اجتماعی، انتشارات حقیقت.

governmental, the government share is decreased equal to his beneloan grants for consumption loans. On the other hand, assume:

D_g	Government deposit at NUBankCo
T_g	Duration of government deposit at NUBankCo
q	Nominal value of each share
m	Number of private depositors
D_i	Deposit of i^{th} individual
t_i	Duration of i^{th} individual deposit
$n_i = \frac{D_i t_i}{q}$	Number of shares of the i^{th} individual
$n_g = \frac{D_g t_g}{q}$	Number of shares of government
$n = n_i + n_g = \frac{1}{q}(D_i t_i + D_g t_g)$	Total number of shares
$\pi = R - C$	NUBankCo profit: revenue (R) minus cost (C)
$r = \frac{\pi}{n} = \frac{q \pi}{D_i t_i + D_g t_g}$	Profit of each share
L	Amount of beneloan, granted by government
t	Number of months of beneloan repayment

Now if we have:

$$L \times t = D_g \times t_g \quad (26)$$

That is government allocates all her deposits to beneloan thus, in profit distribution after settlement will gain nothing. The profit of each share will be:

$$r = \frac{q\pi}{D_i t_i + D_g t_g - Lt} = \frac{q\pi}{D_i t_i} \quad (27)$$

If $L \times t < D_g \times t_g$ that is, beneloan payment of government is less than value of government deposits, profit of each share will be equal to:

$$r = \frac{q\pi}{D_i t_i + D_g t_g - Lt} \quad (28)$$

and the payment to government for her share will be equal to

$$r \times (D_g t_g - Lt) \quad (29)$$

In the case of $L \times t > D_g \times t_g$, government debt will be equal to the above amount.

NUBankCo Advantages

1. The better features of good corporate governance can be found in NUBankCo.
2. NUBankCo interest payment to depositors is not usury. Since it is a kind of corporate distribution of profit/loss and completely is Sharia compliant. This kind of depositing is a kind of Mudarabah between depositors and NUBankCo.
3. In receiving interest from the loans granted to investors, NUBankCo must use only the Islamic contracts (products). In this regard, if the bank allocates his resources to specific branch of investment in special activities as specialized as possible, will be more efficient.
4. By eliminating usury and creating direct link between loans demand and deposits supply, banking operation will be more stable with less risk and therefore more secure. On the other hand, it has a built-in securitization process.

5. According to definition of share in NUBankCo, it will be very simple to eliminate different interest rates. NUBankCo can work with one and with different interest rates regarding its articles of associations. Though the unique interest rate for deposits adds more transparency. In this case the profit distribution will be more righteously. By this simplification demand and time and saving deposits can be treated the same (and may also be treated different in lots of shapes as company's articles of association force).
6. Private/government foreign/domestic legal/real entities and any mix of them are free to deposit at NUBankCo and participate in profit/loss sharing. NUBankCo may also invest his deposits in other NUBankCo, simpler than other participations.
7. Because of increasing financial security, mobilization of resources and productivity of NUBankCo will be more than conventional banks, thus NUBankCo will be more efficient.
8. NUBankCo will establish sound stable financial sector and consequently stable real sector.
9. NUBankCo will increase society welfare through efficient allocation of resources.

Summary

In this chapter we were going to introduce a new Islamic financial institution with elaborated economic and financial characteristics. «Non-Usury Bank Corporation» (NUBankCo) is defined in a way that depositors are the shareholders of the Bank. This corporation is a new kind of shared ownership corporation which its shareholders are deposit holders and their deposits work as corporation's equities. The defined bank can perform non-usury operations and by designing a behavioral model, it is shown that NUBankCo can draw an environment that the welfare of society is to be

maximized.

Mobility of deposit resources in NUBankCo is less than conventional banks and there is less conflicts between large and small shareholders / depositors and limits the emergence of shareholders' cartels and thus huge sudden outflow of funds which creates bankruptcy crises.

OECD's corporate governance criteria are completely adaptable to this bank. Other pronouncements like Basel, AAOFI, IFSB, and FSF can be applied to this bank. NUBankCo can be established in different countries and can be adapted to different monetary, banking, foreign exchange and commercial laws and regulations and can coexist in competition with conventional banks.

NUBankCo will be Islamic in deposit mobilization side and will be Islamic in the loan/credit side for certain Islamic contracts and banking operations. Foreign currency exchange operations, bonds, commercial papers and precious metals transactions, cash and draft operations, and credit and beneloan (non-interest loan) operations are characterized for NUBankCo to be fully Islamic.

Resources

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Chapter Three

Joint Stock Company with Variable Capital (JSCVC)

Introduction

Change of assets of a company is a nature of financial institutes. Change of capital and the number of shareholders of conventional Joint Stock Companies are due to specific formalities established by Commerce Law and are not so easy to be done repeatedly in small periods of time. For having quick varying capital capability, new legal institution should be defined. To cover this shortage, we define Joint Stock Company with Variable Capital (JSCVC) which can prepare the necessary background for financial Profit and Loss Sharing (PLS) and other financial sharing (*Musharakah*) activities.

Generally, similar type of companies has legal founding in laws in some countries. For example, AGmvK⁷⁹ in Germany, SICAV⁸⁰ in France⁸¹, Spain⁸², Italy⁸³ and Malta⁸⁴, ICVC⁸⁵ in U.K. and OEIC⁸⁶ in United States are more or less of this type. The latter is a kind of investment fund operates according to the Investment Company Act⁸⁷ approved in 1940.

Laws of each country have special fineness for companies with variable capital according to particular conditions. Elimination of interest

⁷⁹ Aktiengesellschaft mit Veränderlichem Kapital

⁸⁰ Société d'Investissement à Capital Variable. SICAV is an acronym for, French or Italian which can be translated as "Investment Company with Variable Capital".

⁸¹ Société d'Investissement à Capital Variable

⁸² Sociedad de Inversión de Capital Variable

⁸³ Società d'Investimento a Capitale Variabile

⁸⁴ Companies Act (Investment Companies with Variable Share Capital) Regulations. Subsidiary Legislation 386.02

<http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10491>

⁸⁵ Investment Company with Variable Capital (ICVC)

⁸⁶ OEIC (Open-Ended Investment Company) and Open-Ended Mutual Fund.

⁸⁷ U.S. Securities and Exchange Commission (SEC). U.S. Securities and Exchange Commission Information on Mutual Funds. Retrieved 2011-04-06.

Pozen, Robert; Hamacher, Theresa (2011). *The Fund Industry: How your money is managed*. John Wiley & Sons.

rate and Rastin Accounting System are considered in defining JSCVC to fulfill the operations of financial sharing.⁸⁸ Islamic banks also require sharing arrangement to fulfill non-usury financial operations and in this regard needs to be defined as variable capital corporations; because the deposits of banks are instantaneously changing and if the deposit of bank be treated as share, we need variable capital company arrangements and regulations.

Shareholders of JSCVC share the financial results of the company proportional to their capital and duration of their participation. This is different to conventional companies that shareholders are just are shared in the financial results of the company proportional to the amount of their nominal values of their shares. In comparison to other companies, these companies have similar functions such as issuing share, dividing profit, electing and assigning managers, holding assemblies, preparing financial reports and etc. According to the article of association, variable capital companies should also operate under the supervision of board of managers and according to the approval of their general assemblies and votes of shareholders; and should also be under specific legal authority supervision.

JSCVC can be formed by government, private sector or mixed shares of government entities and private persons. Based on the article of association, ordinary and distinguished shares for public or founders can be defined respectively -though not recommended.

Definition of share, share document and its kinds, compulsory items of share document, share transaction and etc., are precisely defined in Commerce Laws of all countries. Therefore, in order to prevent spoiling of the rights of shareholders, the procedure of issuing shares for variable

⁸⁸ Bidabad, Bijan et. al. (2012), Draft of Executive Regulations for Rastin Banking, Bank Melli Iran. <http://www.bidabad.ir/doc/rastin-banking-regulation.pdf>

capital company from legal point of view should be precisely defined in compliance with domestic law of any country.

Change (increase/decrease) of capital of conventional companies as defined by laws is not almost compatible with variable capital companies in different countries at all and needs new legislation, though many financial institutions around the world and under different legislations use some types of variable capital operations in the framework of other companies rules and regulations and in different legislation systems. The outstanding feature of JSCVC refers to the participation procedures and accounting clearing of shares in such a way that the amount and duration of participation become the base for accounts clearing and settlement arrangements.

Joint Stock Company with Variable Capital (JSCVC)

Joint Stock Company with Variable Capital (JSCVC) is a joint stock company in which the capital and shares vary by new entrance or withdrawals of stockholders or by lapse of time through changing sharing proportions because of changes in shares' durations. Amount of nominal capital of the company at any point of time is calculated by summing up the nominal values of the shares of shareholders at that time, but company's yields is distributed by time-duration weighted of the shares. The time points and periods for clearing accounts are predetermined according to the article of association of the company. Time points or financial periods can be orderly cyclic/periodical, or disordered but predetermined.

Whenever a shareholder requests for withdrawal of his share/deposit, his share of the company's yield is calculated and paid. Thus, the share of each shareholder of the yield of the company is calculated according to the

ratio of the days the shareholder has kept his capital in the company multiplied by the nominal value of the shareholder's capital, divided by sum of the similar multiplications for all shareholders. Each shareholder shares the profit/loss of the company proportional to his capital and the days he has been participating in the company. This method of sharing is defined according to the *Rastin Musharakah* (Sharing) Accounting principles of Rastin Profit and Loss Sharing (PLS). In this regard, it enjoys from a fair distribution of benefits. Justification of the activities of this kind of companies is similar to investment companies/funds and banks which operate on the basis of mutual sharing.

In contrast to legal formalities for changing the capital and number of shareholders in conventional companies, JSCVC has different formalities and each shareholder can request to withdraw from the company and put an end to his participation in the company at any time and in this regard, the capital of these companies is variable at any point of time.

JSCVC can be established as public or private entities with public and private, domestic and international shares. These companies can be with limited or unlimited legal responsibilities. To overcome the conflicts of regulations of different countries, JSCVC functions under the regulations of the country where has been registered.

Account Clearing Arrangements

Calling the nominal value of each share: q and the number of shareholders: m and the nominal value of the capital of the i^{th} person: D_i and the duration of the participation of i^{th} person: t_i , the number of shares of each shareholder and total number of shares of all shareholders of JSCVC can be calculated as follows:

Nominal value of the company capital (K) is equal to the sum of nominal capitals of all shareholders:

$$K = \sum_{i=1}^m D_i \quad (1)$$

The ratio of share of the i^{th} shareholder of the company's yield (k_i) is equal to the ratio of the days participating in the company multiplied to nominal value of his share divided by sum of similar multiplications for all shareholders:

$$k_i = \frac{D_i t_i}{\sum_{i=1}^m D_i t_i} \quad (2)$$

The "sharing value" of the shares of the i^{th} shareholder (S_i) is equal to:

$$S_i = k_i \times K \quad (3)$$

Number of the shares of the i^{th} shareholder is calculated as:

$$N_i = \frac{S_i}{q} \quad (4)$$

Total number of shares of company (N) is:

$$N = \sum_{i=1}^m N_i \quad (5)$$

The profit (or loss) of company at the end of corresponding period (π) is distributed per share (r):

$$r = \pi/N \quad (6)$$

The profit (or loss) of the i^{th} shareholder (π_i) will be equal to:

$$\pi_i = k_i \times \pi = r \times N_i = \pi \times N_i/N \quad (7)$$

if not received by the shareholder, will be added to the nominal value of his share at the beginning of the next financial period.

Application in Financial Institutions

Joint Stock Company with Variable Capital (JSCVC) can prepare sound background for many financial sharing activities. JSCVC can be used by majority of investment funds, credit unions, saving and loan

associations, pension funds, thrift saving plans as well as Islamic banks and banking and nonbanking financial sharing activities. Concluding from JSCVC definition, deposits at bank will have the same properties as shares in Joint Stock Company with Variable Capital. The latter justification can change the bank's legal and operational performances to a faired financial discipline and market clearance and moreover tightly links money market to capital market which can dissolve both markets inherent volatilities and fluctuations.⁸⁹ Some applications of JSCVC are as follows:

Application in Investment Funds and Mutual Funds

Joint Stock Company with Variable Capital (JSCVC) can be used for investment funds and mutual funds⁹⁰ as well. Investment funds are funds with professional management which accumulate the capitals of members and use them to transact shares and other valuable papers and securities.⁹¹ Special characteristic of these funds is continuous variation of their capital. By using JSCVC, pre organization and pillars of the fund as: Investment advisor, Distributor, Trustee institute, Transfer agent, Management Company or Administrator, Supervising Authority will remain unchanged. Usually, supervision of mutual funds is carried out through law and

⁸⁹ See:

- Bidabad, Bijan, (2010), Stabilizing Business Cycles by PLS Banking and Ethic Economics. <http://www.bidabad.ir/doc/pls-business-cycles-en.pdf>
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⁹⁰ Mutual funds are mostly utilized in USA. Mutual funds with variable capital (open-end funds), mutual funds with fixed capital (closed-end funds), hedge funds, unit investment trusts, exchange-traded funds (ETF) are included among these funds.

⁹¹ Investment Company Institute, The Structure and Regulation of Mutnal Funds, <http://ww.ici.org/pdf/chap4.pdf>

regulation enactment to observe the rights of shareholders and improvement of market performance. This task often is carried out by capital market authorities in various countries.

Application in Credit Unions

Credit unions can properly be Joint Stock Company with Variable Capital (JSCVC). Credit union is formed as a financing company by ownership and financing of its members and freely operates for saving and extending loan and other financial services provision to members and is managed by members. Usually, credit unions are established as nonprofit organizations⁹². Family, local or guilds credit unions are similar cases in many countries.

Application in Interest-Free and Rastin PLS Banking

Operational characteristic of Joint Stock Company with Variable Capital (JSCVC) is fully compatible with definition of Non-Usury Bank Corporation (NUBankCo) and also from financial operations view with the concepts of the third product of Rastin Profit and Loss Sharing (PLS) banking⁹³.

Non-Usury Bank Corporation can be private, public or mixed. For the former personality, payment of good loan (Interest-free loan) has to have

⁹² National Federation of Community Development Credit Unions, What is a CDCU? Cdcu.coop. Retrieved 2011-10-09.

Ian MacPherson. Hands around the Globe: A History of the International Credit Union Movement and the Role and Development of the World Council of Credit Unions, Inc. Horsdal & Schubart Publishers Ltd, 1999.

Fountain, Wendell. The Credit Union World. AuthorHouse, Bloomington, Indiana, 2007.

⁹³ Bidabad, Bijan; Mahmoud Allahyarifard (2009). The Executive Mechanism of Profit and Loss Sharing (PLS) Banking.

<http://www.bidabad.ir/doc/PLS-banking-Executive-Mechanism.pdf>

<http://www.bidabad.ir/doc/pls-en.pptx>

its own justification. For the two latter personalities, since loans should not involve interest, procedure of extending loan would be different. In governmental Non-Usury Bank Corporation extending good loans is simply done by covering people requests for consumption-interest-free loans. If Non-Usury Bank Corporation is mixed -that is government and private sector share together- government should decrease her profit share in proportion to the amount of good loan she has extended to people. In other words, if the government's capital in the company is D_g and duration of her share/deposit is t_g and as before, the nominal value of each share is q and the number of private depositors is m and the deposit (capital) of the i^{th} depositor is D_i with participation duration of t_i , the nominal value of capital of the company will be equal to:

$$K = \sum_{i=1}^m D_i + D_g \quad (8)$$

The capital ratio of government K_g to total capital of the company is equal to the ratio of the days government has kept her capital in the company multiplied by the nominal value of her capital divided by the sum of the same products for all depositors (shareholders):

$$k_g = \frac{D_g t_g}{\sum_{i=1}^m D_i t_i + D_g t_g} \quad (9)$$

The "sharing value" of the share of government (S_g) is:

$$S_g = k_g \times K \quad (10)$$

Number of government shares (N_g) will be:

$$N_g = \frac{S_g}{q} \quad (11)$$

Total number of shares of the company will be equal to the sum of the numbers of government's and people's shares:

$$N = \sum_{i=1}^m N_i + N_g \quad (12)$$

By considering π as the company profit (or loss) in corresponding financial period, the profit of each share (r) will be calculated by (6). The profit share of the i^{th} shareholder (π_i) is derived from (7) and government profit share will be:

$$\pi_g = k_g \times \pi = r \times N_g = \pi \times N_g/N \quad (13)$$

Now suppose that government wants to extend the amount of L as good loan from her share in NUBankCo for t days. If we have:

$$L \times t = D_g \times t_g \quad (14)$$

that is, government wants to allocate her total deposits to good loan and receive no profit at settlement day. Then the profit of each share will be:

$$\tilde{r} = \frac{\pi}{N} = \frac{q\pi}{\sum_{i=1}^m D_i t_i + D_g t_g - L.t} = \frac{q\pi}{\sum_{i=1}^m D_i t_i} \quad (15)$$

Relation (15) is similar to the case that the government has not ever deposited in the company at all -which is logically correct. If the value of good loan extended by government is less than government's deposit in such a way that:

$$L \times t < D_g \times t_g \quad (16)$$

then, the value of each share will be:

$$\hat{r} = \frac{\pi}{N} = \frac{q\pi}{\sum_{i=1}^m D_i t_i + D_g t_g - L.t} \quad (17)$$

and the payable profit to government will be:

$$\hat{r} \times (D_g t_g - L.t) \quad (18)$$

If $L \times t > D_g \times t_g$ then the government will be in debt to the company equal to the amount of (18).

Application in Saving and Loan Association (S&L)

Joint Stock Company with Variable Capital (JSCVC) has also application in Saving and Loan Associations (S&L). These associations are commonly used in USA under the name of Mutual Saving Banks. In other countries, like U.K. calls for Trustee Saving Banks⁹⁴. Members of these associations have voting right and can interfere the association's management and policies as same as a credit unions.⁹⁵

For example, suppose that a depositor deposits \$A in his account at saving and loan association for a duration of t (which is less than defined company's financial period) before settlement time. In other words, financial year/period has not finished yet. The depositor decides to obtain \$B credit from the association for s periods in addition to his own deposit. If we have:

$$A \times t = B \times s \quad (19)$$

Then the S&L association should pay no profit to depositor. But if we have the following relationship:

$$A \times t > B \times s \quad (20)$$

Then S&L association should pay the following profit to depositor

⁹⁴ Slaughter, Joanna, (1996), Guide to Investment Trusts and Unit Trusts, London, Pitman Publishing.

⁹⁵ Mishler, Lon; Cole, Robert E. (1995). Consumer and Business Credit Management. Homewood, Ill: Irwin.

Norman Strunk, Fred Case (1988). Where Deregulation Went Wrong: a look at the causes behind savings and loan failures in the 1980s. Chicago: United States League of Savings Institutions.

according to deposit return rate of r:

$$(A \times t - B \times s) \times r \quad (21)$$

If the following inequation is satisfied:

$$A \times t < B \times s \quad (22)$$

then the S&L association should receive the following amount from depositor:

$$(B \times s - A \times t) \times r \quad (23)$$

Calculations in this case are similar to that of (8) to (18) with the difference that the gth person is a shareholder/depositor instead of government.

Application in Pension Funds

Pension funds including retirement pension funds and security funds (both private and governmental) and Thrift Saving Plans (TSP)⁹⁶ can properly be formed as a Joint Stock Company with Variable Capital (JSCVC). Furthermore all sub-funds⁹⁷ of thrift plans can enjoy JSCVC personality.

In this connection in Rastin Personal Security (RPS)⁹⁸ subsystem of Rastin PLS banking, bank operates as an intermediary by receiving commission as agent of depositor, and in addition to providing capital management services for depositor/insured, provides necessary background

⁹⁶ TSP, (2011), Summary of the Thrift Savings Plan, February, <http://www.tsp.gov>

⁹⁷ The sub-funds of Thrift Saving Program (TSP) in USA are: Government Securities Investment Fund, Fixed Income Index Investment Fund, Common Stock Index Investment Fund, Small Capitalization Stock Index Fund, International Stock Index Investment and also all Money Market Funds.

⁹⁸ Bidabad, Bijan, Rastin Personal Security (RPS), 2012. <http://www.bidabad.ir/doc/rps-paper-en.pdf>

for sharing depositor/insured's fund into investment plans of entrepreneurs on obligation of pension funds. In this way, depositor/insured will invest his deposit/insurance premium in Rastin PLS banking activities through pension funds as intermediary and instead, fund will be obliged to payback the deposits/premiums and the profits to the depositor/insured in lump sum or as retirement pension periodical payments at maturity. The trustee unit of bank will supervise Rastin Personal Security (RPS) operations on behalf of the bank for better fulfilment of the job and the supervisory authority supervises the pension fund's activities. Rastin Personal Security (RPS) is carried out in Rastin PLS banking infrastructure by issuing Social, Personal and Pension Security Certificates as new financial instruments to fully implement social security system.

Application in Provident Funds

Provident fund is a kind of retirement pension fund which puts the received insurance premiums of Defined Contribution (DC) insurance plans into different investments and pays pension payments to the members in lump sum. Some of these funds allow their members to receive part of their money at retirement time and receive the rest as pension benefit in sequential periods⁹⁹. Nature of these funds is also in compliance with Joint Stock Company with Variable Capital (JSCVC).

Summary

Financial sharing funds and banks necessitate that their capital and number of shareholders be instantaneously variable. Legal personality and accounts clearing of this type of corporations are to be different from

⁹⁹ Azlan Zainol (2006), Management and Performance Challenges in the Investment of Social Security Funds: The Malaysian Employees Provident Fund Experience, ISSA Regional Conference for Asia and the Pacific.

conventional companies. This is why Joint Stock Company with Variable Capital (JSCVC) was proposed.

JSCVC is a corporation in which capital and shares of shareholders vary by new entrance or withdrawal of shareholders at any point of time. Interest rate based calculations was removed and Rastin Sharing Accounting was applied for JSCVCs. Shareholders of JSCVC share the company's nominal capital proportional to nominal values of their shares. Financial outcome of JSCVC is proportional to values of shares weighted by shares duration of participation. To prevent spoiling of shareholders' rights, legal procedure of issuing shares for JSCVC should be defined in compliance with domestic commerce laws in any country. JSCVC can be used by majority of investment funds, credit unions, saving and loan associations, pension and provident funds, thrift saving plans as well as Islamic banks and financial sharing activities. In JSCVC, deposit at bank is treated as share of company (bank). JSCVC has fair profit distribution and accounts clearing arrangements. Different variable capital companies have been defined in many countries' laws, but essential modifications are presented in JSCVC definition to regulate financial sharing arrangements and bank's performances.

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Chapter Four

Banking and Business Cycles

Introduction

Many countries have experienced business cycles in the economy with a sinusoidal trend. These fluctuations also spread in other countries due to international transactions of goods and flows of capital. As a result, the price signals of commodities and various capital yields create the global flow and the movement of business cycles. Various business cycles happen weekly, monthly or seasonal, which were caused by inventory fluctuations and last less than half a decade. These cycles are called “Kitchin”¹⁰⁰ cycles. It is not our significant point of discussion here. We focus here on fluctuations in economic or business cycles, which take place in a decade and turn the economy from prosperity to recession and crisis, and usually it takes another decade to recover the economy. The large cycles, which were caused by structural changes, are known as “Kuznets” cycles¹⁰¹. The longer fluctuations caused by science and technological developments that take about half a century to complete, are called “Kondratieff” cycles¹⁰². Sometimes, the overlapping of these cycles with usual business cycles creates large global crises such as the crises of 1929 and 2008.

Behaviorally, this instability is due to man’s nature to spend exuberantly. The prosperous ones spend extravagantly but the limited available sources do not let him to continue. Therefore, it has to stop during the economic prosperity. That is because resources do not increase proportional to people’s economic activities. The scarcities of resources

¹⁰⁰ Kitchin, Joseph (1923). Cycles and Trends in Economic Factors. *Review of Economics and Statistics* 5 (1). 10–16. <http://www.jstor.org/stable/1927031>

¹⁰¹ - Simon Kuznets, *Secular Movements in Production and Prices. Their Nature and their Bearing upon Cyclical Fluctuations*. Boston: Houghton Mifflin, 1930.

¹⁰² Kondratieff, N. D.; Stolper, W. F. (1935). The Long Waves in Economic Life. *Review of Economics and Statistics* 17 (6):105–115. <http://www.jstor.org/stable/1928486>

cause price increase and decrease of profit margin, which is the beginning of recession and the turning point of business cycle. This reasoning is actually emanates from human being nature; but technically speaking, the inconsistent timed-structure of loans and deposits forces banks (as intermediary between monetary resources and real sector activities) to experience different losses and profits at different times. We are going to show that the time structure of loan and deposit burden financial loads to banks and form monetary oscillation. At the next stage, monetary oscillation affects real economy. Our methodology here is to dichotomize banking activities into two markets of 1: saving supply and bank's deposit demand market and 2: investment demand and bank's credit supply. First market forms deposit interest rate and second market forms credit interest rate. In analysis of these two rates, we will show that if these two types of interest rates were time- inconsistent, then monetary fluctuation starts. As a result, the fluctuation is transmitted to real sector through saving and investment functions. Empirically we will test our hypothesis through estimating the characteristic roots of difference equations we derived from our theoretical analysis using USA 10 different interest rates.

Business Cycle Theories

This phenomenon was realized for the first time by Juglar¹⁰³ for spans of 8-11 years. Later, several theories were introduced about business cycles, which studied business cycle from different points of view. Schumpeter¹⁰⁴ described the four stages of business cycle. The first stage of prosperity wherein there is an increase in production and prices and

¹⁰³ Clement Juglar, *Des Crises commerciales et leur retour periodique en France, en Angleterre, et aux Etats-Unis*. Paris: Guillaumin, 1862.

<http://gallica.bnf.fr/ark:/12148/bpt6k1060720>

¹⁰⁴ Schumpeter, J. A. (1954). *History of Economic Analysis*. London: George Allen & Unwin.

decrease of interest rate. During the second stage of recession wherein the production and prices decrease but interest rate increases until the third stage is reached of crisis due to collapse in stock market and bankruptcy. The recovery begins during the fourth stage, which is accompanied by stock exchange prosperity and the increase of output, demand and prices.

Goodwin¹⁰⁵ believes that the reason for business cycles is the gap between income distribution between the profit of investors of economic firms and the earnings of labor force. When the economy has a high employment rate, the labor demand increases but the workers cannot ask for higher wages as the labor contracts are annual or have fixed periods and wages can only be changed after the end of the contract period. The reverse happens during recession. Therefore, the income of the labor force is adjusted with the income of capital factor after a time lag, which creates a cyclical behavior for matching production with consumption and ultimately shapes the cycle. Although Goodwin's theory has time dynamism, but mathematically its simple form gives a first order difference equations. Although these equations have time ascending or descending trend, and are converging or diverging trends, but cannot obtain time oscillatory trends. The difference equation should be at least of second order to create sinusoid trends. Some economists believe that the reason for business cycles is technological shocks (Real Business Cycle Theory). Kydland and Prescott¹⁰⁶ and the others believe that they are created by political parties and political decision cycles, (Political Business Cycle)¹⁰⁷. Marxists believe it as the essence of capitalism, and neoclassic economists believe that the

¹⁰⁵ Richard Goodwin, "The Business Cycle as a Self-Sustaining Oscillation", 1949, *Econometrica*.

Richard Goodwin, *Nonlinear Dynamics and Economic Evolution*, 1991, in Niels Thygesen et al., editors, *Business Cycles*.

¹⁰⁶ Real business cycle theory. Kydland, Finn E.; Prescott, Edward C. (1982). "Time to Build and Aggregate Fluctuations". *Econometrica* 50 (6): 1345–1370.

<http://www.jstor.org/stable/1913386>

¹⁰⁷ Political business cycle. Partisan business cycle. Michal Kalecki.

decrease of labor purchasing power is the reason for capitalistic crises.

By scrutinizing the nature of unstable and sinusoid movement of economic activities, we realize that the nature automatically leads to situations in which economy turns from prosperity to recession and crisis and back to prosperity. Some believe the reason behind this sinusoid movement is inventory operation and supply flow. That is, when the economy produces more than consumption, goods are accumulated in the warehouses and the producer has to decrease price to sell the inventory. The decrease in price and the large accumulated inventory loosens production in turn compelling the producer to decrease production and thus decreases the income of factors of production (labor, capital and others). That is to say, income at macro level will decrease the demand for goods and services. The lower demand will decrease price and economic firms will face more recession. This phenomenon goes ahead until recession changes to crisis. During this stage, production continues to decrease, but practically the trend of price decrease continues or stops. Price reaches production cost and therefore, it is not possible for the producer to decrease the price below the production cost leading to cessation of production and many inefficient firms may become bankrupt and total supply in the country will decline. The decrease in supply in turn is followed by increase in price and persuades production, which increases income of factors of production in the next stage and is followed by more price increase. As a result, the economy may move from crisis to prosperity until we reach the beginning of next business cycle. This is followed by recession and the cycle repeats itself.

According to Keynesian Economists such as Samuelson (1939), fluctuation in total demand causes the economy to reach equilibrium in a short period, which is not in equilibrium at full employment. The

motivation to obtain full employment in equilibrium and the inefficient excessive use of resources and factors of production and production capacity will lead to business cycles. Keynesian theories believe that the lack of enough effective demand in the economy is an indigenous cause for crises while Classic and Neoclassic economists believe exogenous factors are the causes of business cycles. They believe supply will create its own demand (Say's Law). According to these two views, interference of government policies will have a positive or a negative effect in avoiding crises resulting in different policy. The former offers financial policy and the latter offers monetary policy. Paul Samuelson's (1939) Oscillator Model describes Keynesian analysis based on multiplier effect (on consumption) and accelerator (in investment) which create cycles through changes of total demand components. The struggle between Keynesian and Classic economists can be introduced in this discussion. Keynes (1936) believed when the economy is in liquidity trap, or there is no coordination between saving and investment, in order to obtain equilibrium in money market, it is necessary to obliterate interest rates. In this situation, it is not possible to use monetary policies to overcome crisis because interest rate is zero. Essentially, the liquidity trap occurs due to the poor relationship between return rate of production in real sector and interest rate. That is to say, the interest rate has decreased to a very low figure, regardless of productivity rate. One of the reasons behind this situation is the increase of investment risk, which decreases the net investment yield. The point is that, if it were possible to make negative interest rate in the economy, which is practically impossible, monetary policy would be capable of overcoming crisis. Therefore, national policies are recommended which are conducted in Group 20 by injecting about US\$5 trillion to overcome the present crisis. This method practically causes the crisis stricken economies to overcome the crisis. In order to achieve this, it is necessary to wait for about half a

decade until economic mechanisms lead the economy to prosperity through natural ways. The overview of economic variables in the last decade shows the same in comparison with 1920 crisis. The severe oil and grains prices increase and successive draughts and unexpected ecological and meteorological events had increasing effects on this crisis. Similar conditions of the present crisis were also seen in the crisis of 1920 decade. Also during that period, interest rate was severely reduced, but the economic conditions were so bad that even the low price of capital could not allocate adequate resources for production. Therefore, to recover the global economy we have to wait like the financial policy, which took about a decade to recover the global economy from crisis.

Role of Banks in Creation of Cycles

The essential solution to overcome the crisis is to reform of monetary and banking structure. Some theories such as Austrian Business Cycle Theory¹⁰⁸ suggest that banking structure is one of the factors to create crisis. In spite of excessive Inventory Theory, the variation of inventory is the effect of cycles, not its cause. Unlike the prevailed belief, the recent recession was not because of the recession in America housing market but rather it was the consequence of this crisis. We hypothesize that crisis is a result of structural behavior in money and banking sector. The theory of credit cycles by Irving Fisher¹⁰⁹ is one of the interesting theories about the cause of business cycles. He believed that credit cycles are the starting reason for economic cycles. Accordingly, the net increase of credits and the debts as a percentage of GDP creates economic prosperity, and vice versa, the decrease of net credit, moves the economy towards recession and crisis.

¹⁰⁸ Block, Walter and William Barnett II (2007) On Laidler Regarding The Austrian Business Cycle Theory. Review of Austrian Economics 20 (1): 43-61.

¹⁰⁹ Fisher, Irving (1933), The Debt-Deflation Theory of Great Depressions, Econometrica, <http://fraser.stlouisfed.org/docs/meltzer/fisdeb33.pdf>

In direction of Fisher theory, Minsky¹¹⁰ puts financial instability hypothesis forward and developed Fisher theory by describing credit bubbles and the burst of these bubbles and their effects on economic cycles. He believes that the reason is the accumulated debts to banks. In this connection the Austrian school of thought¹¹¹ can be put forward which believes that the cause of credit changes is the monetary expansionary policies of central banks. This school refers to the role of interest rate as the price of capital for investment and agrees that in an open economy without central bank, interest rate describes the real time preference of borrowers and lenders. Nevertheless, central bank disturbs this equilibrium between them and inevitably creates fluctuations in the economy. When Fisher put forward this theory, the dynamic mathematical tools such as difference equations had not been invented and used yet. If difference equations which were set forth in 1950s by Baumol and Turvey¹¹² were introduced into economic analysis a few decades earlier, by using this tool, Fisher could conclude the occurrence of crisis, as he explained the richest monetary theory of The Quantitative Theory of Money with the help of Balance Law from physics.

Recent researches such as Beaudry and Guay¹¹³ have also touched some aspects of the relation between interest rate and business cycle; but no one of them looks at the problem as is discussed here. Beaudry, and Guay document the extent to which the predictions of standard Real

¹¹⁰ Hyman Minsky, The Credit Crisis: Denial, delusion and the "defunct" American economist who foresaw the dénouement.

http://www.finfacts.ie/irishfinancenews/article_1014734.shtml

Hyman Minsky, The Financial Instability Hypothesis, Working Paper No 74, May 1992, pp. 6-8. <http://www.levy.org/pubs/wp74.pdf>

¹¹¹ Works of Ludwig von Mises and Friedrich Hayek.

¹¹² William Jack Baumol, Topology of Second Order Linear Difference Equations with Constant Coefficients, 1958, *Econometrica*

William Jack Baumol, *Economic Dynamics*, R. Turvey, 1951.

¹¹³ Beaudry, P., A. Guay (1996) What do interest rates reveal about the functioning of real business cycle models? *Journal of Economic Dynamics and Control*, 20 (1996) 1661-1682. Elsevier.

Business Cycle (Kydland, and Prescott (1982)) models are incompatible with observed movements in real interest rates. That is why this study just tries to show the co-movements between interest rates and output and not the causes. Theoretically, world real interest rate is an important mechanism by which foreign shocks are transmitted to small open economies. Blankenau et al¹¹⁴ express that while the world real interest rate is potentially an important mechanism for transmitting international shocks to small open economies, much of the recent studies show that this mechanism has little effect on output, investment, and net exports. Although their study confirms the effect of interest rate shock on real economy, but looks for transmission channel. Furthermore, Ivanova et al¹¹⁵ (2000) have studied the comparative performance of a number of interest rate spreads as predictors of the German inflation and business cycle in the post-Bretton Woods era.

Generally, contemporary macroeconomics discusses in a single money market, we will further divide it into two separate markets where banks operate as intermediary between them. Dichotomization of bank's activities into two markets of "saving supply versus bank's deposit demand" and "investment demand versus bank's credit supply" is new to literature. The only seen background can be found in Bidabad (2006) as an equations block in macro-econometric model of Iran which used this dichotomization essentially for the first time. In other words, the demand of the bank for deposits is at one side of the bank, which intersects with the supply of deposits and fixes interest rate, which is called deposit interest rate. On the other hand, bank creates another market by supplying funds for credit

¹¹⁴ Blankenau, W., M.A. Kose, K. M. Yi (2001), Can world real interest rates explain business cycles in a small open economy? *Journal of Economic Dynamics & Control*, 25 (2001) 867-889.

¹¹⁵ Ivanova, D., Lahiri, K, Seitz, F. (2000), Interest rate spreads as predictors of German inflation and business cycles. *International Journal of Forecasting* 16 (2000) 39–58. Elsevier.

finance and its intersection with demand for credit and loans creates the interest rate for loans. That is to say, bank stands between two markets of supply and demand of money funds. Now suppose the consumption increases, the deposit supply will fall. This will increase the deposit interest rate. The increase in deposit interest rate cannot instantly increase credit interest rate because credit contracts have been fixed for a period and bank has to wait for the duration of the contract before increasing the rate in new contracts for credit and loan and subsequently, the interest rate for loans will increase in the economy. A bank may face losses during this period and after a time lag will compensate it by the increase of loan interest rate. Although this lag is not quite visible for people, from economic point of view it creates a special dynamic relationship between supply and demand for capital. It can mathematically be shown that because of this lag, the relationship between these two variables is a second order behavioral difference equation. Second order difference equations have a wavy character, which creates cycles. Therefore, practically, the cycles created in the saving and families' consumption will transfer into the investment and production sectors.

In other words, all fluctuations seen in real sector of the economy are induced by fluctuations in the money market. Monetarist theories have been carried out on this subject that if in the economy, fluctuations of the money sector decrease, many fluctuations of the real sector will tend to stabilize. The most important effect of elimination of usury or interest is the direct bridging of the investment sector to saving sector of the economy.¹¹⁶

When banks try to maximize profit through optimizing their behavior, the

¹¹⁶ Bidabad, Bijan, Economic-juristic analysis of usury in consumption and investment loans and contemporary jurisprudence shortages in exploring legislator commandments. Proceeding of the 2nd International Islamic Banking Conference. Monash University of Malaysia. 9-10 September 2004. Reprinted in: National Interest, Journal of the Center for Strategic Research, Vol. 2, No. 1, winter 2006, pp: 72-90. Tehran, Iran. <http://www.bidabad.ir/doc/reba-en.pdf>

intermediate sector (bank) acts as a separate sector of the economy and the differences created by them between interest rates of supply and demand of funds, create fluctuations in financial markets. Since loan contracts have maturity periods, changes in supply (sources) or demand (uses) sides of funds are transferred to the other side. This time lag creates continuous fluctuations in financial markets. This analysis can be seen in the following graph:

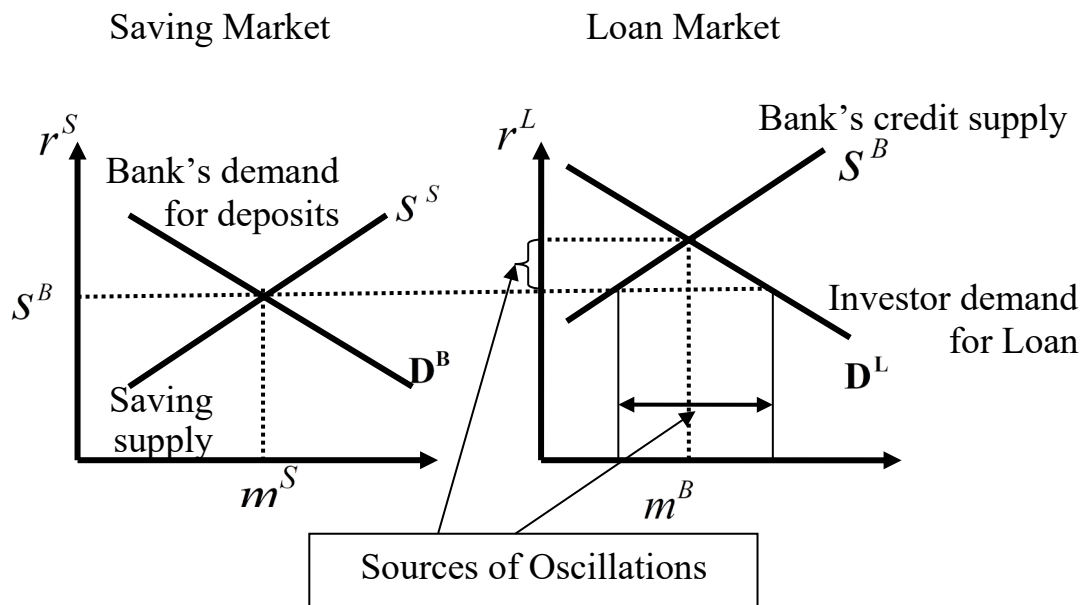


Figure 1

Where:

S^B	Loan supply by banks	r^L	Loan interest rate
S^S	Fund supply by depositors	m^S	Amount of saving
D^L	Loan fund demand	m^B	Amount of loans
D^B	Bank demand for funds	R	Bank's revenue
r^S	Saving interest rate		

Bank's revenue at time t is equal to:

$$R_t = m_t^B r_t^L - m_t^S r_t^S \quad (1)$$

At equilibrium we have:

$$m_t^B = D_t^L = S_t^B \quad (2)$$

$$m_t^S = D_t^B = S_t^S \quad (3)$$

Now suppose a new condition in which demand for D_t^L loans decreases and D_{t+1}^L moves to left side too. In the new equilibrium, if bank's revenue turns negative, we have:

$$r_{t+1}^L < r_t^L$$

(4)

Or:

$$R_{t+1} = m_{t+1}^B r_{t+1}^L - m_t^S r_t^S < 0 \quad (5)$$

Therefore, in respect of time-loan contracts of bank, bank has practically to compensate losses during t+1 period from other sources until the next period when D^B curve moves to the left hand side. That is to say:

$$r_{t+2}^S > r_{t+1}^L \quad (6)$$

$$r_{t+2}^S > r_{t+1}^L$$

$$R_{t+2} = m_{t+1}^B r_{t+1}^L - m_{t+2}^S r_{t+2}^S > 0 \quad (7)$$

By generalizing this hypothesis we clearly see that whenever shocks occur in deposit supply or demand for bank loan, because of time-contracts, these shocks will be transferred to other market in next period and fluctuations transfer from market to market alternatively; and permanently fluctuates other related markets.

By considering the sign of three equations of (1), (5) and (7), we can clearly see that the behavior of variable R is alternative in different time periods. The behavior of the two markets described above can be drowned according to Cob-Web model which creates different fluctuation according to the gradient of different parts of supply and demand curves.

The interest rates in the two markets are as follows:

$$r_t^S = r^S(m_t^S) \quad (8)$$

$$r_t^L = r^L(m_t^B) \quad (9)$$

According to the above assumptions if we adjust the relationship of the two markets with one time-lag, we have:

$$m_{t+1}^S = f(m_t^B) \quad (10)$$

By replacing (8) and (9) in (10), we have:

$$r_t^S = r^S(f(m_{t-1}^B)) = r^S(f(r^{L^{-1}}(r_{t-1}^L))) \quad (11)$$

In other words, the interest rate in the deposit market is a function of interest rate in loan market in the last period. The adjustment takes place when the return movement occurs in the next period which means that the interest rate of loan market is itself a function of interest rate of deposit market in the previous period, or:

$$m_{t+1}^B = g(m_t^S) \quad (12)$$

By replacing (10) in (12), we will have:

$$m_{t+1}^B = g(f(m_{t-1}^B)) \quad (13)$$

This is a second order difference equation which is characterized to fluctuate easily in time. This is also true about interest rates. By replacing

(12) in (10), we have:

$$m_{t+1}^S = f(g(m_{t-1}^S)) \quad (14)$$

This equation similar to equation (13) can be completely oscillatory. By replacing (12) in (9), we will have:

$$r_t^L = r^L(g(m_{t-1}^S)) = r^L(g(r^{S^{-1}}(r_{t-1}^L))) \quad (15)$$

Since equations (15) and (11) are function of m_{t-1}^S and m_{t-1}^B these two variables can completely be oscillatory according to (14) and (13). Therefore, interest rate similar to the amount of deposits (savings) and loans in both loans and deposits markets can fluctuate.

Transfer of fluctuations

Although the transfer of monetary fluctuations to real sector can be clearly seen and understood, but in order to clarify the subject, we consider the equilibrium at macro level and its relation with interest rate fluctuations induced by the banking behavior. According to national accounting relationship we can write:

$$\begin{aligned} \text{gdp} &= \text{con} + \text{inv} + \text{gov} + \text{ex} - \text{im} \\ \text{gde} &= \text{con} + \text{sav} + \text{tax} + \text{tr} \\ \text{gdp} &= \text{gde} \end{aligned} \quad (16)$$

In which:

gdp = gde	Gross domestic product = Gross domestic expenditure
con	Consumption
inv	Investment
gov	Government expenditure
ex	Export

im	Import
sav	Saving
tax	Tax
tr	Transfer payments to outside

By solving equation (16), the equilibrium condition in macro economy will be obtained:

$$(inv-sav) + (gov-tax) + (ex-im-tr) = 0 \quad (17)$$

Foreign exchange markets relate international capital markets to real sector through foreign exchange rates and financial derivatives such as options, futures, forward contracts; and time deposit certificates where these markets also oscillatory affect the real sector through interest rate similarly. However, for simplicity, we do not consider it and according to equations (15) and (11), we will only consider the two variables of investment and saving as functions of interest rates of saving deposits and loans (r^S and r^L). In other words, the equilibrium condition in the economy in time t will be as follows:

$$(inv_t(r_t^L) - sav_t(r_t^S)) + (gov_t - tax_t) + (ex_t - im_t - tr_t) = 0 \quad (18)$$

By replacing r_t^S and r_t^L from equations (15) and (11) in equilibrium condition, we will have:

$$\left(inv_t \left(r^L(g(r^{S^{-1}}(r_{t-1}^L))) \right) - sav_t \left(r^S(f(r^{L^{-1}}(r_{t-1}^L))) \right) \right) + (gov_t - tax_t) + (ex_t - im_t - tr_t) = 0 \quad (19)$$

If government has balanced fiscal policy which means $(gov_t - tax_t) = 0$ and the trade balance is also balanced $(ex_t - im_t - tr_t) = 0$, again the equilibrium (19) is a second order difference equation which can lead the economy into disequilibrium in different times. In other words, the mathematical behavior of equation (19) will be different regarding the

behavioral characteristic of saving and loan contracts and the reaction of depositors and borrowers (investors) to interest rates of deposits and loans which can show any kind of oscillatory behavior. Nevertheless, this behavior cannot be expanding (diverging) or dampening (converging) forever, because disequilibrium tends to zero in long run. Therefore, necessarily even if the equilibrium is a moving equilibrium, it should oscillate around its long run equilibrium and this phenomenon creates economic cycles.

