



*ISLAMIC DEVELOPMENT BANK
ISLAMIC RESEARCH AND TRAINING INSTITUTE*

RISK MANAGEMENT

AN ANALYSIS OF ISSUES IN
ISLAMIC FINANCIAL INDUSTRY

*OCCASIONAL PAPER
NO. 5*

JEDDAH - SAUDI ARABIA

1422H (2001)



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TARIQULLAH KHAN
HABIB AHMED

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HABIB AHMED

FOREWORD

The Islamic financial industry is growing continuously ever since the first institutions started operating during the early Seventies. At the present, most Islamic financial services are being provided in almost all parts of the world by different financial institutions. Standards for financial reporting, accounting and auditing have already been put in place. Progress is being made in establishing an Islamic capital and inter-bank money market, an Islamic rating agency and an Islamic financial services supervisory board. These developments imply that the Islamic financial industry has become systemically important for the international financial system.

Due to its special treatment of different risks, asset-based nature and the strong concerns of clients for Islamic values, the concept of Islamic finance contains inherent features that enhance market discipline and financial stability. However, due to the relatively new microstructures of the Islamic modes of finance and the unique risk characteristics of liabilities and assets, the Islamic financial industry also poses a number of systemic risks. Research studies can be instrumental in strengthening its stabilizing features and in mitigating the potential sources of instability. As a result, the stability of financial markets can be enhanced along with attaining the objective of growth. This is important for the industry's sustained growth and its contribution to the stability and efficiency of the international financial markets.

With such a background, the Board of Executive Directors of the Islamic Development Bank (IDB), asked IRTI to conduct a research dealing with risk management issues of the Islamic financial industry. As a result, Tariqullah Khan and Habib Ahmed - researchers at the Institute have prepared the present paper. Indeed, the subject is very important and the authors have attempted to undertake a comprehensive stock taking and analysis of some of the relevant issues. Standard setters, Shari[ah scholars, policy makers, practitioners, academia and researchers may find the work relevant. It is hoped that the study will be instrumental in motivating to conduct more research in this important area.

Mabid Ali Al-Jarhi
Director, IRTI

GLOSSARY

(ARABIC TERMS USED IN THE PAPER)

<i>al khiraju bi al-daman and al ghunmu bi al ghurm</i>	:	These are the two fundamental axioms of Islamic finance implying that entitlement to return from an asset is intrinsically related to the liability of loss of that asset.
‘ <i>arboon, bay’ al-</i>	:	A sale contract in which a small part of the price is paid as an earnest money (down payment), the object and its remaining price are exchanged in a future date. In case the buyer rescinds from the contract he has to forego the earnest money compensating the seller in causing a delay in sale.
<i>Band al-Ihsan</i>	:	Beneficence clause in a <i>Salam</i> contract used in the Sudan. It is aimed at compensating the party to the contract that is adversely affected due to changes in prices between signing the contract and its final settlement.
<i>Band al-Jazaa</i>	:	Penalty clause in an <i>Istisna’</i> to ensure contract enforceability.
<i>Bay’</i>	:	Stands for sale and has been used here as a prefix in referring to the different sale-based modes of Islamic finance, like <i>Murabahah</i> , <i>Ijarah</i> , <i>Istisna’</i> and <i>Salam</i> .
<i>Fiqh</i>	:	Refers to the whole corpus of Islamic jurisprudence. In contrast with conventional law, <i>Fiqh</i> covers all aspects of life, religious, political, social or economic. In addition to religious observances like prayer, fasting, <i>Zakah</i> and pilgrimage, it also covers family law, inheritance, social and economic rights and obligations, commercial law, criminal law, constitutional law and international relations, including war. The whole corpus of <i>Fiqh</i> is based primarily on interpretations of the Qur’an and the <i>Sunnah</i> and secondarily on <i>Ijma’</i> (consensus) and <i>Ijtihad</i> (individual judgement). While the Qur’an and the <i>Sunnah</i> are immutable, <i>Fiqh</i> verdicts may change due to changing circumstances.
<i>Gharar</i>	:	Uncertainty of outcome caused by ambiguous conditions in contracts of deferred exchange.

<i>Ij^{ar}ah, bay' al-</i>	:	Sale of usufructs (operating lease).
<i>Isti^{sn}ah, bay' al-</i>	:	Refers to a contract whereby a manufacturer (contractor) agrees to produce (build) and deliver a certain good or premise at a given price on a given date in the future. This is an exception to the general Shari[ah ruling which does not allow a person to sell what he does not own and possess. As against <i>Salam</i> , the price here need not be paid in advance. It may be paid in installments, in steps with the preferences of the parties or partly at the front end and the balance later on as agreed.
<i>Ju'alah</i>	:	Service contract, performing a given task for a fee.
<i>Khiyar al-shart</i>	:	The option to rescind from a sale contract based on some conditions stipulated by one party without fulfilling, which a party can rescind from the contract.
<i>Mud^{ar}abah</i>	:	An agreement between two or more persons whereby one or more of them provide finance, while the others provide entrepreneurship and management to carry on any business venture whether trade, industry or service, with the objective of earning profits. The profit is shared by them in an agreed proportion. The loss is borne only by the financiers in proportion to their share in total capital. The entrepreneur's loss lies in not getting any reward for his/her services.
<i>Mur^{ab}ahah, bay' al-</i>	:	Sale at a specified profit margin. The term is, however, now used to refer to a sale agreement whereby the seller purchases the goods desired by the buyer and sells them at an agreed marked-up price, the payment being settled within an agreed time frame, either in installments or lump sum. The seller bears the risk for the goods until they have been delivered to the buyer. <i>Mur^{ab}ahah</i> is also referred to as <i>bay' al mu'ajjal</i> .

<i>Musharakah</i>	:	An Islamic financing technique whereby all the partners share in equity as well as management. The profits can be distributed among them in accordance with agreed ratios. However, losses must be shared according to the share in equity.
<i>Qard hasan</i>	:	A loan extended without interest or profit sharing.
<i>Rahn</i>	:	Collateral.
<i>Riba</i>	:	Literally means increase or addition, and refers to the 'premium' that must be paid by the borrower to the lender along with the principal amount as a condition for the loan or an extension in its maturity. It is regarded by a predominant majority of Muslims to be equivalent to interest.
<i>Salam, bay' al-</i>	:	Sale in which payment is made in advance by the buyer and the delivery of goods is deferred by the seller. This is also, like <i>Istisna'</i> , an exception to the general Shari'ah ruling that you cannot sell what you do not own and possess.
Shari'ah	:	Refers to the divine guidance as given by the Qur'an and the <i>Sunnah</i> and embodies all aspects of the Islamic faith, including beliefs and practices.
<i>Tawrid, bay' al-</i>	:	Contractual sale in which known quality and amount of an object is supplied by a supplier for a known price to be paid on an agreed upon periodic schedule.
<i>Wakalah</i>	:	Agency - appointment of someone else to render a work on behalf of the principal for a fee.

ABBREVIATIONS

AAOIFI	Accounting & Auditing Organization for Islamic Financial Institutions
BCBS:	Basel Committee for Banking Supervision
BIA:	Basic Indicator Approach
BIS:	Bank for International Settlements
BMA:	Bahrain Monetary Agency
CA:	Capital Arbitrage
CAMELS:	Capital, Assets, Management, Earnings, Liquidity, and Sensitivity to risk
CAPM:	Capital Asset Pricing Model
DGAP:	Duration Gap
EAD:	Exposure at Default
EL:	Expected Loss
FIs:	Financial Institutions
FTSE:	Financial Times Stock Exchange
G10:	Group of Ten
GDP:	Gross Domestic Product
HSBC:	Hong Kong Shanghai Banking Corporation
IAIB:	International Association of Islamic Banks
IAIS:	International Association of Insurance Supervisors
IASC:	International Accounting Standards Committee
IASs:	International Accounting Standards
IDB:	Islamic Development Bank
IMA:	Internal Management Approach
IMF:	International Monetary Fund
IOSCO:	International Organization of Securities Commissioners
IRB:	Internal Rating Based
IRTI:	Islamic Research and Training Institute
ISDA:	International Swap & Derivatives' Association
JFFC:	Joint Forum on Financial Conglomerates
LDA:	Loss Distribution Approach
LGD:	Loss Given Default
LIBOR:	London Inter-bank Offered Rate
LLR:	Lender of Last Resort
LR:	Leverage Ratio

LTCM:	Long Term Capital Management
MCM:	<i>Murabah</i> Clearing Market
MDB:	Multilateral Development Banks
M-M:	<i>Mudarabah</i> - <i>Musharakah</i>
MOF:	Maturity of Facility
ODS:	Object Deferred Sale
OECD:	Organization for Economic Co-operation and Development
OIC:	Organization of Islamic Conference
OTC:	Over the Counter
PD:	Probability of Default
PLS:	Profit-and-Loss Sharing
PPFs:	Principal Protected Funds
RAROC:	Risk Adjusted Rate of Return on Capital
RSA:	Rate Sensitive Assets
RSL:	Rate Sensitive Liabilities
RWA:	Risk Weighted Assets
SA:	Standard Approach
SPV:	Special Purpose Vehicle
UAE:	United Arab Emirates
UL:	Unexpected Loss
VaR:	Value at Risk
WL:	Worst Loss

EXECUTIVE SUMMARY

Islamic financial industry has come a long way during its short history. The future of these institutions, however, will depend on how they cope with the rapidly changing financial world. With globalization and informational technology revolution, scopes of different financial institutions have expanded beyond national jurisdictions. As a result, the financial sector in particular has become more dynamic, competitive, and complex. Moreover, there is a rapidly growing trend of cross-segment mergers, acquisitions and financial consolidation, which blurs the unique risks of the various segments of the financial industry. Furthermore, there has been an unprecedented development in computing, mathematical finance and innovation of risk management techniques. All these developments are expected to magnify the challenges that Islamic financial institutions face particularly as more well established conventional institutions have started to provide Islamic financial products. Islamic financial institutions need to equip themselves with the up-to-date management skills and operational systems to cope with this environment. One major factor that will determine the survival and growth of the industry is how well these institutions manage the risks generated in providing Islamic financial services.

Studying risk management issues of the Islamic financial industry is an important but complex subject. The present paper discusses and analyzes a number of issues concerning the subject. First, it presents an overview of the concepts of risks and risk management techniques and standards as these exist in the financial industry. Second, the unique risks of the Islamic financial services industry and the perceptions of Islamic banks about these risks are surveyed through a questionnaire and analyzed. Third, the main regulatory concerns with respect to risks and their treatment with a view to draw some lessons for Islamic banks are discussed. Fifth, a number of Shari[ah related challenges concerning risk management are identified and discussed. Finally, conclusions and policy implications are summarized.

The study concludes that financial markets liberalization is associated with an increase in risks and financial instability. Risk management processes and techniques enable financial institutions to control undesirable risks and to take benefit of the business opportunities created by the desirable ones. These

processes are of important concern for regulators and supervisors as these determine the overall efficiency and stability of the financial systems.

The study shows that the Islamic financial institutions face two types of risks. The first type of risks they have in common with traditional banks as financial intermediaries, such as credit risk, market risk, liquidity risk and operational risk. However, due to Shari[ah] compliance the nature of these risks changes. The second type is of new and unique risks that the Islamic banks face as a result of their unique asset and liability structures. Consequently the processes and techniques of risk identification and management available to the Islamic banks could be of two types – standard techniques which are not in conflict with the Islamic principles of finance and techniques which are new or adapted keeping in view their special requirements.

Due to their unique nature, the Islamic institutions need to develop more rigorous risk identification and management systems. The paper identifies a number of policy implications the implementation of which can be instrumental in promoting a risk management culture in the Islamic financial industry.

- i. The management of all banks need to create a risk management environment by clearly identifying the risk objectives and strategies of the institution and by establishing systems that can identify, measure, monitor, and manage various risk exposures. To ensure the effectiveness of the risk management process, Islamic banks also need to establish a proficient internal control system.
- ii. Risk reporting is extremely important for the development of an efficient risk management system. The risk management systems in Islamic banks can be substantially improved by allocating resources for preparing a number of periodic risk reports such as capital at risk reports, credit risk reports, operational risk reports, liquidity risk reports and market risk reports.
- iii. An Internal Rating System (IRS) is highly relevant for the Islamic banks. At initial stages of its introduction the IRS may be seen as a risk based inventory of individual assets of a bank. Such systems have proved highly effective in filling the gaps in risk management systems hence in enhancing external rating of institutions. This contributes to cutting the cost of funds. Internal rating systems are also very relevant for the Islamic modes of finance. Most Islamic banks already use some

form of internal ratings. However, these systems need to be strengthened in all Islamic banks.

- iv. Risk-based management information, internal and external audit, and asset inventory systems can greatly enhance risk management systems and processes.
- v. Substantial risks faced by the Islamic banks can be reduced if a number of supporting institutions and facilities are provided. These include a lender of last resort facility, deposit protection system, liquidity management system, legal reforms to facilitate Islamic banking and dispute settlement, uniform Shari[ah standards, adoption of AAOIFI standards and establishing a supervisory board for the industry.
- vi. The Islamic financial industry being a part of the global financial markets is effected by the international standards. It is thus imperative for the Islamic financial institutions to follow-up the process of standard setting and to respond to the consultative documents distributed in this regard by the standard setters on a regular basis.
- vii. Risk management systems strengthen financial institutions. Therefore, risk management needs to be assigned a priority in research and training programs.

I

INTRODUCTION

Islamic financial institutions were established three decades ago as an alternative to conventional financial institutions mainly to provide Shari[ah compatible investment, financing, and trading opportunities. During its short history, the growth in the nascent banking industry has been impressive. One of the main functions of financial institutions is to effectively manage risks that arise in financial transactions. To provide financial services at low risk, conventional financial institutions have developed different contracts, processes, instruments, and institutions to mitigate risks. The future of the Islamic financial industry will depend to a large extent on how these institutions will manage different risks arising from their operations.

1.1 UNIQUE NATURE OF ISLAMIC BANKING RISKS

A distinction between theoretical formulations and actual practices of Islamic banking can be observed. Theoretically, it has been an aspiration of Islamic economists that on the liability side, Islamic banks shall have only investment deposits. On the asset side, these funds would be channeled through profit sharing contracts. Under such a system, any shock on the asset side shall be absorbed by the risk sharing nature of investment deposits. In this manner, Islamic banking offers a more stable alternative to the traditional banking system. The nature of systemic risks of such a system would be similar to the risks inherent in mutual funds.

The focus of this study is on the actual practices of Islamic banks. The practice of Islamic banking, however, is different from the theoretical aspirations. On the assets side, investments can be undertaken using profit sharing modes of financing (*Mud^arabah and Mush^aarakah*) and fixed-income modes of financing like *Murab^alah* (cost-plus or mark-up sale), installment sale (medium/long term *Murab^alah*), *Istisn^al/ Salam* (object deferred sale or pre-paid sale) and *Ij^arah* (leasing). The funds are provided only for such business activities which are Shari[ah compatible. On the liability side, deposits can be made either in current accounts or in investment accounts. The former is considered in Islamic banks as *Qard^h hasan* (interest-free loan) or *Amanah* (trust). These have to be fully returned to depositors on demand. Investment depositors are rewarded on the basis of profit and loss sharing (PLS) method and

these deposits share the business risks of the banking operations. Using profit sharing principle to reward depositors is a unique feature of Islamic banks. This feature along with the different modes of financing and the Shari[ah compliant set of business activities change the nature of risks that Islamic banks face.

1.2 SYSTEMIC IMPORTANCE OF ISLAMIC BANKS

The Islamic financial services industry comprises of Islamic commercial and investment banks, windows of conventional banks offering Islamic financial services, mutual and index funds, leasing and *Mud^{ar}abah* companies and Islamic insurance companies. The present paper specifically deals with the risks facing the Islamic commercial and investment banks.

Since its beginning in the early 1970s, the growth of the Islamic financial industry has been robust. While some countries have introduced Islamic financial services along with conventional ones, three countries (Iran, Pakistan, and Sudan) have opted for comprehensive reforms with the objective of transforming their financial systems to an Islamic one. According to the International Association of Islamic Banks (IAIB), the number of Islamic financial institutions stood at 176 at the end of 1997.¹ These financial institutions had a combined capital of US\$ 7.3 billion and assets and liabilities worth US\$ 147.7 billion. In 1997, Islamic banks managed funds worth US\$ 112.6 billion making a net profit of US\$ 1.2 billion. The historical data on these financial variables is given in Table 1.1.

Table 1.1
Size of Islamic Financial Institutions
Some Financial Highlights (Amount in US\$ Million)

Year	No. of Banks	Combined Capital	Combined Assets	Combined Funds Managed	Combined Net Profits
1993	100	2,309.3	53,815.3	41,587.3	N.A.
1994	133	4,954.0	154,566.9	70,044.2	809.1
1995	144	6,307.8	166,053.2	77,515.8	1,245.5
1996	166	7271.0	137,132.5	101,162.9	1,683.6
1997	176	7333.1	147,685.0	112,589.8	1,218.2

Source: *Directory of Islamic Banks and Financial Institutions-1997*, The International Association of Islamic Banks, Jeddah.

¹ The data collected by the IAIB is available only up to 1997 and the IAIB is no more operational.

During a short history of its existence, the Islamic banks have performed reasonably well. A recent study on the performance of Islamic banks shows that these institutions are well capitalized, profitable and stable². Furthermore, this paper indicates that Islamic banks have not only grown at a faster rate than their conventional counterparts, but have also outperformed them in other criteria. On the average, Islamic banks have larger capital-asset ratios and have used their resources better than conventional banks. Furthermore, the Islamic institutions have yielded profitability ratios that are superior to those of traditional banks.

Linear and exponential forecasts from the data in Table 1.1 indicate that the estimate of capital of Islamic financial institutions is valued between US\$ 13 billion and US\$ 23.5 billion in 2002.³ The corresponding projections for assets held by these institutions are US\$ 198.6 billion and US\$ 272.7 billion respectively in the same year. Given the performance and the potential market of Islamic financial services, Islamic banking sector has grown at a fast pace and rapidly gained global dimension. This is witnessed by the involvement of many multinational financial institutions like ANZ Grindlays, Chase Manhattan, Citicorp, Commerzbank AG, HSBC, and Morgan Stanley Dean Witter & Co. in Islamic products. Major world stock exchanges like Dow Jones and FTSE having introduced Islamic indices.

1.3 OBJECTIVES OF THE PAPER

While Islamic banks being commercial enterprises would be more concerned with growth of assets and profitability, regulators would prefer the banks to be more stable and have growth as secondary concern. Due to the unprecedented developments in the areas of computing, information and mathematical finance, the financial services markets have become extremely complex. Moreover, cross-segment mergers, acquisitions, and financial consolidation have blurred the risks of various segments of the industry.

Given this complexity, dynamism, and transformation in the financial sector there are several questions that can be raised related to Islamic banks. How do the Islamic banks perceive their own risks and these various developments? How regulators expect to respond to the new risks inherent in Islamic banks? What possible Shari[ah compatible risk management instruments are available at the present? What are the prospects of exploring new

² For details, see Iqbal (2000).

³ While linear projections are estimated assuming constant growth rate, the exponential forecasts are the optimistic figures estimated by assuming exponential growth. Note that given the small number of observations, these forecasts should be taken as indicative only.

instruments in the future? What are the implications of all these for the competitiveness of Islamic banks? How is stability of the Islamic financial institutions going to be affected? The objective of the present paper is to address some of these questions. Specifically the paper aims at the following:

- i. Presenting an overview of the concepts of risks and risk management techniques and standards as these exist in the financial industry.
- ii. Discussing the unique risks of the Islamic financial services industry and the perceptions of Islamic banks about these risks.
- iii. Reviewing the main regulatory concerns with respect to risks and their treatment with a view to draw some lessons for Islamic banks.
- iv. Discussing and analyzing the Shari[ah related challenges concerning risk management in the Islamic financial services industry and
- v. Presenting policy implications for developing a risk management culture in Islamic banks.

1.4 OUTLINE OF THE PAPER

In section two, we discuss the basic concepts of risks and their management as practiced in the conventional financial sector. This section also provides details of the various processes to manage different risks. The section ends with identifying the nature of risks found in Islamic financial institutions and instruments. Section three, reports results from a survey on risk management issues in Islamic financial institutions. The survey covered 17 Islamic institutions from 10 different countries. The results covers the perspectives of Islamic bankers towards different risks, the process of risk management in these institutions, and some other aspects related to Islamic financial institutions. Section four discusses the risk management aspects from the regulatory viewpoints. Based on, among others, the proposals of Basel Committee, the section touches on the regulatory aspects for Islamic financial institutions. Among others, it covers issues related to capital requirements in Islamic financial institutions and different approaches to manage various risks. Section five covers some *Fiqhī* issues related to risk management. Other than pointing out the Shari[ah viewpoints towards different techniques and instruments used for risk mitigation, proposals are made on developing new techniques. Some suggestions are also given for consideration of Shari[ah experts to deliberate on. The last section concludes the paper and presents policy implications for developing risk management culture in Islamic banks.

II

RISK MANAGEMENT: BASIC CONCEPTS AND TECHNIQUES

In this section we discuss the basic risk concepts and issues related to risk management. After defining and identifying different risks, we describe the risk management process. Risk management process is a comprehensive system that includes creating an appropriate risk management environment, maintaining an efficient risk measurement, mitigating, and monitoring process, and establishing an adequate internal control arrangement. After outlining the basic idea of the risk management process and system, we discuss the main elements of the management process for specific risks. The latter part of the section examines the risks involved in Islamic financial institutions. We review the nature of traditional risks for Islamic financial institutions and point out some specific risks that Islamic banks face. We then discuss the risks inherent in different Islamic modes of financing.

2.1. INTRODUCTION

Risk arises when there is a possibility of more than one outcome and the ultimate outcome is unknown. Risk can be defined as the variability or volatility of unexpected outcomes.⁴ It is usually measured by the standard deviation of historic outcomes. Though all businesses face uncertainty, financial institutions face some special kinds of risks given their nature of activities. The objective of financial institutions is to maximize profit and shareholder value-added by providing different financial services mainly by managing risks.

There are different ways in which risks are classified. One way is to distinguish between business risk and financial risks. Business risk arises from the nature of a firm's business. It relates to factors affecting the product market. Financial risk arises from possible losses in financial markets due to movements in financial variables (Jorion and Khoury 1996, p. 2). It is usually associated with leverage with the risk that obligations and liabilities cannot be met with current assets (Gleason 2000, p. 21).

⁴ This definition is from Jorion and Khoury (1996, p. 2).

Another way of decomposing risk is between systematic and unsystematic components. While systematic risk is associated with the overall market or the economy, unsystematic risk is linked to a specific asset or firm. While the asset-specific unsystematic risk can be mitigated in a large diversified portfolio, the systematic risk is nondiversifiable. Parts of systematic risk, however, can be reduced through the risk mitigation and transferring techniques.

To understand the underlying principle of risk management, we use Oldfield and Santomero (1997) classification of risks. Accordingly, financial institutions face the following three types of risks: risks that can be eliminated, those that can be transferred to others, and the risks that can be managed by the institution. Financial intermediaries would avoid certain risks by simple business practices and will not take up activities that impose risks upon them. The practice of financial institutions is to take up activities in which risks can be efficiently managed and shift risks that can be transferred.

Risk avoidance techniques would include the standardization of all business-related activities and processes, construction of diversified portfolio, and implementation of an incentive-compatible scheme with accountability of actions. Some risk that banks face can be reduced or eliminated by transferring or selling these in well-defined markets. Risk transferring techniques include, among others, use of derivatives for hedging, selling or buying of financial claims, changing borrowing terms, etc.

There are, however, some risks that cannot be eliminated or transferred and must be absorbed by the banks. The first is due to the complexity of the risk and difficulty to separate it from asset. The second risk is accepted by the financial institutions as these are central to their business. These risks are accepted because the banks are specialized in dealing with them and get rewarded accordingly. Examples of these risks are the credit risk inherent in banking book activities and market risks in the trading book activities of banks.

There is a difference between risk measurement and risk management. While risk measurement deals with quantification of risk exposures, risk management refers to “the overall process that a financial institution follows to define a business strategy, to identify the risks to which it is exposed, to quantify those risks, and to understand and control the nature of risks it faces” (Cumming and Hirtle 2001, p. 3). Before we discuss the risk management process and measurement techniques, we give an overview of the risks faced by financial institutions and the evolution of risk management.

2.2. RISKS FACED BY FINANCIAL INSTITUTIONS

The risks that banks face can be divided into financial and non-financial ones.⁵ Financial risk can be further partitioned into market risk and credit risk. Non-financial risks, among others, include operational risk, regulatory risk, and legal risk. The nature of some of these risks is discussed below.

Market Risk is the risk originating in instruments and assets traded in well-defined markets. Market risks can result from macro and micro sources. Systematic market risk result from overall movement of prices and policies in the economy. The unsystematic market risk arises when the price of the specific asset or instrument changes due to events linked to the instrument or asset. Volatility of prices in various markets gives different kinds of market risks. Thus market risk can be classified as *equity price risk*, *interest rate risk*, *currency risk*, and *commodity price risk*. As a result, market risk can occur in both banking and trading books of banks. While all of these risks are important, interest rate risk is one of the major risk that banks have to worry about. The nature of this risk is briefly explained below.

Interest Rate Risk is the exposure of a bank's financial condition to movements in interest rates. Interest rate risk can arise from different sources. *Repricing risk* arises due to timing differences in the maturity and repricing of assets, liabilities and off-balance sheet items. Even with similar repricing characteristics, *basis risk* may arise if the adjustment of rates on assets and liabilities are not perfectly correlated. *Yield curve risk* is the uncertainty in income due to changes in the yield curve. Finally instruments with call and put options can introduce additional risks.

Credit Risk is the risk that counterparty will fail to meet its obligations timely and fully in accordance with the agreed terms. This risk can occur in the banking and trading books of the bank. In the banking book, *loan credit risk* arises when counterparty fails to meet its loan obligations fully in the stipulated time. This risk is associated with the quality of assets and the probability of default. Due to this risk, there is uncertainty of net-income and market value of equity arising from non-payment and delayed payment of principal and interest.