It may be necessary to brief the same by using fiscal policy ($gov_t - tax_t$). According to Keynes theory, we can compensate disequilibrium in equation (18). But by injecting financial resources to economy equal to the amount $(gov_t - tax_t) > 0$, the excess government budget at time t -*Ceteris Paribus*- will be government debt to central bank at time $t+1$ and disrupts budget balance. As a result, the government has to levy more tax to compensate this deficit in the next period which leads to recession and disequilibrium and fluctuation in the next period. The same is true about the last parentheses of equation (19) about trade balance $(ex - im - tr)$. By creating export incentives and import barriers for imports at time t , government increases the trade balance equal to $(ex - im - tr) > 0$, and by increase of exchange rate for the period $t+1$, exchange stability will be disrupted and we will face deficit in foreign trade which will have negative effects on the economy and creates fluctuations.

Oscillation in second order difference equations

In order to clarify the second order difference equations' behavior further, we will brief the time trend dynamism of linear non-homogenous difference equation with fixed coefficients. Consider a linear non-homogeneous second order difference equation with constant L and fixed coefficients of “a” and “b”:

$$y_{t+2} + ay_{t+1} + by_t = L \quad (20)$$

According to the amounts of “a” and “b”, time trend of this equilibrium can be linear or non-linear for each Particular Solution. By foregoing L for the time being, the Complementary Function will be:

$$y_{t+2} + ay_{t+1} + by_t = 0 \quad (21)$$

This difference equation has the following second order Characteristic Equation with roots x' , x'' :

$$x^2 + ax + b = 0 \quad x', x'' = (-a \pm \sqrt{a^2 - 4b})/2 \quad (22)$$

The Final Solution is in the form of the sum of “Particular Solution” ($y_p=M$) (by solving the non-homogeneous equation) and “Complementary Function”:

$$y_t = A(x')^t + B(x'')^t + y_p$$

In case, the equation has two real positive or zero roots, when both of these roots are real and less than one, by increase of t , y_t tends to constant M (figure 2). But if $x'=1$ and $x''<1$, when t increases, y_t tends to $A+M$ (figure 3). If $x''=1$ and $x'<1$, when t increases, y_t will finally tend to $B+M$. If one of the roots is bigger than the other ($x'>1$) and B and A are both positive, by increase of t , y_t will increase (figure 4).

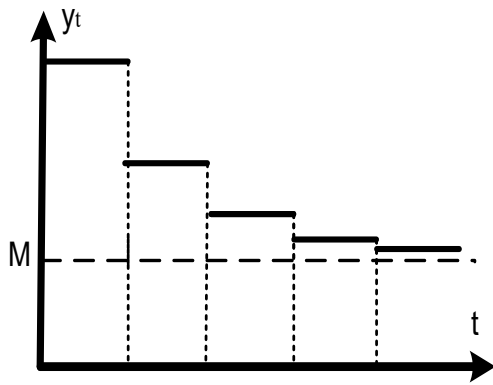


Figure 2

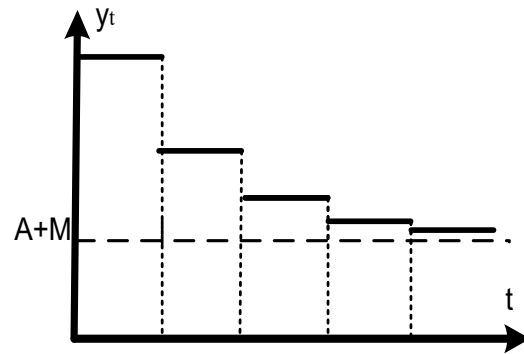


Figure 3

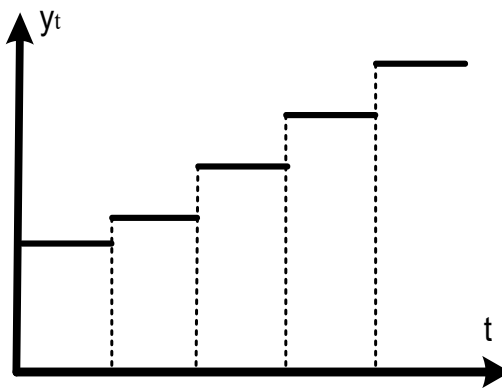
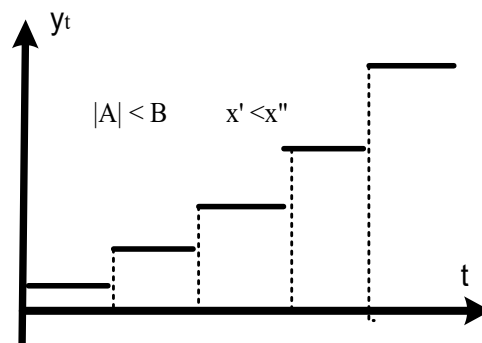
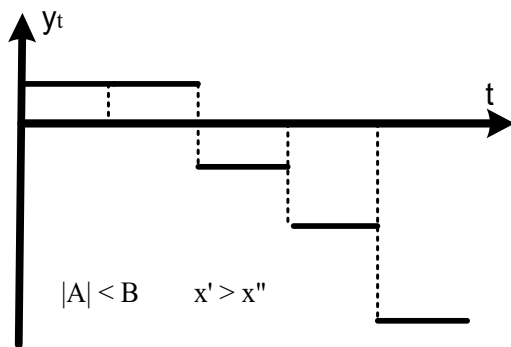


Figure 4

If $A < 0$ and $B > 0$, the result depends on whether x' or x'' is larger. At the preliminary stages, by increase of t , the amount of y_t is more affected by the term whose root is larger (figure 5).



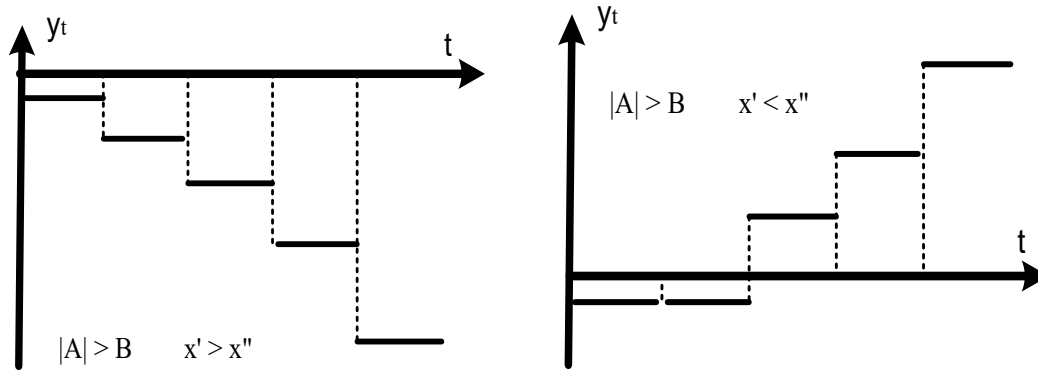


Figure 5

In case the two roots are real and negative (or zero), when x'' , $x' < 0$, when t is even, $(x'')^t$ and $(x')^t$ will be positive, and when t is odd, these items will be negative. This causes y_t to oscillate in successive periods. If the absolute value of both roots are less than one, $0 < |x'|$, $|x''| < 1$; which means: $-1 < x'$, $x'' < 0$, by increase of t , $|A(x')^t|$, $|B(x'')^t|$ will reduce and the amount of y_t tends towards M and finally will fit on line $y_p = M$ (figure 6). If $x' = -1$ and $-1 < x'' < 0$, $A(x')^t$ does not depend on the amount of t , but only on its being odd or even. When t is even, the last expression is equal to A and when it is odd, it will be equal to $-A$. Also by increase of t , the amount of $B(x'')^t$ will decrease and y_t oscillatory tends to $A(x')^t + M$ and $A(-1)^t + M$ (figure 7). When $x', x'' < -1$, y_t fluctuation will increase by the increase of t and the root with higher absolute value, will have a more effective role in fluctuations of y_t (figure 8).

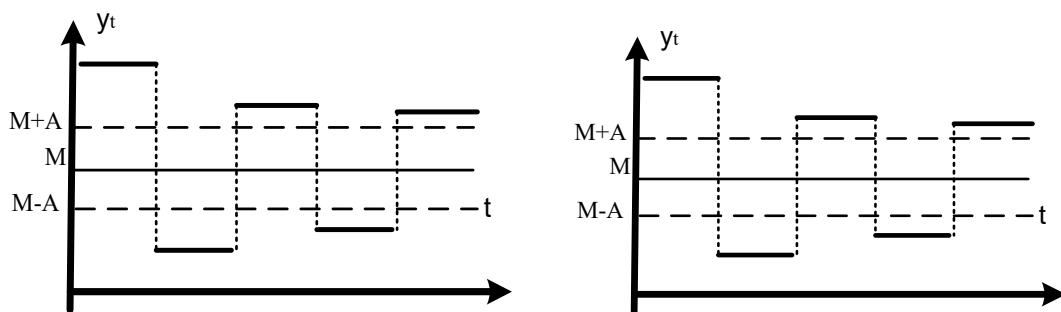


Figure 6

Figure 7

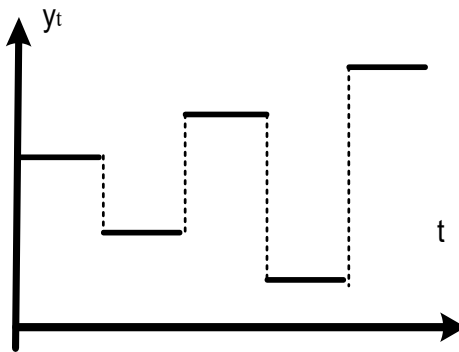


Figure 8

In case, one root is positive and the other is negative, the absolute value of the larger root will have more effects on y_t . The following cases may occur:

If $1 > x' > 0$ and $|x'| > |x''|$, y_t will finally tend to M (figure 2).

If $x' = 1$ and $|x'| > |x''|$, y_t tends to $A + M$ (figure 3).

If $x' > 1$ and $|x'| > |x''|$, the increase of t will increase y_t (figure 4).

If $-1 < x' < 0$ and $|x'| > |x''|$, by increase of t , the amount of y_t will fluctuate and finally tend to M (figure 6).

If $x' = -1$ and $|x'| > |x''|$, by the increase of t , y_t will oscillate around $A + M$ and $-A + M$ (figure 9).

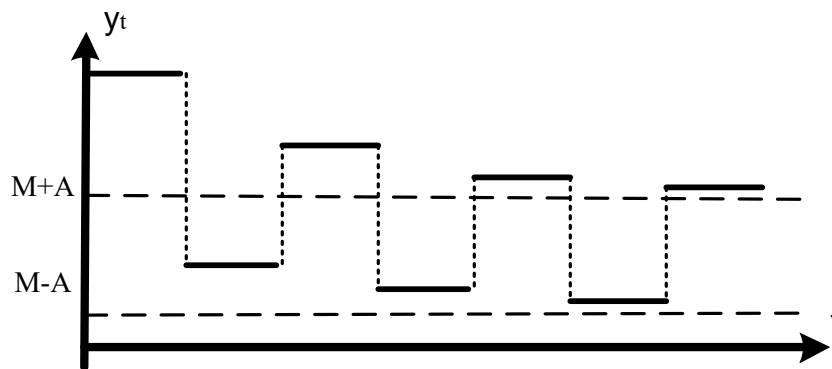


Figure 9

If $x' < -1$ and $|x'| > |x''$, y_t will have expanding fluctuations in relation with M when t increases (figure 8).

If $x' = -x''$, changes in y_t depends on the sign of A , B and larger absolute value of A in relation with B and vice versa.

In case, the roots are double and real, the solution of the difference equation will be as follows:

$$y_t = Ax^t + Btx^t + M \quad (23)$$

If $x > 1$, Btx^t will increase by the increase of t and will have an expanding time trend.

If $x = 1$, and $Btx^t = Bt$, we will have a similar case to previous one.

If $0 < x < 1$, Btx^t tends to zero when t increases. This trend is not compensated by the expanding trend of t and when t increases, x^t will be more than t and therefore, the term Btx^t will tend to zero.

If $-1 < x < 0$, we have a trend similar with the case $0 < x < 1$, except that the term Btx^t has a fluctuation trend which tends to zero.

If $x = -1$, the trend of Btx^t is similar with $x = 1$, but with fluctuations.

If $x < -1$, the result is similar with $x > 1$, but with fluctuations.

In case, the roots are imaginary or complex, the solution of the difference equation will be:

$$y_t = D^t [E \cos (tR) + F \sin (tR)] + M \quad (24)$$

where the roots of the complex characteristic equation will be $c \pm di$ and its

module will be $D = \sqrt{c^2 + d^2}$. The term in the bracket has an iterated fluctuation in each 360° . In other words, y_t has a cycle equal to $t = 360^\circ/R$. Since $\sin R = d/D$, if for example $R = 60^\circ$, the range of the cyclical movement will be $t = 360^\circ/60^\circ$.

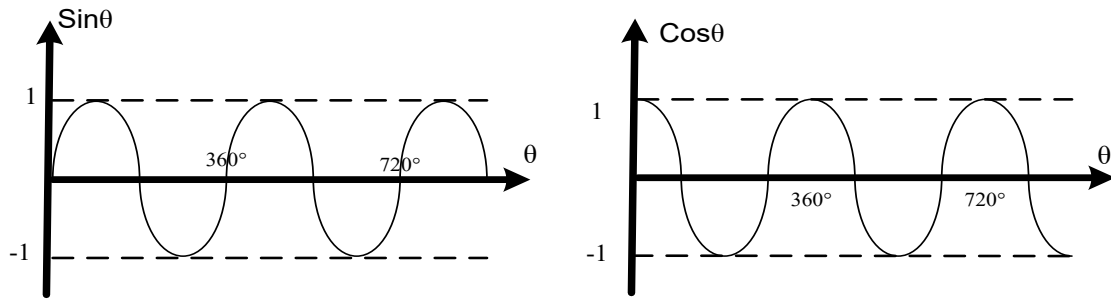


Figure 10

For, $\theta = tR$ the curves $\sin \theta$ and $\cos \theta$ in figure 10 have symmetrical cycles. Since amount of t is discrete, t may not be located at the beginning or middle of those cycles; therefore, figures 11, 12 and 13 look unbalanced. The term in the brackets of equation (24) has smooth fluctuations, but when reaches to power t , if $D > 1$, by increase of t , D^t will increase and multiplied by the amount of the brackets in equation (24) will increase the fluctuations (figure 11). If $D = 1$, D^t will also be equal to 1 and will have no effects on the amount of the bracket and y_t will have a monotonous (smooth) fluctuations (figure 12).

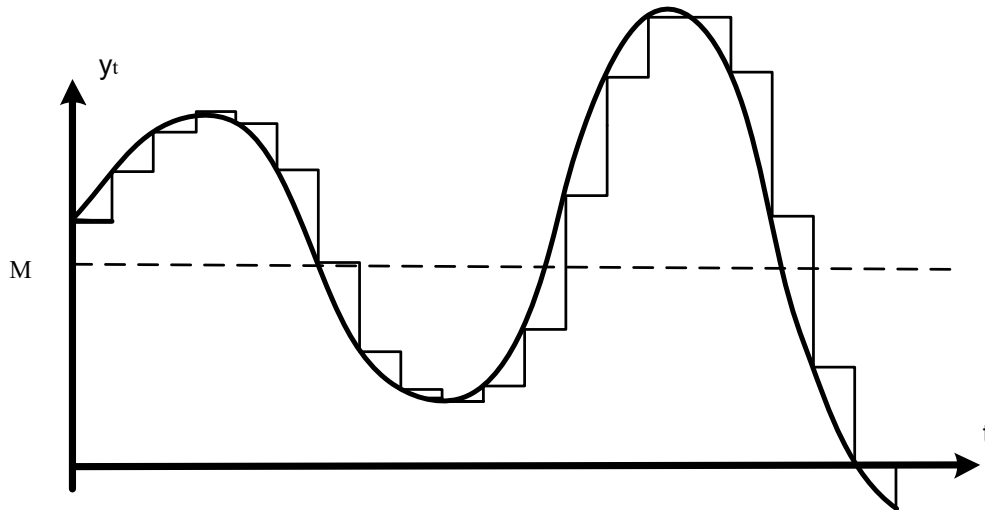


Figure 11

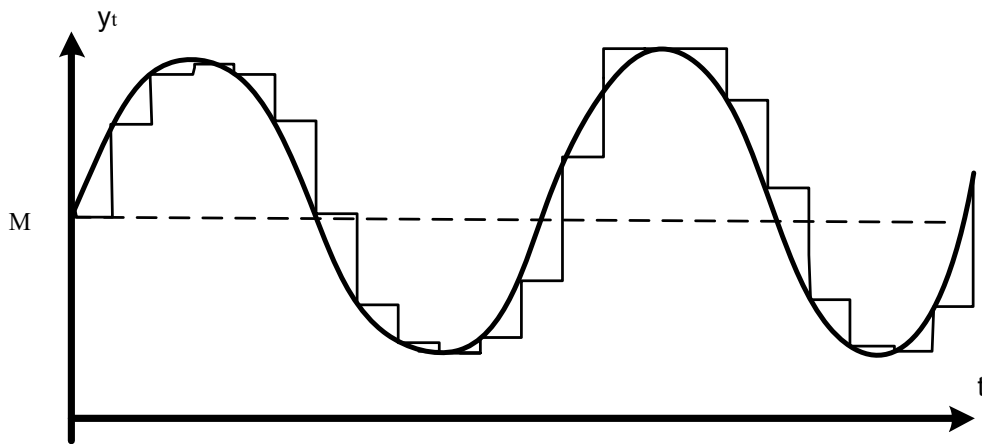


Figure 12

If $D < 1$, when t increases, D^t decreases and fluctuations of y_t will tend to zero (figure 13). If we have a Particular Solution, (this solution may be in the form of M , Mt or Mt^2), we define y_p as the temporary equilibrium of y_t . But if the Particular Solution is not fixed, the equilibrium will be moving. For example, the Particular Solution can be in the form of $y_p = bt$ where the difference equation has no temporary equilibrium and bt is a moving equilibrium (figure 14).

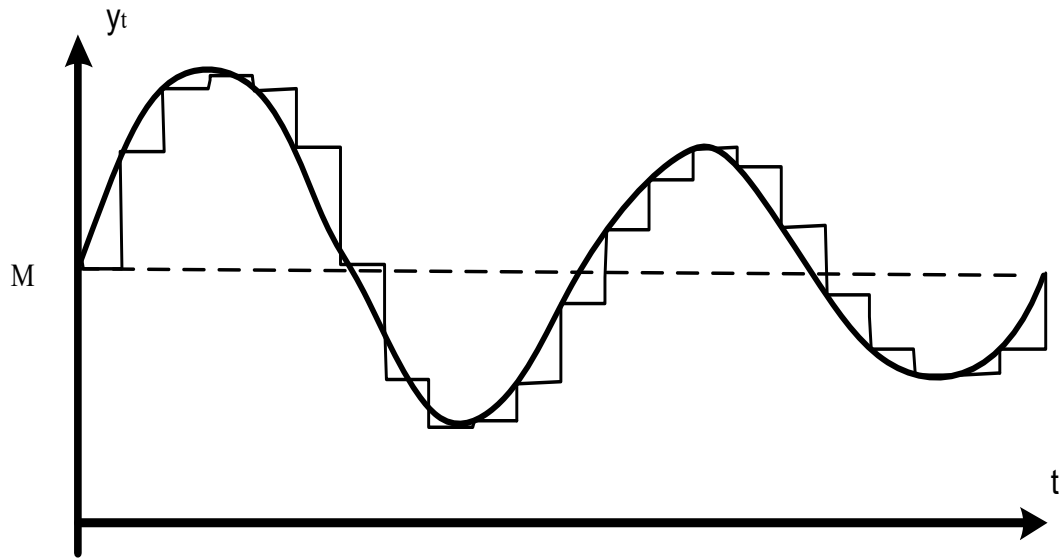


Figure 13

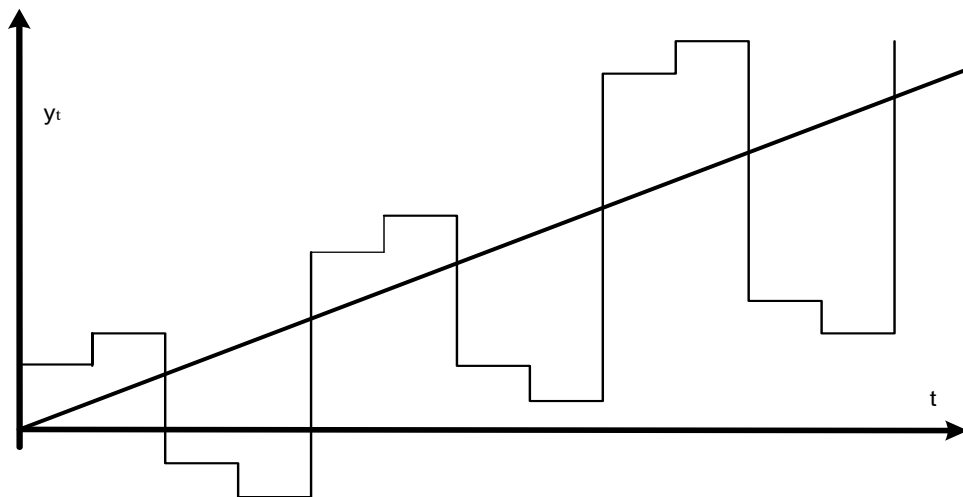


Figure 14

In general, for a second order homogenous difference equation with constant coefficients such as:

$$y_t + by_{t-1} + cy_{t-2} = 0 \quad (25)$$

With the help of figure 15 we can describe the time trend of y_t by considering the coefficients of difference equation (b, c) and the roots of characteristic equation.

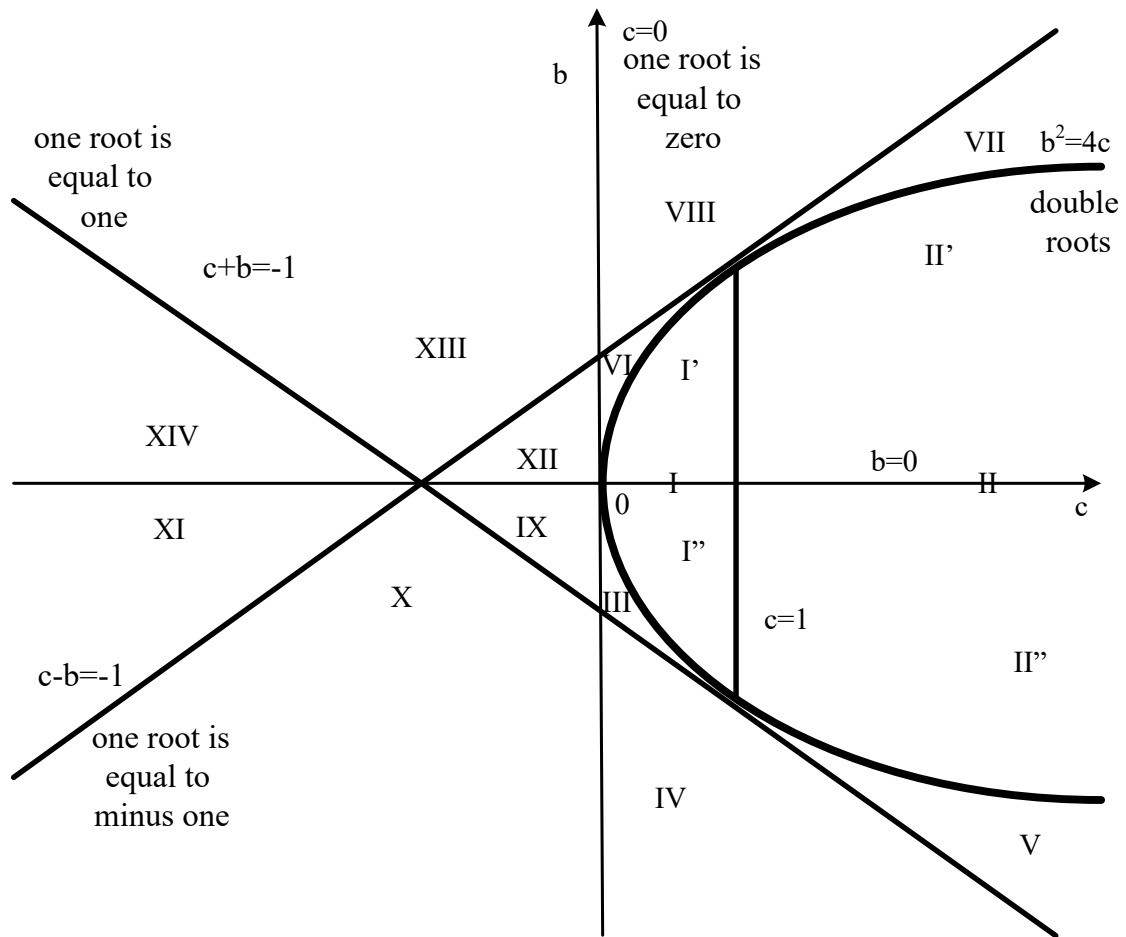


Figure 15

In figure (15):

Area I: includes (I', I): oscillatory dampening fluctuation (complex roots, module <1)

Area II: includes (II'', II'): explosive oscillatory fluctuation (complex roots, module >1)

Area III: dampening and non-oscillatory (real roots, less than one)

Area IV: finally dampening and without oscillation (real roots, both positive, one larger than and the other less than one)

Area V: non-dampening and without oscillation (real roots and larger than

one)

Area VI: oscillatory dampening (real roots, both negative with absolute values less than one)

Area VII: explosive with oscillation (real roots, both negative with absolute values larger than one)

Area VIII: finally explosive with oscillation (real roots, both positive and less than one)

Area IX: dampening without oscillation (real roots, both positive and less than one)

Area X: finally explosive without oscillation (real roots with opposite signs, the positive root is larger than one and the absolute value of the negative root is less than one)

Area XI: finally explosive without oscillation (real roots, with opposite signs, the absolute value of both roots are larger than one and the absolute value of the positive root is larger)

Area XII: dampening with oscillation (real roots with opposite signs, the absolute value of both roots less than one)

Area XIII: finally explosive with oscillation (real roots with opposite signs, the absolute value of the negative root is larger than one and the positive root is less than one)

Area XIV: finally explosive with oscillation (real roots with opposite signs, the absolute value of both roots are larger than one and the absolute value of the negative root is larger than the positive root)

In analyzing the time trend of y_t in a second order difference equation,

the characteristics of being real roots, complex roots and double roots, their signs, the absolute value of them and being larger or smaller than one, are critical. In figure 15, many other areas can be enumerated and studied like all the points located on drawn lines and curve or at the intersection of them and so on, but since it is time consuming, we stop here¹¹⁷.

It may be noted that all the above analyses are only about second order non-homogeneous difference equations with a constant term and fixed coefficients. Nevertheless, if the constant term is a function of time or the difference equation is not linear, or has a higher order, or the coefficients are functions of time, y_t will have different trends which create moving equilibriums with various fluctuations. The mathematical behavior of this kind of equations can be coinciding with difference equation in the previous discussion about interest rates and deposit and loan sources which create fluctuations in money and capital markets that can easily fluctuates the supply and demand in real sector through investment and consumption demands functions.

Empirical Investigations

To test the time structure of the interest rate the following interest rates were selected for a long period since 1948 till present¹¹⁸:

Discount Rate (End of Period): Rate at which the Federal Reserve Bank of New York discounts eligible paper and makes advances to member banks. Borrowing from a Federal Reserve Bank may take the form either of discounts of short term commercial, industrial and other financial paper or of advances against government securities and other eligible collateral.

¹¹⁷ For more information about time behavior of difference equations look through Bijan Bidabad, "Difference Equations and the Stability of Equilibrium Dynamism". <http://www.bidabad.ir/doc/difference-equations.pdf>

¹¹⁸ International Financial Statistics, Country Note 2010, USA, www.imfstatistics.org

Federal Reserve advances to or discounts for member banks are usually of short maturity up to fifteen days.

Federal Funds Rate: Weighted average rate at which banks borrow funds through New York brokers.

Commercial Paper Rate: Rate on three-month commercial paper of nonfinancial firms. Rates are quoted on a discount basis and interpolated from data on certain commercial paper trades settled by the Depository Trust Company.

Treasury Bill Rate: Weighted average yield on multiple-price auctions of 13-week treasury bills.

Certificate of Deposit Rate: Average of dealer offering rates on nationally traded certificates of deposits.

Lending Rate: Base rate charged by banks on short-term business loans.

Mortgage Rate: Contract rate on 30-year fixed-rate first mortgages.

Government Bond Yield: Long-Term and Short-Term: Yield on actively traded treasury issues adjusted to constant maturities. Yield on treasury securities at constant maturity are interpolated by the U.S. Treasury from the daily yield curve. This curve, which relates the yield on security to its time of maturity, is based on the closing market bid yields on actively traded treasury securities in the over-the-counter market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. Medium-Term rate refers to three-year constant maturities. Long-term rate refers to ten year constant maturities. Figure 16, shows the time path of different interest rates during the sample period.

Figure 16. Different interest rates time trend. USA (%) for 1948-2009

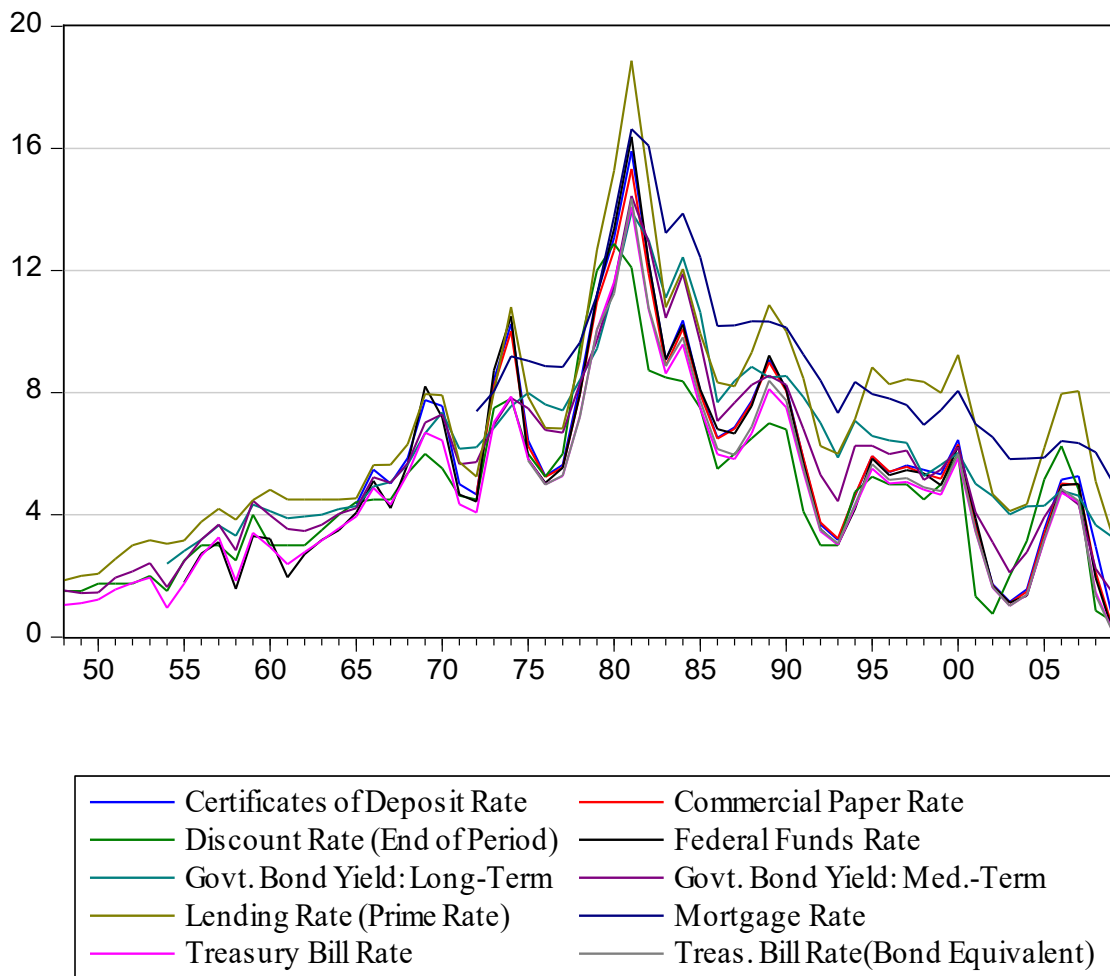


Table 1. Estimation results for ten estimated equations

Dependent Variable	$Y_t = \beta_0 + \beta_1 \cdot Y_{t-1} + \beta_2 \cdot Y_{t-2}$						
	Smpl	Obs	Y_t	β_0	β_1	β_2	R^2
Certificates of Deposit Rate (secondary market-3 month)	1967-2009	43	CDR	1.412	1.173	-0.405	0.714
			t-Stat.	2.124	7.828	-2.675	
Commercial Paper Rate	1974-2009	36	CPR	1.092	1.208	-0.406	0.761
			t-Stat.	1.609	7.807	-2.564	
Discount Rate (End of Period)	1950-2009	60	DR	0.877	1.168	-0.349	0.774
			t-Stat.	2.387	9.376	-2.786	
Federal Funds Rate	1957-2009	53	FFR	1.159	1.121	-0.332	0.721
			t-Stat.	2.241	8.255	-2.445	
Lending Rate (Prime Rate)	1950-2009	60	LPR	1.193	1.195	-0.364	0.799
			t-Stat.	2.553	9.559	-2.962	
Treasury Bill Rate (Bond Equivalent-3 month)	1977-2009	33	TBRBE	0.920	1.212	-0.384	0.768
			t-Stat.	1.412	7.048	-2.153	
Mortgage Rate	1974-2009	36	MR	0.713	1.301	-0.386	0.874
			t-Stat.	1.140	7.983	-2.339	
Treasury Bill Rate	1950-2009	60	TBR	0.738	1.173	-0.330	0.792
			t-Stat.	2.126	9.257	-2.614	
Govt. Bond Yield: Long Term (10 year)	1956-2009	54	GBYLT	0.511	1.103	-0.180	0.880
			t-Stat.	1.491	7.973	-1.319	
Govt. Bond Yield: Medium Term (3 year)	1950-2009	60	GBYMT	0.539	1.127	-0.222	0.856
			t-Stat.	1.656	8.668	-1.718	

Table 2. Characteristic roots of the second order linear difference equations

	Variables	$y_{t+2}=a.y_{t+1}+b.y_t+L$			roots	Real		Imaginary		Module	Characteristic roots x', x''
		a	b	L		c	d	D			
CDR	Certificates of Deposit Rate (secondary market-3 month)	-1.173	0.405	1.412	complex	0.586	0.865	1.045	0.586±0.865i		
CPR	Commercial Paper Rate	-1.208	0.406	1.092	complex	0.604	0.878	1.065	0.603±0.877i		
DR	Discount Rate (End of Period)	-1.168	0.349	0.877	complex	0.584	0.831	1.016	0.584±0.830i		
FFR	Federal Funds Rate	-1.121	0.332	1.159	complex	0.561	0.804	0.98	0.560±0.803i		
LPR	Lending Rate (Prime Rate)	-1.195	0.364	1.193	complex	0.598	0.849	1.039	0.597±0.849i		
TBRBE	Treasury Bill Rate, Bond Equivalent-3 month)	-1.212	0.384	0.92	complex	0.606	0.867	1.058	0.606±0.866i		
MR	Mortgage Rate	-1.301	0.386	0.713	real				0.843, 0.458		
TBR	Treasury Bill Rate	-1.173	0.33	0.738	real				0.705, 0.469		
GBYLT	Govt. Bond Yield: Long Term, 10 year	-1.103	0.18	0.511	real				0.903, 0.200		
GBYMT	Govt. Bond Yield: Medium Term, 3 year	-1.127	0.222	0.539	real				0.872, 0.255		

To show the oscillatory natures of the interest rates we need to test that the equations (11) and (15) hold true. That is why these two equations are difference equations with (at least) orders 2 or more. Using data of the United States of America for the period of 1948-2009, we try to show that equation (11) and (15) are oscillatory and therefore the source of oscillation will be transferred to equations (18) and (19) which are the equilibrium condition of the macro-economy. We can conclude that the source of oscillation is emanated from interest rates to real sector, and the interest rates are the source of cycles in the economy.

We test the hypothesis that do various interest rates obey oscillatory behaviors? Therefore, ten types of short term, medium term and long-term interest rates were selected. We fit a second order linear non-homogenous difference equation to all 10 interest rates as given by (20).

Table 1 shows all estimated parameters are statistically significant and proves that a second order linear difference equation time structure exists for all 10 selected interest rates.

Table 2 shows all short-term interest rates' second order homogeneous linear difference equations have complex characteristic roots; but the roots for medium and long-terms interest rates are real. These results prove that the source of fluctuations in real economy comes from short-term interest rates, though medium and long-term interest rates have real characteristic roots and dampening behaviors.

Since values of D in short-term rates are less than or nearly equal to or greater than one, the forms of oscillations will be as shown by figures 11 to 13. On the other side, the medium and long-term interest rates have real characteristic roots, which each one of the pairs is close to one and another is much less than one. Therefore, the medium and long-term interest rates have time path similar to figures 2 and 3 and have dampening behaviors.

Summary

Many theories try to explain the sources of business cycles. In this chapter, Economic Cycle Theories are discussed by bifurcating money market into two markets of Saving-Deposit and Investment-Credit followed by studying dynamic structure behavior of depositor-bank-investor. The empirical results prove that in United States, the banking system creates fluctuations in monetary sector through interest rates. These fluctuations affect real sector through saving and investment and as a result fluctuate the whole economy. Mathematical derivations show that current structure of banking operation is a source of economic cycles and fluctuations.

The approach is to find the initiator of the cycles is the dynamic structure of different interest rates. It was shown that there is important lag structure between deposit interest rates and loan interest rates. The observed lag structure actually forms a second order difference equation behavior in banking sector as source of fluctuations which starts from money sector and expands to real economy.

In order to see the oscillatory nature of the interest rates, this study tests the second order linear difference structure of time paths for 10 different short, medium and long terms interest rates of United States of America. We tested this hypothesis on United States interest rates data for a long time period. The estimated results showed that short-term interest rates are the source of fluctuations. The estimated dynamic equations for short-term interest rates had complex characteristic roots that let the equations be oscillatory. The long-term and medium-term interest rates equations had real characteristic roots and were not oscillatory. Furthermore empirical investigations show that the second order homogeneous linear difference equations of all short term interest rates have complex characteristic roots; but the characteristic roots for medium

and long terms interest rates are real.

It is observed that the short term interest rates are the source of oscillation which is transferred to real economy. The study concludes that the source of oscillation is emanated from interest rates to real sector, and the interest rates are sources of business cycles in the economy.

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Chapter Five

Fluctuation Dampening and Banking

Introduction

In spite of what is mentioned, the occurrence of crisis was not caused by the America's housing sector depression, but the housing sector fall itself was a consequence of the crisis. According to what is proved, the wavy and sinusoid movement nature of economic activities automatically leads to conditions which moves the economy from prosperity to depression and crisis and then again to recovery and prosperity. Older theories such as Paul Samuelson theory asserts that these sinusoid movements are caused by the production inventory operations and supply flow. That is to say, when the economy produces more than consumption, commodities accumulate in storehouses and in order to sell the accumulated inventory, the seller reduces prices. The lowering of commodity prices and the largeness of accumulated inventory will make production sluggish. Producer will be forced to reduce production and since it decreases the activities of the firm, the income of factors of production (labor, capital and others) will be reduced. This means the reduction of income at macro-level which leads to reduction of demand for goods and services in society as well. Lower income again leads to lower prices and again pushes the economic firm to more depression. This phenomenon continues until the economy turns from depression to crisis. Practically at this stage the cycle comes to a dead-stop and production stops, because prices can't decrease any more. This creates production incentive (because of supply scarcity and price increase) and income increase of factors of production and demand and prices the economy again moves towards recovery and reaches prosperity and the economy reaches the beginning situation of the cycle. After a while, depression starts again and a new cycle starts.

This phenomenon is the result of the nature of human beings' behavior. That is to say, the nature of people creates this behavior. Since human being is greedy in consumption and when he is rich, squanders a lot, but limited resources prevents him from continuous squandering and greed. Therefore, economic prosperity stops, because resources do not increase to economic activities of the people proportionally. That is to say, the scarcities of resources increase their prices and reduces profit margin which is the start of depression and the beginning of the turning towards the lower segment of the business cycle.

Crisis

Review of economic variables of Unites States of America and other industrial nations through the last four decades shows that the behavior manner of financial markets and international commerce spreads crisis from sector to sector and from country to country. Usually crises start in advanced economies and transmit to other countries. Since 1960s, USA faced current account deficit, while the country increased its budget deficit to stimulate the economy which led to twin deficits. Since the middle of 1960s until the beginning of 1980s, money supply in USA and most other advanced economies increased more than 10 percent per year which pushed the inflation rate up from the beginning of 1970s and the economy of some other countries such as United Kingdom faced stagflation¹¹⁹. Meanwhile, the fight between Arabs and Israel started and oil price increased. Some economists believed that the depression of western countries including US was because of oil price increase that increased production markup cost. The beginning of 1980 decade crisis in US was also coincided with oil price increase and by applying deregulation policy in financial markets and

¹¹⁹ Of course, more than others, the UK stagflation was due to the economic effects of her colonies freedom.

the expansion of derivative transactions, and liberation of Saving and Loan Associations activities caused their bankruptcy and depositors drew back their deposits and invested in stock exchange and derivatives markets. Interest rate increase had a destructive effect on Saving and Loan institutes and caused this crisis to prolong until 1990. There was again a new crisis in US and Europe in 1990 which was also coincided with oil price increase and second Persian Gulf War which was the trail of hard stock exchange collapse in Black Monday of 1987 which was controlled by Federal Reserve money injection. In 1992, the US economy moved from depression into prosperity which lasted until 1999. The arrival of new internet innovations caused the flourishing of stocks of internet companies and financial activities on the stocks increased so much that the available assets of this market faced price bubble. This bubble which was called “Dotcom” bubble burst in 1999. The collapse of Dotcom market at the end of 1999 pushed US economy into a new recession which lasted until 2001. But this recession was not accompanied by oil price increase. The nine eleven attack faced the depressed economy with a new shock. Federal Reserve encountered this depression by increasing money supply. Interest rates were decreased and transactions on real goods such as oil and wheat were changed into financial paper transactions which were accompanied with debt crisis. This was because the most transactions were for speculation and not for real goods transactions. By interest rate decrease, debt transaction started and intermediaries discounted high interest rate loans and replaced them with low interest rate loans. The amount of loans was increased and loan was offered even to credit less borrowers with over-priced collaterals. Speculators turned to paper transactions, the results of which were manifested in late 2007. Housing stock market collapsed first and pulled down the value of the stocks based upon the value of collaterals and banks and financial institutes faced bankruptcy. Investors’ market

confidence vanished and they turned to real commodity markets. Simultaneously, the atomic quarrel of Iran with western countries increased the oil price growth rate followed by more increase in other bourse commodity prices. The US attack to Iraq and its continuous presence in that country together with special conditions of oil supply and demand, and capital flight from stock markets and their movement toward the gold and oil markets, increased oil prices around \$150 per barrel and the price of other goods in burses had also such an increase. Depression symptoms were not manifested, because oil demand in China, India and other emerging economies and OECD countries had not decreased. But after a while, oil demand of OECD countries decreased and by money injection of Federal Reserve of United States of America, investors' confidence were revived and capital moved from these two markets to other capital markets. Oil price decreased to about \$40 per barrel and gold price collapsed too. After a while, investors felt that the economy has been stabilized and from other hand, another economic giant (China) entered international scene which had high rate of growth together with India, Brasilia, Turkey, Argentina and other similar countries with high growth rate created a new power in the globe scene which decreased the stability and importance of America and Europe in the global economy. The weakening of the role of United States of America in global economy was exacerbated by crisis in Iraq and Afghanistan, while the relations of China and India with middle-east countries were expanded. Meanwhile, the Russia economy revived because it had changed into one of the largest oil and gas exporting countries and gained a major share in Europe energy market. The gas flow cut of Russia to Europe at the peak of cold winter demonstrated the new power balance to western countries. Many advanced countries were more than before worried about the oil market developments and the high level of dependency of western countries, China and India to Middle East

became more obvious and was forecasted that OPEC which is a cartel of 12 oil producing and exporting countries, will soon dominate the oil market.

These developments strengthened the idea that the market is uptrend and the global demand is improving beyond expectation. This issue will widen the gap between oil producers and consumers and the overcome of paper market (speculation) over oil market is forecasted and the oil market risk and its global supply can have a destroying effect if there are no solid regulations on oil financial paper transactions. The quick price change of oil prices in derivative markets outside the bourse, where transactions have been more than physical supply and demand transaction facts, can exacerbate the conditions. America and Europe economic developments are so that they can also have quick effects on oil price and will increase it. If US trade deficit with its trade partners, especially with China reduces, we can expect the down pressure on dollar will be reduced which leads to lower oil price. But it is not expected that the US twin deficit will decrease in near future. Therefore, we should expect dollar devaluation and oil price increase which gained \$100 per barrel in 2011. Oil consumption in emerging economies is increasing and has increasing pressure on oil price. On the other hand, economic conditions in some European economies are not welcoming and crisis is transmitting from a country to another in Euro Zone and we can expect higher oil prices and the continuation of global economy crisis. Although oil price increase can be regarded as a sign of economic growth and entrance to recovery and prosperity, but oil price increase expectation which increases oil prices does not reveal this sign but it is regarded as a higher risk of the economies in future. In other words, the oil price increase based upon physical increase of oil demand can be regarded as a sign of recovery and not the oil price increase caused by financial oil paper transactions and speculations.

Economic variables of the last decade bring the grate crisis of the 1920s to the mind. The severe oil and grains price increase and successive draughts and unexpected ecological and meteorological events have also exacerbated the problem. Similar conditions were seen in 1920s. During that decade interest rate was also down but in spite of low interest rates, the economic condition didn't allow to allocate enough investment in production. The Keynesian quarrel with classic economists can be explained on this subject. Keynes believed that when the economy is in liquidity trap, or saving and investment are not coordinated, it will be necessary to have a negative interest rate to obtain equilibrium in money market. It is not possible to use monetary policy in this condition because interest rate is so low that cannot be lowered any more. Essentially, liquidity trap occurs when there is a poor relation between interest rate and the rate of return in real sector economy. That is to say, regardless of rate of return of investment, interest rate goes down. One of the reasons for this condition is risk acceleration of investment which decreases the net return of investment. The point is: if it was possible to have negative interest rate which is not practically possible, monetary policy could remove crisis. Therefore, fiscal policies are prescribed for crisis removal which has been applied in G20 group by injecting trillions of dollars. Practically, this method moves out the economy from crisis but this takes 5 to 10 years to adjust the natural economic powers and move towards prosperity.

Crisis Removal by Money Market Reform

The basic solution of crises which has been neglected by economists is money market reform. Studies¹²⁰ show that usury structure of banking

¹²⁰ Bidabad, Bijan, Stabilizing Business Cycles by PLS Banking and Ethic Economics
<http://www.bidabad.ir/doc/pls-business-cycles-en.pdf>
<http://www.bidabad.ir/doc/pls-business-cycles.pdf>

system is the essential source of crises and in spite of Samuelson view, inventory accumulation is also the result of crisis and not its cause. Also, in spite of western theories, housing and construction are not the source of depression but crisis is caused by a structural behavior in money and banking sector. Explanation of this theory which has mathematical proofs is that despite of conventional economists' view which considers money market as a single market, this market consists of two separate markets; and bank operates as intermediary between them. In other words, on one side we have banks' demand market for deposit sources which create interest rate together with deposit supply which is called deposit interest rate. On the other side, by supplying sources, bank creates another market in which the supply of financial sources and demand for money sources fixes the interest rate for loans and credit. That is to say, bank is playing between two markets of financial sources and uses. Now suppose that, because of increased consumption, deposit sources decrease. This will push deposit interest rate up. This increase cannot push up the loan and credit interest rate. This is because banks loan contracts have terms and bank is obliged to wait for the maturity and then increase the loan interest rate for new loans and then, increase all loan interests. During this period, bank has to tolerate losses and after a time lag can increase loan interest rate to compensate this loss. Although this lag is not very tangible for people, but from economic behavior point of view, it creates a special dynamic relation between saving and demand for investment sources. It can be shown mathematically that because of this time lag, the relation is according to a second order difference equation. Second order difference equations have volatility characteristic which means they create cyclical behavior; therefore, practically transmit the cycles created in the saving-consumption behavior of families sector to production-investment sector. This theory is considered as the most important cause of business cycles and since the

cause has been diagnosed, it can be cured.

The cure of this economic disease is to prevent somehow the time lag between the balance of deposit interest rate and loan interest rate which create fluctuation in supply and demand of financial sources. That is to say, bank should not operate as an economic firm, but should operate as a financial intermediate and obtain commission as income. In traditional economies banks work as firm and not as intermediates. That is why banking sector in conventional usurious systems can create market fluctuations. In order to change banks into financial intermediates, we have to describe interest rate performance in loan sector in a way that her outcomes go to depositors rather than the bank itself. The essential solution of this has been explicitly mentioned in divine books such as Old Testament, New Testament (bible) and Quran which is the abolition of usury from monetary activities.

Profit and Loss Sharing (PLS) Banking

Abolition of usury does not mean stopping the financial activities of bank, but it means that owners of financial assets do not earn a fixed interest rate on their assets. That is to participate practically in profit and loss of borrower. This Partnership is put forward in different Islamic participation contracts. In these contracts, it is possible that the lender to participates in profit and loss of the borrower. This banking system is classified as “Profit and Loss Sharing” system which is based upon the doctrine of abolition of usury in banking activities. Since profit and loss sharing changes bank from economic firm to financial intermediary and practically accomplishes the previous descriptions, it can reach a stable equilibrium by eliminating the time lag between saving market and investment market. On the other hand, risks developed in loan market will

be transferred to saving sector and the borrower and the lender (depositor) together will enjoy profit or loss.¹²¹

Economic literature has expressed many advantages about risk transference of Islamic banking operations which are described by Islamic

¹²¹ When talking about PLS banking, it should not be considered that we are regarding the banking system of Iran. This is because it can easily be shown that many of Islamic contracts put forward in Usury Free Banking Law of 1983 are intrinsically usurious. Bidabad, Bijan, Economic-juristic analysis of usury in consumption and investment loans and contemporary jurisprudence shortages in exploring legislator commandments. Proceeding of the 2nd International Islamic Banking Conference. Monash University of Malaysia. 9-10 September 2004. Reprinted in: National Interest, Journal of the Center for Strategic Research, Vol. 2, No. 1, winter 2006, pp: 72-90. Tehran, Iran.

<http://www.bidabad.ir/doc/reba-en.pdf>

<http://www.bidabad.ir/doc/reba-fa.pdf>

Bidabad, Bijan, Sufi foundation of Islamic economics, money, bank, insurance and finance from a theosophy point of view.

<http://www.bidabad.ir/doc/mabani-erfani-eqtesade-islami.pdf>

According to exact definition of usury, Installment Selling contract, Mortgage Hire Purchase and Debt Buying contracts with compound interest in the delay of installment payments are in the domain of usury. Of course by considering all conditions about prohibition of usury, Good (interest-free) Loans, Civil Partnership, Legal Partnership, Direct Investment, Mudarabah, Forward Deals, Joalah (working on behalf), Muzarah (cultivation loan contract), Musaghah (irrigation loan contract) and Ijarah (rental contract) are not in the domain of usury. In all above contracts except Good Loan (Beneloan) which has no interest and Ijarah in which the rental is pre-defined, interest should not be pre-fixed, otherwise, they will fall in usury realm.

Bidabad Bijan, Non-Usury Bank Corporation (NuBankCo) The Solution to Islamic Banking. Proceeding of the 3rd Islamic economics conference, 2003, Tarbiyat Modarres University, Tehran.

<http://www.bidabad.ir/doc/NUBankCo-en.pdf>

<http://www.bidabad.ir/doc/sherkat-sahami-bank.pdf>

In other words, if we want to perform PLS banking, we have to make special changes in current banking system. These changes include from developments in Usury Free Banking Law, elimination of Sharia tricks used by banks and changes in organization of banks. Regarding the usury content of banking system of Iran in recent decades, occurrence of crisis could be forecasted and it is seen, the crisis has been transmitted from industrial countries to Iran and housing depression consequences have been seen in housing sector of Iran which is the effect of the crisis. As it was mentioned before about the basic cause of financial crises, the reason for transmission of the crisis to Iran was the usury content of banking system of Iran, and if it was usury-free, that is, depositor really participated in profit and loss of the borrower, the crisis would not been transmitted to the country. As we see since no country truly conducts Islamic banking, crisis transmits from country to country.

banking researchers¹²² and Islamic banking has been put forward as a financial stabilizer method¹²³. But although it has been theoretically explained, PLS banking has not been practically applied¹²⁴ and this is one of the defects of PLS application¹²⁵. Rastin PLS banking practically creates conditions in which risk problem of investments will not transmit to banks and crisis doesn't find ground to spread. This is because practically, PLS banking diverts risks from loan receiver to depositor and bank will not face loss. On the other hand, the strong and structural relation between loan interest rate and deposit interest rate does not allow loss in one market, while the other one is facing profit. That is, when in loan market the investor faces loss, the PLS system doesn't allow transfer of this loss in form of profit (interest) to depositor. That is, PLS transfers the loss to depositor and both markets enjoy a more relative stability. Therefore, fluctuations of loan interest rate in supply side, and deposit interest rate in demand side will become restful.

This is in contrary to conventional banking in which borrower regardless of obtaining profit or loss, has to pay interest to the lender and he always gains profit. In PLS system if borrower gains profit, depositor will also gain profit and if the borrower faces loss, the lender (depositor) will also suffer loss. In PLS system, regardless of bank to be private or public, the basis for fixing loan rate is the return of real sector economy and bank operates as intermediate of funds or attorney and receives commission

¹²² Mahlkecht, Michael (2009). *Islamic Capital Markets and Risk Management*. London: Risk Books.

¹²³ Zarqa, Muhammed Anas (1983): "Stability in an Interest-free Islamic Economy: A Note", *Pakistan Journal of Applied Economics*, Karachi, (Winter 1983), Vol. 2, pp. 181-88.

¹²⁴ Khan, Shahrukh Rafi (1984) "An Economic Analysis of a PLS Model for the Financial Sector", *Pakistan Journal of Applied Economics*, Karachi, (Winter 1984) Vol. 3, pp.89-105.

¹²⁵ Rosly, Saiful Azhar (2006) *Critical Issues on Islamic Banking and Financial Markets: Islamic Economics, Banking and Finance, Investments, Takaful and Financial Planning*. Author House.

and the remaining profit of investment activity is paid to the depositor. Accordingly, agent bank can receive deposits on the basis of PLS contracts by a general or special participation contract in the form of attorney and invest it according to the decision of depositor or the bank can divide the outcome between depositors. Then, the real profit is divided between them according to their agreements of the parties and in the framework of regulations. In this regard, bank carries out its financial intermediary function and after deducting its commission, transfers the results of investment as she is attorney or agency of depositor.

Because of its intrinsic risk management, development of this banking system will also absorb foreign investors and since all transactions can be carried out on cyberspace, the place of transaction can move to anywhere around the world and certainly other countries will be persuaded to use this kind of banking system. This is because; the essential problem of conventional banking around the world is financial risk which causes the bankruptcy of the banks. By this kind of banking system it is possible to solve the problem of falling into crisis and since the initiation of disease has been found, PLS banking can have curing effect on it.

Rastin Certificates

New instruments and innovations such as Rastin Certificates are used in PLS banking and bank can issue Rastin Certificates and form the secondary market and activate banking and financial market more efficiently and cause important developments. These new innovations can be transacted on cyberspace internet markets. The existence of these instruments make it possible to have a financial market similar to stock exchange for transaction and transfer of deposits and practically regarding the developments of investment and production sector, the transaction price

of these certificates will change. These new instruments are practically regarded as valuable papers which are used for transaction of deposits and represent deposits allocated to entrepreneurs' projects by PLS method. Rastin Certificates are nameless papers which are issued with a fixed nominal price and for a certain period of time (investment implementation period) by the PLS banking branch. Certificates holders are shared in the profit of the implementing project proportional to the nominal value and duration of holding. Bank according to the request of the holder invest the deposited money in one of the three products of the bank. Holder of these papers can transact their papers over the counter of bank, or over internet, therefore, these certificates are assets which can be transacted internationally.

Interest-Free Bonds

Islamic financial instruments should have two main characteristics: firstly they should be usury-free, and secondly, they should be efficient in form of policy application, financing, liquidity management of monetary authorities, government and bank and non-bank financial institutes dimensions. One of the most important instruments affecting monetary expansion is bonds. Open market operation through bond transaction can affect liquidity and other monetary variables such as general price level, interest rate and thereof supply and demand in the economy through monetary expansion mechanism. Because of usurious content of conventional bonds, they are not Sharia-complied and practically application of this instrument is unlawful. The usurious content of these papers does not let to use them in usury-free banking at central banking and commercial banking level; therefore, this important monetary instrument cannot be applied in usury-free banking. This means that without a novel

solution, usury-free central banking has not the necessary instrument to adjust monetary fine tuning of the economy and neither commercial banks have not reliable instruments for financing and asset and liability management. Solving this essential problem is a turning point in applying usury-free banking policies. Therefore, by putting forward interest-free bonds (Rastin Swap Bonds), it is necessary to replace traditional bonds with interest-free bonds for central banking, commercial and retail banking. Vast studies in this field resulted in innovation of interest-free bonds.¹²⁶

These bonds or certificates have two maturities. The first maturity is when certificate expires and the buyer receives his money back. After that, the buyer of the can obtain equal loan to her nominal value of the purchased bond simultaneously with receiving his money back. The second maturity is when he pays back his loan and settles his borrowing procedure down. The issuers of these papers can choose the time of the first and second maturities corresponding to her monetary, financial or fiscal policy subject to this condition that multiplication of loan by its duration is equal to multiplication of debt by its duration.

Four Rastin Swap Bonds can be introduced which, in addition to compliance with Islamic Sharia, and without any Sharia tricks, are tied to assets and can be used as reliable financial instruments in usury-free banking concerning central, commercial and retail banking. These four interest-free bonds are as follows:

¹²⁶ Bidabad, Bijan; M. Allahyarifard and M. Rabiei. Usury-Free Bonds (in Domestic Money and Foreign Exchange) and Islamic Central Banking Monetary Instruments. Proceedings of the 3rd international conference on development of financing system in Iran with cooperation of center for Technology Studies of Sharif University and IRTI of IDB. 19-20 February, 2011, pp. 517-540.

<http://www.bidabad.ir/doc/Islamic-banking-bond-fa.pdf>

<http://www.bidabad.ir/doc/Islamic-banking-bond-en.pdf>

Bidabad, Bijan; Abul Hassan, Ben Ali Mohamed Sami, Mahmoud Allahyarifard. Interest-Free Bonds and Central Banking Monetary Instruments. International Journal of business and Management Science. Vol. 3, no. 3, August 2011.

1. Central bank interest-free bonds which are issued by central bank.
2. Bank interest-free bonds which are issued by commercial, development and specialized banks and monetary institutes whom are under the supervision of central bank.
3. Treasury interest-free bonds. These bonds are issued by government treasury.
4. Commercial interest-free bonds. These bonds are issued with special guarantees by private entities.

The outstanding characteristic of these papers is that they are based upon financial assets and have no pre-determined interest coupons (zero coupons) and are based on “loan equal to future debt”, or “debt equal to future loan” with “temporal withdraw right” which is given to the other party and by creating reciprocal obligation, the primary market is shaped. The secondary market based upon information technology is designed on Rastin Certificate Market (RCM) subsystem in which the buyer will own the paper with his highest competitive price proposal. Other outstanding feature of this financial innovation is that it has no base price below its nominal price and is a substitute for conventional bonds and stabilizes monetary and exchange markets.

Essentially, Rastin Swap Bond is a document which creates two equal rights between buyer and seller. Essentially, the issuer of this paper undertakes to offer equal amount of financial sources for the same period to the buyer. The simple description of this concept can be defined in Islamic interchange contract. That is, two persons decide to interchange some special asset for a certain period of time. The first person deposits a certain amount of money with the other one; and the second person deposits the same amount of money with the first person for the same period in future. In this case, no extra material excess or privilege is given to any of the two

parties. The first party is a real or legal entity and the second party is the bank. On the other hand, since the owner of this paper becomes a rightful person, he can sell his right to a third party.

It is possible to issue Rastin Swap Bonds in foreign currency similar to Rastin Swap Bonds in domestic money. In this connection the four above cited bonds can be issued in foreign exchange denomination. The issuers and buyers of interest-free exchange bonds are similar to interest-free domestic denomination bonds with the only difference that their nominal value in two periods can be in the same denomination or in two different foreign exchanges. In both cases, specially the second one, which is bought in one currency and sold in another currency, there is no usury involvement doubt.

Interest-free bonds (Rastin Swap Bonds) are substitutes for conventional bonds and in addition of being usury-free, can efficiently affect money expansion, and are capable for liquidity management and monetary and banking financing. Some of these bonds affect liquidity supply and some others won't and are neutral. In order to apply efficient monetary policies, central bank can issue, buy or sell interest-free bonds and carry out monetary tuning adjustment policies. If these papers are issued by commercial and specialized banks or non-bank money institutes which have prudential and legal deposits at central bank, their bond issuance will have no monetary effect on the economy. If central bank buys these papers, she will expand monetary base and if she sell it, will contract it. If these papers are bought or sold in the framework of government treasury bonds to apply fiscal policy, they will have different monetary and fiscal effects on the economy and central bank can apply monetary policies by buying or selling government treasury bonds. Using extra reserves of banks and other economic institutes (when some institutes are confronting

with liquidity shortages) through issuing these bonds by commercial and specialized banks and interest-free funds does not affect liquidity supply of the economy and is a solution for liquidity risk hedging and debts and obligations covering. If central bank or government buy or sell these bonds, it will have different expanding or contracting effects on the economy. By obtaining banking guarantees, these papers can be issued by private entities in the framework of interest-free commercial papers for financing private sector.

The secondary market of these papers in internet with ability to conduct a base-price-less tender and accepting highest competitive price offered during the tender period makes possible transactions yields at market prices. No base price lower than the nominal value is considered and price proposals of buyers form the interaction of expected interest rate and inflation rate. In other words, the expected natural interest rate will shape in first and second periods. In addition, the designed transaction facilities of these papers bring about market efficiency and convergence of their yield toward the yield of other securities and the real economy rate of return.

Detailed application plan of one type of Rastin Swap Bonds has been prepared for “Bank Qard-ul-Hasanah Mehr Iran”¹²⁷ as “Saving Qard-ul-Hasanah Certificate (SQC)”. The special characteristics of “Saving Qard-ul-Hasanah Certificate (SQC)” can replace this financial instrument at central banking, commercial and retail banking level in both usury-free and

¹²⁷ See:

Bidabad, Bijan; A. Siahpoush, M. Mirzaei Qazi, S. Aljabouri, H. Nasrollahi, Z. Qolami, A. Sharifi, Amir Shams, Sh. Akbarzadeh. Detailed Design of Qard-ul-Hasanah Saving Certificate (Bond), Bank Qard-ul-Hasanah Mehr Iran. 2011.

Bidabad, Bijan. Legal Analysis of Usury-Free Bonds, 2011.

<http://www.bidabad.ir/doc/legal-analysis-of-non-usury-bonds.pdf>

Bidabad, Bijan Saving Qard-ul-Hasanah Certificate, 2011.

<http://www.bidabad.ir/doc/gavahi-qarzulhasana-pasandaz.pdf>

usurious banking systems for usury bonds without including any usury doubt in banking activities. Some of the characteristics of this innovation are as follows:

1. Financing different private and government sectors.
2. Micro-financing lower income people.
3. Charity activities.
4. Financial policy instrument.
5. Monetary policy instrument.
6. Replacing usury instruments in capital market.
7. To be used as banking guarantee and collateral.
8. High liquidity degree.

Squandering and Ethic Economics

Ethic economics as a subject always considered in Islamic economic philosophy has been rarely considered in new economic theories. We put forward the ethic economics as a new name for old valued subjects in economics which by considering ethical principles analyzes the economic phenomena and behaviors. In this view, the aim of economic studies is not just studying material problems without value and ethic observations. But human being ethical values should be considered accompanying with economic analysis in such a way that private and social material benefits should be considered together with spiritual and ethical characters of human being. This view towards economic problems will put forward two material and spiritual dimensions of human being behaviors in relation to private and social economic areas. This approach assesses private and social behaviors which is different from materialistic view to economics and while accepting scientific economic rules, tries to find material and spiritual welfare in a wider view than pure material.

Another alternative of economic crisis pathology is also returned to human being behavior. We people, who indulge in world loving attributes, and practically, provide conditions for exacerbating the crises. That is to say, we indulge in consumption and are greedy in compiling assets, extravagance and waste which always widen business cycles. This behavior will exacerbate the crisis with severe depression and severe prosperity. If human being behavior improves her behavior so that ethical and mystical teachings which are prevailing in Islam and other Devin religions to be followed, it practically decreases the severity of crisis. When we are facing extravagance and waste in the society, practically over-consumption behavior will increase crisis oscillations and sooner reach depression and prosperity with higher and harder effects. Therefore, we should try to apply ethical and mystical teachings to human being behavior. That is, people without governmental pushing mechanism, prevent extravagant spending and economic greed.

Squandering means wasting resources and is against the maximization principle of resources' utilization. According to Neoclassic theory of consumer behavior, the consumption is based upon a series of assumptions that some of these assumptions such as unsaturation of consumption can be violated in Ethic Economics. According to Neoclassic Economics, people tend to maximize their utility of consumption subject to their priorities for work and leisure times. But practically, consumption utility overcomes leisure time utility. Squandering sources is a kind of wasting resources, but the term of squandering has a wider meaning which includes over-doing in every case, while waste does not have this variety of meaning. Squandering causes waste or throwing away some commodity resources, because of "consumption greed", "looking at Jones", "show-off consumption", "persuading consumption", "habitual consumption" or more generally pro-

consumption. It was shown¹²⁸ that consumer loses some of her utility by squandering. Therefore she has to work more and rest less to compensate the wasted income sources, without obtaining extra utility. In simple words, squandering wastes peoples' leisure time and the utility of leisure time.

Evidences of squandering in producer's behavior and production processes are observable. Production line can produce damaged or corrupt raw materials or produced goods or produce goods at a higher price and use factors of production more than need for various reasons. In other word, a main portion of squandering in production leads to inefficient use of factors of production. Evidences of squandering can be observed in production, total efficiency, un-optimal combination of factors of production, production damages and wastes and corruption of products.

Squandering prevention frees a large share of economic resources and labor force and capital which can easily be used by firms during crisis to breakdown the curve of business cycle which is moving towards depression and crisis and lead it towards recovery and prosperity again. On the other hand, since we will not face extravagance during prosperity, the economy will not reach the saturation threshold and therefore, before the economy reaches saturation conditions, moves towards depression and experiences light prosperity and light crisis and therefore, the wave domain of business

¹²⁸ Bidabad, Bijan; Prodigality in ethic economics. Proceeding of Correcting Consumption Pattern Conference. Institute for Trade Studies and Research, Ministry of commerce, 26 July 2010, pp. 49-76. Tehran, Iran.

<http://www.bidabad.ir/doc/esraf-eghtesade-akhlagh.pdf>

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Bidabad, Bijan; Overconsumption in Ethic Economics and Sustainable Development. 2010.

<http://www.bidabad.ir/doc/toseeh-payedar-eghtesade-akhlagh-en.pdf>

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<http://www.bidabad.ir/toseeh-payedar-eghtesade-akhlagh.pdf>

cycle become very narrow which means relative stability of the economy.

Many socio-economic subject matters, which have been the header of strategic policies of human beings, have been prevailing for thousands of years and Divine wised have described these teachings among their Sharia rules. We can mention one of these subjects as “sustainable development” which is one of the prevailing subjects since the end of the last century. Although this subject as a modern theory has been put forward in 20th century, but its classic concepts in ethic economics has been less considered. One other subject is extravagance by the meaning of over-consumption. Generally this concept coincides with pro-consumption and consumption economics at national level, but its application at international level brings special concepts to mind.

Perhaps at the end it is convenient to mention that prophets and Divine masters have been the wisest persons on the earth and it is wisdom which is the path-finder of goodness and salvation of human being. If human being catches this subject that their teachings are the path-finder of life and make use of their teachings and does not give priority to her own wisdom in one way or other, she will have surely a better material and spiritual life.

Summary

Regarding the formation of financial crises in monetary and financial markets of advanced economies and its transmission to other countries through financial markets and foreign trade, a solution is pointed out which is called the reform of financial, monetary and banking structure. In spite of various theories about the source of crises, studies in this field show that usurious banking structures is the main source of crises. The curing method of this economic disease is to prevent somehow the existing time-lag

between “deposits interest rates” and “loans interest rates” which creates fluctuations in supply and demand of financial sources. That is to say, banks should not function as a conventional economic firm, but should function as a financial intermediate. Banking structural reform and new financial instruments will be introduced in this regard. Squandering prevention and waste prevention and economic ethic teachings are also introduced as supplements in solving crises.

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Chapter Six

Squandering and Ethic Economics

Introduction

Squandering is one of the important topics in ethic economics. Squandering *Israf* in Arabic grammar comes from the infinitive verb-form of *If'al* with root of *Sarafa*) means “exceeding the limits of equilibrium (moderation)” and this passing is meant in exceeding sense and not in dismissing to. Ragheb Isfahani¹²⁹ (a Persian philosopher) defines Squandering (*Sarafa*) as “violating the limits in all aspects of human acts”. Another definition and translation is given for squandering (*Israf*) according to No.4 handwritten Qur’an¹³⁰, held in Astan-e Qods Razavi Library which is mostly taken into consideration here. This translation can be more justified with understandings of the teller, according to the era of beginning of Islam in a historical view.

In this Qur’an the word Squandered (*Asrafa*) is meant as “depraved” and Squandering (*Israf*) is translated as depraved-destroyed. The concept of destruction in economics has very important weight. Destruction of resources is also one of the most important subjects in ethics economics. And this is because the main target in economics is to maximize the benefits of resources and if some part of numbered resources were not exploited correctly, therefore the optimization will be affected in all markets and consequently the economic behaviors will face this un-optimality as well. So it is obvious that the subject of squandering (*Israf*) is one of the most fundamental discussions in ethic economics that we treat

¹²⁹ راغب اصفهانی، معجم مفردات الفاظ القرآن، انتشارات دارالفکر، بیروت، لبنان، صفحه ۲۳۶.
¹³⁰ فرهنگ لغات قرآن خطی آستان قدس رضوی با ترجمه فارسی کهن، موسسه مطالعات و تحقیقات فرهنگی، ۱۳۶۳، وزارت فرهنگ و آموزش عالی. این مجموعه به کوشش احمدعلی رجائی بخارایی از قرآن مزبور استخراج شده است و کاتب قرآن مزبور سعد بن عبد الجبار بن احمد المکنی بابی الحرث.

herein.

Lots of verses in holy Qur'an explain Squandering as disrepute. In verse 7:31:¹³¹ “*O children of Adam! take your adornment at every place of worship, and eat and drink, but be not prodigal. Lo! He loves not the prodigals*”. In exegesis of Bayan-o-Sa'adah it is written:¹³² “*O children of Adam take your adornment*” - concerning each ornament for your beauty and body and its hygienic tools, beautiful and proper vestments, dressing of your hairs and barbs (with comb or with which it is decorated including perfumed oils) and approved acts and words from the other world, also the love of your families and good opinions, moral ethics and actions and correct revelations and inner (in heart) illuminations and spiritual observation, “at every place of worship” which appoints to any general condition for worship of God, meaning observance of the Master of Divine Authority (Caliph of God on the earth), all must be set aside. In this verses adornments and place of worship is interpreted as mentioned. Everybody who wants to know about what is revealed to Innocent Imams can refer to Kafi and Safi or other sources. The part “*and eat and drink*” shows that ornaments, eating and drinking are allowed and are not in contradiction with payer or worship but even enables you to better worship and the generality of eating and drinking is obvious like ornament. “*But be not prodigal [extravagant- squanderer]*” appoints the excess in decorating that will impeach you considering the truth (worship of God), because of business to earning it and earning the price to pay for it, protecting it and keeping it clean. It is also valid for eating and drinking and cleaning the foods and drinks because drinking more than thirst and eating more than

¹³¹ «يا بني آدم خذوا زينتكم عند كل مسجد واكلوا واشربوا ولا تسرفوا انه لا يحب المُسرفين». Aaraf, 31.

¹³² حضرت حاج ملا سلطان محمد بيدختي گنابادي، بيان السعاده في مقامات العباده، جلد پنجم، ترجمه

محمد رضاخاني و دكتور حشمت الله رياضی، صفحات: ۲۶۹-۲۶۸.

hunger makes harm to your health and spirit and make you ill and heavy for your tasks and jobs. “*Lo! he loves not the prodigals*”; God does not love extravagant (squandering- exaggerating) people in whatever domain it could be. Because exaggerating (extravagancy) is current in all acts and words and behaviors. As it is recited in response to the question: “is that possible to exaggerate in ablution? - yes there is squandering (extravagancy, exaggeration, trespassing limits) even if you are doing ablution in a river”. This is because allocating the power and members in any affair more than realizing the truth of that affair or more than earning its true effects, whatever that affair is, a religious obligation (*Vajib*) or advised one (*Mustahab*) or naturally allowed (*Mubah*) it is considered as exaggerating and squandering. And this verification is dependent to the case. But according to interpretation and heart witness, exaggerating in eating and drinking and vestment is in a way that the inner Satan (*nafs*) will take control over intellect (*aql*) and intellect become inattentive to its rule of controlling these desires. So squandering (exaggerating) is dominance (surpassing) of earning the desired and satanic pleasures over the intellect and the divine commandments.”

From this point of view the consistency of approbation of squandering or extravagancy in all affairs can be understood, and within this discussion we focus on economical sense of eating and drinking which are categorized in consumption. In another verses 6:141 it is said¹³³: “*when it bears fruit eat of it and pay what is due (the zakat) of it upon the harvest day. But do not be wasteful; he does not love the wasteful*”. This is insinuation to dimensions of production in relation with squandering. There are also lots of other directives in Qur’an, recognizing the right of property for a person, but obligation to respects the limits of equilibrium (moderation) in

¹³³ Anam: 141. «كُلُوا مِنْ ثَمَرِهِ إِذَا أَثْمَرَ وَآتُوا حَقَّهُ يَوْمَ حَصَادِهِ وَ لَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ»

expending or consuming the these resources in consumption and production in the meantime and blame violating these limits and qualifies it to squandering.

Not only in the exegeses of Shiites and Sunnites to Quran and other references such as Shiites' Four-Books and Sunnites' Six-Books lot of recites and narration exist about prohibition of Squandering but in analytic books the discussions of squandering is under attention so explaining all of them requires writing several books. Despite the fact that contemporary analytic economic books have qualified squandering as the main chapters of Islamic economics but they do not proceed to the study of economic behavior of consumer and producer theoretically. In the meantime this subject from point of view of Ethic economics has not developed yet. It is a primordial subject to be studied and readjusted and experienced.

Consumer Behavior and Squandering

According to consumer's behavior theory in microeconomics, this behavior is based upon the following assumptions: if consumer obtains more utility from A than B, we say A is more preferable than B. This is principally the main assumption of behavior of the consumer according to his rational behavior and it is also accepted in ethic economics because everything that is commanded by intellect is also commanded by Sharia. Therefore, for all possible choices of B and A, the consumer will prefer A to B, or B to A, or is indifferent. One of these preferences is correct. According to transitive rule if consumer prefers A to B, and B to C, he prefers A to C. According to this logic and ordinality of utility, consumer behavior theory has been founded in microeconomics.

In the subject of squandering in ethic economy, in addition to above

assumption and logic, we are facing another subject which can be set forth in the framework of consumption behavior satiation assumption. All assumptions of utility function including strictly quasi concave and other marginal assumptions about time and quantity of commodity (not being integer) and similar classic analysis are also assumed here. In ordinary condition in consumer behavior theory in microeconomics, consumer will maximize his utility function with budget restraint. That is to say:

$$\begin{aligned} \text{Max:} & \quad f(q_1, q_2) \\ \text{S. to:} & \quad y = p_1 q_1 + p_2 q_2 \end{aligned} \quad (1)$$

By formation of Lagrange equation and obtaining necessary conditions, consumer's utility becomes maximized when the marginal utilities ratio is equal to price ratio:

$$\frac{f_1}{f_2} = \frac{p_1}{p_2} \quad (2)$$

Where f_1 and f_2 are first order derivatives of utility function f regarding q_1 and q_2 . And p_1 and p_2 and y_0 are prices of q_1 and q_2 and consumer's income respectively. This equilibrium condition means that the rate of substitution the good is equal to the constant coefficient of Lagrange. The sufficient assumption needs that the bordered Hessian determinant be positive to satisfy the maximization. By solving question (1) and taking derivatives regarding to q_1 and q_2 and Lagrange coefficient and solving equations for q_1 and q_2 we find the demand function:

$$\begin{aligned} q_1 &= \phi_1(p_1, p_2, y) \\ q_2 &= \phi_2(p_1, p_2, y) \end{aligned} \quad (3)$$

Where, changes of q_1 to changes of p_1 and changes of q_2 to changes of p_2 will be negative if other variables are constant (*Ceteris Paribus*) in ordinary conditions of (not Giffen) goods.

The consumer behavior for arranging time for work and leisure in microeconomics can be obtained from a similar process. If his utility (U) function is a function of leisure time (L) and income (y), we can write:

$$U=g(L,y) \quad (4)$$

If total available time for him is T and his working time is W and wage rate is r, his leisure time and income can be explained by the two following equations:

$$L = T-W \quad (5)$$

$$y = rW$$

By substituting in function (4), we will have:

$$U=g(T-W, rW) \quad (6)$$

We maximize this function by equating its derivative to zero:

$$\frac{-dy}{dL} = \frac{g_1}{g_2} = r \quad (7)$$

Where, g_1 and g_2 are partial derivatives of function g with respect to W in composite function (6) for T-W and rW. The condition (7) shows consumer's equilibrium between work and leisure. If the second derivative of function U with respect to W is negative, the sufficient condition is met.

Neoclassic economics view to welfare is in consumption maximization; although, considering the relative preference of human being for work and leisure is theoretically acceptable from human being behavior, and people maximize their consumption and consider work and leisure, but practically, we see that they prefer consumption utility to

leisure utility. That is to say, perhaps we can say people care about tangible materials (goods) more than spiritual utilities which are not tangible. This is because the five senses of human being feel materials better than spiritual meanings. This phenomenon changes human being to a work machine which does his best to produce material goods, while, human being needs to proceed with spiritual products which are usually better achieved in leisure time. That is to say, it is necessary to leave some time for thinking and self-calculating, soul-purification, self-training and spiritual and ethical affairs so that in this relation finds the purpose of her creation and steps forward towards spiritual elevation. The view of maximizing welfare through maximizing consumption means to increase W in function (8) more and more, and material consumption means body gains from bodily joys and ownership joys or obtaining and accumulating assets. While human being cannot consume without limits. This is because, in spite of neoclassic view in consumer's behavior in economics, which assumes non-satiation consumption, consumer does satiation which means he cannot consume more than a limited amount of goods and services. In other words, he has a limited capacity of consumption. If this fact is not true about all commodities, it is true about a group of commodities and services. For the other group which consumption is not limited, it is because of human being's thinking that she receives utility and satisfaction via more ownership of goods. The essential difference of these two groups of commodities, regardless of small differences, is the general classification of goods and services into two groups of durable and non-durables. Non-durables are consumers goods which do not last for a long time, and durables are possessory and some times last more than the life of their owners. The concept of contentedness in consumption, especially in consumption of durable assets can be set forth as a chapter in ethic economics which we abstain to discuss it for the time being and will

discuss it in another discussion.

Squandering is a kind of wasting resources, but squandering has a more general meaning than waste which includes overindulgence and excessive in all affairs, while the word "waste" does not have this variety of meaning. What we consider in squandering is the meaning of squandering and spoiling of resources which makes sense about durable goods, but it makes more sense in non-durable goods. Since squandering causes corruption of good sources by destruction and abandonment because of "purchase greed" or "imitative consumption pattern", or "keeping up with Jones consumption pattern" or "consumptionism"¹³⁴ or "habitual consumption", this term has more meaning of squandering rather than consuming, because sources has been obtained which are not used. In other words, in microeconomic theories, consumption is described as purchase of good or actual demand, which means, purchasing of good is the same as consuming it. On the other hand, using simple words can better explain the purpose. Therefore, we write the following equation:

$$\text{Consumption} = \text{using} + \text{squandering} \quad (8)$$

Its equation will be:

$$q = q^* + q^{\sim} \quad (9)$$

Where, q is the consumption considered by neoclassic economists and q^* and q^{\sim} are those parts of q which are used, and wasted. Wasting may have any understanding of spoiling. For example, throwing away goods, their corruption, buying un-necessary goods, any kind of spoiling, going out of fashion, becoming useless and...have this meaning.

¹³⁴ Samuel Strauss (1870-1953) Critics on Consumptionism. The Atlantic Monthly, November 1924. He defines consumptionism as the science to force human being to more and more consumption of goods.

Regarding the relation (8) or (9), we will again study consumer behavior for maximizing her utility. Rationally and logically, what is wasted does not create any utility for consumer. In other words, if some or part of a commodity is spoiled or wasted or because of passing time is not useable, or becomes out of fashion, or not used for any reason, it has not been “used” and has not created any utility for consumer. That is to say that, only the usage of goods and services creates utility, rather than the purchase of it. Therefore, according to relation (8), only the usage of what is bought shows utility, not wasted and spoiled things. Rewrite the utility function of the consumer by considering (9) and limiting the question to two commodities:

$$\begin{aligned} \max \quad & f^*(q_1^*, q_2^*) \\ \text{s.to:} \quad & y^0 = p_1(q_1^* + q_1^{\sim}) + p_2(q_2^* + q_2^{\sim}) \end{aligned} \quad (10)$$

Regarding the description mentioned about that wastes is utility-less, q_1^{\sim} and q_2^{\sim} do not enter the utility function, but they are in budget line of the consumer. That is:

$$\frac{\partial f^*}{\partial q_1^{\sim}} = \frac{\partial f^*}{\partial q_2^{\sim}} = 0 \quad (11)$$

We write Lagrange equation for problem (10):

$$V = f^*(q_1^*, q_2^*) + \lambda[y^0 - p_1(q_1^* + q_1^{\sim}) - p_2(q_2^* + q_2^{\sim})] \quad (12)$$

The first condition for maximizing (12) is:

$$\begin{aligned} \frac{\partial V}{\partial q_1^*} &= \frac{\partial f^*}{\partial q_1^*} - \lambda p_1 = 0 \\ \frac{\partial V}{\partial q_2^*} &= \frac{\partial f^*}{\partial q_2^*} - \lambda p_2 = 0 \\ \frac{\partial V}{\partial \lambda} &= y^0 - p_1(q_1^* + q_1^{\sim}) - p_2(q_2^* + q_2^{\sim}) = 0 \end{aligned} \quad (13)$$

In other words, the equilibrium condition for usage is the same as equilibrium condition for consumption, or:

$$\frac{f_1^*}{f_2^*} = \frac{p_1}{p_2} \quad (14)$$

But the utility level is below previous one, because budget line $p_1q_1 + p_2q_2$ has shifted to left which means:

$$(y - p_1q_1 - p_2q_2) = p_1q_1^* + p_2q_2^* \quad (15)$$

In other words, the slope of utility curves has not been changed, but since a part of income has been wasted because of spoiling commodities, this line has shifted to the left and is tangent to utility curves with lower utility. In other words, in order to compensate this reduction, we have to pay the amount of $p_1q_1 + p_2q_2$ to consumer until he reaches his consumption position before the waste. With additive utility function assumption we have:

$$f(q_1, q_2) \Big|_y = f(q_1^*, q_2^*) \Big|_{y^*} + f(q_1, q_2) \Big|_{y^\sim} \quad (16)$$

$$y = y^* + y^\sim \quad (17)$$

$$p_1q_1 + p_2q_2 = p_1q_1^* + p_2q_2^* + p_1q_1 + p_2q_2 \quad (18)$$

Therefore, regarding the utility received by consumer, since usage creates utility, in ordinary case of consumer theory, the consumer loses a part of his utility because of spoiling and wasting a part of his income. In order to keep his welfare, the wasted income because of spoil and waste, or y^\sim should be earned through more work. So we study his behavior from work and leisure time point of view. As it was shown in equation (4), worker's utility is a function of income and leisure time variables. Now we

write the second equation in this way:

$$\begin{aligned}
 y &= y^* + y^{\sim} \\
 rW &= rW^* + rW^{\sim} \\
 y &= rW^* + rW^{\sim}
 \end{aligned} \tag{19}$$

Where y^{\sim} is the wasted amount of income for squandering and should be added for the one who has wasted this part of his income to keep his utility unchanged. W^{\sim} is the work hours to earn this income. Therefore, we have:

$$U = g(T - W, rW) = g[T - W^* - W^{\sim}, r(W^* + W^{\sim})] \tag{20}$$

Simply by comparing (6) and (20) we can understand that in order to have equilibrium in this case, the worker has to add W^{\sim} hours of work or decrease his leisure time to obtain enough income to compensate the wastes, while receiving no utility from his wastes. By equating partial derivatives of function U with respect to W^* and W^{\sim} to zero, we will have:

$$\frac{dU}{dW^*} = -g_1^* + g_2^*r = 0 \tag{21}$$

$$\frac{dU}{dW^{\sim}} = -g_1^{\sim} + g_2^{\sim}r = 0$$

Now we add the two equations:

$$\frac{dU}{dW^*} + \frac{dU}{dW^{\sim}} = -(g_1^* + g_1^{\sim}) + (g_2^* + g_2^{\sim})r \tag{22}$$

This is the same equilibrium condition of (7). In other words:

$$\frac{dU}{dW} = \frac{dU}{dW^*} + \frac{dU}{dW^{\sim}} \tag{23}$$

Since $W=T-L$, we can rewrite (23) in this way:

$$\frac{dU}{dW} = \frac{dU}{dW} \cdot \frac{dW}{dL} = -\frac{dU}{dL} \quad (24)$$

Therefore:

$$-\frac{dU}{dL} = \frac{dU}{dW^*} + \frac{dU}{dW^{\sim}} \quad (25)$$

In other words, the consumer has to lose dU/dW^{\sim} of his leisure time utility to buy wasted commodities.

It can be simply said that squandering causes waste of leisure time and its utility. This result does not violate the assumption of rationality of consumer and explains that since squandering causes a part of commodity sources -because of wrong shape of utility function and because of factors such as “purchasing greed”, “imitation consumption”, or “show off consumption” or “encouragement consumption” or “consumption oriented” or other similar things- become spoiled or become garbage, the consumer has to work more to compensate the wasted materials and lose his leisure time to satisfy this consumption phenomena. Actually, through this satisfaction, nothing has been used and he is imaginarily satisfied.

Squandering and Market Demand

We can clearly see the role of income in equations (3) of demand functions for goods. When q is demand quantity and p is price in equations (3), the increase of y shifts demand function to the right hand side and its decrease will shift it to the left hand side. Now, if we divide income as in equation (19) into income for use (y^*) and income for waste (y^{\sim}), if by preventing waste, y^{\sim} will increase; demand curve will move to left by this

amount. This concept is correct in human being behavior as well as market demand, because market demand is the horizontal addition of individual demand functions. That is to say, if we show i^{th} individual demand for j^{th} good as D_{ij} , we can write:

$$D_{ij} = D_{ij}(p_1, \dots, p_m, y_i) \quad (26)$$

Where, p_1, \dots, p_m are prices of m commodities of utility function of consumer I , and y_i is his income; then, market demand function will be as:

$$D_j = \sum_{i=1}^n D_{ij}(p_1, \dots, p_m, y_i) \quad (27)$$

In which, n is number of consumers in the market. By considering y^* and y^{\sim} we can rewrite the above equation as:

$$D_j = \sum_{i=1}^n D_{ij}(p_1, \dots, p_m, y_i^* + y_i^{\sim}) \quad (28)$$

This relationship shows that the necessary income for compensating waste in individual demands will shift market demand, and will certainly affect the market demand. For example, for y^{\sim} of all consumers, that is to say, necessary income for compensating wasted goods becomes zero, market demand, equals to this amount and will shift to left side. If other variables are unchanged, this shift will decrease the market price.

Producer Behavior and Squandering

In spite of the fact that squandering is a well-known phenomenon in consumer's behavior, but it has a considerable justification in producer's behavior. Usually for different reasons, production line has wastes in raw and intermediate materials or final goods, or has to produce goods with higher costs; which means it overuses manpower and other factors of production that all of them are cases of squandering and waste. In other

words, by using certain amount of factors of production in a production line, we have to produce a certain amount of goods which is equal to maximum production capacity of the production line, but if we produce less, it means that we have practically wasted resources in production, and if we have produced low quality goods, we have also practically wasted materials. Again, if goods are spoiled or wasted because of bad warehousing, we have again wasted and squandered. In other words, an outstanding amount of wastes in production is because of inefficient use of factors of production which will be studied here.

Production function of a firm shows the method of combination of factors of production (X_1, X_2, \dots). In a simple form, production of q is a function of:

$$q = f(x_1, x_2) \quad (29)$$

This is a continuous single-valued function for producing Q with continuous first and second order derivatives for positive amounts of production and factors of production and is increasing in this range as an exactly ordinary concave function. At fixed amount of second factor of production x_2^0 , the average and marginal production of every factor of production x_1 will be equal with the ratio of total production to total first factor of production and the ratio of changes of production to the changes of the first production factor. If we put total differential of function (29) equal to zero, rate of technical substitution (RTS) between factors of production at any fixed level of production will be:

$$RTS = -\frac{dx_2}{dx_1} = \frac{f_1}{f_2} \quad (30)$$

The optimum behavior of producer for maximizing profit is derived through maximizing the following function:

$$\Pi = pf(x_1, x_2) - r_1x_1 - r_2x_2 - b \quad (31)$$

Where, firm's profit (Π) is derived by maximizing the difference between sale income pq and cost (C). In which, p is the sale price and r_1, r_2 are prices of variable factors of production and b is the cost of constant factors of production. The necessary condition is obtained by equating first derivatives of this function to zero. To obtain the sufficient condition for maximizing (31), the signs of main minors of its Hessian determinant should alternately be changed. If we solve the equations of necessary condition for x_1 and x_2 , demand functions for factors of production are derived:

$$\begin{aligned} x_1 &= \phi_1(r_1, r_2, p) \\ x_2 &= \phi_2(r_1, r_2, p) \end{aligned} \quad (32)$$

The locus of points where we can get with minimum cost by combining factors of production defines the development path of the firm. In other words, the maximum production on different levels of costs has coordinates of different combining of factors of production whose locus is called the firm's development path and the firm always selects a combination of factors of production to keep on this path. We describe the path by following function:

$$g(x_1, x_2) = 0 \quad (33)$$

The cost function of the firm is derived by simultaneously solving production function, cost line and firm's development path for C . In other words, we solve the below functions for C :

$$\begin{aligned} q &= f(x_1, x_2) \\ c &= r_1x_1 + r_2x_2 + b \\ 0 &= g(x_1, x_1) \end{aligned} \quad (34)$$

The following relationship is derived which is called the cost function:

$$c = \phi(q, r_1, r_2) + b \quad (35)$$

The production supply function of a firm in a perfect competitive market for a commodity defines the amount of commodity production and is derived from the necessary condition for maximizing profit. The condition for maximizing profit is derived by equating price and marginal cost. In other words, the supply function of firm (S) in a perfect competitive market is defined for the amounts of production with higher prices than average cost.

Squandering in Production

We can study squandering in production from different aspects. The following instances can be mentioned:

- Squandering in total productivity: that is, with fixed amount of factors of production, produce less than maximum productivity condition.
- Squandering in un-optimal combination of production factor (allocative inefficiency): which means that the combination of factors of production is not used in the process of production in an optimal way.
- Technological inefficiency: This means that the percentage of defective products or below standard is high.
- Spoil of products: because of bad warehousing, preserving, packing or distribution of products.