Similarly, *trading book credit risk* arises due to a borrower's inability or unwillingness to discharge contractual obligations in trading contracts. This can result in *settlement risk* when one party to a deal pays money or delivers assets

⁵ This classification of risk is taken from Gleason (2000).

before receiving its own assets or cash, thereby, exposing it to potential loss. Settlement risk in financial institutions particularly arises in foreign-exchange transactions. While a part of the credit risk is diversifiable, it cannot be eliminated completely.

Liquidity Risk arises due to insufficient liquidity for normal operating requirements reducing the ability of banks to meet its liabilities when it falls due. This risk may result from either difficulties in obtaining cash at reasonable cost from borrowings (*funding or financing liquidity risk*) or sale of assets (*asset liquidity risk*). One aspect of asset-liability management in the banking business is to minimize the liquidity risk. While funding risk can be controlled by proper planning of cash-flow needs and seeking newer sources of funds to finance cash-shortfalls, the asset liquidity risk can be mitigated by diversification of assets and setting limits of certain illiquid products.

Operational Risk is not a well-defined concept and may arise from human and technical errors or accidents. It is the risk of direct or indirect loss resulting from inadequate or failed internal processes, people, and technology or from external events. While *people risk* may arise due to incompetence and fraud, *technology risk* may result from telecommunications system and program failure. *Process risk* may occur due to various reasons including errors in model specifications, inaccurate transaction execution, and violating operational control limits.⁶ Due to problems arising from inaccurate processing, record keeping, system failures, compliance with regulations, etc., there is a possibility that operating costs might be different from what is expected affecting the net-income adversely.

Legal Risks relate to risks of unenforceability of financial contracts. This relates to statutes, legislation, and regulations that affect the fulfillment of contracts and transactions. This risk can be external in nature (like regulations affecting certain kind of business activities) or internal related to bank's management or employees (like fraud, violations of laws and regulations, etc.). Legal risks can be considered as a part of operational risk (BCBS, 2001a). *Regulatory risk* arises from changes in regulatory framework of the country.

2.3. RISK MANAGEMENT: BACKGROUND AND EVOLUTION

Though business activities have been always exposed to risks, the formal study of managing risk started in the later half of the last century.

⁶ For a list of different sources of operational risk see Crouhy et.al. (2001, p. 487).

Markowitz's (1959) seminal paper first indicated that portfolio selection was a problem of maximizing its expected return and minimizing the risks. A higher expected return of a portfolio (measured by the mean) can result only from taking more risks. Thus, investors' problem was to find the optimal risk-return combination. His analysis also points out the systematic and unsystematic components of risk. While the unsystematic component can be mitigated by diversification of assets, the systematic component has to be borne by the investor. Markowitz's approach, however, faced operational problems when a large number of assets are involved.

Sharpe's (1964) Capital Asset Pricing Model (CAPM) introduces the concepts of systematic and residual risks. Advances in this model include Single-Factor Models of Risk that estimates the beta of an asset. While residual (firm specific) risk can be diversified, beta measures the sensitivity of the portfolio to business cycles (an aggregate index). The dependence of CAPM on a single index to explain the risks inherent in assets is too simplistic.

Arbitrage Pricing Theory proposed by Ross (1976) suggests that multiple factors affect the expected return of an asset. The implication of the Multiple Factor Model is that the total risk is the sum of the various factor-related risks and residual risk. Thus, a multiple of *risk-premia* can be associated with an asset giving the respective factor-specific betas. Though the Multiple Factors Model is widely accepted, there is however, no consensus regarding the factors that affect the risk of an asset or the way it is estimated. There are three approaches in which this model can be implemented. While the Fundamental Factors model estimates the factor specific *risk-premia* assuming the respective factor-specific betas as given, the macroeconomic model assumes the *risk-premia* as given and estimates the factor-specific betas. Statistical models attempt to determine both the *risk-premia* and betas simultaneously.

Modern risk management processes and strategies have adopted features of the above mentioned theories and adopted many tools to analyze risk. An important element of management of risk is to understand the risk-return trade-off. Investors can expect a higher rate of return only by increasing the risks. As the objective of financial institutions is to increase the net income of the shareholders, managing the resulting risks created to achieve this becomes an important function of these institutions. They do this by efficiently diversifying the unsystematic risks and reducing and transferring the systematic risk.

There are two broad approaches to quantify risk exposures facing financial institutions. One way is to measure risks in a segmented way (e.g., GAP analysis to measure interest rate risk and Value at Risk to assess market risks). The other approach is to measure risk exposure in a consolidated way by assessing the overall firm level risk (e.g., Risk adjusted rate of return, RAROC for firm level aggregate risk).⁷

2.4. RISK MANAGEMENT: THE PROCESS AND SYSTEM

Though main elements of risk management include identifying, measuring, monitoring, and managing various risk exposures,⁸ these cannot be effectively implemented unless there is a broader process and system in place. The overall risk management process should be comprehensive embodying all departments/sections of the institution so as to create a risk management culture. It should be pointed out that the specific risk management process of individual financial institutions depends on the nature of activities and the size and sophistication of an institution. The risk management system outlined here can be a standard for banks to follow. A comprehensive risk management system should encompass the following three components.⁹ We outline the basic concept of the risk management process and system in this section.

2.4.1. Establishing Appropriate Risk Management Environment and Sound Policies and Procedures

This stage deals with the overall objectives and strategy of the bank towards risk and its management policies. The board of directors is responsible for outlining the overall objectives, policies and strategies of risk management for any financial institution. The overall risk objectives should be communicated throughout the institution. Other than approving the overall policies of the bank regarding risk, the board of directors should ensure that the management takes the necessary actions to identify, measure, monitor, and control these risks. The board should periodically be informed and review the status of the different risks the bank is facing through reports.

Senior management is responsible to implement these broad specifications approved by the board. To do so, the management should establish

⁷ For a discussion on adopting consolidated risk management from the supervisors' and the banks perspectives see Cumming and Hirtle (2001).

⁸ See (Jorion 2001, p. 3) for a discussion.

⁹ These three components are derived from BCBS's recommendations of managing specific risks. See BCBS (1999 and 2001b).

policies and procedures that would be used by the institution to manage risk. These include maintaining a risk management review process, appropriate limits on risk taking, adequate systems of risk measurement, a comprehensive reporting system, and effective internal controls. Procedures should include appropriate approval processes, limits and mechanisms designed to assure the bank's risk management objectives are achieved. Banks should clearly identify the individuals and/or committees responsible for risk management and define the line of authority and responsibility. Care should be taken that there is adequate separation of duties of risk measurement, monitoring and control functions.

Furthermore, clear rules and standards of participation should be provided regarding position limits, exposures to counterparties, credit and concentration. Investment guidelines and strategies should be followed to limit the risks involved in different activities. These guidelines should cover the structure of assets in terms of concentration and maturity, asset-liability mismatching, hedging, securitization, etc.

2.4.2. Maintaining an Appropriate Risk Measurement, Mitigating, and Monitoring Process

Banks must have regular management information systems for measuring, monitoring, controlling and reporting different risk exposures. Steps that need to be taken for risk measurement and monitoring purposes are establishing standards for categorization and review of risks, consistent evaluation and rating of exposures. Frequent standardized risk and audit reports within the institution is also important. The actions needed in this regard are creating standards and inventories of risk based assets, and regularly producing risk management reports and audit reports. The bank can also use external sources to assess risk, by using either credit ratings, or supervisory risk assessment criterion like CAMELS.

Risks that banks take up must be monitored and managed efficiently. Banks should do stress testing to see the effects on the portfolio resulting from different potential future changes. The areas a bank should examine are the effects of downturn in the industry or economy and market risk events on default rates and liquidity conditions of the bank. Stress testing should be designed to identify the conditions under which a bank's positions would be vulnerable and the possible responses to such situations. The banks should have contingency plans that can be implemented under different scenarios.

2.4.3. Adequate Internal Controls

Banks should have internal controls to ensure that all policies are adhered to. An effective system of internal control includes an adequate process for identify and evaluating different kinds of risks and having sufficient information systems to support these. The system would also establish policies and procedures and their adherence are continually reviewed. These may include conducting periodic internal audits of different processes and producing regular independent reports and evaluations to identify areas of weakness. An important part of internal control is to ensure that the duties of those who measure, monitor, and control risks are separated.

Finally, an incentive and accountability structure that is compatible with reduced risk taking on part of the employees is also an important element to reduce overall risk. A prerequisite of these incentive-based contracts is accurate reporting of the bank's exposures and internal control system. An efficient incentive compatible structure would limit individual positions to acceptable levels and encourage decision makers to manage risks in a manner that is consistent with the banks goals and objectives.

2.5. MANAGEMENT PROCESSES OF SPECIFIC RISKS

As mentioned above the total risk of an asset can be assigned to different sources. Given the general guidelines of risk management process above, in this section we give details of risk management processes for specific risks faced by banks.

2.5.1. Credit Risk Management¹⁰

The board of directors should outline the overall credit risk strategies by indicating the bank's willingness to grant credit to different sectors, geographical location, maturity, and profitability. In doing so it should recognize the goals of credit quality, earnings, growth, and the risk-reward tradeoff for its activities. The credit risk strategy should be communicated throughout the institution.

The senior management of the bank should be responsible to implement the credit risk strategy approved by the board of directors. This would include developing written procedures that reflect the overall strategy and ensure its implementation. The procedures should include policies to identify, measure, monitor, and control credit risk. Care has to be given to diversification of

¹⁰ This section is based on the credit risk management process discussed in BCBS (1999).

portfolio by setting exposure limits on single counterparty, groups of connected counterparties, industries, economic sectors, geographical regions, and individual products. Banks can use stress testing in setting limits and monitoring by considering business cycles, interest rate and other market movements. Banks engaged in international credit need to assess the respective country risk.

Banks should have a system for ongoing administration of various credit risk-bearing portfolios. A proper credit administration by a bank would include an efficient and effective operations related to monitoring documentation, contractual requirements, legal covenants, collateral, etc., accurate and timely reporting to management, and compliance with management policies and procedures and applicable rules and regulations.

Banks must operate under a sound, well-defined credit-granting criteria to enable a comprehensive assessment of the true risk of the borrower or counterparty to minimize the adverse selection problem. Banks need information on many factors regarding the counterparty to whom they want to grant credit. These include, among others, the purpose of the credit and the source of repayment, the risk profile of the borrower and its sensitivity to economic and market developments, borrowers repayment history and current capacity to repay, enforceability of the collateral or guarantees, etc. Banks should have a clear and formal evaluation and approval process for new credits and extension of existing credits. Each credit proposal should be subject to careful analysis by a credit analyst so that information can be generated for internal evaluation and rating. This can be used for appropriate judgements about the acceptability of the credit.

Granting credit involves accepting risks as well as producing profits. Credit should be priced so that it appropriately reflects the inherent risks of the counterparty and the embedded costs. In considering the potential credit, the bank needs to establish provisions for expected loss and hold adequate capital to absorb the unexpected losses. Banks can use collateral and guarantees to help mitigate risks inherent in individual transactions. Note, however, that collateral cannot be a substitute for comprehensive assessment of a borrower and strength of the repayment capacity of the borrower should be given prime importance.

Banks should identify and manage credit risk inherent in all of its assets and activities by carefully reviewing the risk characteristics of the asset or activity. Special care is needed particularly when the bank embarks on new activities and assets. In this regard, adequate procedures and controls need to be

taken to identify the risks in new asset or activity. Banks must have analytical techniques and information systems to measure credit risk in all on- and off-balance sheet activities. The system should be able to provide information on sensitivities and concentrations in the credit portfolio. Banks can manage portfolio issues related to credit through loan sales, credit derivatives, securitization, and involvement in secondary loan markets.

Banks must have a system for monitoring individual credits, including determining the adequacy of provisions and reserves. An effective monitoring system would provide the bank, among others, the current financial condition of the counterparty. The system would be able to monitor projected cash-flow and the value of the collateral to identify and classify potential credit problems. While monitoring the overall composition and quality of the portfolio, a bank should not only take care about the concentrations with respect to counterparties activities but also the maturity.

Banks should develop internal risk rating systems to manage credit risk. A well-structured internal rating system can differentiate the degree of credit risk in different credit exposures of a bank by categorizing credits into various gradations in risk. Internal risk ratings are important tool in monitoring and controlling credit risk as periodic ratings enable banks to determine the overall characteristics of the credit portfolio and indicates any deterioration in credit risk. Deteriorating credit can then be subject to additional monitoring and supervision.

A bank should have independent ongoing credit reports for the board of directors and senior management to ensure that the bank's risk exposure are maintained within the parameters set by prudential standards and internal limits. Banks should have internal controls to ensure that credit policies are adhered to. These may include conducting periodic internal audits of the credit risk processes to identify the areas of weakness in the credit administration process. Once the problem credits are identified, banks should have a clear policy and system for managing problem credits. The banks should have effective workout programs to manage risk in their portfolio.

2.5.2. Interest Rate Risk Management¹¹

The board of directors should approve the overall objectives, broad strategies and policies that govern the interest rate risk of a bank. Other than

¹¹ This section is based on the interest rate risk management process discussed in BCBS (2001).

approving the overall policies of the bank regarding interest rate risk the board of directors should ensure that the management takes the necessary actions to identify, measure, monitor, and control these risks. The board should periodically be informed and review the status of interest rate risk the bank is facing through reports.

Senior management must ensure that the bank follows policies and procedures that enable the management of interest rate risk. These include maintaining an interest rate risk management review process, appropriate limits on risk taking, adequate systems of risk measurement, a comprehensive interest rate risk reporting system, and effective internal controls. Banks should be able to identify the individuals and/or committees responsible for interest rate risk management and define the line of authority and responsibility.

Banks should have clearly defined policies and procedures for limiting and controlling interest rate risk by delineating responsibility and accountability over interest rate risk management decisions and defining authorized instruments, hedging strategies and position taking opportunities. Interest rate risk in new products should be identified by carefully scrutinizing the maturity, repricing or repayment terms of an instrument. The board should approve new hedging or risk management strategies before these are implemented.

Banks should have a management information system for measuring, monitoring, controlling and reporting interest rate exposures. Banks should have interest rate risk management systems that assess the effects of rate changes on both the earnings and economic value. These measurement systems should be able to utilize generally accepted financial concepts and risk management techniques to assess all interest risk associated with a bank's assets, liabilities, and off-balance sheet positions. Some of the techniques for measuring a bank's interest risk exposure are GAP analysis, duration, and simulation. Possible stress tests can be undertaken to examine the effects of changes in the interest rate, changes in the slope of the yield curve, changes in the volatility of the market rates, etc. Banks should consider the "worse case" scenarios and ensure that appropriate contingency plans are available to tackle these situations.

Banks must establish and enforce a system of interest rate risk limits and risk taking guidelines that can achieve the goal of keeping the risk exposure within some self-imposed parameters over a range of possible changes in interest rates. An appropriate limit system enables the control and monitoring of interest

rate risk against predetermined tolerance factors. Any violation of limits should be made known to senior management for appropriate action.

Interest rate reports for the board should include summaries of the bank's aggregate exposures, compliance with policies and limits, results of stress tests, summaries of reviews of interest rate risk policies and procedures, and findings of internal and external auditors. Interest rate risk reports should be in details to enable senior management to assess the sensitivity of the institution to changes in the market conditions and other risk factors.

Banks should have adequate system of internal controls to ensure the integrity of their interest rate risk management process and to promote effective and efficient operations, reliable financial and regulatory reporting, and compliance with relevant laws, regulations, and institutional policies. An effective system of internal control for interest rate risk includes an adequate process for identify and evaluating risk and having sufficient information systems to support these. The system would also establish policies and procedures and their adherence are continually reviewed. These periodic reviews would cover not only the quantity of interest rate risk, but also the quality of interest rate risk management. Care should be taken that there is adequate separation of duties of risk measurement, monitoring and control functions.

2.5.3. Liquidity Risk Management¹²

As banks deal with other people's money that can be withdrawn, managing liquidity is one of the most important functions of the bank. The senior management and the board of directors should make sure that the bank's priorities and objectives for liquidity management are clear. Senior management should ensure that liquidity risk is effectively managed by establishing appropriate policies and procedures. A bank must have adequate information system to measure, monitor, control and report liquidity risk. Regular reports on liquidity should be provided to the board of directors and senior management. These reports should include, among others, the liquidity positions over particular time horizons.

The essence of liquidity management problem arises from the fact that there is a trade-off between liquidity and profitability and mismatch between demand and supply of liquid assets. While the bank has no control over the

¹² The discussion on Liquidity Risk Management is derived from BCBS (2000).

sources of funds (deposits), it can control the use of funds. As such, a bank's liquidity position is given priority in allocating funds. Given the opportunity cost of liquid funds, banks should make all profitable investments after having sufficient liquidity. Most banks now keep protective reserves on top of planned reserves. While the planned reserves are derived from either regulatory requirements or forecasts, the amount of the protective reserve depends on the management's attitude towards liquidity risk.

Liquidity management decisions have to be undertaken by considering all service areas and departments of the bank. Liquidity manager must keep track and coordinate the activities of all departments that raise and use funds in the bank. Decisions regarding the bank's liquidity needs must be analyzed continuously to avoid both liquidity surplus and deficit. In particular, the liquidity manager should know in advance when large transactions (credit, deposits, withdrawals) would take place to plan effectively for resulting liquidity surpluses or deficits.

A bank should establish a process of measuring and monitoring net funding requirements by assessing the bank's cash inflows and outflows. The bank's off-balance sheet commitments should also be considered. It is also important to assess the future funding needs of the bank. An important element of liquidity risk management is to estimate a bank's liquidity needs. Several approaches have been developed to estimate the liquidity requirements of banks. These include the sources and uses of funds approach, the structure of funds approach, and the liquidity indicator approach.¹³ A maturity ladder is a useful device to compare cash inflows and outflows for different time periods. The deficit or surplus of net cash flows is a good indicator of liquidity shortfalls and excesses at different points in time.

Unexpected cash flows can arise from some other sources. As more and more banks are engaged in off-balance sheet activities, banks should also examine the cash flows on this account. For example, contingent liabilities used in these accounts (like financial guarantees and options) can represent substantial sources of outflows of funds. After identifying the liquidity requirements, a series of worse case scenarios can be analyzed to estimate both possible bank specific shocks and economy-wide shock. The bank should have contingency funding plans of handling the liquidity needs during these crises. Possible responses to these shocks would include the speed with which assets

¹³ For a discussion on these methods see Rose (1999).

can be liquidated and the sources of funds that banks can use in the crisis. If the bank is dealing with foreign currency, it should have a measurement, monitoring and control system for liquidity in active currencies.

Banks should have adequate internal controls over its liquidity risk management process that should be a part of the overall system of internal control. An effective system would create a strong control environment and have an adequate process of identifying and evaluating liquidity risk. It should have adequate information system that can produce regular independent reports and evaluations to review adherence to established policies and procedures. The internal audit function should also periodically review the liquidity management process to identify any problems or weaknesses for appropriate action by the management.

2.5.4. Operational Risk Management¹⁴

The board of directors and senior management should develop the overall policies and strategies for managing operational risk. As operational risk can arise due to failures in people, processes, and technology, management of this risk is more complex. Senior management needs to establish the desired standards of risk management and clear guidelines for practices that would reduce operational risks. In doing so, care needs to be taken to include people, process, and technology risks that can arise in the institution.

Given the different sources in which operational risk can arise, a common standard for identification and management of these needs to be developed. Care needs to be taken to tackle operational risk arising in different departments/organizational unit due to people, process, and technology. As such a wide variety of guidelines and rules have to be spelled out. To do so, the management should develop an 'operational risk catalogue' in which business process maps for each business/ department of the institution are outlined. For example, the business process for dealing with client or investor should be laid out. This catalogue will not only identify and assess operational risk but also can be used for transparency by the management and auditors.

Given the complexity of operational risk, it is difficult to quantify it. Most of the operational risk measurement techniques are simple and experimental. The banks, however, can gather information of different risks from reports and plans that are published within the institution (like audit

¹⁴ This part is based on BCBS (1998) and Crouhy, et.al. (2001, Chapter 13).

reports, regulatory reports, management reports, business plans, operations plans, error rates, etc.). A careful review of these documents can reveal gaps that can represent potential risks. The data from the reports can then be categorized into internal and external factors and converted into likelihood of potential loss to the institution. A part of the operational risk can also be hedged. Tools for risk assessment, monitoring, and management would include periodic reviews, stress testing, and allocation of appropriate amount of economic capital.

As there are various sources of operational risk, it needs to be handled in different ways. In particular, risk originating from people needs effective management, monitoring, and controls. These include establishing an adequate operating procedure. One important element to control operational risk is to have clear separation of responsibilities and to have contingency plans. Another significant element is to make sure that reporting systems are consistent, secure, and independent of business. The internal auditors play an important role in mitigating operational risk.

2.6. RISK MANAGEMENT AND MITIGATION TECHNIQUES

Many risk measurement and mitigation techniques have evolved in recent times. Some of these techniques are used to mitigate specific risks while others are meant to deal with overall risk of a firm. In this section we outline some contemporary techniques used by well-established financial institutions.

2.6.1. GAP Analysis

GAP analysis is an interest rate risk management tool based on the balance sheet. GAP analysis focuses on the potential variability of net-interest income over specific time intervals. In this method a maturity/repricing schedule that distributes interest-sensitive assets, liabilities, and off-balance sheet positions into time bands according to their maturity (if fixed rate) or time remaining to their next repricing (if floating rate) is prepared. These schedules are then used to generate indicators of interest rate sensitivity of both earnings and economic value to changing interest rates.

GAP models focus on managing net interest income over different time intervals. After choosing the time intervals, assets and liabilities are grouped into these time buckets according to maturity (for fixed rates) or first possible repricing time (for flexible rates). The assets and liabilities that can be repriced are called rate sensitive assets (RSAs) and rate sensitive liabilities (RSLs)

respectively, and GAP equals the difference between the former and the latter. Thus for a time interval, GAP is given by,

$$\text{GAP} = \text{RSAs} - \text{RSLs} \quad (2.1)$$

Note that GAP analysis is based on the assumption of repricing of balance sheet items calculated according to book value terms. The information on GAP gives the management an idea about the effects on net-income due to changes in the interest rate. For example, if the GAP is positive, then the rate sensitive assets exceed liabilities. The implication is that an increase in future interest rate would increase the net interest income as the change in interest income is greater than the change in interest expenses. Similarly, a positive GAP and a decline in the interest rate would reduce the net interest income. The banks can opt to hedge against such undesirable interest rate changes by using interest rate swaps (outlined in Section 2.6.6.1).

2.6.2. Duration-GAP Analysis

Duration model is another measure of interest rate risk and managing net interest income derived by taking into consideration all individual cash inflows and outflows. Duration is value and time weighted measure of maturity of all cash flows and represents the average time needed to recover the invested funds. The standard formula for calculation of duration D is given by,

$$D = \frac{\sum_{t=1}^n CF_t \times t \times (1+i)^{-t}}{\sum_{t=1}^n CF_t \times (1+i)^{-t}} \quad (2.2)$$

where CF_t is the value of cash flow at time t , which is the number of periods the cash flow from the instrument is received, and i is the instrument's yield to maturity. The duration analysis compares the changes in market value of the assets relative to its liabilities. Average duration gaps of assets and liabilities are estimated by summing the duration of individual asset/liability multiplied by its share in the total asset/liability. A change in the interest rate affects the market value through the discounting factor $(1+i)^{-t}$. Note that the discounted market value of an instrument with a longer duration will be affected relatively more due to changes in the interest rate. Duration analysis, as such, can be viewed as the elasticity of the market value of an instrument with respect to interest rate.

Duration gap (DGAP) reflects the differences in the timing of asset and liability cash flows and given by,

$$DGAP = DA - u DL \quad (2.3)$$

where DA is the average duration of the assets, DL is the average duration of liabilities, and u is the liabilities/assets ratio. Note that a relatively larger u implies higher leverage. A positive DGAP implies the duration of assets is greater than that of liabilities. When interest rate increases by comparable amounts, the market value of assets decrease more than that of liabilities resulting in the decrease in the market value of equities and expected net-interest income. Similarly, a decline in the interest rate decreases the market value of the equity with a positive DGAP. Banks can use DGAP analysis to immunize portfolios against interest rate risk by keeping DGAP close to zero.

2.6.3. Value at Risk (VaR)¹⁵

Value at Risk (VaR) is one of the newer risk management tools. The VaR indicates how much a firm can lose or make with a certain probability in a given time horizon. VaR summarizes financial risk inherent in portfolios into a simple number. Though VaR is used to measure market risk in general, it incorporates many other risks like foreign currency, commodities, and equities. VaR has many variations and can be estimated in different ways. We outline the underlying concept of VaR and the method of estimating it below.

Assume that an amount A_0 is invested at a rate of return of r , so that after a year the value of portfolio is $A = A_0 (1+r)$. The expected rate of return from the portfolio is μ with standard deviation σ . VAR answers the question of how much can the portfolio lose in a certain time period t (e.g., month). To compute this, we construct the probability distribution of the returns r . We then choose a confidence level c (say 95) percent. VaR tells us what is the loss (A^*) that will not be exceeded c percent of the cases in the given period t . In other words, we want to find the loss that has a probability of $1-c$ percent of occurrence in the time period t . Note that there is a rate of return r^* corresponding to A^* . Depending on the basis of comparison, VaR can be estimated in the absolute and relative sense. Absolute VaR is the loss relative to zero and relative VaR is the loss compared to the mean μ . The basic idea of estimating VAR is shown in Figure 2.1 below.