One of the cases of squandering in production is squandering in total productivity. The increase of total productivity means to produce more goods with a fixed amount of factors of production. Consider the following function:

$$q = Af(x_1, x_2) \quad (36)$$

In which A defines total productivity. If A=1, the production function will be similar with equation (29). Now consider two cases: one with efficient production and optimum use of resources, the other with low productivity and un-optimal use of resources. Certainly in both cases, they use factors of production in the framework of optimization of production. To explain this case, we use the following relationship:

$$A^* = A - A^{\sim} \quad (37)$$

A^* is a multiple of total productivity which is practically carried out and A^{\sim} is related to the part of production that because of inefficiency has practically no production. We call this part of production which is not taken into account “squandering in total productivity”. By replacing (37) in (36), we will have:

$$q = A^* f(x_1, x_2) + A^{\sim} f(x_1, x_2) \quad (38)$$

In the right hand side term, the produced production is q^* and unproduced production is q^{\sim} . In other words:

$$q = q^* + q^{\sim} \quad (39)$$

Squandering in total productivity means to use resources or factors of production in excess of productions' needs (q^{\sim}). In other words, it is possible to calculate wasted materials in this way. If we solve the following equation for C:

$$\begin{aligned} q &= A^* f(x_1, x_2) + A^{\sim} f(x_1, x_2) \\ 0 &= g(x_1, x_2) \\ C &= r_1 x_1 + r_2 x_2 + b \end{aligned} \quad (40)$$

We will have:

$$C = \phi(q^*, r_1, r_2) + \phi(q^{\sim}, r_1, r_2) + b \quad (41)$$

This means that the cost is made of two parts of production-used cost and squandered cost. On the other hand, by using the above relation, we can obtain the demand for factors of production:

$$\begin{aligned} x_1 &= x_1^* + x_1^{\sim} \\ x_2 &= x_2^* + x_2^{\sim} \end{aligned} \quad (42)$$

In other words, on the basis of relationship (32) we will have:

$$\begin{aligned} x_1 &= \phi_1^*(r_1, r_2, p) + \phi_1^{\sim}(r_1, r_2, p) \\ x_2 &= \phi_2^*(r_1, r_2, p) + \phi_2^{\sim}(r_1, r_2, p) \end{aligned} \quad (43)$$

Φ_1^{\sim} and Φ_2^{\sim} are squandering demands for factors of production which were equal to zero if total productivity were at maximum, but since there is waste and squandering, they are positive figures in above relations. These positive figures of Φ_1^{\sim} and Φ_2^{\sim} practically cause the demand functions for factors of production to shift to the right side, causing increased use of factors of production and increase of price of these factors, without increasing production.

Squandering of Non-Optimal Factors Combination

Another case of squandering is non-optimum combination of factors of production. Microeconomic theory considers three general areas. One area is irrational production area in which marginal production of at least one factor of production is negative. Certainly squandering in this area is very high. The negative productivity of a factor of production means overuse of that factor more than need, and its marginal use has caused to

production decrease. For example, if seeds are sprinkled more than need, crop will decrease rather than increase. The other area is rational production area. In this area, squandering is less, but because of non-optimum use of resources, production may not be at maximum. Marginal productivity of factors of production is positive in this area, but the combination of factors of production is not correct. If we optimize the combination of factors of production, this deficiency will be overcome.

Mathematically, maximum production behavior regarding cost constraint is obtained by maximizing the following Lagrange equation:

$$V = f(x_1, x_2) + \mu(C^0 - r_1x_1 - r_2x_2 - b) \quad (44)$$

By equating derivatives of the above function with respect to x_1 , x_2 , μ to zero, we will have:

$$\frac{f_1}{f_2} = \frac{r_1}{r_2} = RTS \quad (45)$$

In other words, technical rate of substitution is equal to price ratio of factors of production. This point is the tangent of cost line C^0 with isoquant curve which maximizes production regarding cost constraint. Certainly any other combination of factors of production causes squandering of the factors and as it was shown in (42) and (43), this has increased demand for factors of production by x_2^{\sim} and x_1^{\sim} without increasing production.

Production Damages

Production damages usually occur for variety of reasons including the damages caused by worker's negligence, inferior quality of raw material, machinery problems, and other problems which have different forms in industrial and traditional goods and services production lines, but all of them are considered here as production damages which lead to low quality

production. Since production damages are bulks, they have special uses and other firms buy them for different uses, but since they have low qualities, will decrease the production yield. In short, we can generalize all effects described about the decrease of total productivity for this subject as well. In other words, we conclude that the increase of production damages leads to the decrease of productivity and it has similar effects. Therefore, the more is production damages, the more will be demand for factors of production, without the increase of production.

Deterioration and Corruption of Product

Deterioration and corruption of products is a phenomenon occurring after the production activities of the firm, but since before delivery, production is a part of firm's properties, therefore, this subject is considered in production discussion. Although this deficiency can be a cause of subsequent services such as transport and distribution, but negligence and weakness of sale and operation managements may cause this type of corruptions. Usually, products are kept in warehouses before they are distributed and finally consumed. Keeping products may cause deterioration and corruption of products. This is true about perishable goods, as well as imperishable goods. For example, rustiness and corrosion because of humidity and dampness or acidity will deteriorate even metals. Certainly deterioration and corruption of products apparently is losing product and from production point of view means losing production resources including factors of production used to produce these products. On this basis, we can generalize all arguments regarding squandering in equations (42) and (43) which say the corruption of products causes to use more factors of production without increasing the productivity.

Knowledge-Based Economics and Ethic Economics

Knowledge-based economics will affect economic behavior of human being community severely. Passing from traditional economic behavior to knowledge-based economics has been accompanied with information technology developments. Fast growth and development of information technology¹³⁵ and communication will have multi-dimensional effects on the set of economic behaviors and along with it, consumption patterns and economic behaviors will be changed. In this relation, internet transactions and electronic commerce can lead to consumption increase because of its easiness and efficiency.

In knowledge-based economy, production, distribution and the use of knowledge and information has important role in economic activities. The relationship of knowledge-based economy and advanced technology of communication and financial payment services is one of the important factors in change of the form of producer's and consumer's behavior and even the change of production function (because of production technology change) and the form of subordinate utility function of consumer (because of changes in taste and style of his preference ordering). This is because the knowledge element has gained importance in the content of production and services as value and therefore, information and communication technology affecting all factors of production and all manufacturing goods and production processes have led consumption pattern towards variety and

¹³⁵ For example, the speed of microchips doubles every 18 months without any change in prices, and the communication bandwidth triples every 12 months, and the worth of a network is proportional with square of its nodes, so by expansion of network, the communication value increases exponentially while its cost is constant. (Narrated from: Jalaly, Aliakbar, "The relationship of electronic commerce and knowledge-based Economy", Collection of papers in Electronic Commerce Gathering.
<http://www.hiberd.com/essay-hiberd/documents-hiberd/03.doc>

mass production and consumption¹³⁶. Regarding the knowledge-based economy observations, the above analysis are not abolished but even has increased the importance of ethic economic view. This is because knowledge-based economy changes and acute the economic behavior by increasing efficiency and productivity and easing activities. Developments of information and communication technology principally affect the above analysis from the following aspects:

- Transaction of goods via internet and other electronic methods
- Easy access to markets, customers, sellers, and intermediates all day long and all week days
- No need to direct presence and communication
- Reduction of payment costs by electronic systems
- Decrease of transaction, warehousing and distribution costs
- Decrease of intermediate's cost
- Decrease of overhead costs
- Increase of the speed of transaction and delivery
- Ease of advertisement and introducing goods
- Increase of efficiency of advertisement for persuading consumption by applying absorbing tools of advertisement such as color, sound and presentation
- Decrease of mistakes in comparison with traditional methods of transaction
- Easy access to large global markets
- Continuous presence all over the world
- Update market information
- More transparency of market information

¹³⁶ See: Knowledge Economy Forum III, The World Bank and the Government of Hungary, Improving Competitiveness Through a Knowledge-Based Economy, Budapest. March: 23-26, 2004.

- Variety of goods and services
- Creation of new financial innovations

These developments affect consumer and producer behavior through the following:

- Changing the form of production function because of production technological changes and thereof, substituting capital intensive factors of production with higher yields and more expert and specialist manpower. In addition, the increase of free financial balances of firms because of the decrease of side costs of sale and distribution and thereof, the sale increase.
- Changing the form of consumer utility function because of changes of taste and introducing new goods and changes of consumer priorities, which results in the omission of purchase and transaction costs and the increase in purchase of other goods because of substitution effect resulted from savings in transaction costs and...

Conclusion

Ethic economics as a subject which has received less attention in new economic theories is one of the important subjects which can have considerable effects on the way of life of human beings. Squandering with the meaning of wasting of resources is against maximizing the utilization of resources in economics. According to neoclassic theory of consumer behavior, this behavior is based upon assumptions and in the subject of squandering in ethic economics, in addition to neoclassic theory assumptions on consumer behavior, assumptions such as non-satiation assumption can be breached. According to neoclassic theory, people desire to maximize their consumption considering their priorities between work and leisure time, but practically, consumption utility exceeds utility of

leisure time.

Squandering of resources is a kind of resource wasting, but the term squandering has a more general meaning which includes excessive usage in every kind of affairs, while waste does not have this variety of meaning. Squandering causes waste of some resources by wasting and corrosion, throwing away because of “purchasing greed”, or “imitating consumption pattern”, or “keeping up with Jones family consumption pattern” or “consumerism”, or “habitual consumption”, or generally, “consumerism”. We showed that consumer loses a part of his utility because of squandering and has to work more and decrease his leisure time to obtain more income for compensating his squandering to regain his lost utility. Briefly speaking, squandering wastes leisure time and the utility obtained from her leisure time.

Evidences of squandering in producer behavior and the production process were also studied. For different reasons, production line can waste and spoil raw material, intermediate or final goods, or produce commodities at a higher cost and with excessive use of factors of production. That is to say, the main part of squandering in production is the result of inefficient use of factors of production. Evidences of squandering of production are in total productivity, non-optimal combination of factors of production, damages and spoil and corrosion in production.

Passing from traditional economy to knowledge-based economy is accompanied with outstanding information and communication technology. Rapid growth and development of information and communication technology will have multi-dimensional effects on economic behaviors; and consumption patterns and economic behaviors will change. The above analysis will be completed by knowledge -based economy considerations which regard consumption patterns and economic behavior from different

aspects when efficiency improves and operations become easier.

Altogether, squandering in a society in markets equilibrium in the economy will cause the following:

- More goods will be consumed, without increasing utility
- Demand for goods and prices will increase
- Leisure time will decrease
- Less products are produced
- More labor force will be used
- More factors of production will be used in production
- Demand for factors of production and wage will increase
- Efficiency decreases
- Social welfare decreases

Commodity squandering creates no utility for consumer. Just the "(real) consumption (usage)" satisfies the preference ordering rules of consumer behavior and the "squandered" commodities do not satisfy these rules. In definition, consumption is equal to "real usage" plus "squandered" commodities. Thence, the consumer will lose some parts of her utility because of squandering (because of lost resources). The amount of lost income resources due to squandering should be re-compensated by more works to preserve the consumer's welfare constant. Squandering effects in total productivity, non-optimal allocation of production factors, product wastage and product decay are analyzed as less productivity and less supply of products due to squandering. According to this analysis, theoretically, it can be concluded that squandering will decrease the leisure and its corresponding utility of human being.

We conclude that if lessens of ethic economics in forming consumption pattern is strengthened, we can guide economic behaviors

towards moderate consumption behavior. If ethic teachings do not carry out this process, people will become as instruments for production and consumption. And in the course of development of humanities will not reach to what he has been created for which is much valuable than material production and consumption. In other words, if economic behavior of people were not trained, the traditional economy will pull people towards changing them into machine for “just production-just consumption”.

Resources

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¹³⁷ His Excellency Hajj Sultan Mohammad Bidokhti Gonabadi, “Bayan u Saadah fi Maghamat Al-Ibadah”, translated by Dr. Heshmatullah Riazi and Mohammad Agha Rezakhani, Ministry of Islamic Culture and Guidance, Tehran, 1998. The Arabic version of this book was published by Tehran University in 1965.

¹³⁸ Isphahani, Ragheb, “Moajam Mofradat Alfaz Al Quran, Darulfekr, Beirut.

¹³⁹ Rajae Bokharaee, Ahmad Ali, Dictionary of Words of hand-written script No. 4 of Astan-e- Ghods-e- Razavi with ancient Persian translation, Ministry of Islamic Culture and Guidance, 1984, Tehran. The hand writer of this Quran is Saade-ibn-e-Abdaljabbare-ibn-e-Ahmad Almokanni Be-Abi Alharath.

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Chapter Seven

Overconsumption in Ethic Economics

Introduction

Many of discussions which are headlines of strategic policies today, had been under consideration at the thousands of years before, and divine theosophists have explained these teachings. Sustainable development discussion which is one of the raised problems at international societies, and has been put forward in theoretical and modern form in the 20th century, is in the domain of ethic economics and this classical concept has not been considered much. Squandering with the meaning of excessive consumption is one of the ethic economics topics. Generally, this concept is coinciding with extravagance and consumptionism at national level, but its application at international level and global economy brings this concept to mind which can be clearly understood by this example¹⁴¹: If animals were intelligent, they practiced a better life. In this connection, when microbes enter our body, they live in it, as we live on the earth and eat from our body which is similar to earth for them. The coexistence of many bacteria and microbes with human beings' bodies is a proved medical proposition. Body tolerates them and they nourish in the body and live together with human being. That is to say, for example, many bacteria help in digestive system to fermentation and digest food, and health, and even life of human being depends on their existence. But the microbes and bacteria overdo their works so that the body dies, and they die too. Their actions are similar with our actions. We say other creatures are not intellectuals, but we who are intellectual, should not do things to ruin our lives. The masters have commanded in all these subjects: "eat and drink, but don't waste because God doesn't like squanderers..." which means human being enjoys so much from God's blessing so that he spoils his own life; that is why it is

¹⁴¹ Speech of his Excellency Dr. hajj Nour-Ali Tabandeh Majzoubalishah, March 25, 2008. <http://mazaesoltani.net/download/mp3/87/87-01-25-sobhe-eshanbeh-aghl.mp3>

commanded not to squander...

A similar example is the misuse or wasteful use of earth by human being. Practically, excessive use of the earth will ruin it and the result is the ruin of people living on it. This ethical comparison which is in the domain of ethic economics put forward at the end of last century by economists and environmental and social experts, and were considered as sustainable development theory. Movements such as “Anti-consumption”, “Ecological economics”, “Green Economics”, and “Freeganism” in recent decades are also along in this direction.

Ethic economics is a new name for the old value discussions in economics that analyzes economy and economic behaviors by observing ethical principles. The aim of economic researches in this direction is to consider materialistic economic problems as well as value-based principles of human ethics. This view to economic problems studies two materialistic and spiritual dimensions of human being in relation with economics simultaneously and takes the human behavior into account from these two views which in contrary to materialistic view, it has a wider view and in addition to observing economic scientific rules, tries to find material and spiritual welfare of human beings in a broader range than just materials.

Sustainable Development

Sustainable development is a pattern of resource use that aims to meet the needs of the present without compromising the ability of future generations to meet their own needs¹⁴². That is to say, today’s needs of human being should be met in a way that future generations would not

¹⁴² Report of the world commission on environment and development, United Nations General Assembly Resolution 42/187, 11 December 1987, retrieved: 2007-04-12.

suffer shortages.

Generally sustainable development debates are about various areas in which sustainable consumption and production are the most important¹⁴³. Sustainable production and consumption is the use of goods and services for essential needs and improvement of quality of life, and while the use of natural resources and poisonous materials and production of spoils and contaminating materials are minimized in life time, they will not endanger the needs of next generations¹⁴⁴. Sustainable production and consumption in economic activities include government, societies and families so that they consider efficient production and natural resources use, to minimize spoils and wastes, and optimize production of goods and services¹⁴⁵. Sustainable production emphasizes on demand side and improvement of environmental performance of the main economic sectors such as agriculture, energy, industry, tourism and transportation. Sustainable consumption refers to demand side and the method of using goods and services to meet main needs and improve the quality of life. In other words, food and health care, shelter, clothing, leisure and work should be changed so that they decrease pressure on earth carrying capacity¹⁴⁶. While sustainable consumption means the improvement of the quality of consumption for present and future generations. This concept of consumption¹⁴⁷ needs optimization of consumption considering preservation of services and quality of resources and environment along

¹⁴³ <http://www.iisd.org/susprod/principles.htm>

¹⁴⁴ Symposium: Sustainable Consumption. Oslo, Norway; 19-20 January 1994.

¹⁴⁵ Edwin G. Falkman, Waste Management International. Sustainable Production and Consumption: A Business Perspective. WBCSD, n.d.

¹⁴⁶ Nick Robins, Sarah Roberts, Changing Consumption and Production Patterns: Unlocking Trade Opportunities. International Institute for Environment and Development and UN Department of Policy Coordination and Sustainable Development, 1997.

¹⁴⁷ Emil Salim, The challenge of sustainable consumption as seen from the South. In Symposium: Sustainable Consumption. Oslo, Norway; 19-20 January 1994.

time.

Sustainable development consists of three main parts of sustainability of environment, economy, and socio-politics. Generalization of sustainable development to these dimensions has been decided in World Health Organization in 2005¹⁴⁸. The United Nations 2005 World Summit Outcome Document refers to the "interdependent and mutually reinforcing pillars" of sustainable development as economic development, social development, and environmental protection. The Universal Declaration on Cultural Diversity (UNESCO, 2001) has brought the concept of sustainable development to cultural domain. It is said in this declaration: "the same as diversity of life which is necessary for nature, cultural diversity is also necessary for human being". In completing the definition of sustainable development, the declaration makes it clear that: "among development pillars, economic growth is not enough, but the methods of obtaining more satisfactory life in the fields of intellectualism, sentiments, ethical and spiritual are also important".

More generally, Hansa¹⁴⁹ believes that sustainable development is a process which covers all directions of human life affecting his livelihood. The meaning of "Green development" is quite different from sustainable development. Those who are in favor of green development prefer sustainability of environment to economic, social and cultural considerations which are unidirectional consideration of the sustainable development goal along the future life of the earth planet. Anyhow, in spite of views of various schools of thoughts¹⁵⁰ about sustainable development,

¹⁴⁸ Word summit outcome document, World Health Organization, 1 September 2005.

¹⁴⁹ Hasna, A.M., 2007, Dimensions of sustainability, Journal of Engineering for Sustainable Development: Energy Environment and Health 2 (1):47-57 retrieved on 2008-04-20.

¹⁵⁰ Center for Sustainable Global Enterprise, Cornell University. Erb Institute for Global Enterprise, University of Michigan.

especially in relationship with “Anthropocentrism”, and “Ecocentrism”, United Nations division for Sustainable Development¹⁵¹ has considered the following fields in the domain of sustainable development:

- Agriculture
- Atmosphere
- Biodiversity
- Biotechnology
- Capacity-building
- Climate Change
- Consumption and Production Patterns
- Demographics
- Desertification and Drought
- Disaster Reduction and Management
- Education and Awareness
- Energy
- Finance
- Forests
- Fresh Water
- Health
- Human Settlements
- Indicators
- Industry
- Information for Decision Making and Participation
- Integrated Decision Making
- International Law
- International Cooperation for Enabling Environment
- Institutional Arrangements
- Land management
- Major Groups
- Mountains
- National Sustainable Development Strategies
- Oceans and Seas
- Poverty
- Sanitation
- Science
- SIDS
- Sustainable tourism
- Technology
- Toxic Chemicals
- Trade and Environment
- Transport
- Waste (Hazardous)
- Waste (Radioactive)
- Waste (Solid)
- Water

¹⁵¹ United Nations division for Sustainable Development. Documents: Sustainable Development Issues. Retrieved 2007-05-12.

During last decade, various organizations have tried to introduce measures for monitoring sustainability under the names of metrics and sustainability indices. Many believe that the concepts of sustainable development is against growth and even implementing sustainable development principles will return human being to the living methods of previous eras¹⁵².

Carrying Capacity

One of the problems in relationship with sustainable development is the carrying capacity of the earth. The carrying capacity of an ecosystem is equal with the number of people of an organism which can be served (protected) in the framework of the respected ecosystem from various views such as: food, housing, sunshine, air and other needs. We should add other variables such as sewage, health care and others for human being. When the density of an ecosystem increases, usually birth rate decreases and the death rate of the respected organism will increase. The difference of these two rates is called “natural growth rate” for which the ecosystem carrying capacity should consider to support. Exceeding carrying capacity, ecosystem population will decrease and below that, population will increase¹⁵³. Of course there are exceptions which are usually temporal. That is to say, the number of dwellers of a variety of living creatures may be more than carrying capacity but this habitation is not enduring and will decrease after a while. This concept creates a regular rule for adjusting the growth rate of the resident number of the ecosystem and the increase of one kind of creature may create problems which not only decreases the number of population of that kind, but also changes the population of other kinds.

¹⁵² Temple (1992) what is sustainable development?

¹⁵³ Sayre, N.F.2008, The genesis history, and limits of carrying capacity, Annals of the Association of American geographers, 98 (1), pp. 120-134.

The famous Lotka-Volterra equation shows for some special kind of creatures how in the present condition of resources, the inhabiting population will face famine. The relationship of human being and environment is much more complicated, because, people always change the shapes of available resources and obtain scarce resources from plentiful resources, which cause population decrease and also by scientific methods decreases deaths. Anyhow, in spite of this, the simple equation of IPAT shows the carrying capacity:

$$I = P.A.T.$$

Where:

I = effects of consumption on environment

P = number of creatures (people)

A = per-capita effects of consumption on environment

T = technology factor

Although this equation has several strong assumptions, but shows the increase of per-capita consumption will increase the effects on environment and, in other words, will decrease the carrying capacity of the environment. Many sociologists and demographers from Malthus¹⁵⁴ until present time have explained population growth as a fearful phenomenon. Even the Club of Rome¹⁵⁵ has forecasted this concept as an important danger for 21st century¹⁵⁶, but many other scientists believe that by changing technology, people can increase the improvement of food production and carrying capacity of the earth. Including, we can mention theories of a Danish economist Ester Boserup¹⁵⁷ which is known as “Adaptation process”. This process from rationality view coincides with the narration of the Prophet

¹⁵⁴ Thomas Malthus (1798), An essay on the principle of population.

¹⁵⁵ The Club of Rome (1972) Limits to growth.

¹⁵⁶ Paul R. Ehrlich (1968) Population bomb.

¹⁵⁷ Ester Boserup (1965) The conditions of agricultural growth. Allen Unwin. Revised and reprinted in population and technology, Blackwell 1980.

Mohammad (peace be upon him) who emphasizes on increase of human generation¹⁵⁸. That is, in spite of Malthus, who is narrow-minded, because of the adaptation theory, the honorable Prophet, not only doesn't see any barriers for population increase, but also emphasizes on population increase. This is because the wise men borne will help each other to solve the problems. This is because each human being borne has an intellect which can solve the problem. But nevertheless, this does not deny squandering in ethic economics. We can easily understand from IPAT equation that in squandering conditions, the consumption effects (I) on environment will aggravate because per-capital consumption (A) effect will also aggravate and thereof, will decrease the earth carrying capacity. In other words, in stationary adaptation conditions, *ceteris paribus*, that is, when the number of people (P) and technology factor (T) are unchanged, the increase of per-capita consumption (A) will proportionally increase the consumption effects (I) on environment.

Overconsumption in Quran

Despite of the generality of the word Squandering and verification of its generality on all human actions and behaviors, overconsumption has more particular economic meaning. Ragheb Isfahani¹⁵⁹ defines overconsumption (*Tabzir*) as spread out like sowing grains and concerns anybody who wastes his properties. Tabrasi¹⁶⁰ translates overconsumption (*Tabzir*) as spreading out her properties by squandering and wasting it, but admits that in a righteousness manner with goodness goal, this action will

¹⁵⁸ تناكحوا تناسلوا تكثروا فإني أباهي بكم الأمم يوم القيامة ولو بالسقط

¹⁵⁹ راغب اصفهاني معجم مفردات الفاظ القرآن انتشارات دارالفكر. ذيل ماده بذر: التبذير و التفريق و أصله القاء

البذر و طرحه فاستعير لكل مضيع لما له، فتبذير البذر تضييع في الظاهر لمن لم يعرف مآل مايلقيه.

¹⁶⁰ طبرسي مجمع البيان، ج ٦ ص ٢١٠ ذيل آيه ٢٦ سوره اسراء.

not be classified as *Tabzir*. Quran says¹⁶¹ (17:26-27): “give to the near of kin, the needy and the destitute traveler their rights and do not squander (spread out), for the wasteful are the brothers of Satan; and Satan is ungrateful to his Lord.” Interpretation of this verse in Bayan o Sa’adah exegesis is as¹⁶²: *the words squander (spread out) is allocated to the meaning of donation to who is not the rightful receiver or if the gift is more than the proper right of the receiver, which is the meaning of squandering, and is prohibited by this verse. Because giving property without squandering is the true meaning of economy (moderation). So Tabzir or overconsumption is included in squandering subject, even if sometimes is placed against it. And as long as the command is for payment of the right implies avoiding of not-paying (avarice-greed), this led to suffice to just command to not-squander, because paying the right is not limited to just material properties and family and includes other rights and all members in internal and external worlds of human being. It is narrated that the prophet passing beside Saad (an apostle) making ablution protested; “Saad what is this squandering? The apostle retorted: is there squandering making ablution (his religious duty of wash up for prayer). The prophet said yes there is even if you are beside the full fountain. It is also narrated that Imam Sadiq in response to the question: “Is there also overconsumption on those that are permitted? Imam said yes and the mystery of it is the fact that anytime a person even beside the spring, overuses more resources required or ordered to accomplish a task such as ablution, this kind of overuse of resources, power, force and attention without justifying the necessity is a kind of wastage, even if there is no*

¹⁶¹ Isra: 26-27.

وَ آتِ ذَا الْقُرْبَى حَقَّهُ وَ الْمِسْكِينَ وَ ابْنَ السَّبِيلِ وَ لَا تُبَذِّرْ تَبْذِيرًا. إِنَّ الْمُبْتَدِرِينَ كَانُوا إِخْوَانَ الشَّيَاطِينِ وَ كَانَ الشَّيْطَانُ لِرَبِّهِ كَفُورًا.

¹⁶² بيان السعادة في مقامات العبادة، ترجمه، جلد ۸، صص ۲۶۳-۲۶۰.

question of overconsumption or wastage, as making ablution from the water of a stream. The key point concluded from citations with all different understandings and advices, is the fact that: distribution of goods/money or words, or knowledge or wisdom or resources or powers and forces or allocating resources to self (Nafs) without consideration of divine commandments and beyond the limits of devotion is wastage, whatever it could be. In the meantime if all of these actions are made with attention to divine orders and guidance are verified as economy (moderation), whatever the action would be. This is why it is narrated if one gives all he has to feed a true real believer; it is worthy and will not be wastage. Those who over-consume or waste contrary to the divine commandments and neglect the divine orders for giving and distributing charity; are brothers of Satan because if the charity is not ordered by God, it is commanded by Satan and Satan is always tending ambushade to believers and deems his inadvertence. As soon takes control of his wisdom and rules him, the way he rules his devils. "Satan is ungrateful to his lord" refers to the reason because Satan is ungrateful and wastes (resources) denying the divine orders of his Lord, so one refusing the divine rules to avoid the wastage is brother (confrere) of Satan." The holy Quran in several verses, sanction wastage as consuming more than needs and the following verses are some of those prohibiting wastage: (6:141)¹⁶³: "He brings forth gardens, trellised and un-trellised, palm-trees and crops, with different fruits, and the olive and pomegranates alike and unlike, when it bears fruit eat of it and pay what is due (the Zakat) of it upon the harvest day, but do not be wasteful; he does not like the wasteful." In (7:31)¹⁶⁴: "Eat and drink, and do not

¹⁶³ Anam: 141.

وَهُوَ الَّذِي أَنْشَأَ جَنَّاتٍ مَّعْرُوشَاتٍ وَغَيْرَ مَعْرُوشَاتٍ وَالنَّخْلَ وَالزَّرْعَ مُخْتَلِفًا أَكْلُهُمُ وَالزَّيْتُونَ وَالرُّمَّانَ مُتَشَابِهًا وَغَيْرَ مُتَشَابِهٍ كُلُوا مِنْ ثَمَرِهِ إِذَا أَثْمَرَ وَآتُوا حَقَّهُ يَوْمَ حَصَادِهِ وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ

¹⁶⁴ Aaraf: 31. وَكُلُوا وَاشْرَبُوا وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ.

waste. He does not like the wasteful.” (25:67)¹⁶⁵: “Those when spend are neither wasteful nor miserly, between that is a just stand”. (26:151-152)¹⁶⁶: “Do not obey the order of the wasteful-man who corrupt in the earth, and do not reform”. In (20:81)¹⁶⁷: “Eat of the good things with which we have provided you and do not transgress therein lest my anger should fall upon you, and upon whosoever my anger falls has assuredly fallen”. The same exegesis¹⁶⁸ comments the revolt (transgression) in this verse: “transgressed means passed limits of moderation and fell into blasphemy and this became predominant on him and exaggerated in sins and oppression. And all the meanings return to revolting to obey (transgressing) the internal and external wisdom. And the meaning of do not transgress is: from what we have provided to you to consume do not transgress the limits God has drawn, including for subjects such as; the quantity of eating or earning the meal, rules of eating and its extravagancies and accessories attached, and thanking the giver according to the gift or meal offered, or variety of meal or excess of eating, or feeding one with a food one does not deserve, neither without attention to God whereas eating (consumption) is drawn into attention but concerns whatever is provided by God for consumption.”

Squandering and Sustainable Development

Tabzir in current economic terms is called “overconsumption” and in popular language is called “extravagance”. This concept, from consumption point of view at macroeconomic level is significant from comparative dimension among countries. This is in spite of equality of

¹⁶⁵ Forqan: 67. وَالَّذِينَ إِذَا أَنْفَقُوا لَمْ يُسْرِفُوا وَلَمْ يَقْتُرُوا وَكَانَ بَيْنَ ذَلِكَ قَوَامًا.

¹⁶⁶ Shoura: 151-152. وَلَا تُطِيعُوا أَمْرَ الْمُسْرِفِينَ. الَّذِينَ يُفْسِدُونَ فِي الْأَرْضِ وَلَا يُصْلِحُونَ.

¹⁶⁷ Taha: 81.

كُلُوا مِنْ طَيِّبَاتِ مَا رَزَقْنَاكُمْ وَلَا تَطْغَوْا فِيهِ فَيَحِلَّ عَلَيْكُمْ غَضَبِي وَمَنْ يَحِلِّ عَلَيْهِ غَضَبِي فَقَدْ هَوَى.

¹⁶⁸ بيان السعادة في مقامات العباد، ترجمه، جلد ۹ صفحات ۲۳۵-۲۳۴.

density of population in different regions; per-capita consumption varies from country to country. For example, China is comparable with United States of America from land measure, but per-capita energy consumption in USA is 9 times as much as China. In other words, in spite of more population of China, her energy consumption is half of USA. Overconsumption of energy is one of the important basic problems at national and global levels from heating and other points of view and the example offered here shows that overconsumption at present global conditions is regarded as a kind of injustice about others rights. For example, energy overconsumption in USA has helped to heat more the earth which has created losses to other people of this planet.

Cases such as consumption wastes, conspicuous consumption, keeping up with Jones consumption and other similar cases are considered as overconsumption which is classified as squandering. These cases are so vast that some of international texts have also considered illumination and luminescence as overconsumption.

From sustainable development point of view, overconsumption decreases the carrying capacity of earth and practically empties the resources and gradually lowers down the level of environment and ecological health. This is in addition to bad effects of pollution caused by production and consumption of goods and commodities. The State of the world report¹⁶⁹ makes it clear that: the ecological capacity of the world is not enough for excessive wishes of China, India, Japan and America. For example, America has less than %5 of world population, but produces %25 of world CO₂¹⁷⁰ and use %25 of the world resources¹⁷¹. In spite of having

¹⁶⁹ State of the world 2006, World Watch Institute, 11 January 2006.

¹⁷⁰ Global Warming.

¹⁷¹ Illinois Recycling Association Recycling Facts.

%3 of world discovered oil resources¹⁷², America spends %26 of the world energy¹⁷³ and produces %30 of the world spoils and wastes¹⁷⁴. According to researches, the effects of this country on environment are 250 times more than people of African Sahara¹⁷⁵. If China and India reach the American level in 2030, they will need the whole planet to satisfy their needs.

From human being life indices point of view, resources needed are higher than resources regarding animals or plants or others. In Five Capital Model¹⁷⁶ classification, 5 kinds of capital have been considered: natural capital, social capital, human being capital, industrial capital, and financial capital. Squandering debate covers all these capitals and as over-use of these capitals leads to the decrease of carrying capacity of living space of human being in Five Capital Model, in ethic economics also this overconsumption is regarded disagreeable.

In holy Quran the verses such as: (21:9)¹⁷⁷“*then we were true to the promise, we saved them together with those whom we willed, and destroyed the transgressors*” and (40:28)¹⁷⁸“*Allah does not guide the lying squanderer*” or (10:12)¹⁷⁹“*In this way, the deeds of squanders were nice at their opinion*” or (40:43)¹⁸⁰ “*there is no doubt that the squanders are the*

¹⁷² SEI: Energy Consumption.

¹⁷³ NRDS: Reducing U.S. oil dependence.

¹⁷⁴ Waste Watcher.

¹⁷⁵ Consumption industrialized, commercialized dehumanized and deadly. And also: US population reaches 300 million, heading for 400 million; no cause for celebration, 4 October 2006.

¹⁷⁶ Five capitals models of sustainable development, Forum for the Future.

¹⁷⁷ Anbiya: 9. وَأَهْلَكْنَا الْمُسْرِفِينَ.

¹⁷⁸ Qafir: 28. إِنَّ اللَّهَ لَا يَهْدِي مَنْ هُوَ مُسْرِفٌ كَذَّابٌ.

¹⁷⁹ Younis: 12. يَعْمَلُونَ كَانُوءًا مَا زِينٌ لِلْمُسْرِفِينَ كَذَلِكَ.

¹⁸⁰ Qafir: 43. وَأَنَّ الْمُسْرِفِينَ هُمْ أَصْحَابُ النَّارِ.

inhabitants of the fire”, and (26:151-152)¹⁸¹: “do not obey the order of the squanders who corrupt in the earth, and do not reform”, and (6:141):¹⁸² “He does not like the squanders” and (7:31): “children of Adam, take your adornment at every place of prayer. Eat and drink, and do not waste. He does not like the squanders”. These verses all show how God prohibits overconsumption (transgressing the limits) and squandering.

Generally, in relation to environment protection the following verse and its exegesis is interesting: (2:205)¹⁸³ “No sooner does he leave than he hastens about the earth to corrupt there and destroy crops and cattle. Allah does not like corruption”. This means that destroying farms and farm animals is considered as corruption and God does not like such actions. Destroying farms and animals both directly and via destroying ecosystem and environment by polluting the environment and making disequilibrium in the ecosystem all are cases of corruption. In the above verse, the farms or farm animals have not been specified to Muslims or believers, and by using the word "earth", all of them around the world have been considered. This approach confront the Muslim peoples and governments with this class of commandments that have not right to corrupt wherever in the earth. Corruption in the earth from the point of view of the said verse includes many activities that destroy the environment including plants, animals and human being. Generalization to human being compromises those activities that corrupt in the earth via production and trade of harmful materials and chemical poisons to destroy peoples and destroying farms and animals to

¹⁸¹ Shoara: 151-152. وَلَا تُطِيعُوا أَمْرَ الْمُسْرِفِينَ الَّذِينَ يُفْسِدُونَ فِي الْأَرْضِ وَلَا يُصْلِحُونَ.

¹⁸² Anam: 141. Aaraf, Verse: 31. إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ.

¹⁸³ Baqarah: 205.

وَ إِذَا تَوَلَّى سَعَى فِي الْأَرْضِ لِيُفْسِدَ فِيهَا وَ يُهْلِكَ الْحَرْثَ وَ النَّسْلَ وَ اللَّهُ لَا يُحِبُّ الْفُسَادَ.

Qasas: 77: And seek not (occasions for) mischief in the land: for Allah loves not those who do mischief. Also in Sureh of Maidah: 64.

وَ لَا تَبْغِ الْفُسَادَ فِي الْأَرْضِ إِنَّ اللَّهَ لَا يُحِبُّ الْمُفْسِدِينَ.

hurt the others, weapons for attack and weapons of mass destruction, burial of nuclear wastes in poor countries and colluding with agents and their leaders, production, consumption, export and import of any raw or intermediate materials that causes corruption in livestock and humans and harmful to them and other similar cases all are included in this debate.

The am verse is commented as follows by the exegesis of mystics as¹⁸⁴: *“when he leaves, means when he turns back on you or a responsible assignee of you for a task, whatever the task is including material or responsibility to people. He will accelerate travelling on earth or the ground of his spirit, or myth of prophets and their successors to make corruption on earth and corruption is the fact of devaluating or changing a thing from its perfect place, it is placed into, or impeach that thing reaches its perfection. The insistence comes from the fact that hypocrites declare to be reformers (peacemakers). “When it is said to them, do not corrupt in the land; they reply: we are just reformers, but it is they who are the evildoers, though they do not sense it”*¹⁸⁵ *shows they will destroy the fundamentals and fruits. The fruit is the result of what people implants from any type ever to be implanted by man or grow from the earth itself; and the generation (child) of humankind or other creatures ...”*

Overconsumption and Sustainable Production

Although overconsumption is related to consumption, but regarding that production of goods provides chain products of intermediate goods which are used in process of production of other goods, we better refer to squandering in production.

¹⁸⁴ بيان السَّعَادَةِ فِي مَقَامَاتِ الْعِبَادَةِ، جلد دوم، ترجمه، صص ٤٢٦ – ٤٢٢.

¹⁸⁵ Baqarah: 11-12.

وَ إِذَا قِيلَ لَهُمْ لَا تُفْسِدُوا فِي الْأَرْضِ قَالُوا إِنَّمَا نَحْنُ مُصْلِحُونَ أَلَا إِنَّهُمْ هُمُ الْمُفْسِدُونَ وَلَكِنْ لَا يَشْعُرُونَ.

A great portion of sustainable production is involved in industrial ecology. That is to say, industrial ecology is a scientific multidisciplinary background which is concentrated on sustainable combination of environment, economy and technology. By industrial term in industrial ecology, we don't mean industrial centers, but we mean how people use natural resources in production process. Basically, industrial ecology is looking for changing industrial processes from linear to closed circular systems. In linear systems, capital and resources will finally turn into spoils and wastes. But in circular systems, wastes are recycled as factors of production in production process. In other words, industrial ecology is considered as a part of an ecosystem. This view was first expressed by Robert Frosch, Nicholas E. Gallopoulos in 1989¹⁸⁶. Their doctrine is: why industrial systems should not act as an ecosystem in which the wastes of an industry become the resources of another industry? This process will cause the consumption of raw material in producing pollution and waste decline in production process. This view which is important for increasing the carrying capacity of earth, has gained the attention of many environmental researchers.

Another related subject is clean technology and concerning regulations which in a way by various law enactments prevents the expansion of technologies with more bad effects in comparison to other production technologies. Although this subject is at its preliminary stages but will create a good background for future.

Cleaner production is also one of the subjects related to squandering in production. This topic practically tries to maximize production by

¹⁸⁶ Robert Frosch, Nicholas E. Gallopoulos, (1989), Strategies for manufacturing, Scientific American, 261: pp 144-152.

minimizing wastes and emission of gases of production process¹⁸⁷. The improvement of organization and technology of production will ease better solutions. The discussions of clean production in the fields of documenting consumption of materials and energy and..., using controlling and monitoring systems and producing indicators, replacing raw materials and auxiliary materials, increase of useable life of auxiliary materials and vaporizable liquids, improvement of automation and controlling, recycling spoils and wastes and less-waste producing processes are included in the debates concerning clean production¹⁸⁸.

Overconsumption and Public International Law

From this view, overconsumption is not only disagreeable, but also can be entered in the definitional domain of crimes. This is because over-consumer endangers other's interests to obtain his own interests; therefore it should be principally defined as crime. Accordingly, God has clearly mentioned in the verses cited above, that He does not like squanderers and considers them as Satan brothers because Satan is the symbol of opposition to human being and this brotherhood means that squanderer is the enemy of human being. Certainly crime is not a fixed rule with unchangeable meaning and it is not considered crime before being legislated by criminal law. In sociologists' viewpoints, crime is an action which is against the society interests, whether is considered by law makers or not¹⁸⁹. Therefore, in law philosophy, in definition of law it has been said that it is a regulations governing people living in the society and if people live alone

¹⁸⁷ Yacoub, Ali, Johannes Fresner (2006) Half is enough, an introduction to cleaner production, Beirut, Lebanon, LCPC Press.

¹⁸⁸ Many other instances are related to this subject whom includes the subject of investment such as construction design for using sunshine energy and prevention of leaking energy used for air-conditioning which we will not go through here.

¹⁸⁹ See: Public punishment jurisprudence. Motamed, Mohammad Ali, Tehran University Publication, Vol. 1, P. 125, 1973.

and out of society, they have no obligations and rights. The difference of law and ethics is that ethics are regarded and judged by people themselves, but in law point of view, goodness and badness is studied by relationship with others¹⁹⁰. Accordingly, in Islamic law, “the public need rule” has been described which is the public necessity which is a need that may not be at emergency level but since it is in wellbeing of people, it is respected and according to Sharia it is considered as law¹⁹¹. The rule of “No Loss” which is a rational rule is also emphasizing the same thing and intellect acknowledges it. On the other hands, the debate of “prohibition of bad” and its relations to rational obligations and also "expediency” from social dimension, all can be commentated and deducted in the framework of badness of overconsumption. The purpose of explaining these subjects is that humankind should replace overconsumption from individual dimension into social and global dimensions, so that the action of over-consumer would not harm others' life. Certainly, many studies should be carried out for the replacement of this view which is more than the subject of this book and we end this subject by explaining that in defining crime, we are not considering a narrow definition in relation with crime, offence or fault, but we consider a general meaning which is any harmful action for others and fighting with that does not mean legal encountering with criminals, but it is by levying special taxes on over-consumer and squanderers and encouragements for parsimony or substituting resources and so on which are explained in detail in environmental economics texts. Partial international activities have been carried out in this regard including Kyoto Protocol for controlling greenhouse gasses and heating of the earth; and Europe also has conducted Emission Trade Scheme (ETS) in this

¹⁹⁰ See: The philosophy of law. Katouzian, Naser. Publication Company Ltd, Vol. 1, pp. 540-541, 1998.

¹⁹¹ See: Legal schools of thoughts in Islam. Langaroudi, Mohammad Jafar. Gange Danesh publications, p. 130, 1991.

direction to limit CO₂ production¹⁹².

Conclusion

Ethic economics is a new name for old value-debates in economics which analyzes economic behavior by considering ethics. Tabzir with the meaning of wasting properties is forbidden in holly Quran and is referred to as overconsumption and waste. This subject has special importance from comparative dimension among countries so that overconsumption is considered as aggression to others' rights at present world conditions, and from this view, squandering is in the realm of crimes.

Squandering or spending more than need which is a concept in ethic economics, which has been reconsidered under the subject of sustainable development at present time. It is shown on the whole that the increase of per-capita consumption, the effects on environment will increase; in other words, the environmental carrying capacity will decrease. At present world conditions, squandering means aggression to others' rights and in addition to be disagreeable, but by compiling rules, it can be regarded in the domain of offence and crime at national and global levels. This is because squanderer endangers the environment and interests of others for her own benefit.

As a model to use resources to serve human being needs for present and coming generations, sustainable development is put forward which coincides with disagreeability of squandering in ethic economics. In spite of considering the sustainability of environment, this concept takes into

¹⁹² Bijan Bidabad, Environment and cement industry in Iran and Europe. Proceeding of the 1st Iran's cement economics seminar, Cement Planning and Research Bureau of Amirkabir Industrial University, Association of Cement Producers Entrepreneurs, September, 27th 2005, Tehran, pp. 317-350, printed by Elme-Omran.
<http://www.bidabad.ir/doc/mohitezist-cement.pdf>

account the areas such as economics, socio-politics, and variety of cultural and life realms regarding intellectualism, sentiments, ethical and spiritual subjects. Regarding the chain of production, it also points to squandering as a topic in industrial ecology. Industrial ecology recommends converting industrial production processes from linear to circular systems in which, scraps and wastes are recycled as factors of other productions. Clean technology and its related regulations and cleaner production are also related to squandering concept in production.

From sustainable development point of view, overconsumption decreases the carrying capacity of the earth planet and also increases pollution and bad effects resulted from production of goods and services. Sustainable development is a model for using and consuming resources to obtain human being needs while preserving natural environment so that to safeguard human needs in future. The emphasis of sustainable development on supply side is on the methods of improving environmental performance of main economic sectors, and sustainable consumption emphasizes on the methods of obtaining requirements in a way which do not decrease the carrying capacity of earth. This concept of consumption requires optimizing consumption by preserving quality of resources and environment along time. Industrial ecology is concentrated on the sustainable combination of environment, economy and technology and it means the method of using natural resources in production process and changing the linear production processes to close cycling processes. In linear systems, resources and capital finally end in garbage, but in cycling methods garbage is recycled and used as factor of production. This view is very important in increasing carrying capacity of the earth. Clean technology and cleaner production are also related to production squandering debate.

Sustainable development concerns quality and quantity of human life. But individual countries' decisions are not very effective in implementing sustainable development goals and we should collect attention of world specialists and policy makers and propaganda on blamefulness of squandering and persuade them to decide on directive instructions and punishing measures for this phenomenon. Therefore, at national level, indicating this subject and transferring this culture and creating necessary background can be a good starting. Regarding the fact that one side of this discussion is in the domain of ethics and is one of the old value debates in economics and has been put forward by various religions in different ways, we can use this background and blame overconsumption and waste, so that in the next steps, by putting forward this subject at related international organizations and holding international conventions, pass official laws and regulations to restrict this phenomenon.

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Annex

Global Hunger and Food Squandering

Damages and wastes are carried out by people into variety of ways and usually no production, transaction and consumption process can be found which has no damages. The damages of production and consumption processes can be classified into different ways according to the purpose of study with different applications¹⁹³. Each of these classifications are subject of detailed discussions and regarding the importance of food and its high level of damages and wastes, and the malnutrition and hunger of people, all are subject to review.