A simpler parametric method can be used to estimate VaR by converting the general distribution into a standard normal distribution. This method is not only easier to use but also gives more accurate results in some cases. To use the

¹⁵ For an extensive discussion on VaR, see Jorion (2001).

parametric method to estimate VaR, the general distribution of the rates of return are converted into a normal distribution in the following way

$$-\alpha = (-|r^*| - \mu) / \sigma \quad (2.4)$$

Note that α represents the standard normal distribution equivalent loss corresponding to confidence level of $1-c$ of the general distribution (i.e., r^*). Thus, in a normal distribution, α would be 1.65 (or 2.33) for a confidence level $c=95$ (or $c=99$ percent). Expressing time period T in years (so that one month would be $1/12$), the absolute and relative VaRs using the parametric method are then given as

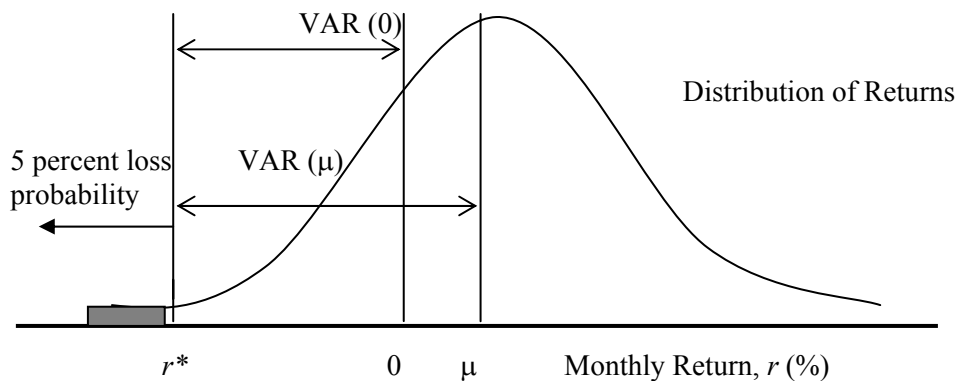
$$VaR(\text{zero}) = A_0(\alpha\sigma\sqrt{T} - \mu T) \quad (2.5)$$

and

$$VaR(\text{mean}) = A_0\alpha\sigma\sqrt{T} \quad (2.6)$$

respectively. Say, for a monthly series the VaR (zero) is estimated to be 'y' at 95 percent confidence level. This means that under normal market conditions, the most the portfolio can lose over a month is an amount of y with a probability of 95 percent (see Box 1 for an example).

Figure 2.1
Basic Concept of Value at Risk



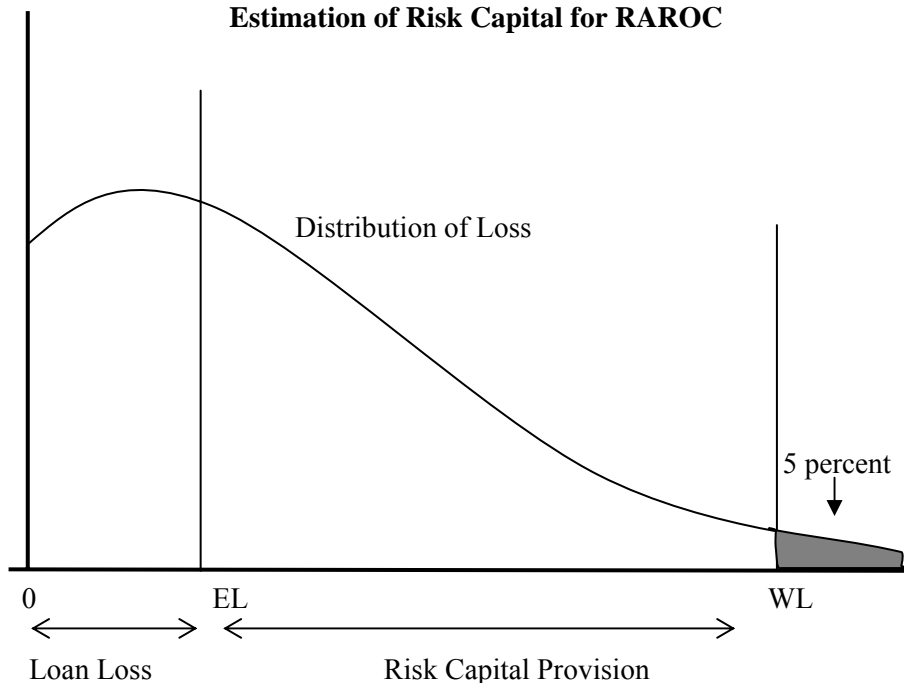
2.6.4. Risk Adjusted Rate of Return (RAROC)

Risk adjusted rate of return (RAROC), developed by Bankers Trust in the late 1970s, quantifies risk by considering the tradeoff of risk and reward in different assets and activities. By the end of the 1990s, RAROC was considered a leading edge methodology to measure performance and a best practice standard by financial institutions. It gives an economic basis to measure all the

relevant risks consistently and gives managers tools to make the efficient decisions regarding risk/return tradeoff in different assets. As economic capital protects financial institutions against unexpected losses, it is vital to allocate capital for various risks that these institutions face. RAROC analysis shows how much economic capital different products and businesses need and determines the total return on capital of a firm. Though RAROC can be used to estimate the capital requirements for market, credit and operational risks, it is used as an integrated risk management tool.¹⁶

Figure 2.2

Estimation of Risk Capital for RAROC



From a loss distribution over a given horizon (say a year) expected losses (EL) can be estimated as average losses of the previous years. Worst case loss (WL) is the maximum potential loss. The worst case loss is estimated at a given level of confidence, c (e.g., 95 or 99 percent). The unexpected loss (UL) is the difference between the worst case and expected loss (i.e., $UL=WL-EL$). Note that while the expected loss is included as costs (as loan loss provision) when determining the returns, the unexpected losses arising from random shocks require capital to absorb the loss. The unexpected or worst case loss is estimated

¹⁶ For a discussion of the use of RAROC to determine capital for market, credit and operational risks, see Crouhy, et.al. (2000, pp. 543-48).

at a given level of confidence, c , as it is too costly for an organization to have capital for all potential loss. If the confidence level is 95 percent then there is a probability of 5 percent that actual losses will exceed the economic capital. The part of the loss that is not covered by the confidence level is the catastrophic risk that the firm faces and can be insured. Estimation of risk capital from a loss distribution function is shown in Figure 2.2. RAROC is determined as,

$$\text{RAROC} = \text{Risk-adjusted Return} / \text{Risk Capital},$$

where risk-adjusted return equals total revenues less expenses and expected losses (EL), and risk capital is that reserved to cover the unexpected loss given the confidence level. While the expected loss is factored in the return (as loan loss provision), the unexpected loss is equivalent to the capital required to absorb the loss. A RAROC of x percent on a particular asset means that the annual expected rate of return of x on the equity is required to support this asset in the portfolio. Note that RAROC can be used as a tool of capital allocation by estimating the expected loss *ex ante*, and used for performance evaluation by utilizing realized losses *ex post*.

2.6.5. Securitization

Securitization is a procedure studied under the systems of structured finance or credit linked notes.¹⁷ Securitization of a bank's assets and loans is a device for raising new funds and reducing bank's risk exposures. The bank pools a group of income-earning assets (like mortgages) and sells securities against these in the open market, thereby transforming illiquid assets into tradable asset-backed securities. As the returns from these securities depend on the cash flows of the underlying assets, the burden of repayment is transferred from the originator to these pooled assets. The structure of securitization process is shown in Figure 2.3 below. The bank, the originator of the securities, packages its assets into pools of similar assets. These assets are passed on to a special purpose vehicle (SPV) or issuer of securities. Note that the SPV is a separate entity than the originator so that the viability of the bank does not affect the credit status of assets in the pool. The issued securities are sold to the investors. A trustee ensures that the SPV fulfills all aspects of the transaction and provides all services. These include transfer of assets to the pool, fulfilling guarantees and collateral requirements in case of default. The trustee also collects and transfers the cash flows generated from the pooled assets to the investors.

¹⁷ For a detailed discussion of structured finance and credit linked notes related to securitization see Caouttee et.al (1998, Chapter 23) and Das (2000, Chapter 4) respectively.

BOX 1:

Examples of Estimating VaR and RAROC

Estimating VaR: An Example

Assume an investment portfolio marked to the market is valued at SR 100 million has expected rate of return of 5 percent and standard deviation of 12 percent. We are interested to estimate VaR for holding period of one month at 99 percent confidence interval. Using the symbols in the text, this information can be written as follows:

$A_0=100$ million, $\mu = 5$ percent, $\sigma = 12$ percent, $c=99$, $\alpha=2.33$, and $T=1/12$.

Note that 99 percent confidence interval yields $\alpha=2.33$ in a normal distribution. Given the above we can estimate the two variants of VaR as:

$$\begin{aligned} VaR(\text{mean}) &= A_0 \alpha \sigma \sqrt{T} \\ &= 100 \times 2.33 \times 0.12 \times (1/12)^{0.5} = 8.07 \end{aligned}$$

and,

$$\begin{aligned} VaR(\text{zero}) &= A_0 (\alpha \sigma \sqrt{T} - \mu T) \\ &= 100 [2.33 \times 0.12 \times (1/12)^{0.5} - 0.05 \times (1/12)] = 8.07 - 0.42 = 7.65 \end{aligned}$$

The result in the relative sense (i.e. relative to mean) implies that under normal conditions there is a 99 percent chance that the loss of the portfolio will not exceed SR 8.07 million over a month. In the absolute sense (i.e. relative to zero) this amount is SR 7.65 million.

Estimating RAROC: An Example

Assume that a bank has funds of SR 500 million, of which SR 460million are deposits and the remaining SR 40 million equity (Step 2 below shows how this amount is determined). Say the bank pays an interest rate of 5 percent to the depositors. As capital is used for unexpected losses, it is invested in risk-free asset (like government bonds) that has a return of 6 percent. The institution invests its remaining liability in projects that yields an expected return of 10 percent. The average loss per annum is estimated at SR 5 million with the worst case loss of SR 45 million at 95 percent confidence interval. The annual operating costs of the bank is SR 10 million. Given this information, we can estimate the RAROC for the portfolio in the following steps.

1. Estimate Risk Adjusted Return (= Total Revenue – Total Cost – Expected Loss)

Total Revenue = Income from Investment + Income from Bonds

$$= 460 \times 0.10 + 40 \times 0.06 = 46 + 2.4 = 48.4$$

Total Cost = Payment to Deposits + Operating Costs

$$= 460 \times 0.05 + 10 = 23 + 10 = 33$$

Expected Loss = 5

$$\text{Risk Adjusted Return} = 48.4 - 33 - 5 = 10.4$$

2. Estimate Risk Capital (=Worst Case Loss – Expected Loss)

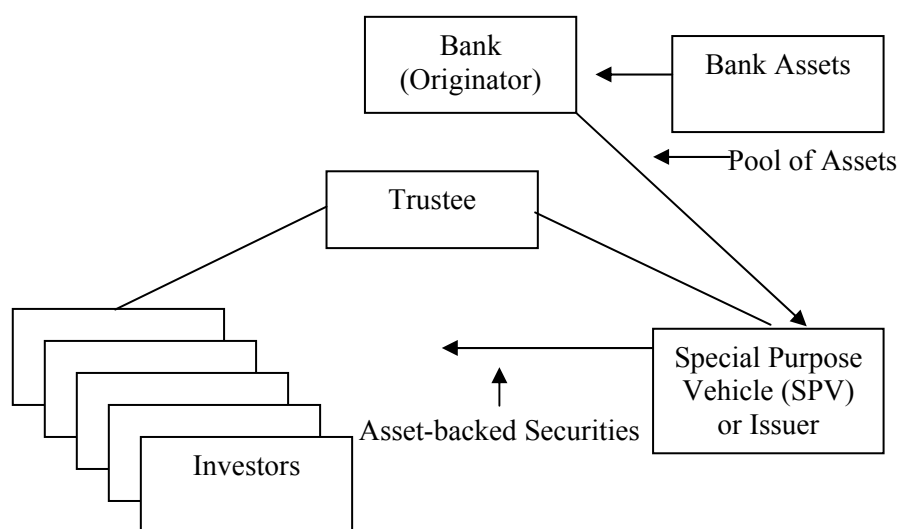
$$= 45 - 5 = 40$$

3. Estimate RAROC (=Risk Adjusted Return/Risk Capital) $\times 100$

$$= 10.4/40 \times 100 = 26 \text{ percent}$$

A RAROC of 26 percent means that the portfolio has an expected rate of return on equity of 26 percent.

Figure 2.3
Securitization Process



By pooling assets through securitization, a bank can diversify its credit risk exposure and reduce the need to monitor each individual asset's payment stream. Securitization also can be used to mitigate interest rate risk as a bank can harmonize the maturity of the assets to that of the liabilities by investing in a wide range of available securities. The process of securitization enables banks to transfer risky assets from its balance sheet to its trading book.

2.6.6. Derivatives

In recent years derivatives have been increasingly taking an important role not only as instruments to mitigate risks but also as sources of income generation. A derivative is an instrument whose value depends on the value of something else. The major categories of derivatives are futures, options, and swap contracts.¹⁸ Futures are forward contracts of standardized amounts that are traded in organized markets. Like futures, options are financial contracts of standardized amounts that give buyers (sellers) the right to buy (sell) without any obligation to do so. Swap involves agreement between two or more parties to exchange set of cash flows in the future according to predetermined specifications.

¹⁸ For a discussion on derivatives see Hull (1995) and Kolb (1997).

Recent years have witnessed the explosion of the use of derivatives. To understand the size of the derivatives in some perspective, we compare it with the global GDP. In 1999, when the world GDP stood at USD 29.99 trillion, the notional amount of global over-the-counter derivatives was USD 88.2 trillion. Of these, USD 60.09 trillion (or around 68 percent) were interest rate derivatives. Interest rate swaps accounted to USD 43.94 trillion or 73 percent of the interest contracts and around 50 percent of total notional value of derivatives.¹⁹ In this section we briefly outline the structure of two derivatives that have relevance to risk management in banking.

2.6.6.1. Interest-Rate Swaps

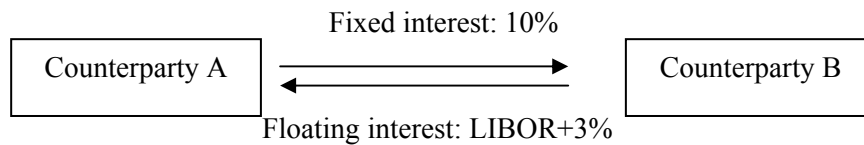
As mentioned above, interest rate swaps constitute almost half of the notional value of all derivatives. Interest rate swaps are used to mitigate the interest rate risk. Though interest rate swaps can take different types, we outline formats of two basic ones here.

The simplest of the interest rate (plain vanilla) swap involves two counterparties, one having an initial position in a fixed debt instrument and the other in a floating rate obligation. To understand why the two counterparties would be interested to swap their interest payments, assume that counterparty A is a financial institution that has to pay a floating interest on its liability (say it pays LIBOR+1 percent on its deposits). The counterparty, however, is locked in an asset that pays a fixed rate of interest for a certain number of years (say 10 percent on a 5-year mortgage). An increase in LIBOR can affect the income of the financial institution adversely. The counterparty B with the floating rate asset of LIBOR+3 percent is exposed to interest rate risk and wants to eliminate it. By swapping the interest payments on their assets, the counterparties can immune their earnings from movements in the interest rate. Note that at the end of the contract period, only the net difference of the interest payments takes place between the counterparties, as the principal involved on both sides of a swap is usually the same amount. The structure of an interest rate swap is shown in Figure 2.4.

¹⁹ Data on world income is taken from World Development Indicators (2001) and on derivatives from BCBS (2001c).

Figure 2.4

Interest Rate Swap



The other example of interest rate swap we provide is the one where parties raise funds at different rates. The swap is beneficial to parties even if one party can raise funds at higher rates than the other for different types of funds. The underlying concept of this swap contract is similar to that of theory of comparative advantage of trade. The objective of the swap is to exchange the costs of raising funds on the basis of comparative advantages. Table 2.1 shows an example. We observe that party B can raise both short and long-term funds at lower rates than party A. Party A, however, can raise short-term funds 0.50 percent cheaper than long-term funds and party B can raise long-term funds 0.25 percent cheaper than short-term funds. Say due to the asset structures, party A needs long-term funds and party B short-term. Party B can raise long-term funds at 2.5 percent (11.5%-9%) lower than party A. Party B can pay its own cost of raising short-term funds 9.25 percent less 0.25 percent (i.e., 9 percent) to party A. In this way B saves 0.25 percent on the cost of the funds of its own choice. Party A also saves 0.25 percent if it raises short term funds at (9.25%+ 1.75%) and pays 0.25 percent to party B (adding up to 11.25 percent), instead of paying 11.50 percent for raising long-term funds by its own. Both end up with a net financial gain as well as paying in consistency with their own asset and liability structures. Thus the principle of a swap is similar to that of free trade on the basis of comparative advantages. Since swaps are arranged in trillions of US dollars in real life, they are hence the practical manifestation of the theory of gains from comparative advantages under free trade.

Table 2.1
Comparative Advantages in Fund Raising

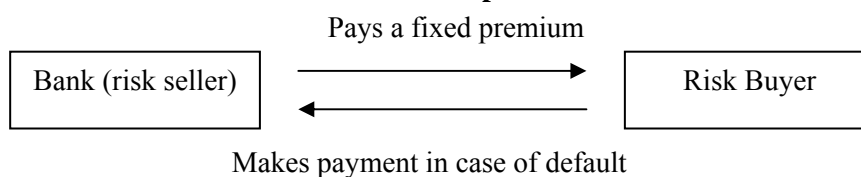
	Cost of raising long-term fixed rate funds %	Cost of raising short-term floating rate funds %	Cost difference %
Party A	11.50%	Benchmark rate (9.25%)+1.75	Can raise short-term funds .50% cheaper than long-term funds
Party B	9%	Benchmark rate i.e., 9.25%	Can raise long-term funds .25% cheaper than short-term funds
B competitive in both by	2.5%	1.75%	

2.6.6.2. Credit Derivatives

Credit derivatives are instruments used to trade credit risk. Credit derivatives may take different forms such as swaps, options, and credit linked notes.²⁰ The basic model involves the banks finding a counterparty that assumes the credit risk for a fee, while the bank itself retains the asset on its book. We outline the nature of a simple credit swap here. The purpose of the derivative is to provide default protection to the bank (risk seller) and compensation to the risk buyer for taking up the bank's credit risk. By paying a premium, the default risk of an asset is swapped for the promise of a full or partial payment if the asset defaults. Credit derivative can be implemented to deal with any part of the credit risk exposure, like the amount, maturity, etc. The structure of a credit swap is illustrated in Figure 2.6.

Figure 2.6

Credit Swap



2.7. ISLAMIC FINANCIAL INSTITUTIONS: NATURE AND RISKS

In order to understand the risks that Islamic financial institutions face, we first briefly discuss the nature of these institutions. To have the discussion in

²⁰ For a discussion on different types of credit derivatives, see Caouette et.al (1998, pp. 307-309) and Crouhy et.al (2001, pp. 448-61).

some perspective, we outline the types of conventional institutions. Financial intermediaries are broadly classified as depositary institutions, investment intermediaries, and contractual intermediaries. Commercial banks, forming bulk of the depositary institutions, specialize in intermediation obtaining most of its loanable funds from deposits of the public. Investment intermediaries offer liquid securities to the public for long-term investment. Investment intermediaries are *mutuals*, with customers being the owners who receive income in form of dividends and capital gains. Investment intermediaries typically invest in secondary markets and, as such, avail investors opportunities to hold securities of private and public institutions. Contractual intermediaries constitute insurance firms and pension funds.²¹

Iqbal et.al. (1998) distinguish two models of Islamic banks based on the structure of the assets.²² The first is the two-tier *Mudharabah* model that replaces interest by profit-sharing (PS) modes on both liability and asset sides of the bank. In particular, in this model all assets are financed by PS modes of financing (*Mudharabah*). This model of Islamic banking will also take up the role of an investment intermediary, rather than being a commercial bank only (Chapra 1985, p. 154). The second model of Islamic banking is the one-tier *Mudharabah* with multiple investment tools. This model evolved because Islamic banks faced practical and operational problems in using profit-sharing modes of financing on the asset side. As a result, they opted for fixed-income modes of financing. As mentioned earlier, fixed-income instruments include *Murabahah* (cost-plus or mark-up sale), installment sale (medium/long-term *Murabahah*), *Istisna'*/ *Salam* (object deferred sale or pre-paid sale) and *Ijarah*.²³

Islamic banking offers financial services by complying with the religious prohibition of *Riba*. *Riba* is a return (interest) charged in a loan (*Qard Hasan*) contract. This religious injunction has sharpened the differences between current accounts (interest free loans taken by owners of the Islamic bank) and

²¹ Depending on the regulatory framework of a specific country, financial institutions may perform different functions. For example, universal banks are consolidated institutions providing different financial services that may include intermediation, investment management, insurance, brokerage, and holding equity of non-financial firms (Heffernan 1996). A simple case of universal bank is in which the liability is the same as commercial banks, but the asset side differs. While the assets of commercial banks are in form of loans only, universal banks can hold equity along with loans. By holding equity positions, universal banks can essentially get involved in the decision making and management of the firm.

²² Iqbal, et.al. (1998) mention three models, the third one being the case where Islamic banks work as agent (*wakeel*), managing funds on behalf of clients on basis of fixed commission.

²³ For a discussion on these modes of financing see Ahmad (1993), Kahf and Khan (1992), and Khan (1991).

investment deposits (*Mud^arabah* funds). In the former case, the repayment on demand of the principal amount is guaranteed without any return. The owners of current accounts do not share with the bank in its risks. In case of investment deposits, neither the principal nor a return is guaranteed. Investment accounts can be further classified as restricted and unrestricted, the former having restrictions on assets that the funds can be used for and on withdrawals before maturity date. The owners of investment accounts participate in the risks and share in the bank's profits on *pro rata* basis. The contracts of *Qard^h Hasan* and *Mud^arabah* are thus the fundamental pillars of Islamic banking and their characteristics must fully be protected for the preservation of the uniqueness of Islamic banks.

The Islamic bank described above appears to have characteristics of both an investment intermediary and a commercial bank. The ownership pattern of the Islamic bank resembles that of a commercial bank as the depositors do not own the bank and do not have voting rights. In Islamic finance parlance, this means while *Mush^aarakah* contract characterizes the equity owners, deposits take the form of *Mud^arabah* contracts.²⁴ An Islamic bank, however, has similarities with an investment intermediary as it shares the profit generated from its operations with those who hold investment accounts. After paying the depositors a share of the profit, the residual net-income is given out to the shareholders as dividends.

Using profit-sharing modes in Islamic banks changes the nature of risks these institutions face. The returns on saving/investment deposit are state contingent. As the depositors are rewarded on a profit-loss sharing (PLS) method, they share the business risks of the banking operations of the bank. The profit/loss sharing feature of these depositors introduces some other risks. Furthermore, the use of Islamic modes of financing on the asset sides changes the nature of traditional risks. We outline the nature of risks that Islamic banks face and risks inherent in different modes of financing below.

2.7.1. Nature of Risks faced by Islamic Banks

Credit Risk: Credit risk would take the form of settlement/payment risk arising when one party to a deal pays money (e.g. in a *Salam* or *Istisna'* contract) or delivers assets (e.g., in a *Mur^abahah* contract) before receiving its own assets or cash, thereby, exposing it to potential loss. In case of profit-sharing modes of

²⁴ One difference between *Mush^aarakah* and *Mud^arabah* is that while in the former case the financier also has a role in management of the project, it does not in the latter case.

financing (like *Mud~~a~~rabah* and *Mush~~a~~arakah*) the credit risk will be non-payment of the share of the bank by the entrepreneur when it is due. This problem may arise for banks in these cases due to the asymmetric information problem in which they do not have sufficient information on the actual profit of the firm. As *Mur~~a~~bah* contracts are trading contracts, credit risk arises in the form of counterparty risk due to nonperformance of a trading partner. The non-performance can be due to external systematic sources.

Benchmark Risk: As Islamic banks do not deal with interest rate, it may appear that they do not have market risks arising from changes in the interest rate. Changes in the market interest rate, however, introduce some risks in the earnings of Islamic financial institutions. Financial institutions use a benchmark rate, to price different financial instruments. Specifically, in a *Mur~~a~~bah* contract the mark-up is determined by adding the risk premium to the benchmark rate (usually the LIBOR). The nature of fixed income assets is such that the mark-up is fixed for the duration of the contract. As such if the benchmark rate changes, the mark-up rates on these fixed income contracts cannot be adjusted. As a result Islamic banks face risks arising from movements in market interest rate.

Liquidity Risk: As mentioned above, liquidity risk arises from either difficulties in obtaining cash at reasonable cost from borrowings or sale of assets. The liquidity risk arising from both sources is critical for Islamic banks. As interest based loans are prohibited by Shari[ah, Islamic banks cannot borrow funds to meet liquidity requirement in case of need. Furthermore, Shari[ah does not allow the sale of debt, other than its face value. Thus, to raise funds by selling debt-based assets is not an option for Islamic financial institutions.

Operational Risk: Given the newness of Islamic banks, operational risk in terms of person risk can be acute in these institutions. Operational risk in this respect particularly arises as the banks may not have enough qualified professionals (capacity and capability) to conduct the Islamic financial operations. Given the different nature of business the computer software available in the market for conventional banks may not be appropriate for Islamic banks. This gives rise to system risks of developing and using informational technologies in Islamic banks.

Legal Risk: Given the different nature of financial contracts, Islamic banks face risks related to their documentation and enforcement. As there are no standard form of contracts for various financial instruments, Islamic banks

prepare these according to their understanding of the Shari[ah, the local laws, and their needs and concerns. Lack of standardized contracts along with the fact that there are no litigation systems to resolve problems associated with enforceability of contracts by the counterparty increases the legal risks associated with the Islamic contractual agreements.

Withdrawal Risk: A variable rate of return on saving/investment deposits introduces uncertainty regarding the real value of deposits. Asset preservation in terms of minimizing the risk of loss due to a lower rate of return may be an important factor in depositors' withdrawal decisions. From the bank's perspective, this introduces a 'withdrawal risk' that is linked to the lower rate of return relative to other financial institutions.

Fiduciary Risk: A lower rate of return than the market rate also introduces fiduciary risk, when depositors/investors interpret a low rate of return as breaching of investment contract or mismanagement of funds by the bank (AAOIFI 1999). Fiduciary risk can be caused by breach of contract by the Islamic bank. For example, the bank may not be able to fully comply with the Shari[ah requirements of various contracts. While, the justification for the Islamic banks' business is compliance with the Shari[ah, an inability to do so or not doing so willfully can cause a serious confidence problem and deposit withdrawal.

Displaced Commercial Risk: This risk is the transfer of the risk associated with deposits to equity holders. This arises when under commercial pressure banks forgo a part of profit to pay the depositors to prevent withdrawals due to a lower return (AAOIFI 1999). Displaced commercial risk implies that the bank though may operate in full compliance with the Shari[ah requirements, yet may not be able to pay competitive rates of return as compared to its peer group Islamic banks and other competitors. Depositors will again have the incentive to seek withdrawal. To prevent withdrawal, the owners of the bank will need to apportion part of their own share in profits to the investment depositors.

2.7.2. Unique Counterparty Risks of Islamic Modes of Finance

In this section we discuss some of the risks inherent in some Islamic modes of financing.

2.7.2.1. *Murābahah* Financing

Murābahah is the most predominantly used Islamic financial contract. If the contract is standardized its risk characteristics can be made parable to interest-based financing. Based on similarity in risk characteristics of the contract with the risk characteristics of interest-based contracts, *Murābahah* is approved to be an acceptable mode of finance in a number of regulatory jurisdictions. However, such a standardized contract may not be acceptable to all *Fiqh* scholars. Moreover, as the contract stands at present, there is a lack of complete uniformity in *Fiqh* viewpoints. The different viewpoints can be a source of counterparty risks as a result of the atmosphere of an ineffective litigation.

The main point in this regard stems from the fact that financial *Murābahah* is a contemporary contract. It has been designed by combining a number of different contracts. There is a complete consensus among all *Fiqh* scholars that this new contract has been approved as a form of deferred trading. The condition of its validity is based on the fact that the bank must buy (become owner) and after that transfer the ownership right to the client. The order placed by the client is not a sale contract but it is merely a promise to buy. According to the OIC *Fiqh* Academy Resolution, a promise can be binding on one party only. OIC *Fiqh* Academy, AAOIFI, and most Islamic banks treat the promise to buy as binding on the client. Some other scholars, however, are of the opinion that the promise is not binding on the client; the client even after putting an order and paying the commitment fee can rescind from the contract. The most important counterparty risk specific to *Murābahah* arises due to this unsettled nature of the contract, which can pose litigation problems.

Another potential problem in a sale-contract like *Murābahah* is late payments by the counterparty as Islamic banks cannot, in principle, charge anything in excess of the agreed upon price. Nonpayment of dues in the stipulated time by the counterparty implies loss to banks.

2.7.2.2 *Salam* Financing

There are at least two important counterparty risks in *Salam*. A brief discussion of these risks is provided here.

- i. The counterparty risks can range from failure to supply on time or even at all, and failure to supply the same quality of good as contractually agreed. Since *Salam* is an agricultural based contract, the counterparty

risks may be due to factors beyond the normal credit quality of the client. For example, the credit quality of the client may be very good but the supply may not come as contractually agreed due to natural calamities. Since agriculture is exposed to catastrophic risks, the counterparty risks are expected to be more than normal in *Salam*.

- ii. *Salam* contracts are neither exchange traded nor these are traded over the counter. These contracts are written between two parties to a contract. Thus all the *Salam* contracts end up in physical deliveries and ownership of commodities. These commodities require inventories exposing the banks to storage costs and other related price risk. Such costs and risks are unique to Islamic banks.

2.7.2.3 *Istiṣnāʿ* Financing

While extending *Istiṣnāʿ* finance the bank exposes its capital to a number of specific counterparty risks. These include for example:

- i. The counterparty risks under *Istiṣnāʿ* faced by the bank from the supplier's side are similar to the risks mentioned under *Salam*. There could be a contract failure regarding quality and time of delivery. However, the object of *Istiṣnāʿ* is more in the control of the counterparty and less exposed to natural calamities as compared to the object of *Salam*. Therefore, it can be expected that the counterparty risk of the sub-contractor of *Istiṣnāʿ* although substantially high, is lesser severe as compared to that of the *Salam*.
- ii. The default risk on the buyer's side is of the general nature, namely, failure in paying fully on time.
- iii. If the *Istiṣnāʿ* contract is considered optional and not binding as the fulfillment of conditions under certain *Fiqhī* jurisdictions may need, there is a counterparty risk as the supplier maintains the option to rescind from the contract.
- iv. Considering that like the client in the *Murabahah* contract, if the client in the *Istiṣnāʿ* contract is given the option to rescind from the contract and decline acceptance at the time of delivery, the bank will be exposed to additional risks.

These risks exist because, an Islamic bank while entering into an *Istiṣnāʿ* contract assumes the role of a builder, a constructor, a manufacturer and

supplier. Since the bank does not specialize in these traits, it relies on subcontractors.

2.7.2.4. *Mushārahah* - *Muḍārahah* (M-M) Financing

Many academic and policy oriented writings consider that the allocation of funds by the Islamic banks on the basis of the *Mushārahah* and *Muḍārahah* is preferable as compared to the fixed return modes of *Murābahah*, leasing and *Istisnāʿ*. But in practice the Islamic banks' use of the M-M modes is minimal. This is considered to be due to the very high credit risk involved²⁵.

The credit risk is expected to be high under the M-M modes due to the fact that there is no collateral requirement, there is a high level of moral hazard and adverse selection and banks' existing competencies in project evaluation and related techniques are limited. Institutional arrangements such as tax treatment, accounting and auditing systems, regulatory framework are all not in favor of a larger use of these modes by banks.

One possible way to reduce the risks in profit sharing modes of financing is for Islamic banks to function as universal banks. Universal banks can hold equity along with loans. In case of Islamic banks this would imply financing using *Mushārahah* mode. Before investing in projects on this basis, however, the bank needs to do a thorough feasibility study. By holding equity positions, universal banks can essentially get involved in the decision making and management of the firm. As a result, the bank will be able to monitor the use of funds by the project more closely and reduce the moral hazard problem.

Some economists however, argue that banks by not opting for these modes are actually not benefiting from portfolio diversification and hence taking more risks rather than avoiding risks. Moreover, the use of M-M modes on both sides of the banks' balance sheets will actually enhance systemic stability as any shocks on the asset side will be matched by an absorption of the shock on the deposit side. It is also argued that incentive compatible contracts can be formulated which can reduce the effect of moral hazard and adverse selection. However, these arguments ignore the fact that banks basically specialize in optimizing credit portfolios not optimizing in credit and equity portfolios. Furthermore, since the Islamic banks' use of current accounts on the liability side is very high, the shocks on the assets side cannot be absorbed by these

²⁵ Credit risk in context of these modes is similar to the common notion of not receiving the funds back on time or fully.

accounts on the liability side. Hence greater use of M-M on the asset side could actually cause a systemic instability given the large current accounts utilized by the Islamic banks.

III

RISK MANAGEMENT: A SURVEY OF ISLAMIC FINANCIAL INSTITUTIONS

3.1. INTRODUCTION

This chapter examines different aspects of risk management issues in Islamic financial institutions (FIs). Results from a survey based on questionnaires and field level interviews with Islamic bankers are reported. Questionnaires were sent to 68 Islamic financial institutions in 28 countries and the authors visited Bahrain, Egypt, Malaysia and the UAE to discuss issues related to risk management with the officials of the Islamic financial institutions. A total of 17 questionnaires were received from 10 countries. The financial institutions that responded and included in the study are given in Appendix 1.

Before discussing risk management related issues, we report averages of some basic balance sheet data on Table 3.1. The average value of assets of 15 Islamic financial institutions stands at US\$ 494.2 million with a capital of US\$ 73.4 million.²⁶ The average capital/asset ratio of these institutions stands at 32.5 percent. This ratio is relatively large due to the inclusion of investment banks that have higher capital/asset ratio. The lower section of the table shows the term structure of assets. A large percentage of the assets (68.8 percent) of the financial institutions have short-term maturity (of less than a year), 9.8 percent have maturity between 1 to 3 years, and the remaining 31.4 percent are invested in assets that are invested assets that mature after three years.

Table 3.1

Basic Balance Sheet Data (1999-2000)

	Number of Observations	Average
Assets (Million US\$)	15	494.2
Capital (Million US\$)	15	73.4
Capital/Asset Ratio (Percentage)	15	32.5
<i>Maturity of Assets</i>		
Less than 1 year(Percentage of Assets)	12	68.8
1-3 years ^a	12	9.8
More than 3 years	12	21.4

a-One financial institution reports term structure for 1-5 years.

²⁶ The data for the IDB was not included in these estimations, as given its size and nature, it would bias the results.

The questions related to risk management issues in the questionnaire can be broadly divided into two types. The first set of questions relates to perceptions of the bankers related to different issues. They were asked to identify the severity of different problems that their institutions faced on a scale of 1 to 5, with 1 indicating “Not Serious” and 5 implying “Critically Serious”. We report the average ranks of the available responses. Note that these rankings are indicative of the relative risk perceptions of the bankers and do not mean anything in the absolute sense. The second type of questions had either affirmative/negative answers or are marked with an × if applicable. In these cases we report the number of institutions in our sample that were marked to be affirmative answers. The remaining answers were either negative or left unanswered. One possible reason for abstention is that the question might not have been relevant to the institution. For example, FIs not engaged in certain modes of financing (like *Salam* and diminishing *Musharakah*) may not have responded to questions related to these instruments. Similarly, banks that are operating only in the domestic economy are not exposed to exchange rate or country risks and may have ignored questions related to these issues. For some questions, however, multiple answers are possible. In these cases, it is possible that the percentage of affirmative responses may add up to be greater than 100.

The results from the survey are discussed into three sections. The first section examines the risk perceptions of the Islamic financial institutions. Given the different nature of Islamic banks, the risks faced by these institutions are identified and ranked according to their severity. The second section scrutinizes different aspects of the risk management system and process in Islamic financial institutions. To do so, we divide discussion into the three constituents of risk management process outlined in Chapter 2. The third section discusses some other issues related to risk management in Islamic financial institutions.

3.2. RISK PERCEPTIONS

The nature of Islamic banks is different from that of conventional interest-based banks, mainly due to the profit-sharing features and modes of financing used. This changes the kind of risks that these institutions face. In this section, we report some perspectives of Islamic bankers regarding the risks that their institutions face.

3.2.1. Overall Risks faced by Islamic Financial Institutions

Table 3.2 reports the average rankings of different kinds to risks faced by Islamic FIs. Note that the rank has a range of 1 to 5, the former indicating “Not serious” and the latter implying “Critically Serious”. It appears that Islamic bankers rank the mark-up (interest rate) risk as the most critical risk they face (3.07) followed by operational risk (2.92), and liquidity risk at 2.71. While credit risk is the risk that most FIs deal with, they do not rank this risk as severe as these risks (2.71). Among the risks listed, Islamic FIs consider market risk to be the least risky (2.50).

The reasons for considering mark-up risk the highest may be that Islamic debt contracts (like *Murabahah*) cannot be repriced and cannot use swaps to transfer this risk. Operational risk may have been ranked high because given the new nature of Islamic banking a lot of the issues related to the operations need to be instituted. These include training of employees, creating computer programs and legal documents, etc. Liquidity risk is also ranked higher than credit risk due to the lack of money market instruments to manage liquidity. One reason of a relatively low credit risk may be that with asset or commodity based financing that most Islamic FIs use, this risk is minimized as the asset/commodity serves as collateral.

Table 3.2

Risk Perception-Overall Risks Faced by Islamic Financial Institutions

	Number of Relevant Responses	Average Rank*
Credit Risk	14	2.71
Mark-up Risk	15	3.07
Liquidity Risk	16	2.81
Market Risk	10	2.50
Operational Risk	13	2.92

*The rank has a scale of 1 to 5, with 1 indicating ‘Not Serious’ and 5 denoting ‘Critically Serious’.

Market risk is incurred on instruments like commodities and equities traded in well-traded markets appears to be least risky. This risk arising from movements in the prices of goods/securities are usually a part of the trading book of a bank. On the banking book, conventional banks trade in bonds to keep a part of their assets in liquid money-market instruments. As the majority of the Shari[ah scholars forbid the sale of debt, trading in bonds almost nonexistent in

Islamic FIs.²⁷ Islamic banks, however, can trade in commodities and assets backed securities. The latter securities are scant, leaving only trading in commodities that can be as a source of market risk for Islamic FIs. As not too many banks are involved in commodity trading, this may be a reason for a low ranking of market risk by Islamic FIs.

3.2.2. Risks in Different Modes of Financing

Table 3.3 reports the Islamic bankers' viewpoints on different kinds of risks inherent in various Islamic modes of financing. The results of these risks are discussed below.

Table 3.3
Risk Perception-Risks in different Modes of Financing

	Credit Risk	Mark-up Risk	Liquidity Risk	Operational Risk
<i>Murabalah</i>	2.56 (16)	2.87 (15)	2.67 (15)	2.93 (14)
<i>Mudarabah</i>	3.25 (12)	3.0 (11)	2.46 (13)	3.08 (12)
<i>Musharakah</i>	3.69 (13)	3.4 (10)	2.92 (12)	3.18 (11)
<i>Ijarah</i>	2.64 (14)	2.92 (12)	3.1 (10)	2.9 (10)
<i>Istisna'</i>	3.13 (8)	3.57 (7)	3.0 (6)	3.29 (7)
<i>Salam</i>	3.20 (5)	3.50 (4)	3.20 (5)	3.25 (4)
Diminishing <i>Musharakah</i>	3.33 (6)	3.4 (5)	3.33 (6)	3.4 (5)

Note: The numbers in parentheses indicates the number of respondents.

*The rank has a scale of 1 to 5, with 1 indicating 'Not Serious' and 5 denoting 'Critically Serious'.

Credit Risk

Credit risk appears to be the least in *Murabalah* (2.56) and the most in *Musharakah* (3.69) followed by diminishing *Musharakah* (3.33) and *Mudarabah* (3.25). It appears that profit-sharing modes of financing are perceived to have higher credit risk by the bankers. Note that credit risk in case of profit-sharing modes of financing arises if the counterparties do not pay the banks their due

²⁷ A form of debt-based bonds exists in Malaysia.

profit-share. Furthermore, this amount is not known to banks *ex ante*. *Ijarah* ranks as second (2.64) after *Murabahah* as having the least credit risks. Like the *Murabahah* contract, *Ijarah* contract gives the banks a relatively certain income and the ownership of the leased asset remains with the bank. *Istisna'* and *Salam* ranked at 3.13 and 3.20 respectively are relatively more risky. These product-deferred modes of financing are perceived to be riskier than price-deferred sale (*Murabahah*). This may arise as the value of the product (and hence the return) at the end of the contract period is uncertain. There are chances that the counterparty may not be able to deliver the goods on time. This may arise to different reasons like natural disasters (for commodities in a *Salam* contract) and production failure (for products in *Istisna'* contract). Even if the good is delivered, there can be uncertainty regarding the price of the good upon delivery affecting the rate of return.

The results on credit risk give some insight to the composition of instruments in Islamic banks. We have noted earlier, Islamic banks' assets are concentrated in fixed-income assets (like *Murabahah* and *Ijarah*). The results from the survey indicate that one explanation for the concentration of assets in fixed income assets may be that these instruments are perceived as having the least credit risk among the Islamic modes of financing. As banks business is to take up and manage credit risks, Islamic banks do not opt for other profit-sharing modes of financing (like *Mudarabah* and *Musharakah*) as they regard these instruments to be relatively more risky.

Mark-up Risk

Table 3.3 shows that mark-up risk ranked highest in terms of severity in product-deferred contracts of *Istisna'* (3.57) and *Salam* (3.5), followed by profit-sharing modes of financing of *Musharakah* and diminishing *Musharakah* (ranked at 3.4) and *Mudarabah* (3.0).²⁸ *Murabahah* is considered to have the least mark-up risk (2.87) followed by *Ijarah* (2.92). Mark-up (interest rate) risk tends to be higher in long-term instruments with fixed rates. One reason for higher concern of mark-up risk in *Istisna'* may be that these instruments are usually of long-term nature. This is particularly true for real estate projects. The contracts are tied up to a certain mark-up rate and changes in the interest rate expose these contracts to risks. *Murabahah* shows the least risk as this mode of

²⁸ Mark-up risk can appear in profit sharing modes of financing like *Mudarabah* and *Musharakah* as profit-sharing ratio depends on, among others, a benchmark rate like LIBOR. For a discussion on the determining profit-sharing ratio see Ahmed (2002).

financing is usually short-term. After *Murabahah*, *Ijarah* is conceived to have relatively less mark-up risk. Even though *Ijarah* contracts may be of long-term, the return (rent) on these contracts can be adjusted to reflect market conditions. Among the profit-sharing modes of financing, the Islamic bankers rank *Musharakah* and diminishing *Musharakah* relatively higher as these are usually longer-term engagements. *Mudarabah* is usually used for short-term financing and has a lower mark-up risk than these two instruments.

Liquidity Risk

Liquidity risk of instruments will be smaller if the assets can be sold in the markets and/or have short-term maturity. The bankers consider *Mudarabah* to have the least liquidity risk (2.46) followed by *Murabahah* (2.67). Note that both of these instruments are usually used for short term financing. Other instruments are perceived as relatively more risky, with diminishing *Musharakah* showing the highest liquidity risk (with a rank of 3.33) and product-deferred instruments of *Salam* and *Istisna'* closely following at 3.2 and 3.0 respectively. *Ijarah* is also perceived to have a relatively higher liquidity risk (3.1).

Operational Risk

As mentioned above, operational risk can arise from different sources. Some aspects relevant to operational risk in Islamic banks are the legal risk involved in contracts, the understanding of the modes of financing by employees, producing computer programs and legal documents for different instruments, etc. The rankings showing the operational risk for different instruments should include these concerns. It appears that operational risk is lower in fixed income assets of *Murabahah* and *Ijarah* (2.93 and 2.9 respectively) and one of the highest in product-deferred sale contracts of *Salam* and *Istisna'* (3.25 and 3.29). Profit-sharing modes of financing of *Mudarabah* and *Musharakah* follow close with ranks of 3.08 and 3.18 respectively. Operational risk is highest in diminishing *Musharakah* (3.4). The relatively higher rankings of the instruments indicate that banks find these contracts complex and difficult to implement.

3.2.3. Additional Issues regarding Risks faced by Islamic Financial Institutions

Table 3.4 shows the Islamic bankers' viewpoints on some specific risk related issues related to Islamic FIs. Given that the Islamic banking is a relatively new industry, the Islamic bankers are of the view that there is a lack of understanding of the risks involved in Islamic modes of financing. They rank the gravity of this problem at 3.82. As the rates of returns on deposits in Islamic banks are based on profit sharing, this imposes certain risks on the liability side of the balance sheet. Even though returns on deposits can vary, Islamic banks are under pressure to give the depositors return similar to that of other banks. They rank this concern at 3.64. This factor is important as a lower return than that given by other banks leads to two additional risks. First, the withdrawal risk that can result from a lower rate of return is considered serious as shown by its ranking of 3.64. The banks also regard fiduciary risk, in which the depositors blame the bank for a lower rate of return, serious with a rank of 3.21.

Table 3.4
Risk Perception-Additional Issues regarding Risks faced by Islamic Financial Institutions

	No. of Relevant Responses	Average Rank*
1. Lack of understanding of risks involved in Islamic modes of financing.	17	3.82
2. The rate of return on deposits has to be similar to that offered by other banks.	14	3.64
3. Withdrawal Risk: A low rate of return on deposits will lead to withdrawal of funds	14	3.64
4. Fiduciary Risk: Depositors would hold the bank responsible for a lower rate of return on deposits	14	3.21

*The rank has a scale of 1 to 5, with 1 indicating 'Not Serious' and 5 denoting 'Critically Serious'.

Note that most of the rankings in Table 3.4 that Islamic bankers assign to specific risks faced by their institutions are higher than all the rankings of traditional risks that financial institutions face (as reported in Table 3.2). To have some indication of this we compare the averages of these specific risks faced by Islamic banks (Table 3.4) with that of the traditional risks (Table 3.2). The average for the former is 3.58 while it is 2.80 for the latter. Thus, Islamic banks not only face some risks that are different from conventional banks, but there is a feeling that these risks are more serious and not well understood. This

calls for more research in risk related issues in Islamic FIs to understand and manage these risks.

Islamic financial institutions have also identified other risks that they face. At the government level, these include legal aspects and taxes (e.g., taxes on interest, leases, *Murabahah* profit, and services). At the central bank level, additional risks include those arising central bank regulations and legislation, no Islamic window for borrowing in terms of need. Other risks pointed are those arising from Shari[ah, non-availability of short-term funds foreign exchange, natural disasters, specific industries, domestic economy and politics, and international financial and market environment.

3.3. RISK MANAGEMENT SYSTEM AND PROCESS

As discussed in Chapter 2, the system and process of risk management has three main constituents. We discuss the risk management practices of Islamic financial institutions under these three heads below. As mentioned above, we report the affirmative answers given to different questions by the institutions in the sample.

3.3.1. Establishing Appropriate Risk Management Environment and Sound Policies and Procedures

Table 3.5 reports some aspects of establishing a risk management environment. While 13 institutions (76.5 percent) of the institutions have a formal risk management system in place, 16 (94.1 percent) institutions have a section/committee responsible for identifying, monitoring and controlling various risks. The same number of institutions (16) have internal guidelines, rules and concrete procedures related to risk management. In the sample, 13 (76.5 percent) banks have a clear policy of promoting asset quality and 14 (82.4 percent) of them have guidelines that are used for loan approvals. Only 12 banks (70.6 percent) determine the mark-up rates on loans by taking account of the loan grading or the risks of the counterparty.

Table 3.5

Establishing an Appropriate Risk Management Environment, Policies and Procedures

	No. of Affirmative Responses	Percentage of Total
1. Do you have a formal system of Risk Management in place in your organization?	13	76.5
2. Is there a section/committee responsible for identifying, monitoring, and controlling various risks?	16	94.1
3. Does the bank have internal guidelines/rules and concrete procedures with respect to the risk management system?	16	94.1
4. Is there a clear policy promoting asset quality?	13	76.5
5. Has the bank adopted and utilized guidelines for a loan approval system?	14	82.4
6. Are mark-up rates on loans set taking account of the loan grading?	12	70.6

3.3.2. Maintaining an Appropriate Risk Measurement, Mitigating, and Monitoring Process

Table 3.6 shows the number of affirmative responses to some issues related to risk measurement and mitigating process. A relatively small number of Islamic banks in the sample (41.2 percent) have a computerized support system to estimate the variability of earnings for risk management purposes. The main risk faced by banks is credit risk. To mitigate this risk majority of the banks (94.1 percent) has credit limits for individual counterparty and 13 institutions (76.5 percent) have a system for managing problem loans. Most banks have a policy of diversifying investments across sectors and industries (88.2 percent and 82.4 percent respectively). A smaller number of banks (64.7 percent) diversify their investments across countries. This lower number may reflect the fact that some banks operate only domestically. To measure and manage liquidity risk, 12 institutions (70.6 percent) compile maturity ladder chart to monitor cash flows and gaps. To measure benchmark or interest rate risk, a small fraction of the institutions (only 29.4 percent) use simulation analysis. Around three-quarters of the banks (76.5 percent) have a regular reporting system on risk management for senior management.

Table 3.6**Maintaining an Appropriate Risk Measuring, Mitigating, and Monitoring Process**

	No. of Affirmative Responses	% of Total
1. Is there a computerized support system for estimating the variability of earnings and risk management?	7	41.2
2. Are credit limits for individual counterparty set and are these strictly monitored?	16	94.1
3. Does the bank have a policy of diversifying investments across:		
a. Different countries	11	64.7
b. Different sectors (like manufacturing, trading etc.)	15	88.2
c. Different Industries (like airlines, retail, etc.)	14	82.4
4. Does the bank have in place a system for managing problem loans?	13	76.5
5. Does the bank regularly (e.g. weekly) compile a maturity ladder chart according to settlement date and monitor cash position gaps?	12	70.6
6. Does the bank regularly conduct simulation analysis and measure benchmark (interest) rate risk sensitivity?	5	29.4
7. Does the bank have in place a regular reporting system regarding risk management for senior officers and management?	13	76.5

Table 3.7 shows the different risk reports that the banks in the sample produce. Note that a few institutions have indicated that they may not have separate risk reports as indicated in the table, but may prepare report(s) that may include information on some of these risks. The table shows that the most widely used report in the Islamic banks is liquidity risk report with 13 banks (76.5 percent) producing these, followed by credit risk report (70.6 percent). The operational risk reports are least used with only 3 institutions (17.6 percent) producing these. Few institutions produce interest rate reports (23.5 percent) and aggregate market risk report (29.4 percent). While 11 Islamic banks in the sample (64.7 percent) have capital at risk report 10 banks (58.8 percent) produce commodities and equities position risk reports, relatively fewer institutions prepare foreign exchange and country risk reports (41.2 percent and 35.3 percent respectively). One reason for these low numbers may be that some countries operate domestically only and as such are not exposed to either foreign exchange or country risks.

Table 3.7

Maintaining an Appropriate Risk Measuring, Mitigating, and Monitoring Process-Risk Reports

	No. of Affirmative Responses	Percentage of Total
1. Capital at Risk Report	11	64.7
2. Credit Risk Report	12	70.6
3. Aggregate Market Risk Report	5	29.4
4. Interest Rate Risk Report	4	23.5
5. Liquidity Risk Report	13	76.5
6. Foreign Exchange Risk Report	7	41.2
7. Commodities & Equities Position Risk Report	10	58.8
8. Operational Risk Report	3	17.6
9. Country Risk Report	6	35.3

Some financial institutions produce other specific risk reports not included in Table 3.7 above. These include Compliance Risk Report, Bad and Doubtful Receivables Report, Monthly Progress Report, Defaulting Cases Report, and Related Party Exposure Report.