Generally, damages occur in the process of production because of poor technology, management, warehousing and sale, lack of proper processing and preserving technology and proper transportation, delivery, packing and supplying to consumers and improper methods of food consumption by consumers as a fraction of household wastes, are the main

¹⁹³ For example, damages can be classified according to the following groups: Solid Wastes, Liquid Wastes, Gaseous Wastes, Animal by-products, Biodegradable waste, Biomedical waste, Bulky waste, Business waste, Chemical waste, Clinical waste, Coffee wastewater, Commercial waste, Construction and demolition waste (C&D waste), Controlled waste, Consumable waste, Composite waste, Demolition waste, Domestic waste, Electronic waste (E-waste), Farm waste, Food waste, Green waste, Grey water, Hazardous waste, Household waste (including Household hazardous waste), Human waste, sewage sludge, Industrial waste (including: slag, fly ash and sludge), Inert waste, Kitchen waste, Litter organic waste, Liquid waste, Medical waste, Mixed waste, Municipal solid waste, Packaging waste, Post-consumer waste, Radioactive waste (nuclear Low level and High level waste, Spent nuclear fuel and Mixed radioactive/hazardous waste), Recyclable waste, Residual waste, Retail hazardous waste, Sewage, Sharps waste, Slaughterhouse waste, Special waste, Toxic waste, Uncontrolled waste, Waste heat, Wastewater, Winery wastewater...
http://en.wikipedia.org/wiki/List_of_waste_types

sources of damages and wastes of food around the world¹⁹⁴.

The subject is very important from humanities point of view because a quarter to one third of food materials are wasted every year and about one sixth of the people of the world which is about one billion people, are facing malnutrition and about one third of them are hungry. Due to poor nutrition during embryonic and childhood is the cause of death of one third of the children of the world¹⁹⁵. According to Food and Agriculture Organization (FAO), number of hungry people in the world had reached 105 million in 2009 and about 1.02 billion had malnutrition and hunger which has been the main cause of annual death of 30.5 million children of the world. Families in developing countries on average spend 70% of their income for food and this figure is about 15% to 18% in industrial countries. A study of hungry people of the world shows 70% of them are women and girls; while rural women produce 50% of the world's food.

The number of children suffering from low weight has increased between 2000 and 2005 according to UN reports. Micro-nutrition shortage

¹⁹⁴ Food wastes include any kind of raw or cooked nourishment which is thrown away. The United States Environmental Protection Agency defines food damages and wastes as "uneaten food". Also refer to:

"The Definition of Waste, Summary of European Court of Justice Judgments". Defra. Updated 2009. Retrieved: 2009-08-20.

<http://www.defra.gov.uk/environment/waste/topics/pdf/ECJCaseLaw20090209.pdf>.

¹⁹⁵ Announcement of Information Centre of United Nations, International Union against Hunger about Food. In this announcement the waste of food has been defined as a "criminal phenomenon" and has asked everybody to decrease waste to zero and do not buy or cook more than need and preserve food through proper methods so that food not to thrown away and before throwing away food, they should think if possible to prepare a tasty soup from the remained food? The announcement has also asked people to persuade governments to implement effective actions for alleviation of hunger and malnutrition. http://www.fao.org/UNFAO/Bodies/cfs/cfs34/index_en.htm

Also see:

<http://www.iaahp.net>

Olivier De Schutter, 2009, UN Special Rapporteur on the right to food, Accountability to combat hunger.

http://www.iaahp.net/fileadmin/templates/iaah/WFD2009/contributions/IAAHeditorial_DeSchutter_EN.pdf

is one of the most important factors for excessive low weight of children. It is one of the main health problems of the world. That is to say, vitamin A shortage and therefore we see anemia symptom because of low usage of iron and zinc. These are causes which increased the early death of children and mothers, further decrease IQ of the children and decrease quality of life and productivity as well as economic growth in developing countries. According to a report, about 70% of non-pregnant mothers in India and 50% of women in sub-Saharan Africa are suffering from anemia because of inadequacy of iron consumption. Further, inadequacy of vitamin A has affected the immunity system of 40% of children below the age 5 in developing countries and has increased the average number of death among the children in developing countries. In some countries the figures are more desperate, one of which is related to India with 40% because of lack of consummation of adequacy of vitamin A among before school age children.

The UN World Food Program Agency projected to the new record number of world hungry people on the occasion of Global Food Day, and emphasis that help contribution has decreased to its lowest level of recent years, while the number of hungry people of the world has increased because of the combined effects of increase of the food price, financial crisis and climate change. In this regard, the executive director of the World Bank¹⁹⁶ says: The main concern of world policy makers today is concentrated on the miseries caused by global crisis. But, the real crisis is hunger and malnutrition... 75% of the people of the world live in villages and most of their lives are tied to agriculture which is the basic tool to fight hunger, malnutrition, and alleviation of poverty and sustainable

¹⁹⁶ Ngozi Okonjo-Iweala.

development¹⁹⁷.

In complain to disregarding the vast hungers of the world, in a symbolic movement in May 2009, Jack Dief, director of Food and Agricultural Organization of UN, went on 24 hours strike in FAO headquarter in Rome. He went on a hunger strike to recall international organizations to fight against spreading world hunger. By expressing his worry about the increasing number of hungry people of the world, he asked all people of the world to join this strike. Dief mentioned that we have every kind of natural resources and techniques to abolish world hungriness and only political reasons prevent us from doing so.

All most 30% of food stuffs in America which amounted to 48.2 billion dollars in 2008 are wasted. A large portion of this figure is food wasted from restaurants, hotels, coffee shops and schools, university cafeterias and office restaurants¹⁹⁸. All these food wastes are because of squandering of food stuff more than needed and are thrown away. Generally, purchasing and keeping more food than needed, increases other costs such as transportation and preserving which are usually forgotten. In this regard, it should be mentioned that according to the published data, about 18.7% of the world energy is used to preserve food stuff in refrigerators¹⁹⁹.

The FAO has predicted about a hunger tsunami in Food Production Outlook for 9 billion people of the world in 2050. It has been mentioned in their report that in order to gain victory on this crisis in 2050, the rules and socio-economic framework should be changed to prevent imbalanced

¹⁹⁷ All-Africa Global Media, Feb., 19, 2008.

¹⁹⁸ Robin Shreeves, The Shocking Statistics of Food Waste (and How to Keep Your Contribution to the Problem at a Minimum) Published on August 25th, 2008, Home & Garden

¹⁹⁹ <http://www.refrigeratorsaver.com/>

distribution of agricultural products. However, within the first half of the 21 century, amount of food needs to be doubled, where world temperature will increase, agricultural production capacity will decrease, while demand for these products will also increase. Hence, if we do not think essentially to solve this problem, the hunger crisis will be indispensable. A recent FAO study shows that in order to feed 9 billion people in 2050, we need to increase agricultural production by 70%, and most of this increase should be in vital strategic productions such as grains. One of the instances that FAO proposes is equal distribution of food and resources. According to the FAO report, grain production which is about 2.1 billion tons per year at present time should be increased by one billion ton. Meat production should increase from 200 million tons to 470 million tons in 2050. Out of these production, about 72% of this amount will be spent in developed countries, while, at present time, figure is 58% of total meat production. The report makes this clear that in order to eliminate hunger in 2050, it is necessary to increase investment in agriculture by 60% until 2050. It may be pointed out here that the Human Right Declaration in 1948 considers not being hungry and removal of malnutrition as an integral part of human rights which has been again confirmed by Children Right Convention in 1989, but UN and global community have not done any decisive action about this difficulty yet.

On the other hand, religiously speaking, the holly Quran has considered over-consumption and squandering (spending more than need) as a forbidden act. Al-Quran commands: *“It is him who has created gardens with or without scaffold and date roots and fields with various fruits and olive and similar and un-similar pomegranates. When they become fruitful, eat their fruit and give God’s share when you pick them*

and do not squander, because God does not like squanderers”²⁰⁰. The share of God here certainly means paying “Zakat” (an Islamic tax) to poor and helpless people. In Surah of Isa, God commands: “*Pay the rights of helpless people and those tired up in roads and do not squander at all. Squanderers are brothers of Satan and Satan was not grateful with his God.*”²⁰¹

It is quite clear that human beings are families and in the above verses of the Quran, when it refers to human beings it means to all the people around the world. This verse considered specific rights in the properties of people for family and helpless people, and there is no difference between Asian, African, American or European helpless people. Wherever the helpless is located, they are needy and we have to pay his right which is contained in the properties of wealthy peoples.

Quran again commands: “*Eat and drink and do not exceed limits because he does not like squanderers*”²⁰². This subject according to the commands of the God, there is urgently needed for global system to find a basic solution to the problem and put it at the top of international policy making agenda. Ethically, it is not appropriate for human being dignity to see some people throw away 30% of their food stuff while some others suffer and die because of hunger and malnutrition.

The UN World Food Program Agency referred to a new record of

²⁰⁰ An'am: 142-143.

"وَهُوَ الَّذِي أَنْشَأَ جَنَّاتٍ مَّعْرُوشَاتٍ وَغَيْرَ مَعْرُوشَاتٍ وَالنَّخْلَ وَالزَّرْعَ مُخْتَلِفًا أَكْلُهُ وَالزَّيْتُونَ وَالرُّمَّانَ مُتَشَابِهًا وَغَيْرَ مُتَشَابِهٍ كُلُوا مِنْ ثَمَرِهِ إِذَا أَثْمَرَ وَآتُوا حَقَّهُ يَوْمَ حَصَادِهِ وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ

²⁰¹ - An'am: 26-27.

وَآتِ ذَا الْقُرْبَى حَقَّهُ وَالْمِسْكِينَ وَابْنَ السَّبِيلِ وَلَا تُبَذِّرْ تَبْذِيرًا. إِنَّ الْمُبَذِّرِينَ كَانُوا إِخْوَانَ الشَّيَاطِينِ وَكَانَ الشَّيْطَانُ لِرَبِّهِ كَفُورًا.

²⁰² Aaraf: 31. وَكُلُوا وَاشْرَبُوا وَلَا تُسْرِفُوا إِنَّهُ لَا يُحِبُّ الْمُسْرِفِينَ

number of hungry people of the world on the occasion of International Food Day and made it clear that the agency had agreed to help by providing food for 108 million people in 74 countries this year. But some countries reduced the quota and pended the quota of some others because of budget deficit. At last it has managed to secure only 2.9 billion dollars of 6.7 billion dollars budget from donor countries in 2009. By a simple commensuration one can find out that just America's food squander which was about 48.2 billion dollars in last year, 775 million hungry people could have been fed. And if we add the amount of squandering by Europe, Japan and wealthy oil producing countries to this figure, we can see that their squandering amounts reached several times as much of the food needed for hungry and malnutrition people of the world.

Unfortunately, food is considered as other goods and no difference is considered between essential needs and luxury goods. Wealthy people can buy everything, while poor people usually cannot afford to buy their basic needs. Human being has biologic needs of food which is quite different from their secondary needs for other things. That is to say, they need food just like air and water to survive while food is supplied like other goods in the market. In this situation, in addition to people dying because of war and homelessness, some others die because of famine and starvation. Many people die because of chronic malnutrition and diseases thereof; their life becomes shorter and they suffer more. Lack of food, the children also suffered due to low mental and bodily growth which threatens their future. As a result the human being is wasting a portion of human power and resources which decreases the supply in the global economy. This concept can be deducted from the Quran verse which says²⁰³: "*Eat from clean things we have sustenance for you and do not squander them which makes*

²⁰³ Taha: 81.

كُلُوا مِنْ طَيِّبَاتِ مَا رَزَقْنَاكُمْ وَلَا تَطْغَوْا فِيهِ فَيَحِلَّ عَلَيْكُمْ غَضَبِي وَمَنْ يَحِلَّ عَلَيْهِ غَضَبِي فَقَدْ هَوَىٰ.

my anger possible and if my anger descent upon anyone, he will die”.

From economic point of view, prevention of squandering will decrease food prices and thereof, poor people can afford to consume more food. This is very important from economic point of view and everybody and every family needs to buy as much food stuff as it is sufficient for him and nothing should be left to be thrown away. Therefore, people should be trained not to throw away food stuff and instead, should give them to the poor and helpless people so that these people do not decrease their utility but reduces prices and increases their welfare as well. Certainly good nutrition of hungry people and malnutrition people will increase their efficiency which leads to more production increase and welfare of all people of the Earth planet.

Chapter Eight

Asset and Liability Management (ALM)

Introduction

Assets and Liabilities Management (ALM) consists of technical instruments and methods, which consider both value creation and controlling of risks for shareholders. Since one of the main duties of banks' financial management is ALM. Therefore, banks apply ALM techniques to increase more benefits by covering themselves from risks, and minimize losses coming from transactions. The appropriate assessment of bank's ALM requires deep understanding of assets and liabilities, customers, economics environment and competition conditions of the bank. Thus prior to going through into Islamic banking respects of assets and liabilities, it is necessary to introduce Islamic banking assets and liabilities structures, market, customers and other effective factors on ALM.

Economic Theory and Islamic Banking

One of the main purposes of Islamic economics is real value added creation and social welfare maximization in the economy. On the other side, welfare economics, new business administration concepts and also new international banking theories follow the value creation and maximizing of shareholders' benefits. Probably, one of the usury illegality reasons in Islamic banking may come from affection of money market fluctuation on real economic sector that causes economic divergence from long run stability growth and imbalances in money market and other markets as well. Therefore, the compatibility between conventional economics and Islamic economics theories can be observed, though this compatibility cannot be observed in all theories. The main contradictory between Islamic economics and conventional banking comes from usury illegality principle; and usury and non-usury considerations

on transactions are influenced by intellectual deduction of jurists and Islamic economists and existence of contradictories among opinions in this realm is inevitable. In this book, by scrutinizing usury definition and using theosophy principal of jurisprudence some criteria to distinguish usury from non-usury transactions were defined. Based on these criteria, non-usury banking performance requires specific ALM approaches to make necessary coordination that applying those ALM techniques improve the efficiency and effectiveness of this type of banking. Islamic banking as same as conventional banking follows maximizing shareholders assets, but digressing that the real stakeholders of Islamic banks embrace all beneficiaries as depositors, investors and business partners. The shareholder's assets is measured by market value of shares, amount of payable profit and also created value added. The share's market value or created value added are affected by three factors: cash flows resulted from financial ability of shareholders, cash flows' time scheduling, and risks of cash flows. The maximizing shareholder's equity in Islamic banking is considered by maximizing of value creation as well but must consider the principles of usury prohibition mentioned above. Now Economic Value Added (EVA) index will be considered as value creation criterion.

Assets and Liabilities Structures in Islamic Banking

The cognition of assets and liabilities structure in Islamic banking requires assets and liabilities items to be considered on the basis of Islamic Sharia. The source and origin of assets in Islamic banking same as conventional banking come from net benefit and liabilities. On the other words, essential pillar of profit acquiring in Islamic banking is assets from internal sources of shareholder's equities and from external source as liabilities.

Table 1: General structure of assets and liabilities in Islamic banking

<u>ASSETS</u>
Cash and short-term funds
Deposits and placements with banks and other financial institutions
Short term investment (i.e. Sukuk)
Allowance for bad and doubtful financing
Financing and advances based on Islamic contracts
Direct investment
Other assets
<u>Fixed Assets</u>
Property, plant and equipment
Other tangible assets
Intangible assets (i.e. goodwill)
<u>TOTAL ASSETS</u>
<u>Off Assets</u>
Customer commitment and contingencies
<u>LIABILITIES AND SHAREHOLDER'S EQUITY</u>
Deposits from customers
Deposits and placements of banks and other financial institutions
Bills and acceptances payable
Other liabilities
Provision for taxation and zakat
Ordinary share capital
Reserves
Shareholder's equity
<u>TOTAL LIABILITIES AND SHAREHOLDER'S EQUITY</u>
Bank commitment and contingencies

Productive assets in Islamic banking which are classified as uses are affected by monetary resources and shareholders' equity or deposits of depositors which are categorized in Islamic contracts according their liquidity degrees.

Cash

Similar to conventional banking, in Islamic banking this type of assets is maintained for covering bank commitments. Low or lack of return of this type of assets and also its undesired effects of inadequate liquidity are very important for maintaining this type of assets. In other words, increasing losses of liquidity risk stimulated the Assets and Liabilities Committee (ALCo) to propose some guidelines to preserve the tradeoff between costs of maintaining liquidity and liquidity risk. Generally, optimum liquidity amounts to be maintained by Islamic bank can be calculated by equation (1).

$$LR_t = \frac{AL_t + ELS_t}{ELN_t} \geq \sigma \quad (1)$$

AL_t : Liquid assets

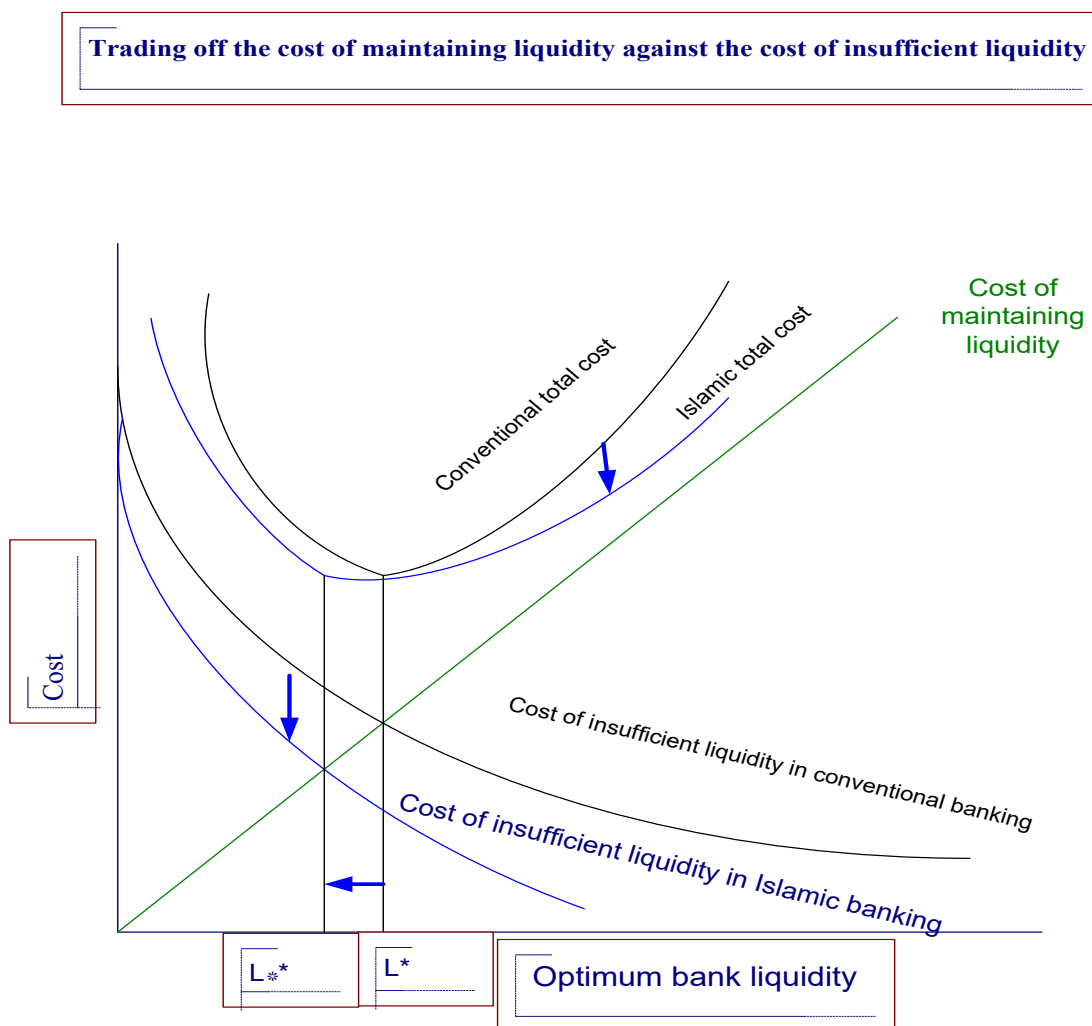
ELS_t : Estimated acquired liquidity based on liability sources

ELN : Estimated liquidity needs

The above equation shows optimum liquidity ratio and it should be greater than σ in absolute value. In Islamic banking, the required cash flow (ELN) variation is lesser than conventional banking. Because, the rate of return in Islamic banking comes from rate of productivity in real economy sector in correspondence to profit and loss sharing (PLS) mechanism and this will stabilize interest rate and loaning and depositing flows. Rate of return and loans and deposits flows in Islamic banking are more stable than

conventional banking. Figure (1) indicates liquidity risk curve shifts down (increases slope) in Islamic banking, thus, optimum liquidity in Islamic banking will be lesser than conventional banking.

Following figure (1), the optimum amount of liquidity can be calculated as the point of intersection of the cost of maintaining liquidity curve and the cost of insufficient liquidity curve in both types of banking. In other word optimum liquidity measure is reached where liquidity costs are minimized as shown in following figure.



Lower liquidity needs in Islamic banking will cause the liquid assets to be allocated for investment in high-return assets. Therefore, since the liquidity in Islamic banking is lesser than conventional banking, the

opportunity cost for maintaining liquidity in Islamic banking is lesser than conventional banking as well. The liquidity needs in Islamic banking and conventional banking are shown with b_{PLS} and b_{Con} parameters and we can realize this relation: $b_{Con} > b_{PLS}$.

High Liquid Assets

Islamic banking may buy some return based assets instead of their cash hoardings. Despite of being highly liquid, these assets have positive returns and bank can get profits of joint venture in investment projects. Sukuk²⁰⁴ and Musharakah bonds (*Oragh-e-Musharakah*) are samples of this type of assets in Islamic banking which are replacements for bonds in conventional banking. Decision for maintaining this type of assets will be based on liquidity, inflation, rate of return of real economy sector, and also economic conditions and regulations and etc

Receivable Accounts and Notes

The origin of this kind of assets comes from Islamic bank credits as form of debt buying (*Kharid-e-Dayn*) contraction. Purchasing of this type of assets will depend on customer credit position, rate of return and economic conditions.

²⁰⁴ Sukuk is a one of financing instruments which is based on Al-Ijarah contraction. Sukuk or Al-Ijarah negotiable paper can be issued on the bases of Al-Ijarah contractions basis and Al-Ijarah Muntahia bi Tamlik. In the first type, Sukuks are issued and offered to borrow capital. The borrowed capital based on Sukuk is spend for buying capital intensive and durable goods on behalf of capital owners and the Sukuk's issuer by a leasing contracts rent the goods to customers who need these types of goods. At the end of duration of Ijarah, goods will be sold as scrap. The rent will repaid to Sukuk owners at the specified dates after deduction of costs. In the second type of Sukuk (Al-Ijarah Muntahia bi Tamlik) at the end date of Ijarah contraction, the goods (Ain) by the way of gift (hibah), or at nominal price will be transferred to the lessee (Mostajer). For more information see: Proceeding of the international new financial instrument on Islamic banking system conference, (2007), Export Development Bank of Iran, Tehran.

Claims

The banking claims include those purchased assets that go into the credit risky. Total outstanding claims, allowance for bad and doubtful financing of government and non-government claims, debts of paid L/C on the base of Islamic contracts, irrecoverable receivable notes and others are classified in this group. The qualities of this type of assets regarding their returns in banks whether Islamic or non-Islamic are different and depend on the type of collaterals, mortgage or non-mortgage and cash or non-cash. So for calculating the allowances for bad debts and determining credit risk measure are considered by ALCO. The standard measure for allowances for bad debts (sum of public and specific reserves) to net loans should be at an acceptable level (the standard measure is 2% of net financing and advances). One of the advantages of Islamic banking in comparison to conventional banking is the transparencies of the balance sheet items. Because, profit and loss sharing (PLS) will decline allowances for bad and doubtful financing. In case of bankruptcy and investment loss, amount of investment is directly booked in costs accounts and therefore, the financial statement is more transparent in Islamic banking than conventional banking.

Financing Based on Islamic Contracts

The main activity of financial intermediary institutions is credit loaning or financing and advances. On the other words, financial intermediary institutions as economic firms are active in two markets. They demand financial resources from depositors (in deposit market) and on the other side, they supply credits to investors (in credit market)²⁰⁵. Revenue of

²⁰⁵ See: Bidabad, Bijan, Mahmoud Allahyarifard, (2005), "IT role in fulfillment of profit and loss sharing" Proceeding of The 3rd International Islamic Banking and Financing

Footnote continues in next page:

these institutions comes from differences between received and paid interest or interest premium. Prohibition of usury (*Riba*) in Islam and other divine religions and also work and do as bases of value creation are main characteristics of Islamic banking products and services, so this type of banking tend toward Musharakah contracts with pre-undetermined profit/return rate.

Generally selling assets as forms of credit products can be separable according to the following table²⁰⁶. Although, many of these products enter into usury domain²⁰⁷, but are used by Islamic banks like Iran. In many Islamic countries which applying Islamic banking, PLS contraction has not developed deeply for example the PLS paradigm of Islamic banking in Malaysia has been much slower on the asset side than on the liability side. On the asset side, only 0.5% of Islamic bank financing is based on the PLS paradigm of Mudarabah (profit-sharing) and Musharakah (joint venture) financing.²⁰⁸

In Iran, Islamic banking products can be separated into three major sectors of Qard-ul-Hasanah, Musharakah (joint) and Mubadalah (exchangeable) contractions. The banks are not authorized to receive profits from credit and loan based on Qard-ul-Hasanah and just can get commission based on the services they supply to their customers. The

Footnote is continued from last page:

conference, Monash University, Kuala Lumpur, Malaysia.

<http://www.bidabad.ir/doc/english-pls-5.pdf>

²⁰⁶ See: Hedayati, Aliaskhar, and co-authors, (2002), "Internal banking operation (2)", Iran Bank Institute, Central Bank of Iran, 5th publish, p 9 (in Farsi).

²⁰⁷ Bidabad, B. (2004), Economic-juristic analysis of usury in consumption and investment loans and contemporary jurisprudence shortages in exploring legislator commandments. Proceeding of the 2nd International Islamic Banking Conference, Monash University of Malaysia. 9-10 September 2004.

<http://www.bidabad.ir/doc/reba-en.pdf>

²⁰⁸ See: Beng Soon Chong, Ming-Hua Liu, 2007, "Islamic Banking: Interest-Free or Interest-Based? ",

www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2007-Vienna/Papers/0019.pdf

volume of this type of assets should be equal to the Qard-ul-Hasanah resources. The return of Musharakah contracts should be determined on the base of activity in real economy sector and to be determined according to profit and loss sharing (PLS) in investment. The return of Mubadalah contracts will be determined on the base of resale of assets to customers.

Table 2: credit products in Islamic banking

Qard-ul-Hasanah		Musharakah contractions		Mubadalah contractions	
Type of products	Type of return	Type of products	Type of return	Type of products	Type of return
Marriage, trousseau, preparation, house repairs, educational allowance, subsidy for rural constructions, and other productive sectors	Flat rate	Direct investment, <i>Muzaraah</i> , <i>Musaghah</i>	Floating rate	<i>Froush-Aghsati</i> (BBA ²⁰⁹), <i>Ijarah- be sharte- tamlik</i> ²¹⁰ , <i>Salaf</i> (forward), <i>Kharid-Dayn</i> (debt buying), <i>Joalah</i> , <i>Isisna</i>	Flat rate

²⁰⁹ Baia bi Thamin Ajil (BBA)

²¹⁰ Al-Ijarah Muntahia bi Tamlik

There is no unanimity on these types of contracts regarding usury doubts²¹¹. And the preferred contracts are those which are based on Musharakah that Islamic jurisprudence unanimity exists among the jurists for it, though present supervision and accounting systems cannot monitor and cover the non-usury banking systems' needs.²¹² Establishing of second market for certificate of deposit transactions in this type of investment, applying insurance of deposit instrument and transferring operational risk to depositors and also getting commission by bank are of noticeable processes.

Direct Investment

Another item of assets is the investment of Islamic bank in huge infrastructures developments projects.²¹³

Money Resources for Investment based on Debt (Deposits)

The main debt items in non-usury banks' balance sheet are various deposits which customer of individuals or legal entities, private or public sectors have deposited at the bank. Generally, Islamic bank's deposits can be categorized into Qard-ul-Hasanah and investment deposits. Qard-ul-Hasanah deposits are cheap resources and include *jari* (current) account, *Pasandaz* (saving) account which all of them are free of financial cost (payable interest). Another type of banking resources is investment deposits which Islamic bank can use them on the base of profit and loss sharing

²¹¹ It is needed to notify that some economists believe that necessarily it is not needed to separate contractions as Qard-ul-Hasanah, Musharakah, and Mubadalah; and some economists believe that Jealah and Istisna can be classified into Musharakah contracts.

²¹² See: Bidabad, Bijan and Mahmoud Allahyarifard, 2006: Implementing IT to fulfill the profit and loss sharing mechanism, Islamic Finance News (IFN) Journals, 3rd edition: <http://www.bidabad.ir/doc/summery-pls-it-1.pdf>.

²¹³ In case that these investments were governmental and its rate of return be less than rate of return of real economy sector, then the government should pay subsidy to the bank.

(PLS), and bank as intermediate agent apply them in different investment projects and the investment return will be paid to depositors according to their proportions and durations. As a rule, all Qard-ul-Hasanah deposits should be allocated to Qard-ul-Hasanah loans.

Capital

Capital is the most important index for indicating how well the stability of a bank is. One of the international standards on Basel committee on banking supervision is capital adequacy ratio (CAR). Capital adequacy ratio index comes from sum of tier 1 or core capital and tier 2 or supplementary capital to risk-adjusted assets ratio (on basis of Basel1 is adjusted by credit risk and on basis of Basel2 is adjusted by credit, operational and market risk). This ratio for banks which they are members of Basel committee on banking supervision should be $\delta = 8\%$ as minimum measure (see equation 2).

$$CA = \frac{C1 + C2}{RWA} \geq \delta \quad (2)$$

Structural differences between Islamic banking and conventional banking activities in economic activities viewpoint caused different theories regarding the way of calculating capital adequacy ratio in the Islamic banking as follows:

- On profit and loss sharing (PLS) basis and lack of collaterals in this kind of transactions the Islamic banking face with higher credit risk coefficients in comparison with conventional banks.
- In the PLS mechanism depositors participate both in profit and loss which comes from yield of investment, therefore calculating the risk coefficients of Islamic banks should be on the basis of proportions of

depositors and bank. In other word for calculating capital adequacy ratio the weighted average of customer proportion of risk should be exited from denominator of the fraction. Therefore the required capital adequacy ratio in Islamic banking is lesser than conventional banking.

- The other assets items in balance sheet and off-balance-sheet items in Islamic banking like conventional banking possess different coefficient for operational, credit and market risks.

Economic Value Added in Islamic Banking

In the non-usury banking the monetary resources for investment come from two sources of debt capital and equity capital. The Islamic bank after deduction of legal reserves and provident funds by using the resources on the basis of Musharakah contracts (with floating profit) can invest them undividedly and distribute their returns on basis of accrual accounting system among the stakeholders. The object of Islamic banking is to maximize the benefits of stakeholders which include depositors and beneficiaries (legal owners).

In this section by introducing economic value added (EVA) index as value creation criterion, we will compare Islamic banking and conventional banking. Calculation of EVA is done by different methods of theoretical economics by reduction of opportunity cost of capital from net profit of the firm (after deduction of the taxes). Therefore in order to maximize the EVA it is necessary to consider EVA in Islamic banking and conventional banking as:

$$EVA = \pi - \bar{r} K \quad (3)$$

\bar{r} : weighted average cost of capital which is introduced as exogenous and

follows the rate of return of real economy sector; and r_{PLS} is rate of return in the real economy sector. Hence equation (3) is EVA, which π is profit and K is capital of Islamic bank. Rate of return in PLS mechanism is right the same rate of productivity but rate of return or interest rate in the conventional banking is equal to market interest rate plus rate of risk. Therefore, rates of returns in the two systems can be compared by using following relation:

$$r_{PLS} = r_m + E(div)$$

(4)

According to equation 4, the rate of return on PLS basis is equal to sum of market interest rate and mathematical expectation of a deviation term. This random deviation term contains credit risk as negative factor and unexpected return as positive factor. Equality between real economy return rate and market interest rate will depend to this term. Therefore, three logical relationships could be written down as follows:

I) If $E(div)=0 \rightarrow r_{PLS} = r_{Con}$

If mathematical expectation of deviation term is equal to zero then both rates will convergence to a unique rate.

II) If $E(div)>0 \rightarrow r_{PLS} < r_{Con}$

If expected value of deviation increases then rate of return in PLS will be less than conventional banking rate of return.

III) If $E(div)<0 \rightarrow r_{PLS} > r_{Con}$

If expected value of deviation decreases then rate of return in PLS will be more than conventional banking.

The profit comes from differences between revenue and costs as:

$$\pi = TR - TC \quad (5)$$

The bank undivided revenue comes from disposable financial resources and commissions and the revenue of non-credit products and services and is calculated by equation (6).

FD: disposable resources,

r : rate of return of investment in real economy sector.

$$TR = FDr_{PLS} + BF \quad (6)$$

The bank's disposable resource is calculated by equation (7).

a : legal reserve ratio (received by central bank for implementing monetary policies)

b : rate of providential reserve or primary reserve for payment of short term bank commitments.

$$FD = D(1 - a - b_{PLS}) \quad (7)$$

The bank cost is indicated by equation (8) and contains operational costs (OC) and non-operational costs (NOC). NOC includes personnel, administration and office and depreciation and amortization costs. OC includes expenses related to credit risk (allowances for bad and doubtful financing) and operational risk introduced as proportion (θ) of disposable resources for supplying of credit and loan as shown by equation (9).

$$TC = OC + NOC \quad (8)$$

Generally in the Islamic banking on basis of Musharakah contracts outstanding and expired due dated claims do not exist. Therefore θ

coefficient in Islamic banking is lesser than this parameter in conventional banking. Based upon above discussion this inequality holds: $\theta_{PLS} < \theta_{Con}$.

$$OC_{PLS} = \theta_{PLS}(1 - a - b_{PLS})D \quad (9)$$

Substitution of the above equations in EVA function of PLS will become:

$$EVA_{PLS} = [D_t(1 - a - b_{PLS})r_{PLS} + BF_t - \theta_{PLS}(1 - a - b_{PLS})D_t - NOC_t - \bar{r}K_t] \quad (10)$$

Operational cost of conventional banking is indicated by equation (11):

$$OC_{Con} = [\theta_{Con}(1 - a - b_{Con}) + i]D \quad (11)$$

i : Weighted average of payable interest rate to depositors,

r : Weighted average receivable interest rate from loanee.

EVA function in this case will be as depicted by equation (12)

$$EVA_{Con} = [D_t(1 - a - b_{Con})r_{Con} + BF_t - iD_t - \theta_{Con}(1 - a - b_{Con})D_t - NOC_t - \bar{r}K_t] \quad (12)$$

The equations (10) and (12) indicate the EVA in the two banking approaches. According to the following reasons we can deduce that EVA in Islamic banking is more than the conventional banking:

- Since provident (b_{PLS}) reserve in PLS banking is lesser than conventional banking (b_{Con}) so financial efficiency in PLS banking is more than conventional banking. The main reason of more efficiency is due to stability in cash flows of PLS banking; so for covering liquidity risk less provident funds are required in comparison with conventional banking.
- Lack of outstanding claims and doubtful claims in PLS banking because of nature of Musharakah contracts and supervision on investments

decline θ_{PLS} coefficient in Islamic banking in comparison to conventional banking (θ_{Con}). Hence lack of these kind of inefficient assets will improve financial circulations in PLS banking than conventional banking and this will grow up the EVA in this kind of banking system.

- Rate of return in PLS banking is more ($r_{PLS} > r_{Con}$) than the conventional banking, so consequently EVA in PLS banking is higher than conventional banking.

Considering these three factors and parameters in the mathematical models and also logical and mathematical reasoning and analyzing them, we will conclude that the EVA in PLS banking will be more than the conventional banking. For testing this hypothesis based on some case studies, we will have a look at the financial statements of Islamic RHB Bank and conventional bank from the same RHB bank comparatively.

Comparison of Financial Indices

Table 3 indicates quick ratio in two systems of PLS banking and conventional banking for the two approaches of RHB bank. The quick ratio indicated by b is lesser in PLS banking than the conventional banking, because of stability of cash flows in PLS banking. Therefore declining of b coefficient is a main factor of increasing EVA in Islamic banking in comparison with conventional banking.

Table 3: Liquid assets proportions in PLS and conventional banking

Indices	RHB Islamic banking		RHB Investment banking	
	31.03.2007 RM,000	31.12.2006 RM,000	31.03.2007 RM,000	31.12.2006 RM,000
Cash balances with banks and other financial institutions	35035	21283	35177	34147
Total assets	8239971	8092265	72675509	6834756
$QR = \frac{LiquidAssets}{Assets}$ ²¹⁴	43%	26%	48%	50%

Source: RHB Islamic Bank and RHB Investment Bank financial statements²¹⁵

Table 4 analyzes another section of PLS banking characteristics. Decline of outstanding claims and allowance for bad and doubtful financing claims and more transparency of financial statements are other characteristics of PLS banking in comparison with conventional banking. According to table 4, allowances for bad and doubtful financing ratio to gross financing and advances (in PLS banking) and the same ratio to loans and advances (in the conventional banking) indicates this consequence. In PLS banking, because of characteristics of Musharakah and Mudarabah contracts this ratio is lesser than conventional banking. This factor plays important role to increase of EVA in comparison with conventional banking.

²¹⁴ Quick Ratio

²¹⁵ http://www.rhb.com.my/about_rhb/financial/pdf/AC_31_Mar_07_final.pdf;
http://rhibislamicbank.com.my/pdf/RHBIB%20Annual%20Report%202006_FinSec.pdf

Table 4: Allowances for bad and doubtful financing in PLS banking and conventional banking (θ coefficient).

Indices	RHB Islamic banking				RHB Investment banking			
	31.03.2007		31.12.2006		31.03.2007		31.12.2006	
	RM,000		RM,000		RM,000		RM,000	
	Amount	%	Amount	%	Amount	%	Amount	%
Public	78479	1.78	77059	1.8	13128	1.59	10432	1.38
Specific	49374	1.12	48822	1.14	63724	7.74	96458	12.72
Total	127853	2.89	125881	2.95	76852	9.34	106890	14.1
Gross financing and advances or loans and advances, RM,000	4416945		4273454		823234		758173	

Source: RHB Islamic Bank and RHB Investment Bank financial statements²¹⁶

Table 5 indicates some financial indices in PLS banking and conventional banking. These indices are shown in two groups of profitability and capital adequacy indices and will compared two different banking systems. The profitability indices include Return on Assets (ROA) and Return on Equity (ROE). According to this table, PLS banking profitability ratios is more than conventional banking. Higher ratios indicate higher efficiency and means higher EVA in PLS banking in comparison to conventional banking.

Capital adequacy ratio index has been calculated as advised by Basel

²¹⁶ The mentioned same reference

committee on banking supervision standard in two banking systems. The first index is core capital ratio (inclusive of market risk) which is calculated as Tier 1 capital²¹⁷ to risk adjusted assets ratio. The second index is calculated as aggregation of Tier 1 capital and Tier 2 capital²¹⁸ to risk adjusted assets ratio.

According to table 4, rate on assets (ROA) and rate on equity (ROE) in Islamic banking at the two considered times are more than conventional banking. Therefore, the mentioned relation $r_{PLS} > r_{Con}$ indicates more return in PLS banking in comparison with conventional banking. As table 5 core capital ratio (including credit and market risk) and risk-weighted capital ratio (including credit and market risk) of conventional banking are more than Islamic banking. Applying Basel committee on banking supervision standards for calculating Capital Adequacy Ratio (CAR) for the two approaches will cause of higher CAR in the conventional banking. Profit and loss sharing, decline of risk coefficient and transferring of a fraction of risk to depositors (in PLS mechanism) will increase CAR in Islamic banking.²¹⁹ In other words, decline of low-return-high-risk assets created by outstanding claims and doubtful financing or loans; change in risk coefficient based on Islamic standards, and transferring of a fraction of risk to depositors will increase CAR in Islamic banking in comparison to conventional banking.

²¹⁷ Tier 1 capital measures equity holding and is equal to the sum of tangible equity, including common stock, surplus, retained earnings, and perpetual preferred stock. Unlike primary capital under uniform rules, capital reserves are excluded from equity. See Donald R. Fraser and others, "Commercial banking and management of risk", 2001, South-Western College Publishing, pp. 398-399.

²¹⁸ Tier 2 capital is comprised of loan loss reserves, subordinated debt, intermediate preferred stock, and other counted previously as primary capital (e.g., Mandatory convertible debt and cumulative perpetual preferred stock with unpaid dividends). Refer to mentioned reference.

²¹⁹ In this way it will be necessary that international Islamic organization like IFSB or AAOIFI design evaluation and performance standards for Islamic banking for increasing Islamic banking interactions with other banks in the globe.

Table 5: Financial indices in PLS and conventional banking

Indices	RHB Islamic banking		RHB Investment banking	
	31.03.2007	31.12.2006	31.03.2007	31.12.2006
	%	%	%	%
ROA	.27	1.07	.159	.96
ROE	3.28	13.25	1.64	9.24
Core capital ratio (including of market risk)	17.36	17.78	18.5	20.29
Risk-weighted capital ratio (including market risk)	15.44	15.84	14.6	16.02

Source: RHB Islamic Bank and RHB Investment Bank financial statements

Conclusion

Since in Islamic banking depositors take partnership in benefits of bank so Islamic banking follows to maximizing benefits of beneficiaries and among them depositors. Therefore, there are dissimilarities between ALM approaches in Islamic banking and conventional banking. First, this dissimilarity comes from differences on accounting system in Islamic banking in comparison to conventional banking. Secondly, usury illegality and its related jurisprudence specifications indicate that time is not the solely the effective factor on increasing equity (deposited capital) return; but profit and loss sharing resulted from investment in real economy sector is the essential base in monetary transactions. These two important

factors are considerable factors in Islamic ALM.

Profit and loss sharing (PLS) banking characteristics will increase economic value added (EVA) as a value creation index in comparison with conventional banking. In this regard the factors affecting economic value added regarding the aspects of assets items optimization, decline of credit risk and more transparency and also increasing rate of return were explained by applying different ALM indices. Lesser instability of financial flows and stability of PLS banking will decline liquid provident reserve for covering liquidity risk. On the other hand, releasing these types of assets and buying high return assets will increase EVA in Islamic banks. Profit and loss sharing characteristics and permanent supervision on investment are effective factors for removing or decreasing of outstanding claims, doubtful financing or loans and more transparency of financial statements of PLS banking. Absence of these types of inefficient assets, safe and sound circulation of resources will increase productivity of bank and will increase EVA on PLS banking. High financial stability and soundness in PLS banking will be accessible through higher return and lower risk. Comparison and study of financial statements in the two Islamic and conventional RHB banking approaches made evidences for higher value added creation of PLS banking. Another comparative evaluation of financial soundness of two banking approaches is capital adequacy ratio. This ratio in PLS banking is higher than conventional banking due to redefinition of risk coefficients, decline of outstanding claims, doubtful financing or loans, change of quality of assets items from risk point of view and increases of returns will increase CAR in PLS banking. Undoubtedly, the uniform calculation of Basel standards for all banks (Islamic and conventional) will create some deviations in fiscal comparison of different banks. In this regard international organizations and institutions like AAOIFI, IFSB and also IDB will play important role to introduce these

guideposts. Applying the standards provided by international institutions as Basel committee on banking supervision will be useful to increase the coordination of international banking with Islamic principles and usury considerations.

Comparison of financial indices for the two type of banking leads us that Islamic banking is more efficient than conventional banking.

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Chapter Nine

Central Banking

Introduction

Monetary policy is the process by which monetary authority controls supply of money, usually through interest rate targeting to promote economic growth and stability. In early Islamic governments, this task was done through *Bayt-ul-Mal* (treasury) operations and it was mixed with government fiscal policy. Since money at that period composed of gold coins (Dirham and Dinar)²²⁰, and supply of gold had always been stable and fiat money and credit were not applicable, then monetary expansion mechanism²²¹ did not actually exist as it is in recent and current times.

As similar as conventional central banking, main functions of Islamic central bank are defined as maintaining price stability and fulfilling macroeconomic goals or reduction of damages of performance of monetary system and controlling liquidity and supervising banking operations. Although Islamic central banking is not different from conventional central banking as a whole, but the role of an Islamic central bank in conducting monetary policy is restricted to use interest-free Islamic monetary instruments and commercial banks are obliged to implement non-usury banking operations²²².

Islamic financial instruments should be usury-free and efficient in applying monetary, fiscal and financial policies at different levels of central bank, government and commercial banks and non-banking money and

²²⁰ See: M.U. Chapra (1996), Monetary management in an Islamic economy, Islamic Economic Studies, Vol. 4, No. 1, December.

²²¹ Bijan Bidabad (1994) General Monetary Equilibrium, <http://www.bidabad.ir/doc/monetary-ed8.pdf>

²²² Chapra, M. U. (1985). Toward Just a Monetary System. Journal of King Abdul Aziz University: Islamic Economics, Vol. 2, 109-115.
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financial institutions. Conventional interest-bearing bonds are not allowed in Islamic central banking. This restriction mostly distinguishes Islamic central banking from conventional one in implementing monetary policy. Furthermore, monetary authorities are legally responsible to supervise commercial banks and money and credit funds and institutions. Islamic central bank as well as Islamic commercial banks is not allowed to use usury-based banking operations. This also brings some new different supervisory duties to monetary authority and implementation of monetary policy as well.

Objectives of central banking as well as monetary policy are also similar to conventional systems; but considering usury prohibition. The objectives such as prosperity of the whole humanity and economic stability, stabilizing domestic and external values of money²²³, promotion of sustained and balanced economic growth, mobilizing resources for economic development, and improvement of income and wealth distribution and so on - though with different emphases- are considered in both Islamic and conventional central banking systems. Both systems do not bear inflation, deep and prolonged recessions and unemployment because of misery to the society and destroy of economic welfare.

Functions of Islamic central banking are also similar to conventional one such as regulating money supply, influencing bank-financing direction, providing measures of safeguarding and ensuring prudent banking and banking supervision.

²²³ Chapra, M. U. (1985). Toward Just a Monetary System. Journal of King Abdul Aziz University: Islamic Economics, Vol. 2, 109-115.