Table 3.8 exhibits different risk measuring and mitigation techniques used by Islamic banks. There may be a variety of formats in which these techniques can be used, ranging from very simple analysis to sophisticated models. The most common risk measuring and managing technique is the credit ratings of prospective investors used by 76.5 percent of the institutions in the sample. Around 65 percent of the institutions use internal rating system for these ratings.²⁹ Maturity matching analysis to mitigate liquidity risks is used by 10 institutions (58.8 percent). While more than half of the institutions (52.9 percent) estimate worst case scenarios, 47.1 percent of them use duration analysis to estimate interest rate risk and risk adjusted rate of return on capital (RAROC) to determine the overall risk. Seven banks (41.2 percent) in the sample use different types of Earnings at Risk, Value at Risk. Only 29.4 percent of the banks use simulation techniques to assess different risks.

²⁹ The internal rating system is used by large commercial banks to determine the economic capital they should hold as insurance against losses. BIS (2001) is trying to introduce the internal rating system to determine the capital requirements of banks in its new standards (see, section four). The internal rating system which the Islamic banks have reported using can be considered as a simple listing of assets in accordance with their quality particularly, for provisioning loan loss reserves.

Table 3.8
Maintaining an Appropriate Risk Measuring, Mitigating, and Monitoring
Process-Measuring and Management Techniques

	No. of Affirmative Responses	Percentage of Total
1. Credit Ratings of Prospective Investors	13	76.5
2. Gap Analysis	5	29.4
3. Duration Analysis	8	47.1
4. Maturity Matching Analysis	10	58.8
5. Earnings at Risk	7	41.2
6. Value at Risk	7	41.2
7. Simulation techniques	5	29.4
8. Estimates of Worst Case scenarios	9	52.9
9. Risk Adjusted Rate of Return on Capital (RAROC)	8	47.1
10. Internal Rating System	11	64.7

The banks indicate the use of some other techniques not listed in Table 3.8 above. These include analysis of the collateral, sector and market exposure of debtors, lending, risk analysis, measuring the effect of price of a particular commodity (like oil) and global stock market on borrower.

Table 3.9 focuses on the monitoring aspects of risk management. Note that there can be more than one answer to the questions so the sum of the percentages (given in parenthesis) may exceed 100.³⁰ Almost 70 percent of the banks reappraise the collateral regularly and 29.4 percent of them do so occasionally. A large percentage of the banks (82.4 percent) also confirm a guarantor's intention to guarantee loans regularly. One institution reviews such guarantee occasionally. For institutions engaged in international investments, 8 (47.1 percent) review the country ratings regularly, 3 (17.7 percent) do so occasionally and 1 bank does not review these ratings at all. Note that specific question on reserve provision for losses was omitted in the questionnaire. Though most Islamic banks have excess reserves, the information on RAROC indicates about half of these institutions estimate risk capital to account for unexpected losses.

While a significant number of banks (76.5 percent) use international accounting standards, only 64.7 percent of them use AAOIFI standards. Five institutions report using other accounting standards, mainly national ones. The

³⁰ Five institutions had more than one answer. The bank can have more than one answer as they may take different approaches depending on the asset type and the tenure of the contract.

frequency of assessing profit and loss positions is daily for 7 (41.2 percent) institutions, weekly for 4 (23.5 percent) banks and monthly for almost 70 percent of the banks.

Table 3.9

Maintaining an Appropriate Risk Measuring, Mitigating, and Monitoring Process- Risk Monitoring

	Regularly	Occasionally	Never
1. Does the bank periodically reappraise collateral (asset)?	12 (70.6%)	5 (29.4%)	
2. Does the bank confirm a guarantor's intention to guarantee loans with a signed document?	14 (82.4%)	1 (5.9%)	
3. If loans are international, does the bank regularly review country ratings?	8 (47.1%)	3 (17.7%)	1 (5.9%)
4. Does the bank monitor the borrower's business performance after loan extension?	12 (70.6%)	2 (11.8%)	
	International	AAOIFI	Other
5. Does the accounting standards used by the bank comply with the following standards?	13 (76.5%)	11 (64.7%)	5 (29.4%)
	Daily	Weekly	Monthly
6. Positions and Profits/Losses are assessed?	7 (41.2%)	4 (23.5%)	12 (70.6%)

3.3.3. Adequate Internal Controls

Table 3.10 points out some aspects of internal controls that Islamic FIs have in place. Eleven banks (64.7 percent) indicate that they have some form of internal control system in place that can promptly identify risks arising from changes in the environment. The same number of banks have countermeasures and contingency plans against disasters and accidents. A large percentage (82.4 percent) of the banks has separated duties of those who generate risks and those who manage and control risks. Thirteen banks (76.5 percent) indicate that internal auditor reviews and verifies the risk management systems, guidelines, and risk reports. A high of 94.1 percent of these institutions have backups of software and data files.

Table 3.10
Adequate Internal Controls

	No. of Affirmative Responses	Percentage of Total
1. Does the bank have in place an internal control system capable of swiftly dealing with newly recognized risks arising from changes in environment, etc.?	11	64.7
2. Is there a separation of duties between those who generate risks and those who manage and control risks?	14	82.4
3. Does the bank have countermeasures (contingency plans) against disasters and accidents?	11	64.7
4. Is the Internal Auditor responsible to review and verify the risk management systems, guidelines, and risk reports?	13	76.5
5. Does the bank have backups of software and data files?	16	94.1

3.4. OTHER ISSUES AND CONCERNS

In recent times there has been an exponential growth in the use of derivatives by conventional financial institutions for both risk mitigation and income generating purposes. There are, however reservations regarding use of derivatives from the Shari[ah perspectives. As such, with an exception of a few, most Islamic financial institutions do not use derivatives. This is revealed in Tables 3.11 and 3.12. Table 3.11 shows the institutions using derivatives for hedging (risk mitigation) purposes and Table 3.12 points out the number of banks using these instruments for income generating purposes. These tables show that while there is only one case of use of forward contracts for income generating purposes, there are several cases of use of derivatives for risk mitigation purposes. Specifically, there are three cases of currency forwards, and one case each of commodity forwards, currency swaps, commodity swaps, and mark-up swaps. The case of mark-up swap (or profit rate swap) is interesting.

Table 3.11**Use of Derivatives for *Hedging* (Risk management) Purposes (No. of Institutions)**

	Forwards	Futures	Options	Swaps
Currency	3	-	-	1
Commodity	1	-	-	1
Equity	-	-	-	-
Mark-up Rate	-	-	-	1

Table 3.12**Use of Derivatives for *Income Generation* Purposes (No. of Institutions)**

	Forwards	Futures	Options	Swaps
Currency	1	-	-	-
Commodity	-	-	-	-
Equity	-	-	-	-
Interest Rate	-	-	-	-

Table 3.13**Lack of Instruments/Institutions related to Risk Management**

	No. of Relevant Responses	Average Rank*
1. Short-term Islamic financial assets that can be sold in secondary markets	15	3.87
2. Islamic money markets to borrow funds in case of need.	16	4.13
3. Inability to use derivatives for hedging.	14	3.93
4. Inability to re-price fixed return assets (like <i>Murabahah</i>) when the benchmark rate changes.	16	3.06
5. Lack of legal system to deal with defaulters.	15	4.07
6. Lack of regulatory framework for Islamic banks.	15	3.8

*The rank has a scale of 1 to 5, with 1 indicating 'Not Serious' and 5 denoting 'Critically Serious'.

Table 3.13 sheds light on the seriousness of some constraints that Islamic financial institutions face in managing risks. The first two concerns relate to the lack of financial instruments/institutions for liquidity risk management. Lack of Islamic financial assets that can be bought/sold in secondary markets is ranked at a high of 3.87 and the absence of Islamic money markets to borrow funds in case of need at 4.13. The banks rank inability to use derivatives to transfer risks at 3.93. Among the concerns listed in the table, inability to reprice assets is considered the least serious (ranked at 3.06). This

may be due to the fact that the most of the assets in Islamic banks use have short-term maturity and interest rate risk is relatively small. The bankers, however, have worries about legal and regulatory risks. These are ranked at 4.07 and 3.8 respectively. Note that these constraints identified by Islamic banks are ranked much higher than the traditional risks (like credit risk, interest rate risk, etc. listed in Table 2) that these institutions face.

Table 3.14 reports the responses of Islamic banks to some issues related to their operations. Ten banks (58.8 percent) in the sample are actively engaged in research to develop Islamic compatible risk management instruments and techniques. When a new risk management product or scheme is introduced, a significant number of Islamic banks (76.5 percent) get clearance from the Shari[ah board. Only three banks (17.7 percent) have used securitization to raise funds and transfer risks. A relatively small number of banks (41.2 percent) have a reserve that is used to increase the profit share of depositors in low performing years. This is done mainly to mitigate the withdrawal and fiduciary risks that Islamic banks face. Note that investment banks and the only development bank (IDB) do not have depositors in the traditional sense and this question does not apply to them.

Table 3.14
Other Issues related to Islamic Financial Institutions

	No. of Affirmative Responses	Percentage of Total
1. Is your bank actively engaged in research to develop Islamic compatible Risk Management instruments and techniques?	10	58.8
2. When a new risk management product or scheme is introduced, does the bank get clearance from the Shari[ah Board?	13	76.5
3. Does the bank use securitization to raise funds for specific investments/projects?	3	17.7
4. Do you have a reserve that is used to increase the profit share (rate of return) of depositors in low-performing periods.	7	41.2
5. Is your bank of the view that the Basel Committee standards should be equally applicable to Islamic banks?	10	58.8
6. Is your organization of the view that supervisors/regulators are able to assess the true risks inherent in Islamic banks?	9	52.9
7. Does your organization consider that the risks of investment depositors and current accounts shall not mix?	9	52.9

The final set of questions in Table 3.14 relates to the regulatory aspects of Islamic banks. Only 9 banks (52.9 percent) are of the view that supervisors/regulators are able to assess the risks inherent in Islamic banks and 10 (58.8 percent) of them conclude that the Basel Committee standards should be equally applicable to Islamic banks. Nearly half of the banks (52.9 percent) believe that risks of investment deposits and current accounts should not mix. The views of Islamic financial institutions regarding the capital requirements is shown in Table 15.3. As is seen, the views given are different. Seven banks (41.2 percent) are of the view that the capital requirements for Islamic banks should be less than conventional banks, 6 banks (35.3 percent) think it should be equal to that of their conventional counterparts, and only three institutions acknowledge this should be less.

Table 3.15

Capital Requirement in Islamic Banks compared to Conventional Banks

	Less	Same	More
Do you think that the capital requirements for Islamic banks as compared to conventional banks should be	7 (41.2%)	6 (35.3%)	3 (17.7%)

3.5. RISK MANAGEMNET IN ISLAMIC FINANCIAL INSTITUTIONS: AN ASSESSMENT

The above analysis has touched on different aspects of risk management in Islamic FIs. It first identifies the severity of different risks and then examines the risk management process in Islamic banks. Among the traditional risks facing Islamic banks, mark-up risk is ranked the highest, followed by operational risk. The results show that Islamic financial institutions face some risks that are different from that faced by conventional financial institutions. These banks reveal that some of these risks are considered more serious than the conventional risks faced by financial institutions. Profit-sharing modes of financing (diminishing *Musharakah*, *Musharakah* and *Mudarabah*) and product-deferred sale (*Salam* and *Istisnaf*) are considered more riskier than *Murabahah* and *Ijarah*. Other risks arise in Islamic banks as they pay depositors a share of the profit that is not fixed *ex ante*. The Islamic banks are under pressure to give returns similar to other institutions, as they believe that the depositors will hold the bank responsible for a lower rate of return and may cause withdrawal of funds by the depositors.

In order to get an overall assessment of the risk management system of Islamic FIs, we report averages of the three constituents of this process. The average score represents the sum of affirmative answers as a percentage of the total possible answers in each component. For example, the average score for “Establishing an Appropriate Risk Management Environment, Policies, and Procedures” (Table 3.5) is 82.4 percent. We arrive at this number by taking the sum of all affirmative answers given by financial institutions in Table 3.5 (i.e. 84) as a percentage of all possible affirmative answers (i.e. $17 \times 6 = 102$). The corresponding figures for “Maintaining an Appropriate Risk Measuring, Mitigating, and Monitoring Process” (Table 3.6) and “Adequate Internal Controls” (Table 3.10) are 69.3 percent and 76 percent respectively.

These figures indicate that Islamic banks have been able to establish better risk management policies and procedures (82.4 percent) than measuring, mitigating, and monitoring risks (69.3 percent), with internal controls somewhere in the middle (76 percent). We note two points from these results. First, the overall averages are relatively high. One reason of this may be that there is an upward bias of the banks included in the sample. We believe that the banks that have relatively better risk management systems have responded to the questionnaires giving these higher averages. Second, the relative percentages indicate that Islamic financial institutions have to upgrade their measuring, mitigating, and monitoring process followed by internal controls to improve their risk management system.

The results also point out that the lack of some instruments (like short-term financial assets and derivatives) and money market hampers risk management in Islamic financial institutions. There is a need for research in these areas to develop instruments and their markets that are compatible with Shari[ah. At the government level, the legal system and regulatory framework of the Islamic financial system needs to be understood and appropriate policies undertaken to cater to the needs of Islamic banks.

It should be noted that the views expressed in this chapter are those of Islamic bankers. As pointed out in the Introduction, the view of risks and their management of the bankers will differ from the perspectives of the regulators and the members of Shari[ah board. Given the different objectives, regulators and Shari[ah experts may take a more conservative approach towards risk and its management. These perspectives are discussed in the following chapters.

IV

RISK MANAGEMENT: REGULATORY PERSPECTIVES

4.1 ECONOMIC RATIONALE OF REGULATORY CONTROL ON BANK RISKS

Banks generate assets by using depositors' funds. Since the rate of return on the banks' equity depends on the volume of assets accumulated, banks have the natural inclination to mix little amount of their own equity with as much of depositors' money as possible. Hence banks' assets exceed their equities several times. If assets are far larger than equities, even a small loss on assets could be enough to wipe out a bank's equity and cause it to collapse and loss to depositors. As a result of the contagion effects and disruptions in the payments and settlement processes, the collapse of even a small bank can be a source of a big systemic instability. The Islamic banks are no exception to this systemic phenomenon. Liberalization, electronic banking and clearance and settlement processes, availability of diverse financial assets, financial consolidation and emergence of highly leveraged institutions have added to the fragility of financial systems. The primary concern of regulatory standards and supervisory oversight is to ensure systemic stability, protect the interest of depositors and enhance the public's confidence on the financial intermediation system. However, due to the rapidly changing nature of financial markets, regulatory and supervisory standard setting appears to always remain as a "work in progress". In this section we discuss regulatory and supervisory concerns with risk management at the level of individual banks. We also present an overview of the recent supervisory trends in aligning bank capital with asset risks and the implications of this for Islamic banks.

4.1.1. Controlling Systemic Risks

Systemic risk is the probability that failure of even a small bank could result in the contagion effect and the whole payments system could be disrupted. This could lead to a financial crisis, decline in the value of assets in place, impairing growth taking capabilities of the economy, creating unemployment, decreasing economic welfare and even causing social and political instability.

For a number of reasons banks are the only institutions having such significance for systemic stability.

- i) Banks are not only business firms but are also agents of the payments, clearance and settlement system.
- ii) Banks are highly leveraged and exposed to financial risks and instability.
- iii) Regulatory interference is not always perfect. Particularly, deposit protection schemes and lender of last resort facilities create moral hazard on the part of both banks and depositors.
- iv) Due to financial liberalization, technological and computing revolution, and electronic banking, clearing and settlements systems have enabled banking to cross-geographic boundaries and regulatory jurisdictions.
- v) The extent of mergers, financial consolidation and cross-segment activities – banks writing insurance contracts, insurance companies undertaking investment activities and investment banks mobilizing deposits etc., is on the rise leading to the mixing of the risks of these different segments. The systemic importance of a bank is different compared to an investment firm or an insurance company. The failure of a bank creates a severe contagion effects due to the disruption of the payments and settlement processes. Compared to this the failure of an insurance or investment firm will have a more isolated effect on the firm itself. Moreover, insurance firms and investment banks are not covered by lender of last resort or deposit insurance schemes; hence they do not face moral hazard and adverse selection problems as such. Furthermore, the nature of liabilities and assets of banks and the other firms are different. Cross-segment activities blur all these functional differences and mix the different types of risks, making regulation and supervision more important.³¹
- vi) An important source of systemic risk is the relationship of banks with highly leveraged firms. Banks are not only highly leveraged themselves,

³¹ Banks are prone to “runs” for a number of reasons: (i) Banks owe to depositors and other creditors fixed obligations irrespective of the quality of their assets (this feature, however does not exist in Islamic banks), (ii) The value of bank assets is not known to depositors – bank runs thus are psychological and confidence matter rather than a true assessment of asset values of banks (iii) depositors are paid on the basis of first come first served if bank run happens leading to a run in case of problems and (iv) banks are much more interconnected through the payments and settlement process – depositors know that. See (Llewellyn 1999).

but are also a source of creating leverage. Leverage increases financial risks and creates financial instability. Banks themselves being highly leveraged can be severely destabilized if they keep large exposures to other highly leveraged firms. Therefore banks need to be aware about the risks and risk management systems of their counterparties.³²

- vii) Banks undertake large amounts of off-balance sheet activities. Particularly, due to an increase in securitization and derivative activities these off-balance sheet activities have increased disproportionately. These activities although useful are a source of disguise leverage of banks.

4.1.2 Enhancing the Public's Confidence in Markets

The efficiency of financial markets depends on the confidence of the public in the financial intermediaries, which in turn depends on the integrity of these institutions. Public confidence in financial institutions strengthens the financial intermediation system and the society as a whole benefit from these in terms of financial efficiency and stability. Some of the benefits of financial intermediation which need to be strengthened by the regulatory process are given here:

- i. Due to economies of scale, specialization and technical expertise, financial intermediaries are more suited to evaluate the risks of counterparties as compared to individual savers. Thus financial intermediation reduces information cost, moral hazard and adverse selection and consequently the cost of finance. Due to lack of confidence on the financial intermediation system the public could withdraw from it. As a result, the cost of funds in the economy will increase leading to an inefficient allocation of resources.
- ii. Financial intermediaries reduce a number of mismatches between the preferences and needs of savers and investors. These are maturity mismatches, size of fund mismatches and liquidity mismatches. As a

³² A classical real world case of a relatively small firm potentially causing a meltdown of global financial markets happened in September 1998 when Long-Term Capital Management (LTCM), a US Hedge Fund with a capital of \$ 4.8 billion and assets of \$ 200 billion was rescued by regulators. Collapse of the LTCM could have caused a serious systemic instability. This incident triggered a series of regulatory guidelines and standards regarding banks' relationship with highly leveraged firms and counter party risk management. See, for example, Report of the (US) Presidents' Working Group on Hedge Fund, Leverage and the Lessons of Long-Term Capital Management (1999), BCBS, Sound Practices for Banks' Interaction with Highly Leveraged Institutions (1999). All BCBS publications can be accessed at: www.bis.org.

result of confidence problem these mismatches could increase, increasing the frictions in the process of resource allocation.

- iii. Financial intermediaries are much more capable of assessing the risks of alternative investment opportunities in comparison to individual savers. As a result of a confidence problem this comparative advantage cannot be utilized.
- iv. Efficiency in processing the transactions of the payments system is extremely important for reducing the transaction costs. Electronic systems have made the process even more critical for the competitive efficiency of an economy. Lack of public confidence in the financial institutions can impair the utilization of the payments facilities and the economy can be inefficient as compared to its competitors.

In order to enhance the public's confidence on the financial intermediation system, the interests of depositors and other users of financial services need to be protected. Depositors of banks in particular and users of financial services in general are not in a position to protect their own interests like the shareholders of banks and other firms. There are a number of reasons for this that require regulatory and supervisory oversight.

- i. Depositors and other customers of the financial services industry are numerous and often have short-term relationships with banks and other financial institutions. As a group and individually, they are not able to monitor the activities of financial institutions, which always involve complex long-term contracts.
- ii. Financial institutions play important fiduciary role. The financial contracts at the time of selling to the clients may be of a particular nature. These contracts may later be changed due to genuine needs or merely due to moral hazard on the part of the institutions. Customers cannot effectively monitor the enforcement of the contracts in their own best interest overtime.
- iii. Customer protection has become even more important in the new regime of e-banking, rising trends of money laundering and other acts of deceit on the part of some elements.

For these and other reasons the regulatory and supervisory authorities have to safeguard and protect the interests of customers. Without such a

protection and safeguard the integrity of markets cannot be ensured and the confidence of customers on the financial institutions cannot be strengthened. As a result, inefficiency, systematic instability and financial crisis can grip the markets effecting economic development and welfare adversely.

4.1.3 Controlling the Risk of Moral Hazard

Some of the policies and safety nets introduced by regulatory authorities to protect the integrity of markets, to safeguard the interests of depositors and to avoid systemic risks often become the source of moral hazard on the part of depositors as well as banks. Regulation and supervision is also required to safeguard these safety net arrangements.

- i. The lender of last resort (LLR) facility of central banks aims at preventing bank runs by providing liquidity facility to banks in times of crisis. Many studies indicate that since central banks are there to rescue banks, particularly, banks which are “too big to fail”, they behave imprudently. In addition to the regulatory oversight, it is often recommended that the LLR facility shall be provided at a very high cost and that the private sector shall participate in overcoming any financial crisis by taking direct responsibility for financial losses.
- ii. The deposit insurance schemes aim at providing protection to depositors in case of bank failure. Since the depositors have to lose nothing as the deposits are insured, banks undertake risky activities. Since the rate of interest on deposits is fixed, in case of success of their risky operations, all the high return are accrued to the owners of banks and in case of losses deposits are protected in any way. Since deposits are protected, depositors also have no incentive to monitor the activities of banks. Thus a number of studies have found that financial instability is high in countries where deposits are fully protected³³. An effective regulatory and supervisory oversight is thus required to prevent or at least minimize the adverse consequences of the safety net schemes put in place by the public authorities.

4.2 INSTRUMENTS OF REGULATION AND SUPERVISION

The regulation of financial institutions is generally classified into *conduct of business regulation* and *prudential regulation*. The former type of

³³ See, Demirguc and Enrica (2000).

regulation is required to protect the interests of customers. The interests of customers can be protected by requiring banks to put certain minimum amount of their own capital at stake and ensuring timely disclosure of accurate information. Establishing a satisfactory level of competence and integrity in supplying banking services, maintaining a leveled playing field for competition and ensuring the production and supply of fair financial contracts and products are also the primary requirements in this regard. To achieve these objectives of *conduct of business regulation*, uniform sets of standards, rules and guidelines are required. Prudential regulation is directed at systemic safety by ensuring the soundness of individual financial institutions through the application of the set standards and guidelines across institutions. The instruments used for the regulation and supervision of financial institutions can broadly be classified into three categories:

- a) Ensuring the maintenance of a minimum level of risk-based capital,
- b) Putting in place an effective system of risk-based supervision and
- c) Making certain the timely disclosure of correct information about risk management systems and processes.

4.2.1 Regulating Risk Capital: Current Standards and New Proposals

Bank capital is the most effective source of protection against risks. It is also an effective means of regulation because capital standards can be enforced uniformly across institutions and jurisdictions. In general, capital refers to shareholders' equity. Capital is required to support the risks of assets and for its stabilization and confidence building role, particularly, against the eventuality of any crisis and in fact when it arises. Traditionally, adequacy of capital in a banking firm is gauged by the capital/asset ratio i.e., the leverage ratio (LR). The LR does not cover the relative risks of different assets. In addition, it does not take into account the stabilization role of funds, which due to their long-term maturity as compared to deposits have the potential to relieve the pressure on shareholders' equity in case of a crisis. Therefore, the 1988 Basel Capital Accord³⁴ introduced the concept of risk weights for assets and it distinguishes

³⁴ The Basel Committee for Banking Supervision – an international standard setting body was established by the Central Bank Governors of the Group of Ten Countries at the end of 1974. The Committee's members now come from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, United Kingdom and United States. In 1988, the Committee decided to introduce a capital measurement system commonly referred to as the Basel Capital Accord. This system provided for the implementation of a credit risk measurement framework with the aim to establish a minimum capital standard of 8% of total risk-

between tier-1 and tier-2 capital³⁵. The Accord requires that internationally active banks in G-10 countries shall maintain at least 3% leverage ratio, at least 4% tier-1 capital against risk weighted assets (RWAs) and at least 8% total capital (tier-1 plus tier-2) against RWAs³⁶. In this section we briefly overview the salient features of the existing and proposed regulatory capital standards.

4.2.1.1 Regulatory Capital for Credit Risk: Present Standards

Credit risks are so much important for banks and from regulators' perspective that the 1988 Capital Accord requires capital only against credit risks for on-balance sheet and off-balance sheet assets of banks. Banks are in the business of borrowing money to lend. As a result of lending, receivables from clients make an overwhelming part of their total assets. The quality of these assets, therefore, depends on the timely and full repayment by the clients. A failure to do so, i.e. default, is always probable depending on the credit quality of the client. The primary concern of regulators is, therefore, that banks should be aware of their credit risk and maintain a minimum level of capital to overcome any instability caused by default by a client. Total assets of a bank are put into five risk categories (0%, 10%, 20%, 50% and 100%). Summary composition of each risk bucket for on-balance sheet items is given in Table 4.1³⁷.

Total capital requirement for on-balance sheet assets is reached by putting all assets into their respective buckets and deriving RWAs of the bucket as a first step. For example, assets in 0% risk weight category are default risk free assets. These assets do not need any capital for their protection. Assets in 100% risk weight category are very risky and all such assets need minimum 4%

weighted assets by the end of 1992. In 1996 the Accord was amended also to require capital for market risks. The Accord is expected to remain effective till 2005 when the New Accord is expected to be implemented.