Sharia Allowances of Monetary Policy

The aim of Islam is exaltation of humankind and full height of dignity in humanity. Exaltation means qualitative and quantitative improvement of human beings. Generally, reason and Sharia both are complements to each other and all Sharia rules are based upon reason and wisdom theosophically. Moreover, the best method of decision making in Islam is based upon consultation. By this concept, we can conclude that regarding consensus, Islam accepts solving social problems via consultation. The holy Quran orders: "*Conduct their affairs by mutual consultation*".²²⁴ This is a general legislative rule that authorize decision making through consultation. The general rational rule and custom limitations are clear in this method. All new legal institutions and rules can be defined upon this command. Principally, theosophy of legislation of some Sharia commandments and leaving many others by the Prophet (PBUH) is due to this subject that the obligation and prohibition of many partial commands in different times and places are different. Thus, not all the subjects were legislated; and making decision about them were left to honest reason and wisdom that by considering different conditions and observing situation of people the best expedients be adopted. This was an introduction to institutionalization of monetary authority and policy but considering that legislation in prohibition of permissible (*Mubah*) activities is just allowed in realm of Islamic Sharia and not more. Quran states that:²²⁵ "*If ye do it not, take notice of war from Allāh and his messenger: but if ye turn back, ye shall have your capital sums: deal not unjustly, and ye shall not be dealt with unjustly*". This verse is about usury (*Riba*) and we can infer that from

²²⁴ Shoura: 38. *وَ أَمْرُهُمْ شُورَى بَيْنَهُمْ.*

²²⁵ Baqarah: 279.

فَإِنْ لَمْ تَفْعَلُوا فَأْذَنُوا بِحَرْبٍ مِنَ اللَّهِ وَ رَسُولِهِ وَ إِنْ تَبِيتُمْ فَلَكُمْ رُؤُسُ أَمْوَالِكُمْ لَا تَظْلِمُونَ وَ لَا تُظْلَمُونَ.

personal money management level up to monetary policy (and even at level of international monetary and exchange management) the adopted policies should not supply money with more than its market price that means "unjustly"; and the other side is "unjustly".

Supervision policies in Islam are in prevention of swindle in transaction, but not economic interference. This also determines supervision responsibility and neutrality of monetary authority. In present western economies, such as United States, the Federal Reserve System is a private corporation that its major stockholders are American bankers (often from three major banking families). However, the Federal Reserve Act²²⁶ forces neutrality but actually absolute neutrality is a matter of debate in United States monetary system.

Money, Interest and Economic Fluctuation

Liquidity has two equivalent definitions as sum of money and quasi money (in sources side) or sum of net domestic and foreign assets (in uses side) of consolidated (debit-credit) account of banking system. Increase of government fiscal deficit and commercial banks credits leads to increase of net domestic assets of banking system; while balance of payment surplus increases net foreign assets. Both of these expand money and managing them is a task of monetary policy to ensure that money growth satisfies economic needs. Government fiscal deficit increases liquidity in economy, and could lead to increase in prices and continue to lower the purchasing power of government budget in next period and new fiscal deficits and increases of money supply again and thus contributes to inflationary process. Treasury bill is an effective instrument, which makes the

²²⁶ Federal Reserve Act, December 23, 1913.

<http://www.ilsdc.org/attachments/files/105/FRA-LH-PL63-43.pdf>

government capable to borrow from the economy. Central bank conducts monetary policy by transaction of T-bills, and facilitates government fiscal policy and manages the circulating money. Because of existence of interest rate in treasury bills, they are not legitimate from Sharia point of view in Islamic banking, and practically, application of this instrument is forbidden by Islamic law. Thus, in absence of interest rate, government borrowing is not simply done especially from private sector. Moreover, not all public projects are financeable through regular financing procedures. This is the main trouble of Islamic monetary policy in action. It is argued that then how will government budget deficits be financed? The raw answer to this question lies in minimizing wasteful public and private spending to reduce demand for credit, and restructuring the entire financial system to meet the genuine funding needs of public sector in light of Islamic teachings.²²⁷ The notions though seem interesting but are not actually operational.

Balance of payments surplus as a source of money expansion depends on many domestic and international economic behaviors such as current and capital accounts balances and exchange rates that its monetized value has its own effects on net foreign assets of banking system.

Money market bifurcates bank's behavior into two markets namely saving-deposit and investment-credit markets as discussed before. In one hand, demand of bank for deposits intersects supply of deposits (saving schedule) and fixes deposit interest rate. On the other side, bank creates another market by supplying credit funds that intersects demand for credit (investment schedule) and fixes loan interest rate. In view of this, bank stands between two markets of supply and demand of money funds in money market.

²²⁷ Chapra, M. U. (1983). Monetary Policy in an Islamic Economy. In Ziauddin Ahmad, et al (eds.), Money and Banking in Islam, Islamabad: Institute of Policy Studies, pp. 27-68.

In case that consumption increases, supply of bank deposits (saving) will fall. As a result, there will be an increase in deposit interest rate. The increase in deposit interest rate cannot instantly increase loans interest rates, because loan contracts have been fixed for a longer period, and bank has to wait until contracted maturity to increase the loan interest rate. Therefore, bank will face loss during this period and thereafter in the next period; it will be compensated by increasing loan interest rate by a time lag. This lag, from economic point of view creates a special dynamic relationship between supply and demand for money. In previous chapters mathematically we showed that because of this lag, the relationship between these two variables (supply and demand for money) is a second order difference equation that is able to create economic cycles. In other words, fluctuation of real economy is induced by fluctuations in money market. The most important effect of elimination of interest rate (as it is raised by Islamic banking) is to bridge investment and saving through rate of return in real economy.

This subject is double important to Islamic monetary policy in both subjects of stabilization policy and open market operations on non-usury valuable papers and bonds.

Monetary Instruments and Islamic Considerations

Monetary authorities use different instruments, which can be generally classified into three groups of quantitative, qualitative and prudential instruments. Usually, quantitative monetary instruments change money supply through monetary expansion mechanism. This mechanism practically creates money through depositing money in banks and banks' loans. Qualitative instruments are directive monetary arrangements in distribution and allocation of loans and credits within different economic

sectors. Interest rate locates at central core of all these instruments. Prudential instruments are those measures that are used to ensure well-functioning of commercial banks.

Open market operation is one of the most important quantitative instruments. In this way, monetary authority buys or sells bonds and valuable papers and change the amount of high powered money in economy. In a capitalist monetary system, transaction of these papers is based upon variable interest rates and involves usury, and cannot be used in the interest-free or Islamic banking systems. The problem remains as a matter of debate if central bank buys and sells private securities and corporations' equities.²²⁸ In this case, open market operations actually distort relative values of private sector's assets. If central bank purchases and sells stocks of public sector corporations, just distorts relative prices and advantageous of public enterprises; but purchase and sell of private sector equities are highly questionable and affects private shareholders benefits of transacted and non-transacted entities and may also involve corruption.²²⁹

Discount window is an instrument in which commercial banks can sell some of their financial papers at discounted rates to central bank to solve their liquidity needs. By changing this rate, central bank can affect the banks' volume of free resources and their credit capabilities accordingly. This instrument is very helpful when banks need loan to get enough liquidity. This method uses interest rate, hence cannot be used in Islamic

²²⁸ Khan, M. Akram (1982) Inflation and the Islamic Economy: A Closed Economy Model, in M. Ariff (ed.), Monetary and Fiscal Economics of Islam. Jeddah: International Centre for Research in Islamic Economics.

Siddiqi, M. Nejatullah (1982) Islamic Approaches to Money, Banking and Monetary Policy: A Review, in M. Ariff (ed.), Monetary and Fiscal Economics of Islam. Jeddah: International Centre for Research in Islamic Economics.

²²⁹ Chapra, M.U. (1996), Monetary management in an Islamic economy, Islamic Economic Studies, Vol. 4, No. 1, December.

banking system.

Monetary authorities sometimes force the banks to keep a certain percentage of their assets in form of bonds. The purpose of this *reserve requirement* policy is to prevent money expansion through reduction of free reserves of banks.

Legal reserve rate is known as credit brake, is another quantitative monetary instrument. It has many capabilities in harnessing banking credits. This rate has a vast range of effects on controlling bank's credits through controlling monetary expansion mechanism. With this rate, a non-interest-bearing obligation is applied to banks. Slight increase of this rate is costly for banks, since, it blocks some of their resources in central bank.

Obligations to *keep shares of assets in bonds*, is another quantitative instrument that central bank forces commercial banks to keep a certain percentage of their asset in form of bonds. The purpose of this policy is to prevent monetary expansion through reduction of free reserves of commercial banks.

Credit rationing and *credit ceiling* are more popular monetary instruments in developing countries; because of their undeveloped financial infrastructures. Credit ceiling is allotted to each sector and to each bank. This instrument is inefficient economically and from resources allocation viewpoint. It can be used in Islamic monetary policy. However, issue of penalty of nonconforming bank remains unsolved.

Qualitative instruments practically direct banks' credits and restrict or divert the banks' financing through limiting or encouraging credits to desired sectors. Banks *credit provision limits*, *credit ceilings*, defining the *method of allocation of deposit funds*, *value-oriented allocation of credit*,

selective credit control, margin requirements, maximum and minimum interest rates are considered as qualitative instruments. *Lender of last resort* refers to the loans provided to face liquidity crises through interest-free loans with or without service charge. Generally, qualitative instruments do not have necessary capabilities to help monetary authorities reaching goals efficiently.

Prudential instruments as stated before are the measures for secure banking. *Minimum capital requirements, maximum exposure restrictions, mandatory appropriation of profits* and *moral suasion* are of prudential measures.

Specific interest-free instruments are also considered for Islamic monetary policy. In this context, *profit sharing ratio* is used as a signaling device as interest rate, but it is not desirable and even Sharia-compliant that central bank interferes in private contracts of trader partners. Profit sharing ratio can influence demand and supply of money. *Refinance ratio* and *lending ratio* are in opposite direction of *cash reserve ratio*. Contractionary monetary policy requires lower refinance ratio and changes in lending ratios would increase policy effectiveness. *Public share of demand deposits* instrument is used to divert some part of demand deposits to public treasury enabling to finance socially beneficial projects. *Value oriented allocation of credit, interest-free loan (Qard-ul-Hasanah) ratio, maximum and minimum markup ratios* are other instrument in this class.

In view of the above discussions, it should be mentioned here that the monetary instruments of conventional banking system could not help a central bank for controlling liquidity in an Islamic economy; because the most important monetary instrument, which is open market operations, is not applicable. Therefore, there is a need to innovate appropriate monetary instruments suitable for usury-free conditions. As a conclusion, to revive

Islamic monetary policy, we should provide necessary replacement for conventional bonds and treasury bills to activate non-usury open market operations; that is some public equity-based instrument.

Financial Papers

Islamic financial activities based on Islamic faith must stay within the limits of Islamic law in all actions and deeds. To conduct Islamic monetary policy, innovative Sharia complied financial instruments are necessary. This shortage exists in countries such as Sudan and Iran that eliminated the conventional banking system and substituted it with a non-usury one, and others countries, such as Bangladesh, Brunei, Indonesia, Jordan, Kuwait, Malaysia and the United Arab Emirates that partially use non-usury operations. In this regard, Brunei, Indonesia, Malaysia, Sudan and UAE have already launched some Islamic monetary instruments such as Sukuk as a first step in this direction. However, these instruments are controversial among Islamic scholars and majority of them believe that such contracts are not Sharia compliant.²³⁰

The main Islamic constraint of prevailed bonds or papers in Islamic countries is due to necessity of having a real project or asset counterpart in real sector. From a conventional viewpoint, contractionary/expansionary monetary policies may not directly link to real projects or business activities.²³¹ For instance, contractionary monetary policy is done by selling government bonds by central bank as monetary instruments, which does not need to have a counterpart or asset backed in real sector. This contradiction is one of the main constraints of applying Islamic instruments

²³⁰ Mansoori, M. T. (2010), *Fiqh Regulations on Finance and Business Transaction*, Ulil Alba Institute, Pasca Sarjana Universitas Ibn Khaldun, Bogor, Indonesia.

²³¹ Rabin, A. A. (2004). *Monetary Theory*, Edward Elgar Publishing, Massachusetts, USA.

in an interest-free central banking system. Another solution to this problem is based upon interest-free swaps of funds.

Various bonds, notes, bills etc. are debt securities that people buy them and lend their funds to issuer and issuer is committed to pay principal and interest back at maturity. Usually bonds are guaranteed by issuer, government or government affiliated organizations, or they are asset-backed securities so that some assets such as credit cards or payable loans cover the papers. Mortgage-Backed Securities, Collateralized Mortgage Obligations (CMO), and Collateralized Debt Obligation (CDO) are kinds of these securities. These papers include government bonds, municipal securities, corporate securities, asset or mortgage backed securities, government affiliated organizations securities, foreign government securities, and supranational securities. Securities issued by government are treasury bills, treasury notes, treasury bonds or perpetual bonds that are similar in financial structure but differ just in the interest rates. All of them might be sold before maturity by reduced prices. Their maturities are from few days to 30 years and some of them are even perpetual or take several decades. Banker acceptance papers, commercial papers and deposit certificates are also various kinds of bonds used for short-term financing. Bonds might be issued in fixed-rate, floating rate, reference-rate (usually LIBOR or EUBOR) or zero-coupon. Interest Only (IO) and Principal Only (PO) might also be transacted in separate. In inflation-Linked (indexed) bonds, the nominal yield is adjusted by inflation rate (Treasury Inflation Protected Security "TIPS"). Some notes are linked to stocks, financial or GNP indices (Equity-Linked Notes). Bearer or anonym bonds are in opposition to registered bonds in which only the owner can claim the debt. Some bonds do not even have a written paper certificate (Book-Entry Bond). We can also mention Lottery Bonds, War Bonds, Serial Bonds, Revenue Bonds, and Climate Bonds as other kinds of bonds.

Callable Bonds allow the issuer to call the holders and buyback the bonds before maturity. Accordingly, in case of decreasing interest rates, the issuer can prevent losses by buying back and obtain cheaper loan. Opposing to this kind of bond is Puttable Bond (Put Bond or Retractable Bond) allow the holder to apply them to issuer and sell them back before maturity. Some bonds are both puttable and callable. The prices of these bonds are calculated by deducting call option or put option prices from the straight bond price.

Subordinated Bonds have the lowest right in liquidation when the issuer becomes bankrupt; at first, other bond's tranches (Senior Bonds) will be settled and the remainder will be paid to Subordinated Bonds. Therefore, they have higher risk rate in comparison with other bonds.

Financial papers are generally classified into Negotiable and Non-negotiable classes. Private debt securities (PDS) are those negotiable and non-negotiable papers that are issued by corporations and the issuer is bounded to pay the profit periodically and the principle at maturity to paper holder. On the other hand, private debt papers can be classified into two main groups of equity-linked debt securities and non-equity-linked securities. The first papers are transformable to issuer's company shares and their holders can be regarded as company shareholders, while the second group cannot be transformed into shares and the issuer can raise short, medium and long terms financing by these debt papers. These papers can also be transacted in secondary market.

Interest-free securities have become increasingly popular over the last decade, both as means of rising government finance through sovereign issues, and as a way for corporate entities to obtain fund through corporate *Sukuk*. In 2000, there were only three *Sukuk*-type bonds worth \$0.3 billion. In 2004 there were 64 issues worth almost \$7 billion, and in 2007 the figure

exceeded \$90 billion with more than 119 issues.²³² It is assessed that the advantage of *Sukuk* is that it is compliant with Sharia²³³ though many others do not agree.²³⁴

Debt purchase and substance purchase in non-usury transaction of debt-based financial papers are controversial to be based for innovating Islamic monetary instruments. Despite of jurists' views that believe transaction of debt-based papers is *Riba*, these transactions are conducted in forms of *Murabahah*, Partnership, and *Ijareh* (rent) contracts.

Purchase of substance is a contract²³⁵ in which in first case, seller sells a good to buyer at a certain price on credit terms; and then the buyer sells the same good at lower price to the seller in cash. In second case, a third party enters into transaction. The primary seller sells the good at a certain price to buyer by credit. Then the buyer sells the good to the third person at a lower price but in cash. Then the third person sells the good to the original seller at the same price in cash and pays his debt to the first buyer. Hanafi and Shafei jurists have different views about this type of transaction. Some of them approve it in the case of existing a third person and some approve it as detestable (*Makrouh*) in absent of a third person but agree that transaction pillars are fulfilled²³⁶. Hanbali and Maliki jurists disapprove this kind of contracts and believe that they are not

²³² Moody's (2007). Focus on the Middle East. Inside Moody's, winter, p. 4.

Moody's (2008). Focus on the Middle East. Inside Moody's, winter, p. 4.

²³³ Wilson, R. (2008). Innovative in the Structuring of Islamic sukuk securities. *Humanomics*, Vol. 24 (3), 170-181.

²³⁴ Mansoori, M. T. (2010), *Fiqh Regulations on Finance and Business Transaction*, Ulil Alba Institute, Pasca Sarjana Universitas Ibn Khaldun, Bogor, Indonesia.

²³⁵ Wahbah al-Zuhayli, *Al-Fiqh al-Islami wa Adillatuh*, 3rd ed., Vol. 4, Damascus: Daral-Fikr, P. 466; Muhammad Wafa, *Abraz, suwar al-buyu al-fasidah*, Egypt, 1984, P. 40.

²³⁶ Including transaction contract, good and enumeration (money) and two parties of transactions.

Sharia compliant²³⁷. As it is clear, in both cases, they only appear to be different and regarding the purpose²³⁸ of this transaction, they are kinds of Sharia tricks. Moreover, debt is the obligation of paying money or peer, in other words, selling debt to the third person is called debt purchase.²³⁹ Debt purchase may be in cash or credit. In credit case, the debt is again sold in credit, which is not right from Sharia scholars' viewpoints and is regarded as transaction of debt-by-debt²⁴⁰. In cash case, selling debt to third person in cash is not accepted by some Sharia scholars; Shafei scholars confirm it, while Maliki scholars conditionally accept²⁴¹. Debt-based securities are divided into two groups of Coupon Bond²⁴² and Zero Coupon Bond²⁴³ securities.

²³⁷ Wahbah al- Zuhayli, Vol. 4, P. 468; AI-Mausu'at al-fiqhiyyah, Vol. 9, P. 96.

²³⁸ All contracts are due to the intents.

²³⁹ The first Islamic Private Debt Security (IPDS) was issued in form of "advance purchase loan" (Salaf) contract in Malaysia in 1990 for a multinational company. A group of financiers bought the securities in form of some assets and sold them at higher prices including cost and profit margins to the issuer of securities. This transaction is a debt purchase contract.

²⁴⁰ Wahbah al-Zuhayli, Bay' al-dayn fi al-dhart'at al-Islamiyyah, P 23.

²⁴¹ Al-Sadiq Abd al-Rahman al-Gharyani, Al-Muamalat Ahkam wa Adillah, 2nd ed., 1992, PP. 190; M. Tawfiq Ramadan al-Buti, Al-Buyu al-Shaiah wa athar dawabit al-mabi ala shariyyatiha, Beirut: Dar al-Fikr al-Muasir, 1998, PP. 370-378.

²⁴² Islamic Coupon Bond: Coupon defines the profit share of the debt-based paper issued based on Murabahah Notes Issuance Facilities (MuNif) and future (Al-Bai Bithaman Ajil: ABBA) contracts. The holders of these papers receive fixed profit every six months from the issuance time to maturity. At the first stage, the establisher sells the asset to the issuer SPV (Special Purpose Vehicle) of the papers based on substance purchase contract, and in the second stage, the issuer publishes the papers (primary and secondary including principle and profit) under trustee supervision. In the third stage, papers will be sold to investors according to debt purchase contract. These papers can be transacted in secondary market.

Muhammad Arham, Islamic perspectives on marketing, Journal of Islamic Marketing Vol.: 1 Issue: 2, 2010.

²⁴³ Islamic Zero Coupon Bond: Zero coupon papers with fixed yield were introduced in 1982. These papers had no profit coupons from issuance time to maturity. Instead, investors and buyers of the papers receive principle and interest at maturity. These papers are sold to buyers at lower price than their face value, and are bought back by issuer at face value. Interest rate is used in discounting the face value of the papers at purchase time, but no profit is paid until maturity. These papers are based upon debt purchase contract; and are not legitimate beside some jurisprudents, and are assimilated to use Sharia trick.

Because of *Riba*-based form of Islamic Zero Coupon Bonds, transaction of these debt-based papers at lower price than face value, regardless of not receiving any interest until maturity, has no application in usury-free central banking. On the other hand, although Islamic Zero Coupon Bonds observe transaction pillars and using debt and substance purchases contracts, their transactions are not Sharia-compliant, because of using tricks to pretend to comply with Sharia.

Mortgage Backed Securities (MBS) were used by selling mortgage loans for the first time in United States in 1938 and Islamic banks interested to apply it. American government appointed a governmental organization to buy housing loans and resale them to investors. In Iran, the prudential regulations of transforming mortgage claims into securities were passed by Credit Committee of Central Bank in 1998 and were confirmed by Higher Council of Stock Exchange in 1999²⁴⁴. In these securities, principle and profit of papers should be guaranteed by legal entities. By considering the guaranteed profit (interest) of these papers, they have skepticism of *Riba* and are not usable in a true interest-free banking.²⁴⁵

In order to use appropriate monetary instrument and policy that are mostly based upon transaction of bonds, we need true Islamic financial innovations, which in addition to comply with Sharia, could be efficient. Rastin Swap Bonds (RSBs) were defined to remove this shortage. RSBs can be used as Islamic monetary, fiscal and financial instruments in Islamic banking at different levels of central banking, commercial banking, treasury and commercial entities in conventional banking system as well as Islamic system.²⁴⁶ Furthermore, these bonds may be issued in domestic

²⁴⁴ <http://www.econews.ir/fa/NewsContent.aspx?id=108111>

²⁴⁵ See: <http://banki.ir/akhbar/205-gozaresh/1446-markazi3>

²⁴⁶ Bidabad, Bijan, Abul Hassan, Mohamed Sami Ben Ali, Mahmoud Allahyarifard (2011), Interest-Free Bonds and Central Banking Monetary Instruments, International

Footnote continues in next page:

money and foreign currency as well. This instrument is defined in Rastin Banking System.

Summary

Islamic central banking is not different from conventional central banking as a whole, but the role of Islamic central bank in conducting monetary policy is restricted to use interest-free monetary instruments, and commercial banks are obliged to implement non-usury banking operations. Islamic financial instruments should be usury-free and efficient in applying monetary, fiscal and financial policies at different levels of central bank, government and commercial banks and non-banking money and financial institutions. Conventional interest-bearing bonds are not allowed in Islamic central banking. This restriction mostly distinguishes Islamic central banking from conventional one in implementing monetary policy.

We examine monetary instruments in Islamic central banking framework. As a conclusion, to revive Islamic monetary policy, we should provide necessary replacement for conventional bonds and treasury bills to activate non-usury open market operations; that is some public equity-based instrument. In this regard, by looking at financial papers and notes, we emphasize on Rastin Swap Bonds (RSBs). RSB is a financial paper that observes the right for the lender to borrow an equal amount to his lending from the borrower. Four types of RSBs in domestic money and foreign currency are defined and their Sharia allowances and monetary, fiscal and financial effects are evaluated. Rastin Swap Bond will serve as important instrument for resource mobilization and will be a primary vehicle for development of Islamic capital market and central banking operations.

Footnote is continued from last page:

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Chapter Ten

Insurance and Bankruptcy

Introduction

Economic insurances which are often called commercial insurance, have a long history, going back to 6500 years ago. According to a found papyrus belonging to 65 centuries ago, in order to help and protect each other against accidents, ancient Egyptian lithographers used to pay a share to a fund. The King of Babel, Hammurabi legislated law in 2250 B.C., according to which transporters were responsible for the cargo they carried until delivery. In 588-640 B.C. in Greece, there were associations which established funds and received monthly fees to help and protect members against injury and damages. A similar organization has also been seen in ancient Rome²⁴⁷. There are similar cases in middle ages which we will not go through²⁴⁸. Modern various²⁴⁹ economic insurances can be counted as follows:

1. Life insurances
2. Personal accidents insurances
3. Health insurances
4. Insurance for fire accidents and other hazards, such as explosion, theft, earthquake, flood and plane crash

²⁴⁷ Salehi, Jan Ali Mahmoud (2002), Insurance Law, Bimeh Markazi Iran, Training and Publication Office, pp. 65-73.

²⁴⁸ Before Islam, kinds of insurance have been prevailing in Arabia peninsula. The reason for not being mentioned in narrations may be because The Legislator did not want to go in detail of economic subjects except when necessary.

²⁴⁹ There are two kinds of insurances called Co-insurance and Re-insurance which distribute the consequent accident risks subjected to the insurance policy. In co-insurance, two or more insuring companies jointly insure the asset. This kind of insurance is usually used for insuring large risks such as fire accidents or explosions in factories and in case of accident, each insurance company pays his share. Re-insurance is a kind of double insurance, and the first insurer insures the extra risk by another insurer. In other words, the first insurer insures a part of his obligations by another one. Another kind of insurance called Complimentary insurance which is different from double insurance covers other or extra risks for the insured.

5. Cargo insurances
6. Transportation vehicle (sea, air, road) insurances and its related civic responsibility
7. General (civic and professional) responsibility insurance
8. All risk insurances for contracting and installations and related civic responsibilities (engineering insurance)
9. Operation and cash in till insurances
10. Workers honesty insurances
11. Oil exploration and excavation and related industries insurances
12. Agricultural products insurances
13. Export insurances

In all kinds of above insurances upon the conditions written in their contracts and by taking fees from the insured, insurer will cover financial support mentioned in their policy, the following general rule is satisfied. Although these contracts are different in details, but generally they are similar.

The generality of insurance can be mathematically explained; suppose insurer receives A_i dollars from the i^{th} insured to insure asset B_i . Assume that the probability of losing the asset is equal to P . Accordingly, if the number of insured of this kind of asset is n , and $i=1 \dots n$, the amount received by the insurer will be equal with:

$$A = \sum_{i=1}^n A_i \quad (1)$$

The mathematical expectation of the payments of insurer to insured in case of loss of the assets will be equal to:

$$B = \sum_{i=1}^n P B_i = P \sum_{i=1}^n B_i \quad (2)$$

If insurance fee is equal to the below ratio:

$$q = \frac{A_i}{B_i} \quad i = 1, \dots, n \quad (3)$$

By replacing the terms we can write:

$$\sum_{i=1}^n A_i = q \sum_{i=1}^n B_i \quad (4)$$

By replacing (1) and (2) in (4), we will have:

$$A = \frac{q}{P} B \quad (5)$$

That is to say, the received amount by insurer (A) is equal to the ratio of insurance fee (q) to the probability of loss of the asset (P) multiplied by the amount paid to insured (B) by insurance company. Insurer company profit will be:

$$\pi_I = A - \frac{q}{P} B \quad (6)$$

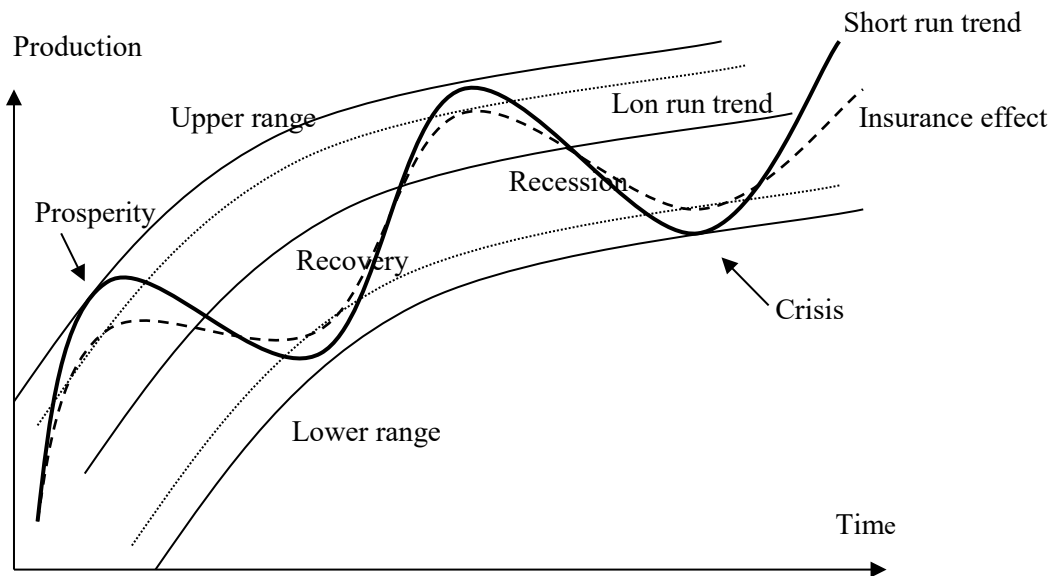
If $\pi_I = 0$, the relation (5) will satisfy and insurer practically will have no profit, which means her economic activity has no yield. Therefore, she should not enter the market. It is the same when $\pi_I < 0$, which means his income is less than his payments ($A < \frac{q}{P} B$). So, when

$$\pi_I > 0 \Rightarrow A > \frac{q}{P} B \Rightarrow \frac{A}{B} > \frac{q}{P}, \quad (7)$$

his activity is profitable. In other words, if the probability of accident is truly estimated, the rate of insurance should be higher than the occurrence of accident probability so that the ratio of income (A) of insurance company to her cost (B) is larger than one. In this case, the profit rate of the

insurance company will be $\frac{q}{p} > 1$. This analysis means that the insurance company is a commission-receiver agent and by rendering a service, obtains a percentage for risk coverage. This action is similar to levying tax on n firms to cover their risks. In spite of *Riba*, insurance acts against economic fluctuations. We can study this phenomenon in business cycle performance. In business cycles, fluctuations caused by seasonal fluctuations and cycles which take 8-11 years to finish, turn the economy from recession to crisis and then to recovery and prosperity and again to recession and a new cycle. Business cycles are a lengthy subject in economics which we don't go into details now.

When economy is at prosperity stage, total production is at its maximum level and then tends to decline towards recession until finally reach to crisis. In this process, unemployment of factors of production exacerbates and reaches its maximum in crisis. Firms become bankrupt one after another until inventories empty and prices start to rise and increasing demand increases production and supply and a new recovery and then prosperity starts in the economy within 8-11 years. When the economy is in crisis, by decrease of prices, producers and intermediates start to bankrupt and since they cannot keep their financial obligations, social problems will be the consequences of this compulsory cycle in the economy. When the economy reaches its lowest in crisis stage, prisons will be filled with people who cannot afford to pay their debts and obligations. Insurance practically will minimize this cycle and decreases its range. As it is seen in the figure below, the hachured curve has reduced production and income during recovery and prosperity, and instead, has decreased depression and crisis in the next steps. In other words, insurance has reduced the cycle range of short term oscillations and guided the growth trend towards long term economic trend and the economy has been more surrounded.



Long term and short term economic conditions during business cycles

Chain Bankruptcy Theory

Let us start a new discussion about chain bankruptcy. Any firm at time t has some assets and liabilities. Its total asset (W_i) is equal to the value of all goods and physical capital and other acceptable items in firm's (C_i) portfolio plus its claims (F_i) from others. That is:

$$W_i = C_i + F_i \quad (8)$$

On the other side, debts (D_i) are equal to financial obligations of the firm. Altogether, in an economy with n firms, all claims will be equal to all obligations, or:

$$\sum_{i=1}^n F_i = \sum_{i=1}^n D_i \quad (9)$$

The net worth (asset) of each firm is equal to:

$$W_i^n = C_i + F_i - D_i \quad (10)$$

By summing up the above equation, and replacing from (9), the inventory

in the economy will be equal to net worth of asset, or,

$$\sum_{i=1}^n W_i^n = \sum_{i=1}^n C_i \quad (11)$$

Now suppose n firms have transactions with each other and i^{th} firm buys C_i amount of goods from the $i-1^{\text{th}}$ firm and sells it to the firm $i+1^{\text{th}}$. If this process of purchase is based on credit, it will cause transmission of bankruptcy to other firms. As commodities are sold payable at maturity, i^{th} buyer promises to the $i-1^{\text{th}}$ seller to pay him the amount of D_i at maturity. On the other hand, he sells the good to $i+1^{\text{th}}$ buyer and receives a payable written document equal with F_i and the commodity goes from firm $i-1$ to firm i and then to firm $i+1$. These simple sequences will go on several times. To simplify the subject, let us suppose that the face value of the commodity C_i increases α percent in each transaction between firms and these firms have no other assets except this commodity and all their claims and obligations are related to this commodity which create their assets and liabilities. We can design the above chain as follows:

$$\begin{aligned} C_0 &= (1+\alpha)C_0 \rightarrow C_1 = (1+\alpha)C_0 \rightarrow C_2 = (1+\alpha)C_1 \rightarrow \dots C_j = (1+\alpha)C_{j-1} \rightarrow \dots C_n = (1+\alpha)C_{n-1} \\ C_0 &\rightarrow (1+\alpha)C_0 \rightarrow (1+\alpha)^2 C_0 \rightarrow \dots (1+\alpha)^j C_0 \rightarrow \dots (1+\alpha)^n C_0 \\ D_0 &= 0 \rightarrow D_1 = C_0 \rightarrow D_2 = C_1 \rightarrow \dots D_i = C_{i-1} \rightarrow \dots D_n = C_{n-1} \\ F_0 &= C_0 \rightarrow F_1 = (1+\alpha)C_0 \rightarrow F_2 = (1+\alpha)C_1 \rightarrow \dots F_j = (1+\alpha)C_{j-1} \rightarrow \dots F_n = (1+\alpha)C_{n-1} \quad (12) \\ \pi_0 &= C_0 \rightarrow \pi_1 = \alpha C_0 \rightarrow \pi_2 = \alpha C_1 \dots \rightarrow \pi_j = \alpha C_{j-1} \rightarrow \dots \pi_n = \alpha C_{n-1} \end{aligned}$$

The sale of firm zero to firm n^{th} has been shown in the first row and each term shows the value of the commodity for firm j . This process is in the form of difference equation; therefore, the second row by replacing C_i in terms of C is essentially the solution for the first row. The third row shows the debt flow of the firms and the fourth row shows the firms' claims. The fifth row shows the profit of firms zero to firm n^{th} .

Total profit of the transactions in the economy will be equal to:

$$\pi = \sum_{i=0}^n \pi_i = C_0 + \sum_{i=1}^n \alpha(1 + \alpha)^{i-1} C_0 = C_0 + \alpha C_0 \sum_{i=1}^n (1 + \alpha)^{i-1} \quad (13)$$

Total debts created in the economy will be:

$$D = \sum_{i=0}^n D_i = \sum_{i=0}^n C_{i-1} = \sum_{i=0}^n (1 + \alpha)^{i-1} C_0 = C_0 \sum_{i=0}^n (1 + \alpha)^{i-1} \quad (14)$$

Total claims created in the economy will be:

$$F = \sum_{i=0}^n F_i = \sum_{i=0}^n (1 + \alpha)^i C_0 = C_0 \sum_{i=0}^n (1 + \alpha)^i \quad (15)$$

All above relations have a summation of a geometric progression term:

$$\sum_{i=0}^n (1 + \alpha)^i = \frac{(1 + \alpha)^{n+1} - 1}{\alpha} \quad (16)$$

Therefore, we have:

$$\pi = C_0 (1 + \alpha)^n \quad (17)$$

$$D = C_0 \left(\frac{(1 + \alpha)^n - 1}{\alpha} \right) \quad (18)$$

$$F = C_0 \left(\frac{(1 + \alpha)^{n+1} - 1}{\alpha} \right) \quad (19)$$

Again, we can find the trueness of the above relations by the below replacement:

$$\pi = F - D \quad (20)$$

Now suppose that the inventory of the last firm C_n is spoiled or damaged because of an accident. Therefore, his claims which were supposed to be created after selling goods to the next firm and could compensate its debts (D_n) and leave some profit π_n for the firm which is

equal to $\alpha(1+\alpha)^{n-1}$ have been ruined. That is to say, his claims which are regarded as assets, becomes zero but his debts and obligations remain. Therefore:

$$F_n = 0 \quad (21)$$

$$\pi_n = -D_n \quad (22)$$

Now its losses are equal with its debts to firm n-1. The un-fulfillment of his financial obligations in equations (12) will follow a reverse trend; that is equal to D_n of claims of the n-1th firm (F_{n-1}) is not paid and the profit of the n-1th firm is also lost. By using equations (12) we can write:

$$F_n = (1+\alpha)D_n = (1+\alpha)(1+\alpha)C_{n-2} = (1+\alpha)F_{n-1} \quad (23)$$

Therefore:

$$F_{n-1} = \frac{1}{(1+\alpha)}F_n \quad (24)$$

That is to say, the claims of the firm n-1 from the firm n have been equal to zero, because of the accident for goods of the nth firm. The general form of the above equation applies to all firms:

$$F_{i-1} = \frac{1}{(1+\alpha)}F_i \quad (25)$$

Since this equation is recursive, when $F_n = 0$, all F_0, \dots, F_{n-1} will be zero too. That means, in business of C, all merchants become bankrupt and since they cannot obtain their claims, they cannot pay their debts. Therefore, all merchants in relation with this commodity will be bankrupt. In this case, the losses of all merchants will be:

$$\pi_j = -D_j \quad (26)$$

This can be extracted from equations (12). The nominal loss to the

economy will be:

$$\sum_{i=0}^n \pi_i = -\sum_{i=0}^n D_i = -C_0 \left(\frac{(1+\alpha)^n - 1}{\alpha} \right) \quad (27)$$

Insurance and Chain of Bankruptcy

Now suppose in each transaction of commodity C, its owner pays a percentage of it as insurance fee to insurance company. If insurance rate is q and the i^{th} insured always pays qC_i to insurance company, by using equations (12) we can calculate insurance fees at any time. In the following sequence, Q_j is the insurance fee of the j^{th} insured:

$$qC_0 \rightarrow qC_1 \rightarrow qC_2 \dots \rightarrow qC_j \rightarrow \dots qC_n \quad (28)$$

$$Q_0 = qC_0 \rightarrow Q_1 = q(1+\alpha)C_0 \rightarrow Q_2 = q(1+\alpha)^2 C_0 \rightarrow \dots Q_j = q(1+\alpha)^j C_0 \rightarrow \dots Q_n = q(1+\alpha)^n C_0 \quad (29)$$

The total insurance fee paid will be:

$$Q = \sum_{i=0}^n Q_i = \sum_{i=0}^n qC_0(1+\alpha)^i = qF \quad (30)$$

Which means that the total insurance fee paid is equal to the insurance fee rate multiplied by total claims of merchants from each other for transacting commodity C. Assume there are one accident which ruins the commodity in n transactions, so the probability of this accident will be equal to:

$$P = \frac{1}{n} \quad (31)$$

Therefore, if the commodity is ruined in n^{th} transaction, the insurance company has to pay $D_n = C_{n-1}$ to n^{th} merchant. The company can afford to pay this amount for her obligations and since F_{n-1} is not zero in this case,

the recursive equation (25) for all claims of previous merchants will not become zero and they obtain their profits. In this case, only the n^{th} merchant has no profit, but has even no loss, because insurance company has covered his loss by paying him D_n which is equal to the value of his lost commodity. The insurance company calculates the accident probability through equation (31) and thereof, insurance fee. In our sample, the insurance fee will be:

$$q = \frac{Q}{F} \quad (32)$$

And insurance cost for the j^{th} insured will be $Q_j = qC_0(1 + \alpha)^j$ and therefore, the income of the insurance company will be:

$$Q = qC_0 \left(\frac{(1 + \alpha)^{n+1} - 1}{\alpha} \right) \quad (33)$$

Mathematical expectation of insurance company cost from equation (31) will be:

$$E(B) = C_0 \left(\frac{(1 + \alpha)^{n+1} - 1}{n\alpha} \right) \quad (34)$$

Mathematical expectation of insurance company profit is as follows:

$$E(\pi_I) = Q - B = \left(q - \frac{1}{n} \right) C_0 \left[\frac{(1 + \alpha)^{n+1} - 1}{\alpha} \right] \quad (35)$$

If insurance fee rate is equal to one divided by the number of transactions, the insurance company profit will be equal to zero, but even in this case, the economy gets rid of bankruptcy. But since the insurance company has offered this service to the community, he has to obtain a profit:

$$q = \frac{Q}{F} > \frac{1}{n} \Rightarrow Q > \frac{F}{n}$$

That means, the total insurance fee received by the company should be more than the average claim of one transaction which is a clear result.

Summary

By economic analysis of insurance, the “chain bankruptcy” theory is put forward as a new theory. Through a mathematical-behavioral model we will show how insurance breaks the chain bankruptcy in the economy and make the business cycle oscillation range narrow.

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Chapter Eleven

Social Takaful

Introduction

Social Takaful is based upon two principles, namely, the unity and risk sharing principles. This Islamic approach can act for financial protection of citizens and is to somehow similar to usual insurances. Social Takaful has become increasingly popular in Islamic as well as non-Islamic countries during the past three decades. It should be claimed that the various methods of social Takaful, which currently consists of the youngest and most dynamic insurance markets around the world, refers back to nearly 14 centuries ago.

There are many definitions for Takaful, but all of them are the similar in their essences. Alwan describes: “In social Takaful, every individual of the society is willing to support and guarantee other members, individually or collectively”. This generally performed through affirmative (such as supporting orphans) or privative strategies (such as prohibition of usury). Such behaviors are inspired by the conscience and are derived from Islamic beliefs. As a result, every person can live under the protection and support of the rest of the society, and the society would help him/her whenever needed. In this procedure, every individual will take part in accomplishing the task. Finally, a transcendent society could be established and any damage or harm incurred by the people be quenched (Alwan, 1988)”. It can be said that Takaful is a two-ways mutual relationship. In fact, it reflects the responsibilities of the society members, which should be ended up to collaboration and cooperation between citizens. Takaful is employed to offer a solution and relief for personal and social issues and troubles (Zahedi Asl, 1992). Moreover, it is of high importance to note that social Takaful is not merely a simple practice to supply the three basic needs (residence, food, and clothing) but a comprehensible religious concept. In

addition, it involves every other physical and spiritual need (Alsabayei, 1998).

Social Takaful is divided primarily to two parts. Public Takaful indicates that everyone in a society is mutually responsible for the vital needs of the others until these needs are sufficiently satisfied. The *Zeman Ealah* (Sustenance Guarantee) is a pledge of government to provide subsistence living conditions for all individuals in the society by supplying the required possibilities through economic activities or direct protection if necessary.

Qard-ul-Hasanah

The interpreted concepts about Qard-ul-Hasanah from Quran verses are different from its prevailing concept used nowadays. One of the usury-free banking operations is to provide Qard-ul-Hasanah loans. Usury-free banking regulations of Iran state, “Qard-ul-Hasanah is a transaction in which, the lender delivers a specific amount of his/her property to borrower and borrower will reimburse the lender with the same property or its price”. Literally, “*Qard*” means cutting, breaking off, or severing. In Fiq’h, it means cutting off a segment of one’s property. Jurisprudents consider Qard-ul-Hasanah to be valid when the original property is returned to the owner, even though this definition is the same as the “loan” definition in the civil law²⁵⁰. Unfortunately, in today's society, the loans accompanied with a surplus have become significantly prevailing and as a result, the usury-free loan has been named Qard-ul-Hasanah.

²⁵⁰ Article 648 of the civil law defines loan as a transaction, in which one party grants a determined amount of his/her property to other party. In return, the other party shall return the exact amount and quality to the first party and if failing to do so, shall reimburse the money equivalent of its price when lending.

By studying Quran verses, it is realized that Qard-ul-Hasanah is an ex gratia payment. In other words, Qard-ul-Hasanah in Quran mostly covers the similar subjects as Takaful, and interest-free loan is less concerned in this case. Qard-ul-Hasanah has been mentioned in different verses of Quran and all of them come right after the verses that emphasizing on *Infaq*²⁵¹, *Zakat*²⁵², *Sadaqah*²⁵³, or *Qital*²⁵⁴. Therefore, we can genuinely interpret that Qard-ul-Hasanah is an ex gratia payment from one's property and when considering the literal meaning of "*Qard*" (loan), it means forfeiting one's body in the path of God, which is inherently good or "Hassan". In the verses of 244 of Surah of Al-Baqarah He says: "*who is he that will loan to Allah a beautiful loan, which Allah will double unto his credit and multiply many times? It is Allah that gives (you) want or plenty, and to him shall be your return.*"²⁵⁵ In verse 12 of Surah of Al-Ma'idah, it is said that: "*I am with you if you perform As-Salat (Iqamat-as-Salat), and give Zakat, and believe in my messengers, and honor and assist them, and lend Allah a good loan (Qard)*"²⁵⁶. In verses 10-11 of Surah of Al-Hadid, it is stated that: "*And what is the matter with you that you do not spend in the cause of Allah? While to Allah belongs the heritage of the heavens and the earth. Not equal among you are those who spent and fought before the conquest (of Makkah) (and those among you who did so later). They are greater in degree than those who spent and fought afterwards. But to all, Allah has promised the best (reward). And Allah is all-aware of what you do. Who is he that would lend to Allah a goodly loan, then (Allah) will increase it*

²⁵¹ Infaq means charity, simply to please God without expecting any favor in return.

²⁵² Zakat is what purifies; it is the giving of a fixed portion of one's wealth to charity, generally to the poor and needy.

²⁵³ Sadaqah is voluntary charity out of compassion, love, friendship (fraternity) or generosity.

²⁵⁴ Qital is battle.

²⁵⁵ «مَنْ ذَٰلِذِي يُقْرِضُ اللَّهَ قَرْضًا حَسَنًا فَيُضَاعِفَهُ لَهُ أَضْعَافًا كَثِيرَةً وَاللَّهُ يَقْبِضُ وَيَسْطُطُ».

²⁵⁶ «قَالَ اللَّهُ إِنِّي مَعَكُمْ لَئِنْ أَقَمْتُمُ الصَّلَاةَ وَآتَيْتُمُ الزَّكَاةَ وَآمَنْتُمْ بِرُسُلِي وَعَزَّرْتُمُوهُمْ وَأَقْرَضْتُمُ اللَّهَ قَرْضًا حَسَنًا».

manifold to his credit (in repaying), and he will have a good reward”²⁵⁷. In verse 18 of the same Surah, it is said that: “Indeed, those who give Sadaqat (i.e. Zakat and alms, etc.), men and women, and lend to Allah a goodly loan, it shall be increased manifold (to their credit), and theirs shall be an honorable good reward.”²⁵⁸”

According to the above-mentioned facts, it can be expressed that Qard-ul-Hasanah can be interpreted as devotion of property and life and it does not necessarily reflect the meaning of “loan”. Maybe, using the word “Good Loan” will have less impact on the religious basis of Qard-ul-Hasanah as Quran states.

Social Takaful, Qard-ul-Hasanah, and Insurance

Allocation and equipping of resources in social Takaful is different from prevailing Qard-ul-Hasanah and social security. Usury-free banking regulations in Iran explain that a Qard-ul-Hasanah loan satisfies specific requirements of individuals, including marriage, dowry provision, treatment expenses, house repairs, education subsidies, and subsidies for construction of houses in rural regions. It should be stressed that even in this framework; the concept of Qard-ul-Hasanah is more compatible with Takaful rather than loan.

When compared to common Qard-ul-Hasanah (good loan), in Takaful, the entire resources and services are provided free of charge and as an ex gratia payment and they do not require any collateral. In fact, in Qard-ul-

²⁵⁷ «وَمَا لَكُمْ أَلَّا تُنْفِقُوا فِي سَبِيلِ اللَّهِ وَلِلَّهِ مِيرَاثُ السَّمَاوَاتِ وَالْأَرْضِ لَا يَسْتَوِي مِنْكُمْ مَن أنْفَقَ مِن قَبْلِ الْفَتْحِ وَ قَتَلَ أَوْلِيكَ أَعْظَمُ دَرَجَةً مِنَ الَّذِينَ أنْفَقُوا مِن بَعْدِ وَ قَاتَلُوا وَكَلًّا وَعَدَ اللَّهُ الْحُسْنَى وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ*» مَن ذَا الَّذِي يُقْرِضُ اللَّهَ قَرْضًا حَسَنًا فَيُضَاعِفَهُ لَهُ وَ لَهُ أَجْرٌ كَرِيمٌ».

²⁵⁸ «إِنَّ الْمُصَدِّقِينَ وَ الْمُصَدِّقَاتِ وَأَقْرَضُوا اللَّهَ قَرْضًا حَسَنًا يُضَاعَفُ لَهُمْ وَ لَهُمْ أَجْرٌ كَرِيمٌ».

Hasanah, exactly the same resources as that loaned must be returned; thus, it does need collateral. In contrast, in social security, an individual plans to invest for receiving resources in future, and in other words, the person him/herself acts as both the supplier and consumer of resources.

Social Takaful in Islam

Bidabad (2003) summarizes all aspects of Islamic Takaful as the following items:

- 1- The “Sustenance Guarantee”, which is mainly used for financial needs of individuals, can be considered as a duty of Islamic government according to verse 58 of Surah of Taubah:²⁵⁹ *“And among them are some who accuse you (O’ Muhammad!) regarding the distribution of the alms. If they are given a part, they approve, but if they are not given, they become angry!”* And this can be happened when you pay the alms (*Sadaqah*) to the needy. Various verses about Qard-ul-Hasanah basically refer to obligation of government such as *Ibahah*²⁶⁰ or *Istihbab*²⁶¹ of those who grant Qard-ul-Hasanah.
- 2- Regarding the government’s responsibility to provide housing, Imam Ali states in his order to Malik Ashtar: “I command you and every other governor that before spending the collected taxes, specify a portion for development and construction. Firstly, prepare the land and then, begin to sow and harvest. Firstly, construct a house and then, reside in there. I would like your territory to be developed and civilized. I like the hovels of the poor and cottages of farmers to be lit with wealth and happiness.”
- 3- Regarding the support for marriage, we can mention the story of a

²⁵⁹ « وَ مِنْهُمْ مَنْ يَلْمِزُكَ فِي الصَّدَقَاتِ. »

²⁶⁰ *Ibahah*: Principle of permissibility.

²⁶¹ *Istihbab*: Principle of recommendatory.

young poor masturbator man, who was brought to Ali. He told Imam Ali that nobody gives me his daughter to get married and I am also jobless. Ali spoke to the attending people: “Who would give his daughter to this young man?” A man responded positively. Again Imam Ali said: “Who would give him a job?” And again another stated that he would provide that. Then, Ali chastised the young man and after that, he sent the man to get married and employed

- 4- The aforesaid story can be taken into consideration as the responsibility of every Islamic government to provide job for every individual of the society.
- 5- Moreover, regarding the need for education, consultation, and training, Ali stated to his governor, Malik Ashtar: “A governor is like a patriarch (chief) of the family, who must observe the faults and dysfunctions of the family as his own.”
- 6- In addition, with regard to the need for health and treatment services, all the aforesaid in this section can reflect the responsibility of the government to satisfy such needs. God is the healer, and his Caliph (substitute) on the earth is as well. On the other hand, the rule of obligations and binding promises²⁶² can verify this issue.
- 7- Based upon the order of Ali to Malik Ashtar, it is of the Islamic governor’s responsibility to satisfy the need for caring of the needy people: “Beware of the heartbroken poor and needy, with grim luck; the ones that son of Abu Talib (me Ali) is always thinking of and concerned about them. God has entrusted them to you, O’ governor and sovereign!. Woe if you ever forget their agony or woe if you ever are deprived from the maintaining celestial throne of God.”
- 8- With respect to the requirements for assisting in the times of danger and urgency, Ali states to Malik: “If an event occurs to ruin the life of

²⁶² This rule is much referred in Maleki Fiqh, and states that if someone promises something, he must carry it out. However, it is reasonable too.

Egyptian farmers, for example, if it does not rain any longer, or if Nile no longer have its beneficent floods, or if the farms are dried and abandoned, and if farmers become poor and needy; it will be the responsibility of the governor to order his tax and financial authorities to decrease taxes from the public and ranchmen. You may wonder that if it depletes the treasury of Egypt and shall harm your administration, but I know the interests of the Islamic state better than anyone does. I have to repeat: “my state with all of its assets is determined to develop the country and I must emphasize even more clearly that Ali is totally bounded to provide welfare for Islamic nation.”

- 9- In order to provide the need for food and nutrition, it is said in verse 184 of Surah Al-Baqarah: “*And for those who can fast but with difficulty (e.g. old people, etc.), they have (a choice either to fast or) to feed a miskin (poor person) (for each fasting day).*”²⁶³ In other words, taxes that must be directly paid to *Bayt-al-mal* (treasury) can be used for feeding poor people. *Kafarat* can be also paid by feeding poor people as stated by Surah of Ma'idah, verse 95: “*or by way of atonement, the feeding of the indigent; or its equivalent in fasts: that he may taste of the penalty of his deed*”.²⁶⁴
- 10- The responsibility of Islamic government to recognize the right of protest and the right of wronged to stand against the aggressor is mentioned in the verse “*to those against whom war is made, permission is given (to fight), because they are wronged; and verily, Allah is most powerful for their aid*”.²⁶⁵ This permission can actually satisfy the existing demand in the society. It should be mentioned that

²⁶³ - «أَيَّامًا مَّعْدُودَاتٍ فَمَنْ كَانَ مِنْكُمْ مَّرِيضًا أَوْ عَلَى سَفَرٍ فَعِدَّةٌ مِنْ أَيَّامٍ أُخَرَ وَعَلَى الَّذِينَ يُطِيقُونَهُ فِدْيَةٌ طَعَامُ

مَسْكِينٍ فَمَنْ تَطَوَّعَ خَيْرًا فَهُوَ خَيْرٌ لَهُ وَأَنْ تَصُومُوا خَيْرٌ لَكُمْ إِنْ كُنْتُمْ تَعْلَمُونَ»

²⁶⁴ «أَوْ كَفَّارَةٌ طَعَامُ مَسَاكِينَ أَوْ عَدْلُ ذَلِكَ صِيَامًا».

²⁶⁵ «أُذِنَ لِلَّذِينَ يُقَاتَلُونَ بِأَنَّهُمْ ظَلَمُوا وَإِنَّ اللَّهَ عَلَىٰ نَصْرِهِمْ لَقَدِيرٌ».

if the Islamic government fails to provide it, it will be the duty of every citizen to provide such a service.

- 11- Regarding the duty of government to support people for obtaining their rights and exacting justice, Imam Ali states to Malik Ashtar: “O’ son of Harith! Do not deem that God is neglectful, as he is always observing for the saved, listens carefully to the screams of his servants, and does not relinquish the slightest injustice from the greatest people. Do you know what the most popular attribute is for a ruler on all circumstances? That (is) for him to be always moderate and mild, and his justice to be like a cloud of mercy casts its shadow across the country, and makes the best effort to content his subordinates.” Therefore, the task of Islamic government would be to assist in exacting justice, as the verse states (Surah of Nisa, Verse 59): *“O’ you who have believed! Obey Allah, and obey the messenger and those of you who are in authority; and if you have a dispute concerning any matter, refer it to Allah and the messenger”*²⁶⁶
- 12- The responsibility of the Islamic government in supporting the minor without a guardian is cleared by the verse (Surah of Zoha, verse: 9):²⁶⁷ *“Therefore, as for the orphan, do not oppress (him)”*; Also as narrated from the Prophet: “I am the guardian of every Muslim. If someone leaves a heritage, it should be his heirs’. But if he leaves a debt or an orphan behind him, it will be my responsibility.”
- 13- Regarding the pension of the retired, elderlies and disabled people, we can refer to the important duty of fidelity, compassion, and religious mercy. Moreover, there is a story about Ali that follows: Ali saw a beggar and asked: who is he? They said: He is a Christian. He said:

²⁶⁶ «يَا أَيُّهَا الَّذِينَ آمَنُوا أَطِيعُوا اللَّهَ وَأَطِيعُوا الرَّسُولَ وَ أُولَى الْأَمْرِ مِنْكُمْ فَإِن تَنَازَعْتُمْ فِي شَيْءٍ فَرُدُّوهُ إِلَى اللَّهِ وَ

الرَّسُولِ».

²⁶⁷ «فَأَمَّا الْيَتِيمَ فَلَاتَقْهَرْ»

When he was young, you made him work, and now that he is old and feeble, you ignore him. Pay him from the *Bayt-ul-mal* funds.

- 14- For supporting those who require support, Ali states: “Woe that every of you see one of his relatives in need and do not try to assist him.” Surely, this is also true with the Islamic government. In the letter to Malik Ashtar, he states: “O’ Malik! Be kind and look at your citizens with compassion and talk to them with a heart full of mercy.”
- 15- For providing relief for problems, Ali states to Malik “Do solve the problems of your citizens”.
- 16- For preparing desirable social norms and traditions, Ali said to Malik: “O’ Malik! Do not refuse the traditions left by the predecessors of Islam and never prevent the citizens from following their own admirable and accepted norms and habits.”
- 17- For supplying apparel, we only mention this narration that “Clothing is necessary for every human”²⁶⁸.

According to the verses and narrations expressed with respect to social Takaful, we now continue to consider the mobilization and allocation of resources:

Mobilizing Resources in Social Takaful

Mobilization of resources is to utilize any necessary tool by the Islamic society in order to wipe out the poverty and inequality and to relieve social disturbances and establish a developed society. Mobilization of resources in Takaful is considered as a duty of government, while the motivation of an individual in participating in task is merely out of kindness. The tools used in this section are provided in the following

²⁶⁸ «أَمَا الْكِسْفَةُ فَعَلَيْ كُلِّ إِنْسَانٍ»

(Bidabad, Mohammadi 2011):

The government, philanthropists, charity organizations, welfare and security organizations, relief foundations must protect needy peoples through the targeted subsidies, *Kaffarah*²⁶⁹, *Zakat*, *Khums*²⁷⁰, *Infaq*²⁷¹, endowments, wills, property of the deceased people, blood money for the deceased people, spoils of war, charitable dedications, sacrifices, tributes, inheritance without the heir, *Jazyah*²⁷², anonymous property, *Infal*²⁷³ and *Rakaz*²⁷⁴, *Berr* and *Ihsan*²⁷⁵, financial penalty of the convicts, illegitimate confiscation, smuggled and usury assets.

Allocation of Resources in Social Takaful

Allocation of social Takaful resources refers to consumption of assets, which is resulted from this system. They are mainly used to supply the minimum subsistence through social Takaful insurances. It should be mentioned that in this system, the entire services are provided free of charge and as ex gratia payments and there would be no need for collateral. These insurances include the following 17 categories (Bidabad, 2003, 2010, 2012, 2014):

- 1- Financial Insurance: Financing needy people including bankrupts.
- 2- Housing Insurance: No person shall live without a shelter. The housing insurance shall provide the minimum housing requirements for the public. It should also provide the financial capability for repairing houses.

²⁶⁹ Payments as atonement for certain sins.

²⁷⁰ One-fifth of income that a person acquires and must pay as Islamic tax.

²⁷¹ *Infaq* means payment just to please God without asking for any favor.

²⁷² Per capita tax, levied on non-Muslim citizens.

²⁷³ Anonymous properties

²⁷⁴ Ore mine etc.

²⁷⁵ Compassion.

- 3- Marriage Insurance: Providing suitable conditions for marriage and removing the existing obstacles for marriage.
- 4- Occupation Insurance: Any person has the right to have a job and thus, this insurance is obliged to provide them with one. In contrary to unemployment insurance, which pays monetary amounts, this insurance offers the individual a job.
- 5- Education Insurance: Every individual in the society must have the means and teachers to advance to any degrees of education that s/he may desire.
- 6- Treatment Insurance: All individuals in the society when becoming ill are insured and hygienic conditions are provided for them.
- 7- Caring and Nursing Insurance: Any disabled or incapable individual in the society is liable to receive adequate care and nursing when needed.
- 8- Accidents Insurance: Any person, who is subjected to natural or unnatural accidents, shall receive the supports from this insurance.
- 9- Food Insurance: Covers the nutrition needs of the individuals in the society. Hence, no person shall remain hungry. Based on this insurance, the minimum food requirements must be easily accessible.
- 10- Self-Defense Insurance: Any person has the full right to protest and stand against the aggressors. At the present time, prosecution institutes and judicial courts are the definitions of this insurance.
- 11- Attorney Insurance: Assisting any individual in demanding justice is of the obligations of this insurance.
- 12- Orphans Insurance: Providing orphans as well as little children without guardian with living conditions and supporting their rights can be done by this insurance.
- 13- Retirement and Disability Insurance: The people who have become incapable because of their age, disability, or disease, and cannot

temporarily or permanently function in their job are hereby insured.

- 14- Guardianship Insurance: Taking the guardianship of all unattended individuals, widows, old people, mentally unstable or incapable persons, and such are covered by this insurance.
- 15- Relief Insurance: Providing the solutions for disabled people in all their social affairs is amongst the obligations of this insurance.
- 16- Cultural Insurance: Assisting the individuals, failing to uphold their socially accepted norms and traditions are upon this insurance.
- 17- Clothing Insurance: No person shall live without appropriate clothing. Supplying the minimum clothing is of the responsibilities of this insurance.

To clarify more in detail, the main users of social Takaful insurances include all susceptible or deprived classes of the society as follows (Bidabad, 2010, 2012 and 2014):

The needy, homeless, poor, distressed, bankrupt, indignant, diseased, blind, disabled, prostrated, bedridden, vagrant, captive, prisoner, wonderer, orphan, unattended infant, old, indebted, damaged, unintentional criminal (who should pay the penalty or blood money), and those who entitled to receive alimony but they do not.

Strategies for Support and Custodianship

Currently, social security plans have three major strategies:

A) Insurance Strategy: These strategies are mostly based upon the occupation of individual in the society; and include social insurance, emergency fund and employer's liability. This strategy leads the insurance system to cover those who are employed. The insurance system has two sections in this part: Traditional insurance and Takaful insurance.

In traditional or common insurances, insurance is an approach to transfer the risk, based on which an organization trades the uncertainty and ambiguity for conclusiveness and assurance. One party agrees to pay a predetermined amount as premium and in return the insurance company is obliged to compensate any damage/loss occurred if it meets the scope of policy criteria.

Some jurists have objections to this characteristic of insurance, in which a determined loss is traded for an undetermined loss and consider it as a case of “*Gharar*²⁷⁶”, which is impermissible in *Fiq’h*.

In order to solve this problem, Takaful insurances do not bear any risk transfer between insurer and the insured. Instead, risks are distributed based on mutual collateral (guarantee) of the participants. In this plan, the agent (insurer) is obliged to collect the premium from the participants and if any damage/loss is incurred to any of the members, it should compensate him/her with an appropriate replacement.

During recent years, various companies have been established in Islamic and non-Islamic countries based on Takaful, which have signed many Takaful contracts with agent or insurer based on Takaful models.

Takaful contract can be considered as the most important difference between Takaful insurance and common insurances. Being ambiguous and indeterminate is the nature of risk. Any transaction in *Fiq’h* will be considered null and void if the subject of transaction is ambiguous. Therefore, Takaful contract cannot be considered as a simple “sales contract”. Ambiguity should be eliminated from any part of a Takaful contract. These parts include the price, method, quantity, and the due date

²⁷⁶ An unknown fact or condition in the contract. For instance, a fact, a condition of a contracting party, an asset in the contract, an asset price, whichever is unknown, makes the contract null and void.

for payment, contract terms, and similar issues.

In general, there is no single operational model for Takaful companies. In fact, any country has its own suggested model. The most important models in this field are *Mudarabah* (trade participation), *Wakalah* (agency), and the combined models (Khan, 2008):

***Mudarabah* Contract (trade participation):** An agreement between a provider of capital (*rabbul mal*), who provides the capital for a business and entrepreneur (*mudarib*), who manages the business and brings his expertise and experience. Under this contract, the final profit should be shared between the parties according to a pre-agreed ratio, while any loss should be solely borne on capital provider. In Takaful contracts based on *Mudarabah*, the insured party provides the capital to the agent of Takaful (insurer). This model is mostly employed in the Southeast Asian countries (e.g. Malaysia, Indonesia, etc.).

***Wakalah* (Agency) Contract:** A contract for appointment of an agent, in which a person appoints another one to act on his behalf. This appointment of agency can be for a determined business or performed on a general basis. The agent can demand a specific amount in compensation of the services rendered (which is called premium in common insurances). This model is generally appropriate for Takaful insurance of products.

The Combined Model: This mode is a combination of *Wakalah* and *Mudarabah* models and is widely used in the members of Cooperation Council for Arab States of the Persian Gulf.

B) Supporting Strategy: These strategies are based on the citizenship or residency and are public. They include social assistance and services. This system is mostly dependent on the government subsidies and credits

(public budget) and encompasses susceptible classes of the society.

C) Relief Strategy: These strategies, including public, governmental, and sometimes international reliefs, are mainly related to natural disasters such as flood, earthquake, widespread fires, as well as unnatural disasters such as war, chemical explosion, and housing problems of refugees (Panahi, 1999).

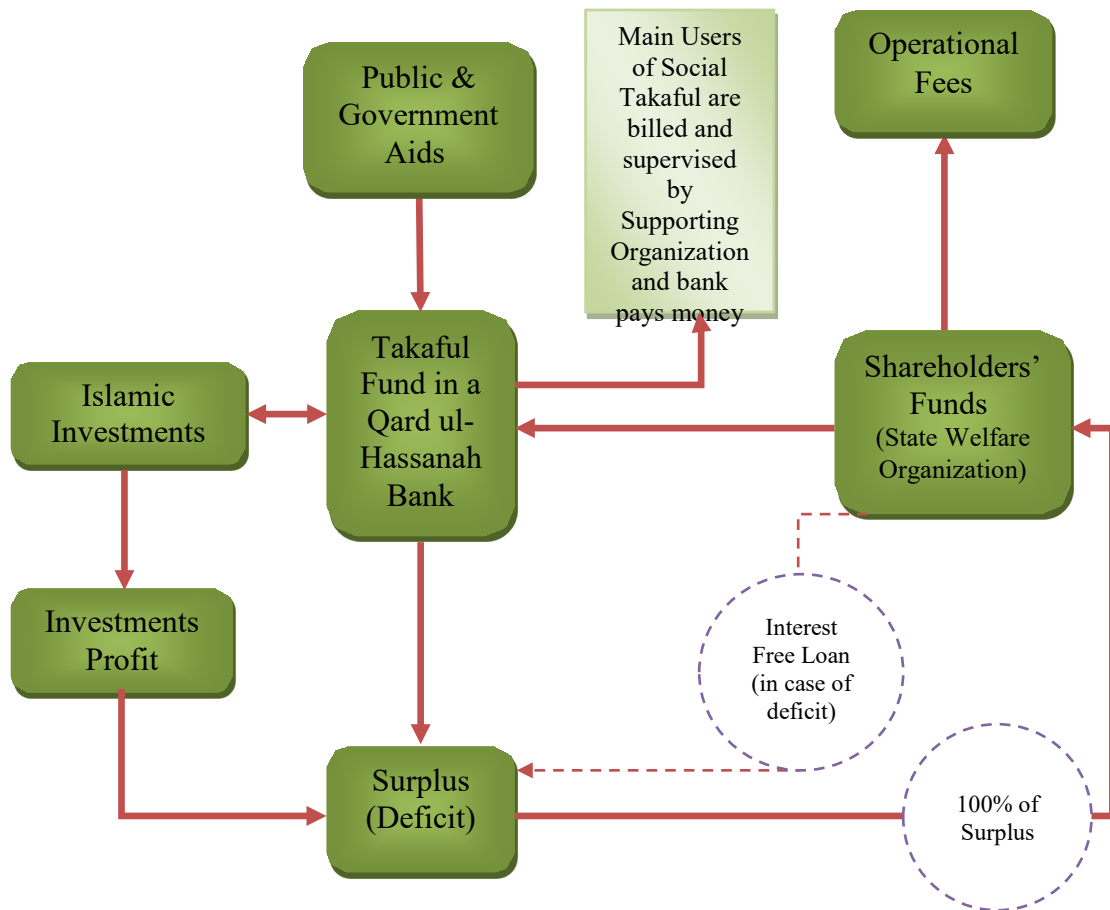
The supporting system covers vulnerable classes of the society (classified as aforesaid), who are unable to provide living conditions for themselves or for their family due to a variety of reasons. Currently in Iran, the State Welfare Organization and Imam Khomeini Relief Foundation bear the major responsibility towards supporting vulnerable classes of the society. Responsibilities and tasks of these organizations are to mobilize and allocate resources for social Takaful.

Banks and Protecting Organizations

Qard-ul-Hasanah is amongst the binding possessory transactions and it literally means to cut off. A person who cuts off a part of his/her property in order to lend it to another is called "*Moqrid*" or the lender, and the one who accepts this property is called "*Moqtarid*" or the borrower. According to Article 648 of the civil law, *Qard* is a transaction in which one of the parties grants a determined amount of his/her property to the other party and the other party shall return the exact amount at the same quality to the first party and if failing to do so, shall reimburse its money equivalent at the time of loaning. Therefore, the sums deposited in banks as Qard-ul-Hasanah are actually considered as the bank's own capital and the obligation of bank regarding its customers as *Moqtarid* is to return the exact property. In fact, banks must return these sums as soon as the

customer requires them.

Figure (1): The Proposed Model



Qard-ul-Hasanah banks and institutes have been specialized in financing the needy in the society and this is one kind of Takaful and social assistance. On the other hand, the activities of supporting organizations such as State Welfare Organization and Imam Khomeini Relief Foundation are of the same orientation. Therefore, in this part, in order to close Qard-ul-Hasanah banks and institutes and support the organization in social Takaful, we have offered a model to facilitate social Takaful, as illustrated by Figure (1).

According to this model, public and governmental aids and other funds that have been deposited in the account of supporting organizations

are collected as funds, which are called “Takaful fund” by the Qard-ul-Hasanah banks. Further, Qard-ul-Hasanah banks also receive sums from customers and apply their agent supporting organizations in authorized bank transactions. Therefore, the legal relationship between the bank and customer is established based on the transaction and agency. In fact, bank utilizes the deposited investments as agents of their customer in transactions and grants of financial bank credits and loans. Therefore, if any profit is made, the profit resulting from the transaction after deducting the fee of the agent will belong to the shareholder’s fund (State Welfare Organization or similar funds). Considering the aforesaid, in this system, the bank acts as trustee of customer and it is necessary to observe the interests and benefits of its principals in granting loans and transactions. In this system, because input and output money transfers are made for social Takaful through Qard-ul-Hasanah bank and are billed by supporting organizations (State Welfare Organization, etc.), therefore the productivity and performance of organizations will be considerably increased and administrative corruption will be significantly reduced due to separation of welfare organization who bills and bank who pays money to the needy. A supreme supervisor governmental committee also checks the whole circulations of money payments and bills.

Summary

In this chapter, in addition to examining the necessity of social Takaful²⁷⁷ based on Quran verses, we study the effective role of Takaful in the social empowerment and economic growth. Different models based on various Islamic financing methods are presented. Ultimately, a Takaful-

²⁷⁷ Islamic insurance

based model is proposed to complete the Qard-ul-Hasanah²⁷⁸ financing.

Social Takaful consists of two sections. The first one is “Public Takaful” (*Takaful Aamm*). It is based on the responsibility of individuals in the society to be concerned about the other’s needs and to fulfill their needs in a viable way. The other category of social Takaful is *Zeman Ealah* (Sustenance Guarantee). That is government is responsible to provide the minimum living subsistence of the whole people of the society. The mechanism of social Takaful can be defined under the duty of Qard-ul-Hasanah Banks.

This beneficial procedure requires specific operational mechanism in addition to automatic financing sources. This chapter proposes a social Takaful solution in overall framework of Qard-ul-Hasanah banking.

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Chapter Twelve

Information and Communication Technology

Introduction

If we accept the criteria for non-usury banking operations as expressed earlier, then we may use IT systems as important standpoint to optimize efficiency and effectiveness of this type of banking. Otherwise, there are operational ambiguities for implementing PLS procedure.

Since in «Non-Usury Bank Corporation» (NUBankCo) depositors are stakeholders, therefore investment return should be distributed among them proportionally based on amount of their own deposits. The most important factor causing ineffectiveness of conventional non-usury banking to achieve PLS mechanism is inability to distribute bank's profit at the end of financial period. On the other hand, the incapability of conventional non-usury banking to achieve PLS mechanism comes from disconnection of profit and loss accounting systems and real economic returns of economic activities. Thus, this causes some ambiguities in non-usury nature of transactions. Generally, the main preventing factors to PLS fulfillment are as follows:

- ✓ There isn't systematic connection among depositors (as supplier of financial resources or as bank's stakeholders) and loaner (as real investors or bank's business partners)
- ✓ Impossibility of creating specific portfolio for each depositor; and precise accounting of her yields by conventional traditional or semi-automatic systems.
- ✓ Existence of different profit (interest) rates for different term deposits based on their progressive time durations returns is a source of fluctuations in financial markets and cause unfair distribution of deposit holders returns. Since, the differential deposit interest rates is not equal

to real economy rate of return; thus, it will be contradictory with PLS mechanism.

- ✓ Multiplicity of loan's interest rates and deposit's interest rates and their discrimination from real economy rate of return causes unfair distribution of profit coming from financial activities and is contradictory with PLS mechanism.
- ✓ In order to fulfill of PLS mechanism bank's stakeholders should be bank's depositors and therefore bank instead of maximizing shareholder's profit should maximize depositors' profit.

Non-usury Banking Role in Financial Markets

In previous chapters by using mathematical modeling it was proved that financial intermediaries as an independent sector of economy is a source of fluctuations in interest rates and will fluctuate real markets. Term structure of loans' contractions and lags of interest rates fluctuations will cause in-coordination between financial resources supply and demand and therefore will cause permanent fluctuations of financial markets. In attention to the possibility of using PLS mechanism as a solution to prevent real economy oscillation coming from financial markets; what would be the solution to new non-usury banking architecture? We will try to answer this question in this chapter.

Banks as economic firms are active in two markets. On the one hand, they demand financial resources from depositors (in deposit resources market) and on the other side, they supply credit to investors (in credit market). As it was shown, conventional non-usury banks do not act as financial intermediaries which receive fraction of investment returns from two parties of contracts as charges. If banks did as intermediaries, then many of usury juristic problems of conventional banks activities would be

eliminated. Conventional non-usury banks act as economic firms and maximize their profits or minimize their interest and non-interest costs which the same markup price of resources mobilization.

$$Max : \pi = \sum_i^n R_i(r_i^L) - \sum_j^m D_j(r_j^D) + \sum_k^o TR_k - \sum_l^p TC_l$$

π : Profit of bank.

R_i : Revenue of credit supply to investors in different contracts with r_i^L loan interest rate.

D_j : Profit payment to deposit holders for deposit type j with r_j^D deposits interest rate.

TR_k : Revenue of offering banking services to customers.

TC_l : Total cost will be such as office, organizational, amortization, tax, personal

Due to lack of IT penetration in supervision, operational and even managerial processes of conventional banks, the administration, personnel and overhead costs are less flexible and effective. Therefore, assuming constant TC_l and TR_k the expression $\sum_i^n R_i(r_i^L) - \sum_j^m D_j(r_j^D)$ will maximize the profit. Just as shown there is not simultaneous and systematic relationship between D_j and R_i . In other words, non-usury banking, the banks' profit resulting from financial transactions made with depositor's resources should be distributed among depositors after deduction of operational costs²⁷⁹. Two major problems are encountered to access this mechanism as follows:

1. In conventional non-usury banking, depositors are not bank's

²⁷⁹ In modern banking of developed countries, implementing IT-based systems has decreased overhead cost. See: Allahyarifard, Mahmoud, "E-banking services and its operational requirement in comparison with operational cost of different banking services", Monetary and Banking Research Academy, Central Bank of Iran, 2005, (Farsi).

shareholders. This fundamental problem can be solved by application of a newly defined special banking named by “Non-usury Bank Company (NUBankCo.)”.

2. Profit (interest) distribution to depositors is due to long delay of finalizing auditing processes after the end of financial year. Whereas, it can be shortened by using IT systems. Thus distribution of profit based on PLS mechanism can be done in shorter periods and more rapidly. On the other side, because of heavy overhead cost in conventional banking, endeavor to implement PLS mechanism would not be very successful. Thus IT and ICT systems could initiate new opportunities to implement real PLS mechanism. This also can reduce overhead cost in conventional banking.

Microlink Banking Solution (MIBS)

MIBS is a new solution for banking activities by ICT master solutions. However, Microlink's activity domain is not restricted to non-usury banking products. Microlink is working in an Islamic country and thus has focused on non-usury banking products. Therefore, Microlink’s experience will be useful for us to improve our idea.

MIBS provides a complete plan to meet the needs of global financial transactions. The system is based on conventional banking practices with application of new technologies of information and communication and distribution channels as internet. Reflexivity, parametricity and security of MIBS are of its characteristics. MIBS was designed and developed on a 3-tier architecture of client/server and Online Transaction Processing (OLTP). This architecture provides a smoothed distribution and concentrated online transactions with load-balancing capability and fast responding and low bandwidth requirement. MIBS is compatible with

Linux operating system and IBM-z series mainframe systems. MIBS covers Islamic banking products with multi-currency and multi-financial-institutions capabilities.

Customer Information File (MIBS/CIF)

MIBS/CIF has a global approach regarding customer relationship with the financial institutions. In this system customer account is unique (i.e. in master table a primary key²⁸⁰ is assigned to every customer). Therefore, all tiers and modules of system and databases and applications connect by this unique number. CIF features are as follows:

- Customers' linkages based on MIBS modules provide comprehensive database of current and historical information of customer.
- Capability of customers' link maintenance.
- Blacklisting of customers and related products to facilitate credit-processing checks.
- Capability to define customer's enquiry and their level of access and assigning user/group accessions permissions.
- Information search can be done by account number, identification card characteristics, employment categories and other recorded indices.
- AA²⁸¹ secure capability to protect customers' enquiries from intruders or unauthorized exposures.
- Interfaces with Data-Warehousing module on customer profitability analyses.

Al-Wadiah Savings Account (MIBS/WSA): MIBS/WSA is an online system that collects and updates all financial transactions in MIBS

²⁸⁰ A primary key is a unique field in master table. In Relational Database Management Systems (RDBMS) all referential integrity are based on this field.

²⁸¹ AA is one of security ranking of system indexes

databases directly and preserves real-time information. WSA designed on a safe-custody base and distribution of profit among customers is according to PLS mechanism. MIBS/WSA features are as follow:

- This system with other MIBS modules uses systemic information resources participatory.
- Provides multiple users defining capability and their authentications with multi-currency products.
- Automatic payment system capability and salary payment system.
- Electronic fund transfer to other accounts and interactions with other systems using gateways.
- Capability of using passbooks and statements for different accounts type.
- Overdraft system capability based on minimum of account's balance average and number of transactions.

System Overview of MBS



Al-Wadiah Current Account (MIBS/WCA): MIBS/WCA operates as a saving account. This production is managed by checkbook and contains a check-imaging system. This system can verify account owner's signatures and contains black listed checking account holders.

Al-Mudarabah Investment (MIBS/MI): This production is an online time deposit and contains two types of fixed and short term deposits. This product is based on two contracts. The first one is Islamic Al-Mudarabah and the second is Al-Inah. In al-Mudarabah contracts, rate of return is floated and is based on PLS mechanism, and in the second, rate of return is fixed.

Hire purchase financing (MIBS/AITAB): This production is conditional leasing for purpose of buying.

Al-Ijarah Leasing (MIBS/IL): This product contains all leasing financial facilities of "Full pay Out Lease", "Deposit Lease", "Residual Lease" and "Operating Lease".

Islamic Financing (MIBS/IF): This product by using other products of Bai'aa, Ijarah, Muzaraah, Murabahah, Musharakah and Kifalah create other financial products.

Share Financing (MIBS/SF): It contains all operations on shares as trading and unremitting, evaluating of shares, communication with stock-agencies, accounting of agency's commission and special reporting to shareholders and agencies,

Ar-Rahnu (MIBS/AR): It is an online system based on Ar-Rahnu contract. According to MIBS/AR in lieu of loan, debtor should provide a valuable asset as collateral for debt.

As a summary, what is known as MIBS, is just supplying IT based products and services that can be seen in conventional e-banking. But, in comparison with non-usury banking products and services, it is similar to traditional banking frameworks and there is not significant differences regarding products and services. Therefore, there are many applicability problems and usury dubieties in MIBS.

Non-usury Banking Information System and PLS

In designing of modern non-usury banking architecture similar to other IT based businesses, using global standards, models and factors are necessary. The related factors are follow as:

- ✓ **Infrastructures:** Executive prosperity of modern non-usury banking depends upon suitable technical, telecommunication, cultural, educational and legal infrastructures. In the case of asymmetric dis-coordination in infrastructural chains, e-banking will fail. E-money and e-payment systems and Real Time Gross Settlement system (RTGS) will be important factors in e-banking development and depend on existence of authorities to certificate and proof digital signatures in a manner that authenticity, integrity, non-fabrication and non-reputation of exchanged data be recognizable.
- ✓ **Standardization:** Before designing and implementing IT systems, it is necessary to define operational, supervisory and managing standards. These standards should also be considered in information and communication management systems. These standards can be in realm of architecture layers and applications programming with multi-lingual, multi-currencies and accounting regulations supports. They should contain security standards in network communication layers: physical, data link, network, transport, session, presentation, application in OSI

model²⁸². All of standards are designed as compatible with globalization notions and directions.

Prohibition of usury in non-usury banking causes international standards and supervising organizations on banking operations such as Basel committee²⁸³ do not cover all of non-usury banking needs. Therefore, Islamic countries have been planning for establishing new organizations to standardize and codify uniform regulations for supervision on Islamic banking activities. Important organizations in this relation are Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI)²⁸⁴

²⁸² The OSI model is an architecture that divides network communication into seven layers. In 1998, the International Standards Organization (ISO) released a set of specifications that describes network architecture for connecting dissimilar devices. TCP/IP protocols follow a four-layer conceptual model known as Department of Defense (DOD) model: Application, Transport, Internet, and Network Interface. In order to access details refer to Microsoft Windows 2000 Network Infrastructure Administration, Microsoft press ,2000, Washington

²⁸³ Week capital situation of international banks in the beginning of 1980s and international disagreement on capital definitions and capital adequacy regulations caused the committee of banking regulations and supervision on banking operations of Bank for international settlement located in Basel city of Switzerland to issue regulations on international standards on capital adequacy measure. These standards introduced to active international banks of Group 10 countries (OECD members). In order to uniform the rules, Basel committee followed two main goals:

- The new rules will improve and strengthen the soundness and stability of international banking.

- Regulations become fairer, and application of regulations in banks of different countries is more compatible to minimize unequal competition of international banks.

Capital Adequacy Ratio (CAR) is a financial index for assessing banks and financial institutions and indicates the success or failure of these institutions in their risk management and financial activities. This ratio as a standard should not be less than 8%. In 2001 on the basis of new agreement under the Basel 2 this ratio was changed to calculate CAR so the credit and market risks entered into the CAR and operational risk entered into the dominator of the CAR's ratio in calculation of weighted value of assets. Therefore, comprehensive methods for risk recognizing introduced.

²⁸⁴ Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) was established in 1991 by Islamic banks and has a board of directors including three central bank governors of Bahrain, Sudan and Jordan and its chairman is Bahrain's commerce deputy minister. The responsibility of AAOIFI is supervising and defining required regulations and standards for Islamic banking. AAOIFI has issued 43 standards and statements, which are mandatory in Bahrain, Sudan and Jordan at the first phase; and at the next phase Qatar and Saudi Arabia also, adopted these regulations and majorities of countries also accepted these regulations as bases for their standards and

Footnote continues in next page:

and The Islamic Financial Services Board (IFSB)²⁸⁵. Despite of the performed endeavors to establish different organizations to motivate and develop non-usury banking by different countries and international organizations such as World Bank and IMF to standardize and deregulating non-usury banking in globalization process; unfortunately no executive achievement has been perceived in non-usury banks. Thus Islamic countries instead of establishing different organizations and performing independent-isolated activities should establish a unique supervisory organization to codify regulations, standards and protocols for all non-usury banks and by implementing IT should provide globalization infrastructures for non-usury banking.

- ✓ **IT based systems:** IT systems in master plan should be integrated, and inter-network or outer-network separated units should be avoided. New information systems architecture will be based on integration

Footnote is continued from last page:

regulations. Organization structure of AAOIFI consists of six parts of General Assembly, Board of Trustees, Accounting and Auditing Standards Board, Sharia Board, Executive Committee and General Secretary. The Accounting and Auditing Standards Board is composed of fifteen part-time members assigned by the Board of Trustees for a four-year term. Members of the Standards Board are representatives of the following categories:

- Regulatory and supervisory authorities
- Islamic financial institutions
- Sharia jurists
- Accounting and auditing professionals on Islamic financial institutions.
- Users of financial statements of Islamic financial institutions.
- University professors in accounting and financial fields.

The first step of defining prudential and supervisory regulations and standards for Islamic banking by Bahrain Monetary Agency (BMA) is the Islamic Financial Services Board (IFSB). This frame is named by 'Prudential Information & Regulatory Framework for Islamic Banks (PIRI) and is based on guidelines of Bahrain AAOIFI and the Basle Committee on Banking Supervision. This committee is in Malaysia and representatives of central banks of Bahrain, Malaysia, Sudan, Jordan, Indonesia, Kuwait, Iran and Saudi Arabia and IMF, IDB and AAOIFI met at the IMF offices in Paris and signed an agreement on a draft for establishment of the IFSB (Islamic Financial Services Board). The objectives of PIRI establishment cover six main areas including capital adequacy, asset quality, and management of investment accounts, revenue quality, liquidity and corporate governance. See: "Banking Monetary Agency Issues New Islamic Banking Regulations", Vol. XLV No.5, 4 February 2002.

management of IT and ICT and all firm's systems use a unique data warehouse or information database management is integrated and based on automatic interaction and transfer of information among databases. In this regard it is necessary to implement database server as client/server, WEB applications, data center operating systems, and N-tier capability for systems. All information resources in inter-network and outer-network will connect together and will create IT master solution for implementing PLS mechanism. In this solution IT subsystems are follow as:

- ✓ **Business Process Reengineering (BPR):** BPR is operational, supervisory and management processes' reconsideration for producing new products or services and is similar to traditional markup reduction. BPR looks for strengthening higher value added and eliminating low value added processes. Application of IT and then BPR in production of goods and services causes decrease of overhead cost. Because in traditional business, BPR improve the processes but new generation of BPR in IT-based business causes structural upheaval in processes. In this regard, BPR tries to change and improve in-organization and out-organization processes and all interacting firms should obey its guidelines. Thus, the role of standardization and supervisory organizations become important.
- ✓ **Enterprise Resource Planning (ERP):** ERP systems are designed to reduce overhead costs arising from incompatibility of systems and prevent invalid and inconsistent information. Despite of similarity between ERP and Management Information System (MIS) there are differences among them. ERP systems embrace all information resources in inter-network or even in outer-network and therefore information resources link together but in MIS, integration of information resources are limited to inter-network or even limited to

some segments of an enterprise.

- ✓ **Customer Relationship Management (CRM):** IT-based businesses are customer oriented as their most important goal. Delivery channels of electronic services as internet and intranet equipment could not fulfill all customers' needs and dissatisfaction of customer may lead to less transactions and missing customer and finally reduction of enterprise's profit. This is a strong reason to use intelligent systems for customer relationship. Modern CRM systems is overshadowed new technology of Meaningful WEB²⁸⁶ which respond to customer automatically and even will assess willingness of customers after delivery of goods or services.
- ✓ **Supply Chain Management (SCM):** Since some of transactions occur between banks and suppliers, therefore SCM system covers all connection processes among them.
- ✓ **Manufacture Executive Systems (MES):** This system is installed and added as a class or module to ERP systems and interacts between executive layer of producer enterprises as counterpart or investment partner and bank. This system will cover all production processes.
- ✓ **Human Resource Management (HRM):** One of the necessary systems for modern non-usury banking is HRM. Since human resource has an important role in enterprise development, therefore implement of strength and updated database of employees information is a necessity. This system should contain interactive and online capabilities of economic, training, educational and cultural, favorites and hobby/entertainment needs of employees. Knowledge-based businesses are based on Knowledge-worker and thus determining the quality of organization as Knowledge-mapping and Knowledge-management are possible through HRM. In this system, all correspondences among personnel and managers are done digitally and personnel register their

²⁸⁶ Meaningful Web is a new version of World Wide Web (WWW) that can process keywords by webs or search engines.

different needs through the system.

- ✓ **Workflow Management (WFM):** WFM determines the principles of process and tracing management of messages and information. Thus, it provides distinction capability of participant. It is possible to determine participant's roles and suitable principles for tracing of messages, transactions and information among participants and databases. In new non-usury banking by WFM system we can trace physical and financial progresses of investment projects based on Musharakah and Mudarabah contracts. It is expected that integrating trend of internal WFM systems with external E-commerce systems because of size-reduction of business enterprises and increasing their efficiency will develop. Imposition of applying Electronic Data Interchange (EDI) by business partners and loaner (investors) in new non-usury bank is an important requirement of the system architecture and WFM will play an effective role in this system.
- ✓ **Delivery Channels:** Delivery channels of new non-usury banking are resembled to other modern banking systems and include branches, phone, ATM, POS, WEB and mobile devices, such as mobile phone. Distribution channels should be designed consistent with technical, telecommunications, cultural, educational and legal infrastructures.
- ✓ **External Interface/Gateway:** To receive real information about Musharakah and Mudarabah contracts, system compatibility and gateway capability for data broadcasting and information interchange with other information systems are necessary.
- ✓ **Risk Management:** Implement of non-usury banking contracts such as Musharakah and Mudarabah without using IT-based systems will increase risks in comparison with conventional banking. Despite of transferring a fraction of credit risk to depositors as stakeholders of investment activities, however increase in supervisory and operational

process on Musharakah and even Mudarabah contracts will cause specific risks in non-usury banking because of the following reasons:

- Permanent auditing and supervision on joint ventures investments for getting confidence regarding enterprise/investment management is of PLS necessities.
- Non-uniform shapes and practices of Musharakah and Mudarabah contracts.
- Inexistence of valid and updated information about joint venture investments or financing of Mudarabah contracts to control Mudarib and impossibility of surveying faults and mismanagement of Mudarib before ending period of contract are reasons for increasing operational risk in non-usury banking in comparison with conventional banking.
- Since the important characteristic of Musharakah contracts is PLS mechanism, therefore in order to decline the credit risk of these contracts we cannot link this type of contracts to collaterals or other guaranties. Thus operational risk management importance and reasons for auditing and supervising on Musharakah and Mudarabah contracts are quite clear in non-usury banking.

Non-usury Banking Products and Services

Since IT based businesses are customer oriented, thus new non-usury banking should supply usual or non-usual products and services to customers in general. The correctness of an action criterion will be the human intention and its nature that wise rules. Therefore, in new non-usury banking every products and services could be supplied by the condition that it is not contaminated with usury consequences. Conventional products and services in non-usury banking may belong to the following categories:

- **Depositories:** Deposits include Qard-ul-Hasanah or investment accounts.
- **Loaning:** Loans could be of consumption type without any excess with exception of commission fees (Beneloan thereafter). Other loans for the purpose of value add production or investment activities and they should confirm two criteria of profit and loss sharing and non-determinacy of surplus rate which it is the most fundamental criterion to distinguish usury and non-usury financial transactions. Therefore the following loan/credit products may be used:
 - ✓ Kind loan (non-interest loans for needy people and non-usury bank can receive only commission fees suitable with services offered and not more).
 - ✓ Civil partnership (to participate in investment and investment return based on the share of each depositor).
 - ✓ Legal partnership (to participate in financing other business partners and based on the share of each depositor).
 - ✓ Direct investment.
 - ✓ Mudarabah (validity of this transactions is based on PLS mechanism which will be accessed by IT based systems-proposition).
 - ✓ Forward transactions (access to products and services processes information of business partners at e-community will cause to determine price of goods and services precisely in the maturity).
 - ✓ Joalah (in this contract loan are received in order to create value added. Thus, the profit is distributed as investment return share and commission fees).
 - ✓ Mozaraah (investment rate of return in agricultural productions will be accessible through IT based systems).
 - ✓ Musaghah (investment rate of return of garden products as fruits will be accessible through IT based systems).

✓ Lease (of durable goods: land, construction, machinery and equipment ... are bought by bank and are leased to others. The return of this type of contracts will be distributed by sharing.