³⁵ The capital standards differentiate between Tier - 1 capital or core capital (pure capital or basic equity), Tier - 2 capital or supplementary capital, tier-3 capital recognized by the 1996 amendment and leverage ratio in the following form. A. Supervisors shall ensure that Tier - 1 (core) capital, i.e., a) basic equity + b) disclosed reserves from post-tax bank earnings minus a) good will, and b) investment in subsidiaries, shall not fall short of 50% of a bank's total capital. B. Supervisors shall also ensure that Tier - 2 (supplementary) capital, i.e., a) undisclosed reserves, + b) revaluation reserves, + c) general loan loss reserves, + d) hybrid debt instruments, + e) subordinated term debt of 5 years' maturity (maximum limit 50% of tier - 1 capital), shall not exceed 50% of a bank's total capital. C. In some countries subordinated debt having a maturity of less than 5 years is classified as tier - 3 capital in accordance with the 1996 amendment of the Accord covering market risks.

³⁶ These standards are also maintained in the proposed New Basel Accord too, see the discussion below.

³⁷ For explanations and details see, BCBS (1988).

tier-1 and 8% total capital protection. If the assets in this category are \$100 million, a minimum of \$ 8 million ($\$100m \cdot 0.08$) total capital is required for this category of assets. In the second step the required capital for all categories is added up to calculate the minimum capital requirement for the on-balance sheet items.

Table 4.1

Summary of Risk Capital Weights by Broad On-Balance-Sheet Asset Categories

Risk Weights (%)	Asset Category
0	Cash and gold bullion claims on OECD governments such as Treasury bonds or insured residential mortgages.
0, 10, 20, or 50% at national discretion	Claims on national public sector entities excluding central government and loans guaranteed by them
20	Claims on OECD banks and OECD public sector entities such as securities issued by US government agencies or claims on municipalities. Claims on multilateral banks or claims guaranteed by them
50	Loans fully secured by mortgage on residential property.
100	All other claims such as corporate bonds and less-developed country debt, a claim on non-OECD banks, equity, real estate, premises, plant and equipment.

For the non-derivative off-balance sheet exposures a credit conversion system and a set of risk weights is provided. Using these guidelines the off-balance sheet exposures are converted into their on-balance sheet equivalents and capital requirement is determined. Capital requirement for the off-balance sheet derivative positions is calculated separately, again using the standards set for this purpose. The over all credit risk capital requirement according to the 1988 Accord is the sum total of the on-balance sheet and off-balance sheet capital requirements.

4.2.1.2 Reforming Regulatory Capital for Credit Risk: The Proposed New Basel Accord

Although the 1988 Accord was meant for application in the G10 and other OECD countries, it has become a standard benchmark for determining the capital adequacy of banks worldwide. For the first time, it provided a systematic framework for aligning bank capital with the risks of their assets. A number of studies confirm that since the introduction of the Accord, bank capital has been strengthened in almost all countries. However, for a number of reasons, the 1988

Accord is under review and will be replaced by the proposed New Accord during 2005³⁸. Some of the reasons, which have prompted the review of the Accord, are given here.

- i. The Accord was meant for internationally active banks of G10 and other OECD countries. But the non-G10 and non-OECD countries have also embraced it and it has assumed the position of an international benchmark to measure capital adequacy of banks. From the non-OECD country perspective, it is, hence, desirable to make adjustments in it to enable it to fulfil the needs of the developing countries as well.
- ii. Default risk also depends on maturity of the facility, longer maturity assets being more risky as compared to the shorter maturity. Therefore, regulatory capital requirements, which give lesser risk weight to assets of short-term maturity, could have encouraged the flow of such capital as compared to the more stable source of longer-term capital. This consideration needs to be built-in the regulatory standards.
- iii. At the time of its adoption, the Accord was truly revolutionary in aligning capital with the relative risks of assets. During the past decade a number of new risks have arisen, new methods of risk management have been innovated and put into practice. There has been an unprecedented advancement in computing and information. E-banking and other information and technology intensive services have bypassed regulatory jurisdictions. Rapid consolidation has taken place in the financial services industry. All these changes need to be taken into account while measuring the real capital adequacy requirement of banks.
- iv. The Accord has also encouraged capital arbitrage opportunities, particularly by encouraging off-balance sheet and trading activities. The merits of this have been tremendous, however it has provided an opportunity for “capital arbitrage” (CA) and “cherry picking”. Through securitization good quality assets have been taken away from the

³⁸ The Basel Committee issued a consultative document on the New Accord in June 1999. After consultations the documents of the proposed New Accord was launched in January 2001. The Committee initially planned to finalize the agreement on the Accord during 2001 and its implementations from 2004. But, the response to the invitation for consultations was so overwhelming that the Basel Committee now plans to finalize the agreement on the document during 2002 and the agreement is supposed to become effective from 2005. The New Accord comprises of three pillars, namely, capital adequacy, supervisory review process and market discipline.

balance sheets of banks and sold for raising additional funds without removing the corresponding liabilities from the balance sheets. As a result, additional funds are raised with the same amount of capital, thereby reducing the overall quality of assets and making the banks riskier.

- v. The proposed New Accord by covering some of these and other pertinent considerations aims at aligning bank capital and risk management systems more strongly. It aims to encourage and give incentives for risk management systems by keeping the capital requirement under the Internal Rating Board (IRB) approach lesser than the standardized approach. It also aims at enhancing disclosures about risk management systems and other important information so that market discipline can be strengthened. The proposed Accord also aims at making bank supervision more risk-based and dynamic.

4.2.1.3 Treatment of Credit Risk under the Proposed New Accord

The consultative document for the proposed New Accord offers three approaches to determine risk-weighted capital for credit risk, namely the standardized approach, foundation IRB approach and advanced IRB approach.

The objective of offering alternative approaches is to encourage risk management culture in banks by requiring lesser regulatory capital from those banks which have put in place standard risk management systems. The risk management systems of banks who will opt to adopt the IRB approaches will be verified by supervisors. Depending on the supervisory risk assessment, banks can graduate from the standard approach to the foundation IRB approach and from there to the advanced IRB approach taking benefit from the regulatory capital relief offered.

Treatment of Credit Risk under the standardized approach

The main proposal is to replace the risk weighting method of the 1988 Accord with a risk weighting of assets based on the ratings of external credit assessment agencies according to the risk weights given in table 4.2.

Table 4.2
External credit assessment based risk weighting system

Claims on		Assessment ³⁹					
		AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Not rated
<i>Sovereigns</i>		0%	20%	50%	100%	150%	100%
<i>Banks</i>	<i>Option 1¹</i>	20%	50%	100%	100%	150%	100%
	Option 2 ² Long-term	20%	50% ³	50% ³	100% ³	150%	50%
	Option 2 ² Short-term ³	20%	20%	20%	50%	150%	20%
<i>Corporations</i>		20%	100%	100%	100%	150%	100%

1 Risk weighting based on risk weighting of the sovereign in which the bank is incorporated.

2 Risk weighting based on the assessment of individual banks.

3 Claims on banks of a short original maturity, for example, less than six months.

Source: Taken from BCBS 2001 (The New Basel Accord).

This risk weighting system implies, for example, that if the sovereign counterparty of an asset, which is worth \$ 100 million, is rated for example, AAA+ to AA-, the asset will be treated as default risk-free and it will not require any capital. But if the rating of the sovereign is BB+ to B-, the asset requires 100% capital protection (i.e. minimum 4 %, \$ 4 million tier-1 capital and 8%, \$ 8 million total capital shall be kept by the bank against the asset). If the sovereign counterparty is rated below B-, for capital requirements, the \$ 100 million asset will be treated as \$ 150 million and total capital requirement will be 8% of \$ 150 million.

Collateral, guarantee, credit derivatives and netting arrangements are the most important instruments to mitigate credit risk. Based on the quality of these, supervisors can give relief in the capital requirements under certain conditions and subject to the satisfactory utilization of standard risk management

³⁹ Risk weights for claims secured by residential property 50%, commercial real estate 100%. Claims on multilateral development banks, case by case approach based on minimum 0% for AAA - AA- with very strong shareholder structure, paid in and callable capital. For risk weights of off-balance sheet items, the risk weights of the 1995 modified Accord are maintained with some modifications for maturity of the facility.

techniques and systems by banks. These are treated uniformly in the standardized approach and in the foundation approach of internal rating.

- i. Collateral is most important among the four techniques to control credit risks. Cash, debt securities, equities, mutual fund units and gold can be used as collateral. The actual strength of collateral depends on the loss in the collateral value due to various risks. The estimate of this loss is called 'haircut'. Normally, the haircut of treasury bills is 0%, if the collateral is equity, the haircut is 30%, if the collateral is an asset under default, the haircut is 100% - total loss. Therefore, the proposed New Accord provides the possibility of a supervisory relief of risk capital allocation subject to the quality (haircut) of collateral. A methodology for determining the haircut under various approaches is provided in the New Accord.
- ii. In addition to collateral, on-balance sheet netting, credit derivatives and guarantees are recognized by the Accord as credit risk mitigants and eligible for supervisory relief for risk capital allocation. These are, however, subject to a number of conditions and existence of risk management systems, disclosures and subject to other details given in the Accord document.

Treatment of Credit Risk under the IRB Approach

An internal rating system, in the simplest form, can be considered as an inventory of all assets of a bank keeping in view the future value of these assets. In this way an IRB maps all assets of a bank in accordance with the risk characteristics of each asset. All banks have some systems of internal ratings in place for provisioning loan loss reserves, but an increasing number of banks are putting in place formal systems of IRB often based on computerized models. Internal rating systems can be instrumental in filling the gaps in the existing risk management systems of a bank. Therefore, these are expected to enhance the risk assessment of an institution by the external credit assessment as well as supervisory risk assessment agencies leading to lesser capital requirements and reducing the cost of funds.

The IRB approach to credit risk management has a number of advantages. First, it makes the regulatory capital requirement more risk sensitive - riskier banks will need more capital, less risky ones lesser capital. The IRB approach is expected to be effective in this regard. Second, it is expected that the

IRB approach will provide incentives for risk management systems. As an incentive for banks to develop their own internal system of risk management, the New Accord recognizes internal ratings for credit risk capital allocation. The Accord offers two alternative types of approaches to internal rating, namely, a foundation approach and an advanced approach

The foundation approach is suitable for less sophisticated institutions and the advanced one is open for use by the sophisticated institutions. Under both approaches, the exposures of an institution are classified into corporations, banks, sovereigns, retail, project finance and equity. These exposures are specifically defined in the foundation and advanced approaches, but both the approaches are based on five key concepts as determinants of credit risk. These are probability of default (PD), loss given default (LGD), exposure at default (EAD), maturity of facility (MOF) and granularity. Each one is briefly described here.

- i. Probability of Default (PD): The PD of a client is the measure of credit risk faced by the bank. The works of rating agencies provide the vital information about the PD of counterparties. The results of the S&P's default studies⁴⁰ provide a number of factual information about the historical characteristics of PDs. First, the higher the ratings, the lower the probability of default, lower ratings always correspond to higher default rates. Second, the lower the initial rating of a party, the sooner the party faces default. An initial B rated company defaults in a period of 3.6 years, AA company defaults in a period of 5 years from the initial rating. A company downgraded to CCC defaults in an average period of less than 6 months. Third, higher ratings are longer-lived. A company rated AAA has the 90.3% chance to be rated AAA⁺ a year later. This chance for the same initial rating is 84.3% for a BBB and 53.2% for a CCC. Thus, ratings provide reliable and systematic information about credit risk. Financial institutions can measure their credit risk by calculating a PD information and maintaining it overtime. In all approaches individual banks must calculate their PDs for corporate, bank and sovereign categories. In addition bank supervisors will also calculate the PDs of clients of individual banks in order to verify the accuracy of the PDs provided by banks.

⁴⁰ See, Standard & Poors (2001).

- ii. Loss Given Default (LGD): The LGD is a measure of the dollar value of loss to the portfolio given a particular default. The PD is specific to a given borrower, the LGD is specific to a given credit facility. Together, the PD and the LGD make a better measure of the credit risk. Some banks may not be able to calculate the LGDs of their facilities reliably while others may be able to do so. After reviewing the individual banks' risk management systems, supervisors have the discretion to decide whether to allow banks to use their own LGD calculations or to assign their facilities supervisory LGD characteristics. Those banks, which qualify for the use of their own LGD calculations will graduate to the advanced IRB approach and those banks which are required to use the supervisory assigned LGDs will be put in the foundation IRB approach. Under the foundation IRB approach, supervisors will decide the LGDs of various facilities with a supervisory benchmark of 50% LGD for an unsecured facility, and with a 75% LGD value for subordinated exposures (Table 5.1 provides the regulatory risk weights given the benchmark LGD of 50%). For secured collateralized transactions, supervisors will decide the LGD values using the collateral haircut standards set under the standardized approach to the capital allocation for credit risk. Under the advanced IRB approach, banks will be allowed to use their own LDG estimates for various facilities in allocating capital for credit risk. Banks are expected to use scientific and verifiable processes for LGD calculation across facilities, across collateral, across borrowers and across exposures. Supervisors have the discretion to decline the use of their own LGDs by banks, i.e. forcing them to follow the basic IRB approach.
- iii. Exposure at Default (EAD): Like the LGD, EAD is also facility specific. It is the measure of the total exposure of the facility at the time of default. If the commitment is for example, for a \$100 facility to be utilized in two years drawn in 4 equal amounts and if the default happens at the end of the first year, the EAD is \$50. Indeed, the default event will also have an impact on future exposures of the remaining \$50 of the facility. Like the LGD, under the basic IRB approach, supervisors will calculate EADs, for individual banks, using set supervisory rules. Under the advanced IRB approach, banks are entitled to calculate their own EAD values for various facilities. The qualitative

characteristics of the system will be the same as described under the LGD.

- iv. Maturity of Facility (MOF): MOF is an important determinant of credit risk. As shown in the above S&P default studies, a longer maturity facility has higher probability of default for all rating classes. Banks are required to provide a complete information about maturity of their facilities.
- v. Granularity: Granularity is the measure of a single borrower concentration in the banks' credit portfolio. The more spread is the credit portfolio among borrowers, the more the non-systematic risks of the borrowers are diversified and the less the credit risk and capital requirement is. The benchmark granularity is the average for the market. Granularity above the benchmark will require more capital and below the benchmark less capital. This evaluation of granularity is required to make each facility's credit risk different for each other facility so that capital can be allocated for each facility differently. The IRB approach requires that the risk of each facility shall be measured separately. The bank's credit portfolio should not be exposed too much to the non-systematic risk of a borrower by loan concentrations.

4.2.1.4 Regulatory Treatment of Market Risk

As discussed above market risks include interest rate, commodity price, exchange rate risk and equity price risks faced by the banks' asset portfolios as a result of their trading positions. As mentioned earlier, the original 1988 Basel Accord does not require capital for these risks. The risks were brought under the regulatory umbrella by the 1996 amendment to the Accord and the amendment became effective in 1998. The amendment introduces two approaches⁴¹ to regulatory assessment of market risks:

- i) The standardized approach; and
- ii) The internal ratings-based approach.

The choice of an approach is a supervisory discretion based on review and understanding of risk management systems and processes existing in banks.

⁴¹ The amendment in fact brought three fundamental changes to the original Accord, namely, the market-risks are brought under the regulatory capital requirements, tier-3 capital was introduced to cover market risks; and two approaches standardized and internal ratings approaches were introduced.

Supervisors may also encourage banks to use both approaches simultaneously. Capital requirements of banks in the first category are meant to be higher than the second category. The objective of these alternative approaches is to introduce an effective incentive system for better risk management by setting lower capital requirements opting for internal ratings and relatively higher capital requirements for the standardized approach. In fact this incentive system proved to be successful and has triggered a revolutionary enhancement of risk management culture in banks in a short period of time. Impressed by the benefits of the alternative approaches, as discussed in case of credit risk, the New Accord suggests adopting the internal ratings approach for credit risk as well. Therefore, the New Accord, in some sense is an extension of the approaches of 1996 Accord to cover credit risks. In other words as far as market risks are concerned, the 1996 amendments to the 1988 Accord will continue beyond 2005 with minor modifications.

In the standardized approach the capital charge for each market risk is first determined separately following standardized methods for each risk. After that these capital charges are added to determine the total capital requirements. Interest rate risk is subdivided into specific and general risks. Specific capital charges are designed to capture the risk underlying any net position due to the non-systematic risks of the counterparty and hence more specific to positions in individual instruments. General risk refers to the risk of loss arising from the changes in the market interest rates. Two methods: “maturity ladder” and “duration” are allowed to banks to choose for allocating risk weights. The underlying principle of the more commonly practiced maturity ladder approach is the fact that longer maturity requires higher risk weights and short maturity lower risk weights. For this specific general principle, it is alleged that the regulatory framework is biased against long-maturity systemically stable sources of funding and favors short maturity unstable sources of funding. As a result, the system might have contributed to the flow of short-term of funds and the resultant financial instability. The internal ratings approach is essentially based on value at risk technique as briefly discussed in section two of this paper.

4.2.1.5 Banking Book Interest Rate Risk

The banking book⁴² interest rate risk refers to income or asset value loss due to a change in the market rates of interest. This is recognized to be an

⁴² Banking book in this case covers also all those positions which due to any reason cannot be sold.

important risk, which warrants allocation of capital. However, the risk greatly varies from bank to bank, therefore, it is not possible to set uniform standards for capital allocation. Therefore, the New Accord keeps the allocation of capital for this risk in the discretion of bank supervisions under pillar-2 of the Accord that gives the framework for the supervisory review process. Supervisions are in particular required to be attentive to the problem of “outlier” banks – banks whose interest rate risk can lead to the decline in its asset value equal to 20% or more of its tier-1 and tier-2 capital. Supervisors also need to carefully assess and review bank’s internal risk assessment and management systems.

4.2.1.6 Treatment of Securitization Risk

Since securitization takes away assets from the balance sheet of a bank and puts them in the balance of a special purpose vehicle as discussed in section two, its risks need to be regulated at balance sheets of the two entities. The 1988 Accord is widely known to have caused capital arbitrage by giving capital relief to securitized assets, particularly first ignoring market risks and afterwards assigning lower risk weights on the trading book positions. The New Accord while appreciating the benefits of securitization tries to minimize capital arbitrage by trying to ensure that:

- i. The securitizing (originator) bank must reach a “clean break” which is: a) the asset transfer must be through a legal and transparent sale and b) the bank shall not hold any control on the assets securitized.
- ii. If the originator is obliged for first credit losses enhancement, it must do so by deducting from its capital and
- iii. If the originator is obliged for a second credit loss enhancement, the position to be treated as a direct credit substitute.

4.2.1.7 Treatment of Operational risks

Operational risks are considered to be important in banking organizations. However, it is only in the New Accord that a specific capital charge is proposed to cover operational risk. Alternative methodologies are suggested for measuring this risk:

- a) Basic Indicator Approach (BIA);
- b) Standardized Approach (SA);
- c) Internal Management Approach (IMA), and
- d) Loss Distribution Approach (LDA).

This menu of approaches is given in order of the level of sophistication of a bank – starting from a simple bank using the BIA and the most advanced banks opting for IMA or LDA in the future. Under the BIA, banks will be required to maintain capital for operational risk equal to a fixed percentage of gross income set by supervisions. Under the SA banks’ activities will be divided into business lines. Capital charges will be set as Beta fractions for each line as given in table 4.3. The same set of business lines and beta fractions are further refined in the IMA, adding additional indicators by the supervisors such as exposure indicators, loss event probability, given the expected loss etc. Suitable approaches will be assigned to banks by supervisors after reviewing the preferences as well as the state of risk management processes existing in banks.

Table 4.3

Proposed operational risk indicators in the New Accord

<i>Business Units</i>	<i>Business Lines</i>	<i>Indicator</i>	<i>Capital factors</i>
Investment banking	Corporate finance	Gross income	β_1
	Trading and sales	Gross income (or VAR)	β_2
Banking	Retail banking	Annual average assets	β_3
	Commercial banking	Annual average assets	β_4
	Retail banking	Annual average assets	β_5
	Payment and settlement	Annual settlement through put	β_5
Others	Retail brokerage	Gross income	β_6
	Asset management	Total funds under management	β_7

Source: The New Basel Accord Document

4.2.2 Effective Supervision

Effective bank supervision is the key to achieve financial efficiency and stability. The objectives of bank supervision can be summarized in a few sentences.

- i. The key objective of supervision is to maintain stability and confidence in the financial system, thereby reducing the risk of loss to depositors and other creditors.
- ii. Supervisors should encourage and pursue market discipline by encouraging good corporate governance (through an appropriate structure and set of responsibilities for a bank’s board of directors and

senior management) and enhancing market transparency and surveillance.

- iii. In order to carry out its tasks effectively, a supervisor must have operational independence, the means and powers to gather information both on and offsite, and the authority to enforce its decisions.
- iv. Supervisors must understand the nature of the business undertaken by banks and ensure to the extent possible that the risks incurred by banks are being adequately managed.
- v. Effective banking supervision requires that the risk profile of individual banks be assessed and supervisory resources allocated accordingly.
- vi. Supervisors must ensure that banks have resources appropriate to undertake risks, including adequate capital, sound management, and effective control systems and accounting records; and
- vii. Close cooperation with other supervisors is essential, particularly where the operations of banking organizations cross national boundaries.⁴³

Effective supervision of banks ensures that banks function safely and soundly, so that the financial system can attain the full confidence of savers and investors. This enables the removal of the constraints imposed by the self-financing system and increases the monetization of transactions. An increased level of savings efficiently put into investments ensures economic development and welfare. Supervisory systems are expected to depend on the socio-political and legal frameworks prevailing in different countries. Hence there cannot be a standardized supervisory system to be followed in all jurisdictions. Different countries use different method and approaches to assess bank risks. These approaches are however, converging on one important point, namely, risk-based formal and systematic supervision shall gradually be adopted in order to make supervision effective. The approaches to supervisory risk assessment as used in different countries can be grouped into four.

- a) Supervisory bank rating systems (such a CAMELS)
- b) Financial ratio and peer group analysis systems
- c) Comprehensive bank risk assessment systems and
- d) Statistical models

⁴³ Core Principles' document, pp.8-9.

The generic features of each approach are summarized in table 4.4.⁴⁴

Table 4.4

Salient Features of Bank Supervisory Risk Assessment Systems

Approaches to Bank supervision	<i>Assessment of current financial condition</i>	<i>Forecasting future financial condition</i>	<i>Use of quantitative analysis and statistical procedures</i>	<i>Inclusion of qualitative assessments</i>	<i>Specific focus on risk categories</i>	<i>Links with formal supervisory action</i>
Supervisory Ratings						
On-site	***	*	*	***	*	***
Off-site	***	*	**	**	**	*
Financial ratio and peer group analysis	***	*	***	*	**	*
Comprehensive bank risk assessment systems	***	**	**	**	***	***
Statistical models	**	***	***	*	**	*

* Not significant ** significant *** very significant

Despite the prevalence of different approaches to supervision in different jurisdictions, a broadly acceptable framework of some of the core principles for effective supervision can be equally relevant across different countries. Such principles provide a widely recognized benchmark for effective supervision, provide for a recognition for the minimum precondition for effective supervision, define supervisory role in identifying risks and mitigating them, and increase cooperation between supervisors of different countries to enhance consolidated supervision. Due to these and other considerations, the BCBS issued the Core Principle for Effective Banking Supervision document in 1997. The main features of these core principles are highlighted in table 4.5.

⁴⁴ See Sahajwala and Bergh (2000).

Table 4.5
Core Principles and Assessment Methodology of Banking Supervision

CLASSIFICATION OF CORE PRINCIPLES*	COVERAGE*	ASSESSMENT OF COMPLIANCE**
Principle – 1 Preconditions for Effective Banking Supervision	Existence of sound economic policies, public infrastructure, market discipline, procedures for effective resolution of problems, sound public safety nets.	Are the roles and duties of different agencies clearly defined? Is there a coordination of activities? Is there a suitable legal framework for banking? Are supervisors empowered?
Principles 2-5 Licensing and Structure	Permissible activities to be licensed to banks, powers of licensing authorities, methods of procedures of licensing owners, plans to operate and manage risks, competence and integrity of senior management, financial matters including capital required other approvals, transfer of control, major acquisition or investment by banks.	Is the term bank clearly defined in laws? Are banking activities clearly defined in laws? Are licensing authorities competent, honest and well informed? Are they empowered to block any subsequent ownership control, activity changes, mergers, etc.? Are they in full contact with such authorities in other jurisdictions?
Principles 6-15 Prudential Regulations and Requirements	Adequacy of risk-based capital, credit risk management, asset quality assessment, large exposures and risk concentration, connected lending, country and transfer risks, market risks, other risk (interest rate, liquidity, operational risk), internal control systems.	Are the authorities empowered to set regulatory capital requirements and to implement these fully? Have they the required rules, regulations in place? Have they the required technical expertise to evaluate the risk existing in banks? Are they empowered to take prompt corrective measures?
Principles 16-20 Methods of on-going Banking Supervision	Supervisory risk assessment systems (offsite surveillance and on-site inspection), external audit reports, consolidated supervision.	Have they the conceptual and technical expertise for supervisory risk assessment? Do they have the resource for onsite inspection? Do they have information for offsite supervision?
Principle 21 Information Requirements	Information disclosure, accounting standards periodicity and accuracy of reports, confidentiality of information.	Are accounting and auditing systems in place? Are banks using valuation methods, which are reliable? Is the required information properly disclosed? Is confidentiality kept?
Principle 22 Formal Powers of Supervisors	Prompt corrective measures, liquidation procedures.	Are supervisors equipped with the power and resources for prompt corrective measures? Are laws in place to enforce liquidation?
Principle 23-25 Cross Border Banking	Responsibilities of law and host country supervisors.	Is consolidated supervision in place? Is there cooperation with supervisors from outside?

*This information is extracted from the Core Principles (1997) document of the BCBS.

**This information is based on the Core Principles Methodology (1999) document of the BCBS.

If the main objective of the Core Principles of effective banking supervision is enhancing financial stability, technical assessment of the compliance with these principles can provide useful insight in increasing the effectiveness of various policies. A recent study conducted by the IMF staff concludes that indicators of credit risks and bank soundness are primarily influenced by macroeconomic and macro-prudential factors and that the direct influence of the compliance with the Core Principles is insignificant in this regard. The study suggests that the compliance could indirectly influence risk through the transmission mechanism of effecting the macroeconomic variables⁴⁵. However, it may be noted that the existence of sound macroeconomic policies and conditions is considered as one of the important pre-conditions for effective banking supervision.

4.2.3 Risk Disclosures: Enhancing Transparency about the Future

The market mechanism functions efficiently with complete information. Information cannot be considered complete unless it is transparent and timely. There are many channels of disclosing such information to clients, shareholders, debtors, supervisors and regulators and above all to the market. These channels are annual reports, supervisory and regulatory review reports, external credit assessment reports whenever available, periodic regulatory reports, reports of market intelligence, stock market information and debt-market information etc. The set of information provides a critical input to investors for allocating their investment in accordance with their appetite for risk adjusted returns. Transparency reduces moral hazard and adverse selection and enhances efficiency and integrity of the markets and strengthens market discipline. Market discipline is strengthened not only by the timely availability of appropriate information about the risk level of a firm, but it is also effected by the information about the firm's risk management processes. Hence disclosure of information is effective only if (a) it provides information about the risk of the firm and (b) it provides information about the risk management processes of the firm.

The traditional channels of information have been effective in providing information about the levels of risks faced by a firm in the past as accounting standards can largely cover these risks. However, due to a number of reasons, it is difficult to set standards for disclosure of future risks and risk management

⁴⁵ See, Sundrarajan, Marston and Basu (2001).

processes across firms, across market segments and overtime. Some of these factors are:⁴⁶

- i. The risk management technologies are changing rapidly due to innovations making it difficult to set rigid standards.
- ii. The financial services industry is itself changing fast and financial conglomerations are emerging blurring the difference between the risk of various segments of the industry - insurance companies, investment banks, commercial banks, etc.
- iii. Financial instruments are also changing fast due to the financial engineering process, making standardized valuation of these instruments almost impossible.
- iv. Due to e-banking, a totally new scenario has developed particularly in relation to the control of the banks on their own banking infrastructure. The Internet-based banking networks surpass regulatory jurisdictions. The infrastructure providers practically control all the e-banking information. Above all, the technology changes very fast.
- v. There are borrower incentives for not disclosing full information. These incentives range from hiding information from competitors, tax evasion, and conflict of interests among shareholders and providers of funds, etc. These factors are so strong that a recent survey of risk disclosure by leading international banks found that the quality of disclosures provided in the annual reports about risk management practices is far short of the expectations. The survey recommends that there must be standardized framework for disclosure of risks to enhance comparability of systems across firms. Disclosures can be improved in almost all areas, but a lot more improvement is needed in non-trading activities as well as credit risk in trading activities. Disclosures also need improvement in the use of models, internal rating system and safety procedures of using computers.⁴⁷

Since “one size fits for all” standards are not possible due to the fast pace of innovation, management of financial institutions can be most effective in

⁴⁶ See, Ribson, Rajna, “Rethinking the Quality of Risk Management Disclosure Practices” <http://newrisk.ifci.ch/146360.html>

⁴⁷ See, IFCI-Arthur Andersen, "Risk Disclosure Survey", <http://newrisk.ifci.ch/ifci-AASurvey.html>

integrating the risk management systems with their annual reports. This requires the evolution and adoption of:

- a) risk-based accounting systems,
- b) risk-based auditing systems,
- c) risk-based management information systems, and
- d) risk-based inventories of all assets of banks.

The common goal of these processes is to disclose information about the risks that the firm is expected to face in the future in addition to the traditional information which relates to the past risks. Once these processes are developed, the annual reports will not only provide information about the risks faced by financial institutions in the past but will also disclose sufficient information about the risk management processes of the institutions and their risks in the future.

Disclosures about risk in an institution and the risk management processes adopted by the institution are so important that the international regulatory standard setters have produced several reports and guidelines on the subject.⁴⁸ Keeping in view the increasing nature of cross-segment activities in the financial industry, the risks which such activities are bound to pose, regulators of various sectors need to enhance coordination of their activities to enhance disclosure and strengthen market discipline. Keeping this consideration in view a Multidisciplinary Working Group on Enhanced Disclosure was established in June 1999 jointly by the BCBS, IOSCO, IAIS and Committee on the Global Financial System of the G-10 Central Banks. The report of the Working Group was released on April 26, 2001.

The report makes it clear that there are two complementary types of disclosures: disclosures about the risks of the institution as given in the traditional statistical information provided in annual reports about the current health of the institutions, and disclosure about the risk management processes of

⁴⁸ These reports include: BCBS (1999a) Sound practices for Loan Accounting and Disclosure, BCBS (1999b) Best Practices for Credit Risk Disclosures, BCBS (1998), Enhancing Bank Transparency, Euro-Currency Standing Committee (1994) Public Disclosure of Market and Credit Risks by Financial Intermediaries, BCBS & IOSCO (1999) Recommendations for Public Disclosure and Derivative Activities of Banks and Securities Firms, BCBS (1997) Core Principles of Effective Banking Supervision, BCBS (1999) the New Basel Accord (Pillar-3 Market Discipline). In addition to the www.bis.org most resources can be accessed from <http://newrisk.ifci.ch/DocIndex/>.

the institution. The second type of disclosure, which is the subject matter of the report, is classified into these groups.

- i. A specific minimum level of disclosure must be a part of the traditional periodic reports provided by the institution to its shareholders, investors, creditors and counterparties.
- ii. Disclosure that could be useful, but their costs and benefits are yet to be settled.
- iii. Certain statistical information could be disclosed which can fill the gaps in disclosures of risk management systems. Again this type of information needs to be studied further before making it a part of the disclosure requirements.

The study concludes that in order to make disclosures transparent and supportive to enhanced market discipline there should be:

- i. A balance between quantitative and qualitative disclosures,
- ii. Disclosures should basically aim at reflecting the firm's own true risk. To achieve this the comparability (with other firms) may at times be sacrificed, and
- iii. Appropriate disclosure of risk management system can be achieved by providing information about intra-period risk exposure instead of the traditional system of period-end data.

The report also recommends to the international standard setters to consider enhancement of guidelines on disclosures on risk concentration, credit risk mitigation and the evolution of overall risk management systems in financial institutions. These recommendations increase the role of supervisors in enhancing such disclosures in the framework of risk-based supervision⁴⁹.

To achieve financial stability, disclosure requirements for banks can be effective only if other agents participating in the economic and financial system also comply with the respective standards. The set of international standards cover a wide range of important areas such as monetary and financial policy

⁴⁹ For more details see, Working Group (2001), Multidisciplinary Working Group on Enhanced Risk Disclosures; Final Report to BCBS, CGFS, IOSCO and IAIS.

transparency, fiscal policy transparency, data dissemination, accounting, auditing, payments settlements, market integrity etc⁵⁰.

4.3 REGULATION AND SUPERVISION OF ISLAMIC BANKS

There could be no disagreement on the statement that the risk management systems in the Islamic banks shall meet the required international standards. However, as mentioned above a number of risks faced by the Islamic banks are different as compared to the risks of traditional banks. Therefore, some international standards meant for traditional banks may not be relevant for the Islamic banks due to their different nature. Hence the effective supervision of Islamic banks requires the study of the risks of Islamic banks and formulating suitable guidelines for the effective supervisory oversight of Islamic banks. Chapra and Khan (2000) undertake a survey of regulation and supervision of Islamic banks. Some pertinent conclusions of that study are presented here.

4.3.1 Relevance of the International Standards for Islamic Banks

- i. The Core Principles document sets pre-conditions for effective banking supervision. In addition to these pre-conditions, there are also a number of other pre-conditions specific for effective Islamic banking supervision. One set of these preconditions has to be fulfilled by bank regulators and supervisors. These include providing a leveled playing field for competition, licensing facilities, lender of last resort facility acceptable to the mandate of Islamic banks, proper legal framework, proper Shari[ah supervision, etc. The other set of preconditions has to be met by the Islamic banks themselves. These include development of inter-bank market and instruments, resolution of a number of unresolved *Fiqh* related issues, development of proper internal control and risk management systems, etc.
- ii. As for as the Core Principles for effective banking supervision and the disclosure and transparency requirements are concerned, these are equally relevant for the Islamic banks. Due to the risk sharing nature of Islamic banks, these banks need even more effective systems of supervision and transparency.

⁵⁰ For international standards see, Financial Stability Forum, International Standards and Codes to Strengthen Financial Systems, (www.fsforum.org/standards/keystds.htm). In addition, the Accounting and Auditing Organization for the Islamic Financial Institutions (AAOIFI) needs to be mentioned specially as it is the sole standard setter for the Islamic financial industry.

- iii. The difficulty in applying the international standards to Islamic banks lies in applying capital adequacy standards. First, due to the risk sharing nature of their modes of finance, Islamic banks need more not lesser capital as compared to traditional banks. Second, there is a need to separate the capital of current and investment accounts. Third, the need to adapt the international standards for the Islamic banks has prompted efforts towards establishing the establishment of the Islamic Financial Services Supervisory Board. Finally, the supervisory risk assessment systems like CAMELS⁵¹ are equally relevant for Islamic banks and these can be adapted without difficulty.
- iv. A number of advantages of the IRB approach discussed in the previous section are relevant for the Islamic banks. First, the approach allows mapping the risk profile of each asset individually. Since the Islamic modes of finance are diverse, the IRB approach suits these modes more than the standardized approach. Second, the IRB approach aligns the actual risk exposure of banks with their capital requirements. This is consistent with the nature of Islamic banks. Third, the IRB approach is expected to encourage and motivate banks to develop a risk management culture and thereby reduce the risks in the banking industry and enhance stability and efficiency. Fourth, it is expected to generate reliable data and information and enhance transparency and market discipline. Fifth, it will use external credit assessment as benchmark, and thus truly integrate internal and external information to generate more reliable data. This is important because external credit assessment may not have the full set of reliable information that an internal-ratings system can have, and internal-rating systems may lack the objectivity of external ratings. This information, used in harmony with incentives for risk management, will be instrumental in controlling moral hazard and capital arbitrage.

4.3.2 The Present State of Islamic Banking Supervision

Most Islamic banks are located in the member countries of the IDB. The study mentioned above identifies a number of issues regarding the present state of Islamic banking supervision.

⁵¹ The CAMELS rating system refers to capital adequacy, assets quality, management quality, earnings, liquidity, and sensitivity to market risks (in some countries also systems for internal controls).

- i. A growing number of these countries are in the process of adopting and effectively implementing the international standards, namely, Core Principles, minimum risk-weighted capital requirements and the international accounting standards. In applying the risk-weighting methodologies to Islamic banks, there are difficulties reported due to the diverse nature of the Islamic modes of finance. Compliance with the standards set by the Accounting & Auditing Organization for Islamic Financial Institutions (AAOIFI), has not yet fully materialized. Only Bahrain and Sudan have so far adopted these standards.
- ii. Some countries including Iran, Pakistan and Sudan are undertaking financial sector reform programs. Strengthening the capital of banks is an important part of these programs. Since most Islamic banks are very small, some countries have announced a program of mandatory merger of Islamic banks to strengthen their capital base.
- iii. An increasing number of countries where there are Islamic banks located, are putting in place both Off-site and On-site supervisory systems. The famous On-site supervisory risk assessment system, namely, CAMELS is also being used in some countries. Islamic banks are generally being supervised within the framework of the prevailing international commercial banking supervisory systems. In some countries special laws have been introduced to facilitate Islamic banking, while in others no such laws exist. Islamic banking operations in the latter group of countries are performed under the guidelines issued by their respective central banks.
- iv. In almost all those countries where Islamic banks are operating, commercial banking functions are segregated from securities and insurance businesses, and distinct authorities are assigned the supervisory task. Malaysia is the only exception, where banks and insurance companies are supervised by the central bank. However, the global trend is inclined towards the concept of universal banking with emphasis on supervision by a single mega-supervisor. Moreover, commercial banks in these countries are supervised by central banks. However, the emerging trend in the world is to segregate the monetary policy framework of macroeconomic management from the microeconomic considerations of bank soundness. As a result of this segregation, banking supervision is being separated from monetary

policy and being assigned to a specialized authority. In cases where different supervisory authorities specialize in supervising different banking and non-banking financial institutions, the need for cooperation and coordination between these authorities increases.

- v. In some countries conventional banks are allowed to open Islamic windows, while in other countries this is not allowed.
- vi. Most private banks have their own Shari[ah supervisory boards. However, in Malaysia, Pakistan and Sudan the central banks have a central Shari[ah board. In Pakistan the Council of Islamic Ideology and the Federal *Shariat* Court are empowered to review all laws in the light of the Shari[ah. The Federal *Shariat* Court has declared interest to be a form of *Riba*.
- vii. A number of characteristics of Islamic banks require that the existing international standards need to be properly adapted to apply these to Islamic banking supervision effectively. The risk sharing nature of investment deposits, the risks of various Islamic products, the availability of risk management instruments, the presence of institutional support such as lender of last resort facility and deposit protection are some of the most important among these factors.

4.3.3 Unique Systemic Risk of Islamic Banking

Transmission and mixing of risks between different segments of the financial services industry can be a source of improper identification of risks and lack of their effective mitigation. Each segment of the financial services industry is specialized in specific types of risks. For example, the insurance industry in general deals with risks, which are of long-term in nature. Banks on the other hand are good in managing short-term risks. The banking book of a bank constitutes those risks, which profile the risk appetite of its depositors. The trading book and fund management activities cater for the risk preferences of investors. Hence specialization by financial institutions in different types of risks enhances efficiency in identifying, pricing and mitigating the various risks. Cross-segment transmission of the various risks can thus cause the mixing of these various risks, and can trigger a conflict in the risk profile of the various users of financial services and can weaken the customers confidence in the overall financial intermediation system. This could cause macroeconomic inefficiency as well as systemic instability. Therefore, most regulatory regimes

attempt to block such transmission of risks either by preventing cross-segment activities of different institutions or by requiring separate capital and other firewalls between the risks of activities of a bank in different sectors.

4.3.3.1 Preventing Risk Transmission

The *raison d'être* of Islamic banking is conducting business practices consistent with the religious prohibition of *Riba*. *Riba* is a return (interest) charged in a loan (*Qard*) contract. This religious injunction has sharpened the differences between current accounts (interest free loans taken by owners of the Islamic bank) and investment deposits (*Mudarabah* funds). In the former case, the repayment on demand of the principal amount is guaranteed without any return. In case of investment deposits, neither the principal nor a return is guaranteed. The owners of current accounts do not share with the bank in its risks. Whereas, the owners of investment accounts participate in the risks and share in the bank's profits on *pro rata* basis. The contracts of *Qard* and *Mudarabah* are thus the fundamental pillars of Islamic banking and their characteristics must fully be protected for the preservation of the uniqueness of Islamic banks.

In all Islamic banks sizeable proportion of funds under management are comprised of current accounts. In some Islamic banks these accounts constitute more than 75% of total funds under management. Thus current accounts are the strength of Islamic banks as these are a vital source of their free money. The use of funds of investment deposits (*Mudarabah* money) along side such huge proportion of borrowed money is unprecedented in the history of the Islamic financial system. It poses at least two important challenges to Islamic banks, namely the challenge of systemic risk and the challenge of barriers to market entry.

The current account holders need to be fully protected against the business risks of the bank. The investment account holders need to fully participate in the business risks of the bank. But the current accounts are guaranteed only theoretically in the sense that in case of a confidence problem, the Islamic bank is not in a position to return all the accounts on demand. The more an Islamic bank relies on these funds the more serious this systemic problem is. This means that in case of crisis, the risks of the assets of investment deposits will be borne by the current account holders. Since most Islamic banks operate in jurisdictions where deposit insurance and lender of last resort facilities are not available, this systemic risk is serious in nature.

Even though investment deposits are theoretically assumed to share the business risks of the bank to the extent that investment deposits finance the businesses, these deposits are also not immune to the systemic risks posed by the current accounts. Current accounts tend to increase the leverage of the Islamic banks, their financial risks and hence adversely affect their overall stability. Thus in a crisis situation, the risks of one type of deposits cannot be separated from the risks of the other type of deposits. This is not only systemically unstable but also against the basic premises of *Qard* and *Mudarabah* – the two pillars of the unique nature of Islamic banking. A number of suggestions are made to prevent the confidence problem, which may arise due to the transmission of risks between the two accounts.

- i. Some researchers suggest a 100% reserve requirement for current accounts. As mentioned earlier current accounts are a vital source of strength of Islamic banks. The drastic measure of 100% reserve requirement will no doubt enhance systemic stability, but it imposes an unreasonable cost on the Islamic banks due to which they may not be able to even survive in the competitive markets.
- ii. The BMA has introduced prudential rules whereby it is mandatory to disclose all assets financed by current accounts separately and all assets financed by investment deposits separately.
- iii. In some regulatory jurisdictions the reserve requirements for current accounts are much higher as compared to investment deposits.
- iv. Some other regulatory regimes combine the requirements as mentioned in the second and third cases.
- v. The AAOIFI has suggested a more elaborate and systematic procedure to tackle the subject. The AAOIFI scheme is worth of discussing in more detail.

The AAOIFI's main concern has been to develop accounting, auditing and income recognition standards for the Islamic financial institutions so that transparency and disclosures can be enhanced in these institutions, which is an Islamic requirement for conducting fair and honest business. In the process of developing the standards, AAOIFI found that most Islamic banks are reporting their investment deposits as off-balance sheet items. After a thorough technical analysis, AAOIFI reached two crucial conclusions.

- i. There is a need to differentiate two types of investment deposits; those restricted to a specific use and general-purpose unrestricted deposits. The magnitude of the first type of deposits is very small as compared to the second type of deposits. While the Islamic banks can continue keeping the first type of deposits off-balance sheet, the second type of deposits shall be kept on-balance sheet. In all our discussion, investment deposits imply this type of deposits.
- ii. The bank while managing investment deposits must face fiduciary and displaced commercial risks. Fiduciary risk can be caused by breach of contract by the Islamic bank. For example, the bank may not be able to fully comply with the Shari[ah requirements of various contracts. While, the justification for Islamic banking is the compliance with the Shari[ah, an inability to do so or not doing so willfully can cause a serious confidence problem and deposit withdrawal. Displaced commercial risk implies that the bank though may operate in full compliance with the Shari[ah requirements, yet may not be able to pay competitive rates of return as compared to its peer group Islamic banks and other competitors. Depositors will again have the incentive to seek withdrawal. To prevent withdrawal, the owners of the bank will need to apportion part of their own share in profits to the investment depositors. The AAOIFI thus suggests that the Islamic bank's capital shall bear the risks of all assets financed by current accounts and capital. In addition, the capital shall also bear the risks of 50% of assets financed by the investment deposits. The risks of the remaining half of the assets financed by the investment deposits shall be borne by the investment depositors.

The results of our survey reported in section three of the paper show that the risk of withdrawal is in fact a nightmare for the managers of Islamic banks. This risk is indeed more serious in Islamic banks as compared to conventional banks. This is because, neither the principal nor a return is guaranteed in Islamic banks' investment deposits unlike the deposits of conventional banks. Although the nature of Islamic banks' investment deposits does introduce market discipline, it also causes a potential confidence problem as compared to traditional bank deposits. Therefore, Chapra and Khan (2000) show reservations about the AAOIFI suggestion to make capital responsible for the risks of only 50% of assets financed by investment deposits, as this will weaken the capital of Islamic banks. They argue that due to the confidence problem mentioned above

Islamic banks in fact should need more capital as compared to conventional banks. A stronger capital base coupled with the market discipline introduced by the nature of investment deposits can indeed make Islamic banks more stable and efficient.

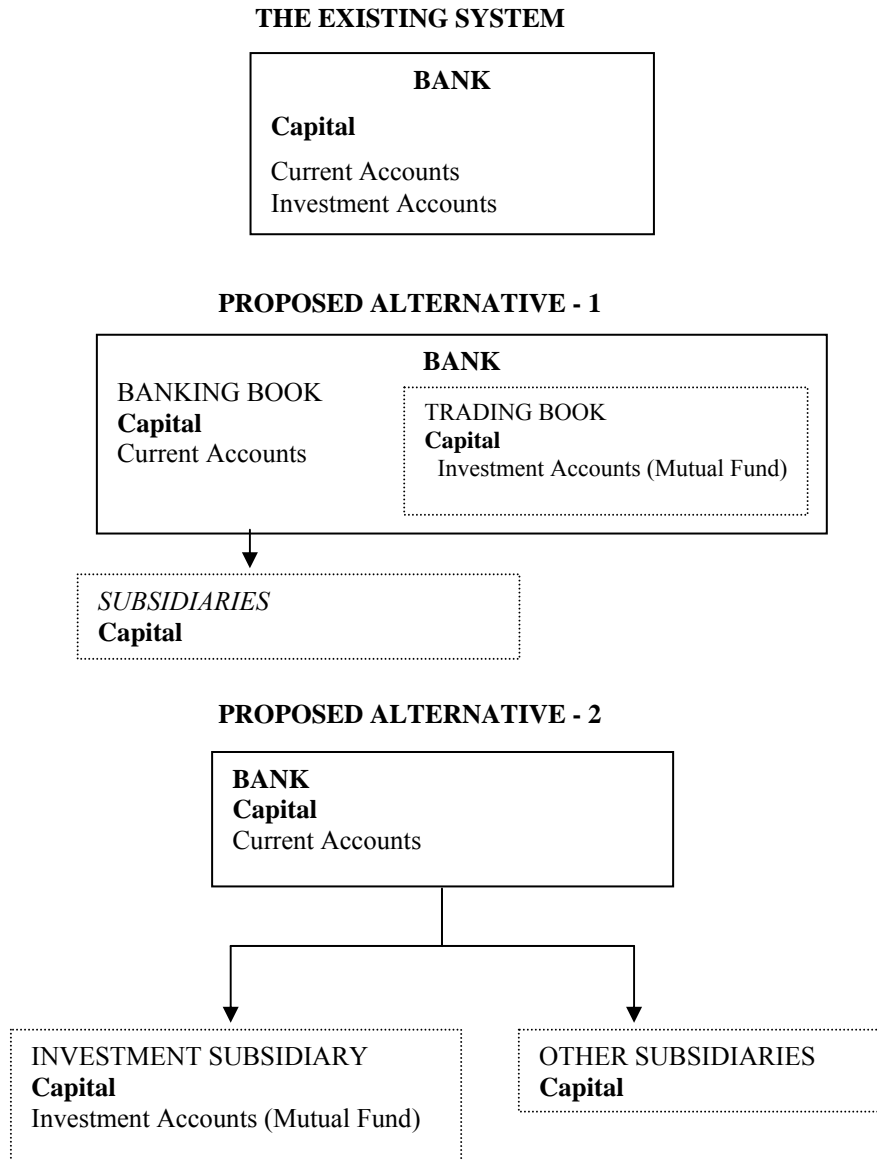
4.3.3.2 Preventing the Transmission of Risks to Demand Deposits

The main concern of AAOIFI namely, the prevention of the transmission of risks of investment deposits to current accounts is of a fundamental nature. To strengthen this concern, Chapra and Khan (2000) suggest for the consideration of standard setters that the capital requirement for demand deposits must be completely separated from the capital requirement for investment deposits. Islamic banks can thus have two alternatives with respect to capital adequacy requirements as given in Figure 4.1. The first alternative would be to keep demand deposits in the banking book and investment deposits in the trading book with separate capital adequacy requirements for the two books. The second alternative would be to pool investment deposits into a securities subsidiary of the bank with separate capital adequacy requirement. There could be other subsidiaries, of an Islamic bank but all with separate capital requirements. These alternatives are expected to introduce a number of benefits over the existing systems.

- i. These will align the capital requirements of the two different deposits to their respective risks. Demand deposits are the main source of leverage of the Islamic banks as a source of free money. These depositors therefore, need more protection as compared to investment account holders. Therefore, the capital as well as statutory reserve requirements must be substantially higher for demand deposits.

Figure 4.1

Proposed Capital Adequacy Alternatives for Islamic Banks



- ii. As for as the risk-return tradeoff is concerned, investment deposits and mutual funds are not much different. However, mutual funds are considered to be more transparent, liquid, and efficient in the allocation of returns to risks. Therefore, several policy oriented writings, judgment of courts and research works have called for establishing mutual funds of various types. Capital requirements provide a strong incentive to establish mutual funds. There is also evidence on this in many regulatory jurisdictions. In these regimes, regulatory capital have played an important role in creating incentives for securitization by requiring lower capital for trading activities as compared to banking book activities of financial institutions. As a result, the size of banking book activities of banks has declined sharply overtime, and that of trading book activities has widened.⁵² This incentive effect of regulatory capital can be replicated in Islamic banks so that the investment accounts of these banks get gradually transformed into mutual funds. The relatively lower capital adequacy requirement on investment accounts (mutual funds) can provide a strong incentive to Islamic banks to develop mutual funds, enhance PLS financing and ensure efficient risk sharing, market discipline and transparency in the distribution of returns.
- iii. As mentioned above, the uniqueness of Islamic banking lies in the fact that the owners of Islamic banks raise demand deposits as interest-free loans (*Qard*) and investment deposits as *Mudarabah* funds. Unless the transmissions of any risks between the two types of deposits are completely prevented, this unique characteristic of Islamic banking cannot be preserved. In this regard, separate capital adequacy standards will serve the firewalls and safety net requirements of major regulatory and supervisory jurisdictions around the world. Furthermore, these alternatives will also help eliminate the difficulty of treating investment accounts while applying the international capital adequacy standards. In addition, segregation of the depository function of Islamic banks from their investment function, will make these banks more credible and acceptable under almost all jurisdictions, thus enhancing the growth of Islamic finance. This will enhance acceptability of Islamic banking in majority regulatory regimes and will remove barrier to market entry.

⁵² See for example, European Commission (1999), and Dale (1996).