- **Credit and debit cards:** Non-usury bank can issue credit and debit cards on the bases of different accounts. Debit cardholder can receive money up to the balance of her Qard-ul-Hasanah or investment accounts. Credit cardholder must benefits from having an investment account either a non-usury loan/credit contracts such as *Hebeh* contract for fulfillment of her consumption needs. Since the integrity of information systems is the foundation of non-usury banking, therefore, this integrated system by preserves and controls the details of customers' information as real time by its CRM system. So every customer on the bases of their credit ranking can receive credit line in framework of non-usury contracts such as Musharakah and Mudarabah through different delivery channels. Customers can access bank's information systems' interfaces through distribution channels. After authentication and authorization by surveying information of memory of chip or magnet attached on the credit cards and final checking and confirmation of integrated system the credit request of customer is send to integrated system and the system by analyzing customer credit accessibility rank automatically process her request and intelligently devotes the requested loan/credit in basis of Musharakah and Mudarabah contracts and by use of secure protocols and connections as Virtual Private Network (VPN), cryptography algorithms, digital signature and different security filters.

- **Foreign exchange products and services:**

Non-usury banking integrated systems with multi-currencies capabilities must offer non-usury types of products and services. The

following foreign exchange products and services can be offered by new non-usury banking as follows:

- ✓ Foreign currency exchange as spot, forward, swap is allowed, and options may be used by the case of non-conditioning for discount rate. These types of products and services will be supplied by virtual markets of foreign currency exchange such as internet or intranet. Main objective of forward transactions in non-usury banking is considered for risk hedging, therefore arbitrage purposes or profit arising from differences of interest rates is canceled.
- ✓ Transaction of gold, silver and other precious metals, participation with goldsmith or silversmith without conditioning and determining the lease rate are non-usury and usable in non-usury bank.
- ✓ Receipts and payments of bills in new non-usury banking are allowed and with existence of E-money and real time transactions are charged with equal commission fees for every bills of different amount values in Electronic funds Transfer (EFT). Contradiction to this problem is acceptable wherever the cost of service grows up as the amount of nominal bill's money grows up.
- ✓ Letter of Credit (LC) issuance and commercial foreign currency exchange services for import of goods and services will be done in new non-usury banking if they are not impressed of time duration and discounting rates. Standardization of commercial, accounting, financial stability standards and practices have been initiated by international organizations as Basel Committee, AAOIFI, IFSB, IMF, WB, Financial Stability Forum (FSF) and International Chamber of Commerce (ICC). For example ICC has published uniform rules of Electronic Uniform Customer and Practice for letter of credit (EUCP), Uniform Customer and Practice for letters of credit (UCP), Uniform Rules for Collections (URC), Uniform Rules for Demand Guarantees (URDG), International

Standard Banking Practice (ISBP). The non-usury bank can also use these standards and provisions in intranet and internet networks to perform her inter-banking transactions as SWIFT. Therefore, the new non-usury bank can use these types of infrastructures which have been initiated before by other organizations.

Non-usury Bank and Depositors

As in NUBankCo previously explained; depositors are stakeholders of bank, and bank is looking for maximization of depositors' profit. In this solution, applying and implementing IT systems and integrity of information in all of systems and modules of both inter-networks and outer-networks of business partners are required. These integrated systems can trace all transactions and management quality of contracts. Therefore, synchronized IT systems in company with PLS mechanism of Musharakah and Mudarabah contracts can supply sufficient guarantees to maximize depositors' profit based on Islamic contracts. Thus participating in economic activities and stakeholder being of depositors is not only restrictive but even banks could produce and supply different credit products based on Islamic contracts. This solution will be compatible with commercial regulations framework around the world.

In this solution, depositors can request products and services of non-usury bank. Non-usury banking products in deposit category are Qard-ul-Hasanah and investment accounts. There is not distinguished difference between conventional non-usury banking and new non-usury banking regarding Qard-ul-Hasanah accounts. New non-usury banking in relation with investment accounts can do as following ways:

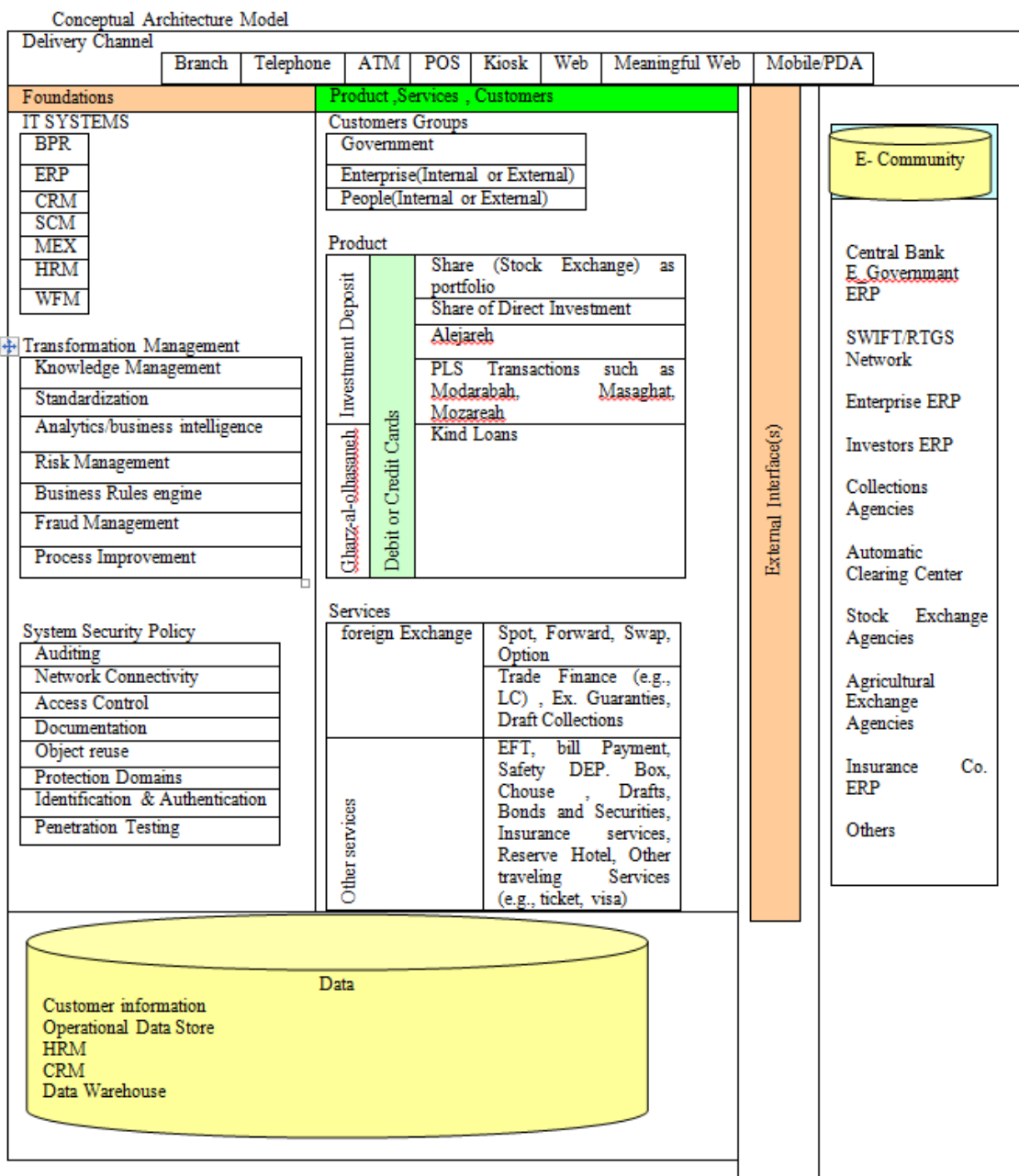
✓ **Establishing of stock exchange agency company and customer portfolio proportional to amount of their deposits:**

In this way stock exchange agency companies will invest money resources of customers in financial markets, and portfolio of each customer is specified and encrypted certificate of deposit is send to customer through digital channels. To increase security, digital certificate authorities confirm issued certifications. The customer will decrypt the received certificate of deposit and reconfirm it by digital signature and acknowledge the certified certificate of deposit to bank. Bank can sale the shares of customer and pay her principle and its profit to customer through CRM system. It should be noted that proprietorship of securities and valuable documents may be encountered as non-usury bank assets and be located in customer portfolio in integrated systems. For hedging market risk and losses it is possible to insure deposits in a systemic connectivity with insurance companies.

As it is obvious from the following figure the Conceptual Architecture Model of new non-usury banking is organized under broad headings of Foundation, Product-Services and Customers and also External Interfaces. IT systems (including: BPR, ERP, CRM, SCM, MEX, HRM, WFM), Transformation management (including: Knowledge management, Standardization, Analytics/ business intelligent, Risk management, Business rules engine, Fraud management, Process improvement), System security policy (including: Auditing, Network connectivity, Access control, Documentation, Object reuse, Protection domain, Identification & Authentication, Penetration testing) are categorized as Foundations. Customers (including: Government, Enterprises, people), products (including: Investment deposit, Qard-ul-Hasanah deposit), Services (including: Foreign currency exchange, other services) are categorized in Product-Services and Customers. External interface is one of the most

important components of non-usury core banking which will be vital for new non-usury banking to access data information resources which produce information in outer-networks and they are very important for fulfillment of PLS mechanism. Data producer and information resources may include: central bank, government, SWIFT, business partners, investors, stock exchange agencies, insurance company, agricultural products exchange agencies and other exchange markets information generators.

Conceptual Architecture Model



✓ **Direct investment by investment company belonging to non-usury bank:**

Non-usury bank can accomplish direct investment by establishing investment companies. Projects durations and their yields scheduling should be suitable with bank's liquidity risk to cover principle and its return of investment of depositors. The Investment Company of non-usury bank by evaluating projects makes necessary provisions to invest or participate in investment projects. Therefore, it is necessary that Investment Company forecasts duration of investments and their returns and should manage risks of projects by assistance of insurance companies. Investment Company introduces and proposes her securities and shares to customers and depositors. Customers by investing through purchasing Investment Company's shares can monitor the physical and financial and managerial progresses of projects by CRM system. In case of customer's request to end the partnership by transferring the property of Investment Company's security to others, the Investment Company buys the security through an intermediate account and sale it to other. The operational process is similar to previous alternative.

✓ **The connection of Non-usury bank with ERP system and investors:**

In this alternative, existence of standards among information system architectures and existence of external interfaces and gateways features in integrated systems will cause suitable infrastructures for initiating connectivity capability among ERP systems of investors, business partners and banks. In this method bank provides fiscal resources for investors and business partners and inform investment return conditions to depositors and customers so if they have tendency to invest then bank will go through automatic Musharakah and Mudarabah contracts by them. Non-usury bank considers and monitors all transactions by Real Time Gross Settlement

(RTGS) systems and estimates project progress trend, investment return and expenditures by applying WFM systems. Therefore investment profit or loss will be shared among depositors, business partners by proportion of their shares.

✓ **Qard-ul-Hasanah loans in non-usury banking:**

Qard-ul-Hasanah in the jurisprudential terminology as explained by Bidabad (2005)²⁸⁷ is transfer of some properties to a person or to leave it without receiving equivalent property. Since governments should fulfill the needs of needy peoples and make provision to access minimum livelihood condition for them, therefore they should collect money resources from tax and duties -or in Islamic countries from tithes (Zakat) for financing peoples' minimum livelihood. Thus attentive to strategic purposes of an economic enterprise which is profit maximization indeed it will be incompatible with generosity of money for free and couldn't be expected from economic enterprise even non-usury to accept responsibility of social security affairs.

Loan requirement for fundamental needs could be as marriage expenditures, marriage provisions, therapy of diseases expenditures, building maintenance repayment cost, educational allowances, building establishment allowances for villagers etc. Therefore applying the loan terminology for these cases is not justified, because same pointed, Qard-ul-Hasanah loan is a money payment to needy as free and without return.

If new non-usury banking wants to supply these types of products to customers, then bank could make provision some Islamic framework such as *Hebeh* contract and collects the necessary resources from following

²⁸⁷ Bidabad (2005) Non-Usury Bank Corporation (NUBankCo), The Solution to Islamic banking, Proceeding of the 3rd International Islamic Banking and Finance Conference, Monash University, KL, Malaysia, 16-17 November, 2005.
<http://www.bidabad.ir/doc/NUBankCo-en.pdf>

ways:

1. Government can pay money for poor in accomplishing her social security affairs and thus supply her own money resources allotments to consumption loans applicants by delivery channels of banks as *Hebeh* contracts.
2. Non-usury bank can deliver Qard-ul-Hasanah deposits for fulfillment of consumption loan applicants (if criterion of free loan is removed).
3. *Hebeh* contract may be applied as outsourcing, so depositors can give their money resources in trust to the bank and then introduce persons who are needy and eligible to receive consumption loans. So, they use this resources and loaner repay its installments without surpluses. Non-usury bank can collect commission fees according to contract context from one or two sides of transaction for her intermediary services between depositors and loaner.

Transformation Management (TM)

TM plays important role for applying new IT and ICT based systems and technologies and introducing new products and services in new non-usury banking. It also may link to Business Process Reengineering system (BPR).

✓ Real Time Gross Settlement (RTGS)

Another important component for executing and implementing of new non-usury banking is settlement process system, because fulfillment of new non-usury banking will require establishment of integrated and interactive systems among depositors as stakeholders, bank and business partners, loaners, investors and insurance companies and other related agents. Distribution of profit is a complex process in Musharakah and Mudarabah

contracts which involve integrated systems supporting multi-currencies and WFM systems in different layers. Interactive and integrated capabilities and existence of standards of information will initiate connectivity capability among other intranet systems as SWIFT, central bank as administrator of Automatic Clearing House (ACH) and RTGS with other internal or external banking interfaces. The external interfaces should be independent in platform and compatible with Windows family, Unix, Linux operation systems. RTGS system monitors and manages daily liquidity risk both in bank and customer levels. RTGS should possess information resource integrity and as a module of plan should be able to perform End-to-End processing in a way that all payment transactions be managed through delivery channels as SWIFT, fax, E-mail, telephone, telex and mobile devices. The process will be managed with minimum human interferences, minimum error, high security aspects and confirmation acknowledgments. Integrated information system properties as payment order message processing and tracing capability, transaction auditing will be done by WFM. Other properties of this system are as follow:

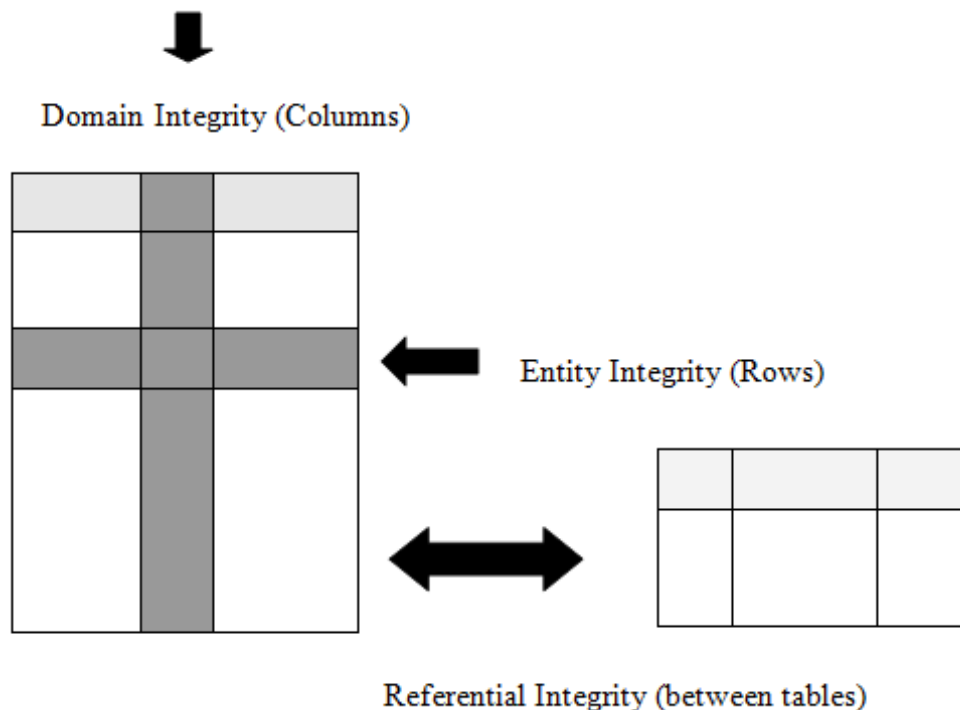
- Fault-tolerant operations including remote disaster recovery and comprehensive encryption security of payment messages and optional smartcard workstations and user authentication.
- WFM tools for scheduling, routing and optimized method of payment.
- Automated balance checking and confirmed statement delivery to customers and business partners by use of SWIFT, fax, E-mail and other distribution channels.

Database Design in New Non-usury Banking

- To design and implement IT systems as BPR, ERP, CRM, SCM, MEX, HRM and WFM Datacenter operating systems and client/server

databases and applications are necessary. The most important operating systems are: Windows^{xp} server datacenter, Sun OS, UNIX, Linux and important client/server capability databases are: Oracle and MS SQL Server.

- Data Integrity (DI) is the first step of designing integrated systems databases and refers to consistency and accuracy of data stored in database. For designing an integrated systems there are four types of DI: domain integrity, entity integrity, referential integrity and user-defined integrity.



This figure shows connectivity of Domain Integrity, Entity Integrity and Referential Integrity.

- Domain Integrity: Domain (or column) integrity specifies the set of data values limitation that are valid for field (column).
- Entity Integrity: Entity integrity requires that all rows in a table have a unique identifier, known as the primary key value.
- Referential Integrity: Referential integrity ensures that the relationship

between the primary key (in a referenced table) and the foreign key (in each of the referencing tables) is always maintained. These relationship will cause the following consequences:

- ✓ A row in a referenced table cannot be deleted, nor can the primary key be changed, if a foreign key refers to the row.
 - ✓ A row cannot be added to a referencing table if the foreign key does not match the primary key of an existing row in the referenced table.
- **User-Defined Integrity:** This type of integrity ensures security of business and organizational rules that do not fall into one of the other integrity categories. Constraints²⁸⁸, stored procedures²⁸⁹, and triggers²⁹⁰ are available for enforcing user-defined integrity.

Therefore, by using integration procedures in databases the main customer table includes customer's specifications such as account number as primary key field. Primary key fields and foreign key connectivity in all of data tables in inter- network and outer-network make integrated information bases, therefore all customers' transactions are traced in the E-community -even around the world- using ERP system.

²⁸⁸ Constraints are a standard method of enforcing data integrity. Microsoft SQL Server 2000 automatically enforces the integrity of a database. See: Microsoft SQL Server.2000, Microsoft Corporation press, 2000

²⁸⁹ Stored procedures can manage database and display information. Stored procedures are a precompiled collection of SQL statements and optional control-of-flow statements stored under a name and processed as a unit. See: Microsoft SQL Server.2000, Microsoft Corporation press, 2000.

²⁹⁰ A Trigger is a special type of stored procedure that is not called directly by a user. When a Trigger is created, it is defined to execute when a specific type of data modification is made against a specific table or column. See: Microsoft SQL Server.2000, Microsoft Corporation press, 2000.

IT in Non-usury and Usury Banking

Fulfillment of IT based banking needs suitable infrastructures. These infrastructures do not only include technical and telecommunications, but also contain cultural, educational and also legal aspects. Although, necessity of suitable infrastructures for both non-usury and usury banking are the same, but IT role in non-usury banking is vital. Initiating an integrated information community, investing on real economy sectors, financial stability according to FSF standards in financial markets, coordination and interaction of systems for transferring information and use of shared hardware and software resources as an actuality for implementing new non-usury banking are unavoidable. Therefore, applying and implementing IT based systems in non-usury banking not only will initiate opportunities same as other IT based businesses but also will establish PLS mechanism nature in the society. For example initiating an ERP system for huge community not only will cause decline of overhead cost but also all people in different organizations who need information will be able to access to precise and up to date information. Therefore, if data warehouse of Management Information System (MIS) were managed or supervised by unique integrated system then actual investment return of customer portfolio is completely traced. Consequently, effectiveness and transparency of economic system certainly increase. Implementing and applying integrated IT systems (BPR, ERP, CRM, SCM, MEX, HRM, WFM) lets architectural feasibility for initiating comprehensive integrated system by connecting information resources of bank, depositors, insurance companies, investors, business partners and also capital market specially through establishing NUBankCo.

IT systems accompanying with complement information systems can connect non-usury banking information resources as rings of a chain,

therefore depositors as stakeholders of a company will be investment patron which is an extreme purpose of non-usury banking. Interaction among non-usury bank and business partners can be done in different ways. The following tables summarize IT based non-usury banking in comparison with conventional non-usury banking:

New non-usury banking (IT based)	Conventional non-usury banking	
<ol style="list-style-type: none"> 1- Possibility to initiate a systemic connectivity and transparent relationship between depositors and investors. 2- Possibility to establish customers' shares portfolio based on their deposit amount. 3- There are not different rates of investment return on basis of different time deposits. 4- All Stakeholders, bank, business partners and all other of partners use the bank's productivity. 5- Applicability of every contracts according to PLS mechanism confirming non-usury criteria. 6- Increasing competition for investment in real economy because there is WFM system for accounting, auditing and tracing. 7- Agreement on execution and operational processes of transactions. 	<ol style="list-style-type: none"> 1- Impossibility to initiate a systemic connectivity and transparent relationship between depositors and investors. 2- Impossibility to establish customers' shares portfolio on the basis of their deposit amount. 3- Determining different rates of returns (interest rates) for different time deposits. 4- Maximization of bank's profit function via widening banking spread (difference if loan and deposit interest rates). 5- Applying unrestricted Mudarabah or Kifalah contracts and determining minimum investment return rate. 6- Unlawful and immoral competition among banks for determining rate of return to increase shareholders' profit. 7- Disagreement on execution and operational processes of transactions. 	Transparency in PLS mechanism establishment

New non-usury banking (IT based)	Conventional non-usury banking	
<ol style="list-style-type: none"> 1- Stability in financial markets because of stable money markets and prevailing FSF standards. 2- Standardization in operational, supervising and management process and unique practices. 3- Lower markup prices of banking products and services. 4- Access to international markets because of compatibility and integrity capabilities. 5- Satisfaction and tranquility of customers will be result of products and services quality. 6- Deletion of unofficial financial markets and usury in the society. 7- Decrease of investment cost and increase of productions in the society because of lowering cost of capital rent in resource mobilization. 8- Dampening money laundering activities because of effective supervisory on processes and tracing of transactions. 9- Depositors will derive actual investment returns of economic activities. 10-Expansion and development of social justice in the society through better allocation of resources. 	<ol style="list-style-type: none"> 1- Fluctuations in financial markets resulting from money markets fluctuations. 2- Varieties of methods and non-unique practices and standards. 3- Higher markup prices of banking products and services. 4- Less ability to possessing global market share and working with restricted market and customers. 5- Dissatisfaction of customers because of paperwork and bureaucratic procedures concerning supply of products and services. 6- Expansion of unofficial financial markets and usury in the society. 7- Increase of investment cost and decline of productions in the society because of growing cost of capital rent in resource mobilization. 8- Expansion of money laundering activities because of ineffective supervisory on processes and tracing of transactions. 9- Depositors will be deprived from actual investment returns of economic activities. 10-Expanding of unfair allocation of resources and wealth in the society. 	<p>Economic, Financial, social effectiveness</p>

New non-usury banking (IT based)	Conventional non-usury banking	Risk management
<ol style="list-style-type: none"> 1- Less operational risk. 2- Continual accounting and auditing process capabilities on Musharakah or Mudarabah contraction by use of WFM system. 3- More confident forecasts of the financial market variables because of standardized and unique practices specifically through WFM system on operational, supervising and management process. 4- Supervising capability on business partners and their manner of management. 5- Ability to present reliable documents and monitoring projects conditions and convincing customers in case of projects' loss. 6- Lower liquidity risk. 7- Higher ability to assess, forecast, and scheduling bank's liquidity requirement because of accuracy and accessibility information. 8- Full use of resources and ineffectiveness of hearsays to withdraw deposits and bankruptcy because of liquidity risk. 9- Transparency of financial sound situation of bank and accessible actual capital adequacy ratio for embracing liabilities and ability for international non-usury inter-banks financing. 10-Attraction of customers and expansion of market because of sound financial stability resulting from enjoyment of customers from real economy yields. 11-Lower market risk. 12- Stability of price of goods in futures. 13- Stability of inflation rate and preservation of customer financial position. 14- Less morality risk: symmetric information in Musharakah or Mudarabah contracts and monitor capability for tracing investment and fulfillment of PLS mechanism. 	<ol style="list-style-type: none"> 1- Higher operational risk. 2- Incapability of continual accounting and auditing process. 3- Less confident forecasts of the financial market variables because of varieties of practices. 4- Incapability to supervise on business partners and Muzarib (investment operator) and lack of ability to survey their managerial capabilities and qualities before project maturity. 5- Inability to present acceptable documents and reasons for legal claiming in the court based upon to be partner of depositors in loss conditions for confirmation of Musharakah or Mudarabah contracts. 6- Higher liquidity risk. 7- Less ability to assess, forecast, and scheduling bank's liquidity requirement. 8- Useless of partial amount of resources for risk management and decline of investment returns hedging. 9- Unavailable modern monetary, inter-banks, stock exchange, derivative markets and inaccessible precise banking information for international financing. 10- Missing customers because of higher loss probability in Musharakah or Mudarabah contracts. 11- Higher market risk. 12- Fluctuations in goods prices in the futures in Salam or Forward (Al-bayaa Salaf) contracts. 13- Higher inflation rate arising from financial markets' fluctuations. 14- Morality risk: Asymmetric information in unrestricted Mudarabah²⁹¹ may cause expansion of immoral activities for increasing bank's profit. 	

²⁹¹ Unrestricted Mudarabah: In this type of contracts depositors agree with bank that according to bank's direction, money resources of customers be invested and depositors will participate in investment returns.

Conclusion

In spite of various attempts of Islamic and non-Islamic countries for executing non-usury banking, there is no important achievement in general understanding of non-usury transactions and their standards. One of the important proposals to fulfill non-usury banking is "NUBankCo". Based on the proposal depositors are stakeholders of bank and bank on the bases of depositors' money resources that indeed will be founder of enterprise (bank) should maximize depositors' profit. Investment returns and in general bank's revenue will be divided among stakeholders (depositors) in proportion of their shares (i.e. amount and duration of deposit relative to total amount of deposits and their durations). Operational, supervising, managerial processes and risk management will be very transparent in this bank in comparison with conventional banking. Fulfillment of transparency in NUBankCo with access to updated real and precise information and supervision over transactions and manner of projects' management will decrease operational risk and will maximize depositors' profit.

Supply of products and services based on IT systems and standardization in order to compete with other banks and globalization is unavoidable. But fulfillment of PLS mechanism and establishment of NUBankCo will be more realistic and more effective by applying IT based systems as BPR, ERP, CRM, SCM, MES, HRM, WFM, K-M. Because all these systems possess integrity characteristics, and use a unique data warehouse and they are components of a unique system and are responsible to handle specific functions. These systems not only will record and manage inter-network processes but also embrace all financial and non-financial transactions of business partners as interactions of multi-layers and multi-parties. This capability requires external interfacing, gateway and RTGS with security characteristics of integrated information. Therefore,

access and supervising detailed information and processes exist. In other words, by applying and implementing IT based systems it will become possible to embrace all information requirements of NUBankCo to fulfill real PLS mechanism.

In this bank similar to other banking systems delivery channels includes digital and non-digital channels. Executing new non-usury banking will initiate new opportunities in different aspects of globalization, market expansion, competition capability with other conventional banks in order to safeguarding depositors' profits and participating them in actual economy yields, and provision of social justice, lubricating complicated interactions between banks in Islamic and non-Islamic countries and decreasing immorality risks and money laundering etc. Standardization in all processes and practices of operational, supervising and managerial aspects should be done by an independent organization to fulfill this type of banking.

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Chapter Thirteen

Finance and Information and Communication Technology

Introduction

Definitely, investment is a reliable method for accelerating economic growth and employment and could be applied as accelerator for speeding up economic growth and development. The foreign investment will be able to improve management systems, exchange of the economic experiments and importation and applying of new technology. Traditional financing methods for importation and injection of capital to investment projects do not suffice with respect to information and communication technology (ICT) progresses and development of international financial networking. The extending number of countries as members of the World Trade Organization (WTO) and tariff reduction policy, freedom of capital inflow and outflow based on capital rate of return are some significant reasons for existing hard competency over the products of the investment project at global markets. In this way, the significant endeavor of the entrepreneurs of the investment projects is to how finance and to reduce mark-up prices of the products and services. The Sharia based financial instruments in investment project financing and the theosophy of usury prohibition for stability and healthy of the financial and other related real economy markets are some main reasons of the enthusiastic attraction of the non-usury financial innovations with known characteristics.²⁹² On the other hand, increasing the volume of transactions obliges to trace financial transactions, the reality of transactions and avoiding from any circumvention, increasing speed, accuracy and decreasing of the mark-up prices and increasing financial efficiency are some main reasons for necessary role of information technology (IT) in Islamic financial markets.

²⁹² See:

بیدآباد، بیژن، تثبیت ادوار تجاری با بانکداری مشارکت در سود و زیان و اقتصاد اخلاق.

<http://bidabad.ir/doc/pls-business-cycles.pdf>

In conventional financing approaches, either local or global, some instruments are used. Namely: local credits and loans, foreign exchange credits and loans, foreign exchange reserve fund, Musharakah bonds, convertible partnership bonds, specific long term investment deposit certificate, securitization and Sukuk for local financing and foreign exchange bonds, foreign resources finance from foreign banks, foreign direct investment, Public-Private partnership (PPP), buyback contracts, financing from international institutions of World Bank and development banks and export credit agencies (ECAs)²⁹³ are used for foreign financing.

The investment project financing are performed as borrowed method namely: finance, refinance, usance, security and etc. and non-borrowed as civil partnership and direct investment that we are discussing here. Then we are going to introduce some IT based new non-usury financial innovations.

Borrowed Financing

In the borrowed financing method, the principle and interest of the resources are guaranteed by the government. The borrowed financing encompasses the whole sorts of short term, middle term and long term credit lines in form of finance and refinance loans which are provided by international banks, non-banking financial and monetary institutions, World Bank (WB), development and regional banks namely Islamic Development Bank (IDB) and other financial institutions and even governments. Issuance of the foreign exchange securities and Musharakah bonds are classified in borrowed financing category - in case of government guarantee of both principle and interest. In this method, buyers of bonds are

²⁹³ The Development Banks and Export Credit Agencies (ECAs) are private or semi-governmental institutions that are intermediates between government and exporters in export financing and can be as partner in financing, insurance and guarantee of project.

not confronted with any risks and the paying back the principle and interest in this kind of debt based financing is an obligation for the issuer of the bonds (government). The traditional financing methods in Iran are as follows:

Securities or Musharakah Bonds

In Iran, non-usury financing instruments in form of Musharakah bonds has been issued and taken into consideration in 1995 for the first time. Lack of IT based supervision mechanism and lack of its development around the world are some constraints to this kind of financing approach. The Iran's foreign exchange bonds issuance for foreign countries, first time returns to the early 2000. Legal prohibition of the government to borrow from banking systems in order to make balance of her budget according to the context of 2002 annual budget law and also looking for diversified financing aim and being present at global financial markets were some reasons for issuance of foreign exchange bonds in Iran.

Certificate of Deposit (CD)

Certificate of Deposit as public or specific deposits is known as other financing instruments. The financing through CD has been approved by the Central Bank of Iran (CBI) in 2001 to encourage investors to make short term deposit with transaction capability in secondary markets. Undeveloped secondary market with IT based mechanisms and also lack of required cultural and organizational development non-publicity requirements are some main reasons for not forming the secondary markets for this kind of securities. The foreign exchange CD also was considered on the basis of the CBI's back up in 2007 a foreign exchange financing instrument for absorbing the international resources particularly of Iranians

resident at foreign countries at the of global financial crisis.

Non-Borrowed Financing

Non-Borrowed financing includes those foreign resources that principle and interest return and risk of the investment are to be transferred to investors and the government has no commitments against any parties. Acceptance of the whole risks by the investor, non-increasing government commitments, application of new technology, managing improvement are some efficiency characteristics of the non-borrowed financing. Although non-borrowed financing follows the debt market position, but since the financial resource provider has participates with both profit and risk of investment so it is comply with non-usury transactions characteristics and as a result the Islamic countries interested to apply this method to finance the projects.

Generally, different types of non-borrowed financing methods in different Islamic countries are as follows:

Sukuk

Debt markets is an inseparable part of financial sector but due to *Riba* (usury) prohibition according to jurisprudence of Islam, the countries who are looking for applying non-usury transactions to meet their financial needs have planned to develop substitute financial instruments for debt market complying with non-usury transactions criteria. In result, the last recent years, the Islamic debt based bonds namely Sukuk has had significant growth and plenty of them were issued by corporations and governments around the world. Based on AAOIFI standards (2004) over 14 types of Sukuk have been recognized and introduced recently. The most

popular types of Sukuk are: Ijarah Sukuk (in assets), Istisna Sukuk (in projects), Murabahah Sukuk (in ownership cases in debt), Musharakah Sukuk (in trade) and Istethmar Sukuk (in investment). Some of this type of Islamic bonds has been issued in huge volumes by some Islamic countries and organizations namely Malaysia, Bahrain, Dubai, Pakistan, IDB and etc. Marketability of these bonds in the secondary market depends on quality evaluation processes of the assets and existing IT-based and e-payments transacting infrastructure. The Sukuk issuance with marketable capabilities has been considered across stock markets of the Islamic country markets.

The significant point of Sukuk issuance is that in spite of prohibition of usury, in calculating profit the usury mechanism is used and the rate of return of this asset is the same as fixed interest rates of Libor plus risk premium or similar margins that somehow instills usury-doubt into mind.

Islamic Zero Coupon Bond

This kind of bonds has not any coupon for paying profit during the investment period from issuance time up to maturity, and the issuance is based on discount mechanism and is popular in Malaysia. Although up to maturity no profit is paid but the rate of return of these securities can be calculated through difference of the par value and discounted price. The Islamic zero coupon security is conducted on the basis of transaction contract (Bai' Contract) and it is transacted on credit then cash with discounting. This transaction is a kind of circumvention and enters to usury realm as some jurists protest.

Direct Investment

Direct investment is another project financing method based on foreign exchange resources. In Iran, The Organization for Investment and

Economic & Technical Assistances set up internet based database software which brought the information from the government and private corporations projects proposed to this organization in a separate collection to encourage foreign investors and financiers. Therefore, the foreign financiers or investors can make decision on each project profile through this internet based portal and it is possible to choose any project for financing or participate through them. This endeavor is just informative and e-payment and financing processes through the foreign retail funds are not engaged in. Lack of available financial instruments in convenient processes and marketable bonds transaction mechanism in primary and secondary markets based on information technology are of extant constraints alongside of the projects financing through the foreign exchange resources in Iran.

Indirect Investment

The different types of indirect investment for investment project financing considering the type of contracts are: buyback, public private partnership (PPP) and civil partnership as follows:

Buyback

In manufacturing projects, finance of construction and equipping processes of enterprises could be conducted through Buyback contracts. That is the buyer of machines and technology prepares required resources through pre-sales of the future goods and services to the equipment producer instead. In buyback contract, the entrepreneur of the projects make an agreement with financiers on pre-sales of produced goods and services instead of refund and will pay back the money in a particular duration with determined prices. This approach due to preventing foreign exchange outflow from country and preserving balance of payment (BOP)

position is attractive for the governments.

Public Private Partnership (PPP)

Public Private Partnership (PPP) is an important financing method for infrastructural projects. In this method, the whole processes of: design, construction, financing and operation entirely are considered. The government donates the privilege of the operation of the project to the concessionaire for duration. The concessionaire can be a corporation or consortiums of corporation. The required guaranty and refund for this kind of financing will be based on the cash flow of the project outcomes. This type of financing entails Limited- Recourse or Non-Recourse rights to the government.

Civil Partnership (Musharekate Madani)

According to the non-usury banking law - approved in 1982- civil partnership is defined as "to merge cash or non-cash capitals that belong to different private or legal entities to get profit jointly complied with the contract". On the other words, Musharekate Madani is a contract that two or more persons who have a bilateral or multilateral agreement join their capitals for running a particular business to gain profit. In this financing bank is as a financer and the entrepreneur is her counterpart, and the partners gain some proportions according to their shares.

IT Infrastructure Requirements

The payment process is a significant pillar for initiating and fulfillment of all commercial transactions among buyers and sellers. Development and extending different types of e-commerce -particularly business to consumer (B2C) and business to business (B2B)- is appropriate

infrastructure for transactions of different asset based securities (ABS) either as Sharia complied or conventional transactions. So it is necessary to review required information technology infrastructure before spelling out IT based non-usury financial instruments transaction mechanisms in investment project financing. Generally, prerequisites and infrastructures for initiating the transactions at the primary and secondary markets are as follows:

Electronic Fund Transfer (EFT)

Automated Clearing House (ACH)

Automated clearing house (ACH) is a system implemented for retail payment and whole interbank transferring processes in huge volume automatically. Transactions settlements in this system are done by batch at a scheduled time (usually at 24 O'clock). The members' banks can issue direct credit transactions²⁹⁴ or direct debit transactions²⁹⁵ by submitting a batch file which contains different transactions order to the counterpart bank. In this system the creditor or debtor accounts of the customers are transferred on the basis of International Bank Account Number (IBAN).

Real Gross Settlement System (RTGS)

The real gross settlement system (RTGS) is a system for payment and transferring high and time-based payments. The central banks mostly are the owner of this system. For transferring of money, it isn't compulsory to have an account in destination bank and it is just enough to have an account

²⁹⁴ This is a payment method that the account holder permits the bank to withdraw the corresponding amounts from the owner's accounts in particular times then to credit other specific account in other banks.

²⁹⁵ It is a kind of funds transferring that account holder permits the bank to withdraw the considered amounts in particular times from other accounts in different banks and then credit them into the account number of the customer. Performing this conduction depends on the multilateral agreements between debtors and creditors.

in remittance bank for funds transferring. The RTGS is a non-cash transferring system.

Scripless Security Settlement System (SSSS)

This system is designed for banks' liquidity management and transacting short term assets as: securities, derivatives like futures and options to provide required liquidity. Adding and saving of the records of the securities owners, transferring the ownership, transacting and repurchasing securities and bonds, authentication of securities owners, issuance of paperless digital securities in an integrated information systems are some of functionalities of this system. Paying and withdrawing funds for transaction of securities are done through RTGS. The banks at most, to prepare required liquidity, sell their bonds to the central bank at the early hours of working time and then repurchase the bonds in case of redundant funds automatically through the RTGS that is hold beside the central bank.

Authentication Mechanism

International Bank Account Number (IBAN)

IBAN is an identifier that defines a unique specific banking account number over the world. This identifier is compatible with international standard of ISO 13616:2007. IBAN creates equal banking account number identification across the world for simplifying interbank transactions.

Basic Bank Account Number (BBAN)

BBAN is just the same ordinary customer account number. In other words, this identifier is an exclusive account number that specifies a specific account across a unique bank. In applying ACH, it is necessary to transfer the account number of payer and payee across the banks on IBAN.

So up to spreading IBAN among the customers, it is not compulsory to know both own and payee account numbers on IBAN basis but they will be able to use the services of this system through BBAN or generating the IBAN through the website of the customer's bank.

Electronic Funds Transfer (EFT) Experience

SWIFT

The SWIFT²⁹⁶ electronic fund transfer in Iranian banks is done in this way that the remitting bank after tracing the bank of beneficiary and her SWIFT number transfers the amount through the subsidiary branch or agent of the bank. In case of lack of subsidiaries or agents banks over the world the transferring process is done through other agents that have subsidiary or a second agent in the beneficiary's bank country. High commission in this case in the beneficiary's bank country and then long duration remittance process are weak points of this kind of electronic fund transfer in Iran. The authentication process would be possible in case of having SWIFT number.

Interbank Information Transfer Network

This network is known as Interbank Switch Center and it is called Shetab in Iran. This center has been running since the end of 1991. The card services center connects the whole Iranian banks including government and private banks and even non-bank financial institutions and this network prepares authentication possibility for customers who want to transfer or pay. The card holder of every member bank can utilize e-banking services and products of the other banks and non-banking financial institutions. Hence the whole automatic teller machines (ATM) and the

²⁹⁶ Society for Worldwide Interbank Financial Telecommunication

EFTPOS devices of Shetab member banks which connected to this center can offer the services to the customers of the other banks. In addition, it decreases the investment costs and subsequently the required expenditures of banks provide extensive services for customers.

Arab Payments and Securities Settlement Initiative (API)

World Bank in co-operation with Arab Monetary Fund and Regional and International Organizations established the Arab Payments and Securities Settlement Initiative (API). This organization encompasses 22 countries who are members of the International Arab Fund and established with the purpose of evaluating and strengthening of the payment systems among Arab countries to improve soundness, efficiency, integrity and creating long term organizational capacity in the region for supporting development of security settlement and reimbursement systems.

PayPal

PayPal is a global and secure payment method known as peer to peer (P2P) system. This kind of global payment possesses the following advantages:

- Merchants pay low fees; individuals pay nothing
- Interest paid on deposits
- Mass (bulk) payments is possible
- Business model: fees + float
- FDIC²⁹⁷ pass-through insurance
 - Against bankruptcy of PayPal
 - Different protection for fraud
- Mobile payments support

²⁹⁷ Federal Deposit Insurance Corporation (FDIC)

- Penetration in USD, CAD, GBP, EUR, JPY, AUS
- B2C and B2B support

Rastin Certificate Market (RCM)

This system is considered for transaction of Rastin Certificates at Rastin Profit and Loss Sharing (PLS) banking system and the other Non-usury financial innovations along with PLS banking namely, Rastin Swap Bonds. The significant difference between this market and Scripless Security Settlement System (SSSS) is in securities transaction mechanism. Somehow the transactions and processes of securities settlement at RCM are based on usury-free transactions, while the SSSS is based on conventional usury transactions mechanism. A model of this system was developed by Bank Melli Iran. Generally the specifications and capabilities of this system are as follows:

- Performing E-payment processes through the Banks' cards of the Shetab network or through reputable global cards namely VISA, Master and American Express (needs necessary agreements and connectivity to the cards ports of the e-payment service providers).
- Multi-currency support
- Multi-language support
- SWIFT connectivity and connect to other e-payment service providers switch namely PayPal (needs necessary agreements with cards issuer and EFT service providers as well)
- Applying ACH for retail payments and RTGS for bulk payments using IBAN and other integrated authentication facilities.²⁹⁸
- Publicity and designing different e-shelving rack for offering Islamic

²⁹⁸ The integrated authentication system is compiling at the Organization and Skills Department of Bank Melli Iran under supervision of the PLS banking experts.

securities

- Buyer and seller queues and offered prices monitoring
- To dispose the auction and doing final transaction of Non-usury bonds based on competitive prices
- Automatic refund and pay back after quitting the auction at the end of auction schedule or before auction and admitting the offered upward prices for retake part for the new auction.
- Compatible with the other financial systems and subsystems and integrity with core banking.
- Accounting operations, input data records, customer desktop monitoring, record and processes tracing, accounting and auditing.
- Management reports and decision support system (DSS) for different managements, experts and customers levels and request by a parametric report generator system.
- Comparison of different business opportunities in view of expected profit, maturity date, capability and capacity of the entrepreneurs and other effective specifications of risks and returns.
- Systematic risk management including liquidity, credit, operation and market risk
- Designing bulk and basket for defined financial certificates.
- Analytical and fundamental analysis features and financial engineering.
- Coding of the certificates based on international standards.

Transactions in this system are based on some of non-usury financial innovations. The IT role in fulfillment of non-usury financial innovations is inevitable²⁹⁹. On the other words, IT infrastructures in different dimensions

²⁹⁹ For more information see:

- Bidabad, Bijan and Mahmoud Allahyarifard, Implementing IT to fulfill the profit and loss sharing mechanism, Islamic Finance News (IFN) Journals, Vol. 3, Issue 3, 6th February 2006. <http://bidabad.ir/doc/summery-pls-it-1.pdf>

Footnote continues in next page:

namely ACH, RTGS, SSSS and IBAN give rise to development of the markets of this kind for Islamic financial innovations.

Conclusion

Despite of throughout extending Islamic financial markets particularly in Malaysia the current transacting practices and mechanisms of Islamic financing instruments are protested by some jurists and Islamic economists. By scrutinizing transacting process of Islamic securities, usury signs can be found in them easily. Amid the investment project financing procedures whatever compatible with non-usury transactions are known as non-borrowed financing approach. For participating of financier in driven risk and return of investment and for applying the debt equity mobilization beyond the borders due to scarcity of this significant investment factor, development of IT infrastructures with giving priority to the theosophy of usury prohibition is inevitable. Hence, actualizing of transactions while avoiding from any circumvention and also extending and development of Islamic financial markets entail implementing IT-based infrastructures, which encompasses ACH, RTGS, SSSS and IBAN and also development of Meta banks, integrated and global networks namely SEPA, SWIFT, SHETAB and accomplished endeavors for absorbing global participations to project financing through foreign exchange funds. Sharia compliance-based transactions of financing instruments on one hand and accessibility to global retail foreign exchange funds on another hand will be two fundamental factors in the recent Islamic financial instruments innovations. In this way by designing new system of RCM with non-usury transactions

Footnote is continued from last page:

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mechanism it is possible to avoid from any circumventions by implementing new IT-based non-usury financial innovations including Rastin Certificates and Rastin Swap Bonds in Rastin PLS banking.

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Annex

Rastin Banking Documents

Rastin Banking Bill and Executive Regulations

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Rastin Banking Base System

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Financial Instrument in Rastin Banking

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ابزارهای مالی گواهی مشارکت و گواهی پذیره با کارایی بین المللی

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Bijan Bidabad

Professor Bijan Bidabad is a multidisciplinary experienced scientist. He received B.A. in Political Science, M.S. and Ph.D. in Economics from Iran and Switzerland and has written more than 420 papers and books. Largest Macroeconometric Model of Iran, Rastin Banking and proposition of different international law declarations are of his recent works.



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info@vdm-vsg.de
www.vdm-vsg.de