4.3.3.3 Other Systemic Considerations

- i. Transmission of the risk of permissible income and impermissible income is a serious systemic risk in conventional banks offering Islamic banking windows. This risk can be controlled if the Islamic banking windows of these banks are brought under separate capital.
- ii. Establishment of specialized subsidiaries with separate capital can also enhance the level of diversification of the business of Islamic banks. Such a diversification can contribute to proper control of their business risks. However, it is also prudent to ensure consolidated supervision of the Islamic banks like traditional banks.
- iii. The unique risks of Islamic modes of finance, the nonexistence of financial instruments, restrictions on sale of debts, and other special features of Islamic banking force the Islamic banks to maintain a high level of liquidity. This naturally affects their income adversely. As a result, the withdrawal risk is strengthened. In this manner, unless these risk factors are properly managed, they can culminate into a serious systemic instability.

V

RISK MANAGEMENT: *FIQH* RELATED CHALLENGES

5.1 INTRODUCTION

The discussion of the previous sections shows that Islamic banks can be expected to face two types of risks – risks that are similar to the risks faced by traditional financial intermediaries and risks that are unique due to their compliance with the Shari[ah]. Consequently the techniques of risk identification and management available to the Islamic banks could be of two types. The first type comprises of standard techniques, such as risk reporting, internal and external audit, GAP analysis, RAROC, internal rating, etc., which are consistent with the Islamic principles of finance. The second type consists of techniques that either need to be developed or adapted keeping in view the requirements for Shari[ah] compliance. Hence the discussion of risk management techniques vis-à-vis Islamic banking is a challenging one. In a study like this, these challenges can neither be identified fully, nor can these be resolved even partially. The objective of this section is to initiate a discussion on some aspects of the unique risks faced by Islamic banks with a view to highlight the challenges and prospects of mitigating these within the framework of the Islamic principles of finance. However, in the outset, we briefly discuss the attitude of Islamic scholars towards risk.

5.1.1 Attitude towards Risk

Risk is assigned significant importance in Islamic finance. Both the two foundational *Fiqh* axioms of Islamic finance, namely, a) *al khiraju bi al-daman* and b) *al ghunmu bi al-ghurm* are in fact risk-based. Together the two axioms can be described to mean that entitlement to the returns from an asset is intrinsically related to the responsibility of loss of that asset⁵³. Interest-based financial contracts separate entitlement to return from the responsibility of loss by protecting both the principal amounts of a loan as well as a fixed return on it. Hence, these contracts transfer the risks of loans to the borrower while the lender retains the ownership of the funds. Islamic finance prohibits the separation of

⁵³ See, Kahf and Khan (1992) for an elaborate discussion of this premises.

entitlement to return from the responsibility for ownership. By doing so risk transferring is discouraged and risk sharing is encouraged.

This does not however mean that the individual's attitude towards risk is subjected to any rigid rules. Due to their natural inclinations, some individuals may like to take more risks than others do and others may like to avoid risk at all. The universal principle of risk aversion, that expected return from an investment depends on the level of the investment's risk – higher risks warrant the expectation for higher returns and lower risks warrant the expectation for lower returns is also accepted by the Islamic scholars.

However, the rule of non-separation of entitlement to returns from the ownership risks led Islamic economists to theorize that most needs of an Islamic economy would be met by the risk sharing arrangements; leaving no role for debt finance to play⁵⁴. Hence within the framework of an interest-free (profit and loss sharing – PLS) economy the effect of leverage on asset growth and the resultant financial risks were ignored in the initial theoretical literature. If a bank is financed only by risk sharing, the dollar value of its assets will be equal to the dollar value of its equity; a dollar of equity capital will bear the burden of risks of a dollar in assets. For a 100% equity-based firm, this risk can be referred to as its normal business risk. As soon as the firm inducts debt finance, the dollar value of its assets start exceeding the dollar value of its equity by the amount of the debt finance inducted. In this case, a dollar of the equity capital of the firm faces the risks of assets in excess of a dollar. This excess burden of risks faced by the equity capital is due to the debt-financed assets and this can be referred to the firm's financial risk. The theoretical literature characterizes the Islamic economy mainly PLS based, hence it ignores the fundamental difference between the two types of risks and its implications for stability of Islamic financial institutions.

It is in the nature of the banking business that assets exceed bank capital several times. The Islamic banks are not an exception to this general rule particularly due to their utilization of demand deposits for financing assets. Islamic scholars agree that under such a condition, banks working on behalf of depositors need to be very cautious about risks⁵⁵.

From this brief discussion we can derive two important conclusions regarding the attitude of Islamic scholars towards risk. First, liabilities and

⁵⁴ See, e.g. Siddiqi (1983).

⁵⁵ See, Zarqa (1999).

returns of an asset cannot be separated from each other. Indeed, this condition has a far-reaching implication for all Islamic financial contracts. Second, common people do not like risk; banks working on their behalf must be cautious and avoid excessive risk taking.

5.1.2 Financial Risk Tolerance

Is it desirable for the Islamic banks to carry the same level of financial risks as their peer group conventional banks carry? Or should one expect that due to the nature of Islamic modes of finance, the Islamic banks should be exposed to more risks as compared to conventional banks?

It is hard to bring practice and theory together for an answer to these questions. From a practical perspective, banks should eliminate their financial risks if possible. For example, without credit risks they will not be required to apportion part of their current income in loan loss reserves. They can use their capital more efficiently to accumulate assets, and maximize their rates of return on equity. This can enable the Islamic banks to pay higher returns to the investment deposit holders who take more risks as compared to the depositors of traditional banks. Hence the Islamic banks can maintain their competitive efficiency. Therefore, the existence of financial risk is an undesirable cost for the Islamic banks, exactly in the same manner as it is undesirable for the conventional banks. If the Islamic banks have to carry the same level of financial risks as their peer group traditional banks, they require simplifying and refining the Islamic modes of finance to make the risk profile of these modes exactly at par with the risk profile of interest-based conventional credits.

However, from the theoretical perspective, in this regard, the challenge is that as a result of such an oversimplification and refinement the Islamic modes of finance can lose their Islamic characteristics and hence their *raison d'être*. Thus from the perspective of the mandate of the Islamic banks, such a refinement and simplification may not be possible. This is because all Islamic modes of finance are based on undertaking real transactions and banks are expected to take a certain degree of ownership risks in order to justify a return on finance. To the extent of the existence of this inevitable level of additional risks in the Islamic banks as compared to conventional banks, the Islamic banks will need to keep additional capital and develop more rigorous internal control and risk management techniques.

5.2. CREDIT RISKS

Credit risk is the most important risk faced by banks, because defaults can also trigger liquidity, interest rate, downgrade and other risks. Therefore, the level of a bank's credit risk adversely affects the quality of its assets in place. Do the Islamic banks face more credit risks as compared to conventional banks or less? A preliminary answer to this question depends on a number of factors, such as:

- a) General credit risk characteristics of Islamic financing,
- b) Counterparty risk characteristics of specific Islamic modes of finance,
- c) Accuracy of expected credit loss calculation, and
- d) Availability of risks mitigating techniques.

The first two points have been discussed in sections two and three of the paper. Here we discuss the last two points in more detail.

5.2.1 Importance of Expected Loss Calculation

The process of credit risk mitigation involves estimating and minimizing expected credit losses. Calculation of expected credit losses, requires the calculation of probability of default, maturity of facility, loss given default, exposure at default and the sensitivity of the assets' value to systematic and non-systematic risks. Expected loss calculation is relatively easier for simple and homogenous contracts as compared to relatively complex and heterogeneous contracts. Since the Islamic financial contracts are relatively complex as compared to the interest-based credit, the accurate calculation of expected losses is supposed to be relatively challenging for the Islamic contracts. The lack of consensus in dealing with a defaulter, illiquid nature of debts etc., add to the complexity of this matter.

This challenge can be overcome by adapting the foundation IRB approach as suggested in section four of this paper. Although our survey results in section three reveal that most Islamic banks, who responded to the questionnaire, already use some form of internal rating systems, it is early for the Islamic banks to qualify for the IRB approach for regulatory capital allocation. Nevertheless, the presence of some form of internal ratings in these banks implies they can enhance their systems with an objective to gradually qualify for the IRB approach. If that happens, these banks will be expected to initially follow the supervisory benchmark LGD and the risk weights as given in Table-

5.1⁵⁶. Gradually, the banks can develop their own systems of calculating the LGD and can graduate to the advanced IRB approach.

Table 5.1
Benchmark Regulatory Risk Weights
(Hypothetical, LGD 50%)

Probability of Default %	Corporate Exposures	Retail Exposures
0.03	14	6
0.05	19	9
0.1	29	14
0.2	45	21
0.4	70	34
0.5	81	40
0.7	100	50
1	125	64
2	192	104
3	246	137
5	331	195
10	482	310
15	588	401
20	625	479
30	-	605

Source: The New Basel Accord

5.2.2 Credit Risk Mitigation Techniques

A number of standard systems, methods, and procedures for credit risk mitigation are also relevant for the Islamic banks. In addition, there is also a need to keep in view the unique situation of these banks. A number of the standard systems and some additional considerations are discussed here in relation to the credit risk management of Islamic banks.

5.2.2.1 Loan Loss Reserves

Sufficient loan loss reserves offer protection against expected credit losses. The effectiveness of these reserves depends on the credibility of the systems in place for calculating the expected losses. Recent developments in credit risk management techniques have enabled large traditional banks to identify their expected losses accurately. The Islamic banks are also required to maintain the mandatory loan loss reserves subject to the regulatory requirements

⁵⁶ It needs to be emphasized that at this stage the New Basel Accord is only a proposal. But it is expected that the IRB approach will remain as an important part of the final document.

in different jurisdictions. However, as discussed above the Islamic modes of finance are diverse and heterogeneous as compared to the interest-based credit. These require more rigorous and credible systems for expected loss calculation. Furthermore, for comparability of the risks of different institutions there is also a need for uniform standards for loss recognition across modes of finance, financial institutions and regulatory jurisdictions. The AAOIFI Standards # 1 provides for the basis of income and loss recognition for the Islamic modes of finance. However, except for a few institutions, banks and regulatory organizations do not apply these standards.

In addition to the mandatory reserves some Islamic banks have established investment protection reserves. The Jordan Islamic Bank has pioneered the establishment of these reserves. The reserves are established with the contributions of investment depositors and bank owners. The reserves are aimed at providing protection to capital as well as investment deposits against any risk of loss including default. However, investment deposit holders are not permanent owners of the bank. Therefore, contributions to the reserve by old depositors can be a net transfer of funds to new depositors and to the bank capital. In this manner these reserves cannot ensure justice between old and new depositors and between depositors and bank owners. This problem can be overcome by allowing the depositors to withdraw their contributions at the time of final withdrawal of deposits. However, such a facility will not be able to provide a protection in the case of a crisis.

5.2.2.2 Collateral

Collateral is also one of the most important security against credit loss. Islamic banks use collateral to secure finance, because *al-rahn* (an asset as a security in a deferred obligation) is allowed in the Shari[ah]. According to the principles of Islamic finance, a debt due from a third party, perishable commodities and something, which is not protected by the Islamic law as an asset, such as an interest-based financial instruments are not eligible for use as collateral. On the other hand, cash, tangible assets, gold, silver and other precious commodities, share in equities, etc., and debt due from the finance provider to the finance user are assets eligible for collateral. We discuss a number of general characteristics of the collateral, which is available in the Islamic financial industry.

- i) As discussed in section four, in the proposed New Basel Accord some types of collateral are given regulatory capital relief depending on the

quality of the collateral and subject to the standardized regulatory haircuts as given in Table 5.2. These standards show that cash and treasury bills are the most valuable collateral and can be given very high regulatory capital relief. Suppose two clients offer collateral of dollars 100 each, e.g., US treasury bills of one-year maturity and the main index equities, respectively. The haircut for the first collateral is 0.5% (the collateral value after this haircut is dollars 95). In the second case, the collateral haircut is 20% (collateral value is dollars 80). In the first case, the capital requirement will be lesser as compared to the second case. The Islamic banks not being able to take the first type of collateral, will be considered more risky.

- ii) There may be some assets, which from the Islamic banks' point of view are good collateral and deserve a regulatory capital relief. For example, a carefully selected asset financed by the Islamic bank may be at least as good a collateral as a 5-year maturity bond issued by a BBB corporate entity. Since the Islamic bank's asset is not in the list of eligible collateral, it is subject to a 100% haircut; the BBB-bond in this case is subject to only a 12% haircut. For the purpose of regulatory capital relief, the Islamic bank's asset is worth nothing, whereas the bond is worth dollars 88 (considering the collateral value as dollars 100).
- iii) Due to restrictions on sale of debts, there are no liquid Islamic debt instruments. However, in view of their liquid nature debt instruments like treasury bills etc., are generally considered as good collateral. These assets are not available to the clients of Islamic banks to offer.
- iv) The Islamic banks have limited recourse to the assets they finance. As compared to this the conventional banks can have unlimited recourse to the assets of their clients. On a stand-alone basis, a particular asset financed by the Islamic bank may depreciate fast even though during the same time the firm's assets may gain value in general. Thus due to its limited recourse nature, the quality of the Islamic banks' collateral may in fact be lower as compared to the collateral of the peer group conventional banks. Moreover, the value of limited recourse collateral is normally highly correlated with the exposure of the credit. If the credit goes bad, the collateral value depreciates too. Good quality collateral should not have such a characteristic. Furthermore, if stand-

alone collateral depreciates faster in value as compared to the firm's other assets; there is an incentive to default.

Table 5.2

Standard Supervisory Haircuts for Collateral in % of Collateral Value

Issue rating for debt securities	Residual Maturity	Sovereigns	Banks/ Corporates
AAA/AA	≥ year	0.5	1
	>1 year, ≤5 years	2	4
	> 5 years	4	8
A/BBB	≥ 1 year	1	2
	> 1 year, ≤ 5 years	3	6
	> 5 years	6	12
BB	≥ 1 year	20	
	> 1 year, ≤ 5 years	20	
	> 5 years	20	
Main index equities		20	
Other equities listed on a recognized exchange		30	
Cash		0	
Gold		15	
Surcharge for foreign exchange risk		8	

Source: The New Basel Accord

- v) The legal systems in the jurisdictions in which Islamic banks operate do not support the qualitative aspects of a good collateral as in most cases it is very difficult to obtain control of the asset and convert it into liquidity without a high cost. This state worsens further due to the fact that the supporting institutional infrastructure for Islamic banking is still in the early stages of development. There are no uniform standards to recognize a default event, to treat a default event when it happens and to litigate disputes.

This discussion shows that due to a number of reasons the collateral available to the Islamic banking industry in general is not eligible for regulatory capital relief under the proposed international standards. This may be due to the fact that the Islamic banks are not represented in the standard setting bodies. They can however, carefully study the consultation documents distributed by the standard setters and present their own points of view like other institutions.

Furthermore, the industry-wide general quality of collateral depends on a number of institutional characteristics of the environment as well as the products offered by the industry. An improvement in the institutional infrastructures and a refinement of the Islamic banking products can be instrumental in enhancing the collateral quality and reducing credit risks.

5.2.2.3 On-Balance Sheet Netting

On-balance sheet netting implies the matching out of mutual gross financial obligations and the accounting for only the net positions of the mutual obligations. For example, bank A owes to bank B \$ 2 million resulting from a previous transaction. Independent from this obligation, bank B owes to A \$ 2.2 millions. In a netting arrangement, the \$ 2 million mutual obligations will match each other out so that \$ 0.2 million will be settled by B as a net amount. There could be several considerations in this arrangement including the maturity of the two obligations, and the currencies and financial instruments involved. The netting process could therefore include discounting, selling and swapping the gross obligations.

Carefully prepared, netting overcomes credit risk exposures between the two parties. With the participation of a third party, playing as a clearinghouse for the obligations, the arrangement becomes a powerful risk mitigating technique. Regulators recognize that role but also supervise the netting activities of banks. The Islamic banks so far have not designed any such mechanism. It can be considered as an important area for future cooperation between the Islamic banks particularly, if the market for two-step contracts as discussed in this section expands in which banks will have more mutual obligations.

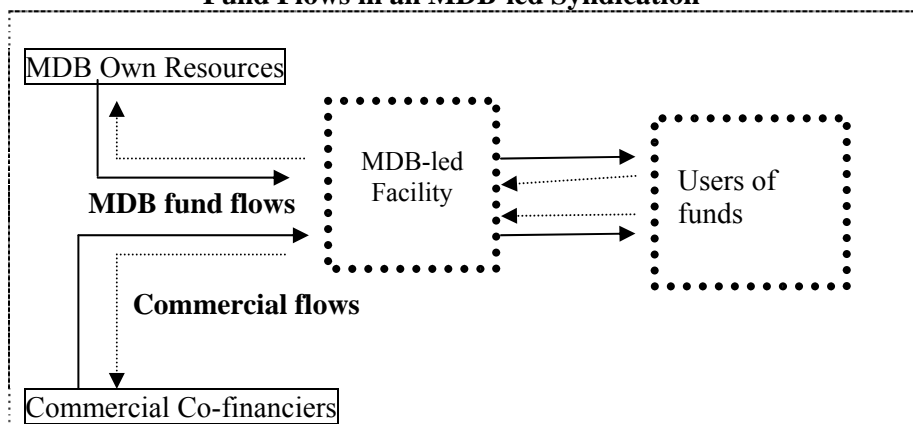
5.2.2.4 Guarantees

Guarantees supplement collateral in improving the quality of credit. Commercial guarantees are extremely important tools to control credit risk in conventional banks. Those banks whose clients can provide good commercial guarantees and who can fulfill other requirements can qualify for regulatory capital relief under the proposed New Basel Accord. Although some Islamic banks also use commercial guarantees, the general *Fiqh* understanding goes against their use. In accordance with the *Fiqh*, only a third party can provide guarantees as a benevolent act and on the basis of a service charge for actual expenses. Due to this lack of consensus, therefore, the tool is not effectively used in the Islamic banking industry.

Multilateral Development Banks (MDBs) enjoy special status in the jurisdiction of their respective member countries. This status has a particular privilege during times of financial crisis in a member country. Financial crisis exposes banks' credit to a country or an institution in its jurisdiction to serious credit risks. In terms of their foreign exchange reserves some countries are always in a crisis-like situation. Credit exposure to entities in such jurisdictions is always risky. This also has an implication for the borrower's cost of capital in terms of foreign exchange. The cost of capital in getting finance in local currency being always lower than the cost of capital in getting finance from outside.

Participation in MDB-led syndication provides an automatic guarantee to a participating commercial bank against the risks as mentioned. Thus it enhances the finance user's credit quality often to the extent that the cost differential between borrowing at home and borrowing abroad is almost eliminated. This implies that by participating in the MDB-led syndication schemes, the commercial banks can mobilize funds in foreign currency at the cost of mobilizing funds in local currency. The syndication generally takes the form of Figure 5.1⁵⁷.

Figure 5.1
Fund Flows in an MDB-led Syndication



Based on these arguments, Hussain (2000) suggests that the IDB shall play a more active role in providing syndicated facilities by strengthening its existing facilities. By benefiting from the IDB's preferred status in the member countries the participating Islamic banks will be able to mitigate their foreign exchange as well as country risk exposures substantially.

⁵⁷ See for example, (Hussain 2000), Standards & Poor's (2001), Asian Development Bank (2001).

5.2.2.5 Credit Derivatives and Securitization

As discussed in section two, through credit derivatives the underlying risk of a credit is separated from the credit itself and sold to possible investors whose individual risk profile may be such that the default risk attracts their investment decision. This new mechanism has already been described earlier. It has become so effective that under certain conditions it is expected to fully protect banks against credit risks. Therefore, the use of credit derivatives as a risk-mitigating instrument is on a rapid rise.

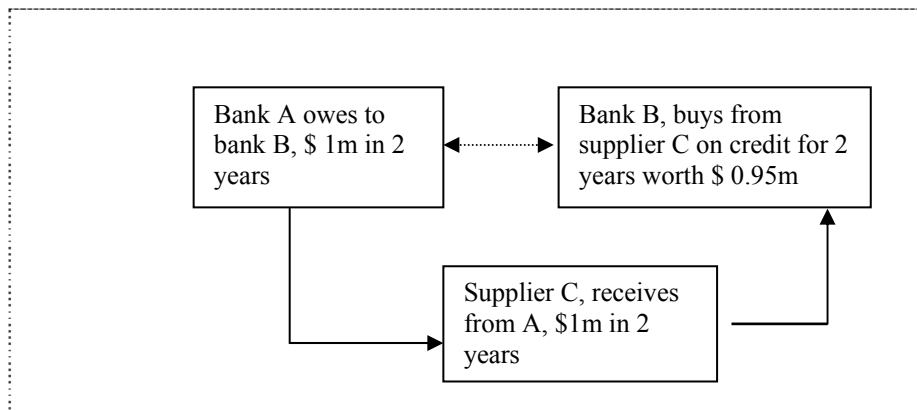
However, at the present, the Islamic banks are not using any equivalent of credit derivatives. The development of comparable instruments depends on the permissibility of sale of debts, which is prohibited by almost a consensus except for Malaysia. In addition to the Malaysian practice, there are a number of proposals under discussion to overcome the sale of debt issue.

- i. Some studies call for making a distinction between a fully secured debt and an unsecured debt. It is argued that external credit assessment makes the quality of a debt transparent. Moreover, credit valuation techniques have improved drastically. Furthermore, all Islamic debt financing are asset-based and secured financing. In view of these developments, restrictions on sale of debt may be re-considered (Chapra and Khan 2000).
- ii. Some scholars suggest that although sale of debt is not possible as such, but the owner of a debt can appoint a debt collector. For example, if the due debt is \$ 5 million⁵⁸ and the owner considers that as a result of default 0.5 million may be lost. The owner can offer some amount lesser than this estimated loss, say for example 0.4 million to a debt collector. The arrangement will be organized on the basis of *Wakalah* (agency contract) or *Ju'alah* (service contract). There seems to be no *Fiqh* objection to this.
- iii. Debt can be used as a price to buy real assets. Suppose, bank A owes debts worth \$1m to bank B, which are due after 2 years. Meanwhile bank B needs liquidity to buy real assets worth \$1m from a supplier C on deferred basis for 2 years. In this case, subject to the acceptance of C, the payments for bank B's installment purchase can be made by bank A. Due to installment sale from C to B, C will charge *Murabahah* profit

⁵⁸ See, Al-Jarhi and Iqbal (forthcoming).

of say, 5%. This profit can be adjusted in two ways. First, upon mutual agreement the supplier may supply goods worth \$0.95 million to bank B and the supplier will receive \$1m cash from bank A in 2 years. Or as a second option, C will receive \$1m from A and \$0.05m directly from B. The implication of this is important. B receives assets worth \$1m at the present instead of receiving \$1m after 2 years, but after paying 5%. As a result, in net terms, B receives \$0.95m today for \$1m after 2 years. Thus the arrangement facilitates a *Fiqh* compatible discount facility. The flow of funds and goods resulting from the first case are given in Figure 5.2.

Figure 5.2
Sale of Debt for Real Assets



The example cited above is based on the permission of the use of debts in buying goods, services and other real assets. This permission can further be extended to design quasi debt (equity) financial instruments by embedding convertibility options. For instance in writing an Islamic debt contract, the user of funds can inscribe a non-detachable option in the contract that subject to the preference of the financier the receivables can be used to buy real assets or shares from the beneficiary. This option in fact changes the nature of collateral from a limited recourse to a full recourse as the option can be utilized depending on the will of the financier. In this manner, it enhances the quality of credit facility by reducing its risk. The potential of these instruments increases in the framework of two-step contracts. However, the Islamic banks at the present do not write such instruments.

5.2.2.6 Contractual Risk Mitigation

Gharar (uncertainty of outcome caused by ambiguous conditions in contracts of deferred exchange) could be mild and unavoidable but could also be excessive and cause injustices, contract failures and defaults. Appropriate contractual agreements between counterparties work as risk control techniques. A number of these can be cited as an example.

- i) Price fluctuations after signing a *Salam* contract may work as a disincentive for fulfilling contractual obligations. Hence if the price of, for example, wheat appreciates substantially after signing the contract and receiving the price in advance, the wheat grower will have an incentive to default on the contract. The risk can be minimized by a clause in the contract showing an agreement between the two parties that a certain level of price fluctuation will be acceptable, but beyond that point the gaining party shall compensate the party, which is adversely effected by the price movements. In Sudan, such a contractual arrangement known as *Band al-Ihsan* (beneficence clause) has now become a regular feature of the *Salam* contract.
- ii) In *Istisna'*, contract enforceability becomes a problem particularly with respect to fulfilling the qualitative specifications. To overcome such counterparty risks, *Fiqh* scholars have allowed *Band al-Jazaa* (penalty clause).
- iii) Again in *Istisna'* financing, disbursement of funds can be agreed on a staggered basis subject to different phases of the construction instead of lumping them towards the beginning of the construction work. This could reduce the banks' credit exposure considerably by aligning payments with the progress of the work.
- iv) In *Murabahah*, to overcome the counterparty risks arising from the non-binding nature of the contract, up-front payment of a substantial commitment fee has become permanent feature of the contract.
- v) In several contracts, as an incentive for enhancing re-payment, a rebate on the remaining amount of mark-up is given.
- vi) Due to non-presence of a formal litigation system, dispute settlement is one of the serious risk factors in Islamic banking. To overcome such risks, the counterparties can contractually agree on a process to be

followed if disputes become inevitable. This is particularly significant with respect to settlement of defaults, as interest-based debt re-scheduling is not possible.

- vii) It can be proposed that to avoid the default by the client in taking possession of the ordered goods, the contract shall be binding on the client and not binding on the bank. This suggestion assumes that the bank will honor the contract and supply the goods as contractually agreed, even if the contract is not binding on it. An alternative proposal could be to establish a *Murabahah* clearing market (MCM) to settle cases, which may not be cleared due to the non-binding nature of the *Murabahah* contract.
- viii) Since the *Murabahah* contract is approved with the condition that the bank will take possession of the asset, at least theoretically the bank holds the asset for some time. This holding period is almost eliminated by the Islamic banks by appointing the client as an agent for the bank to buy the asset. Nevertheless, the *raison d'être* of approving the contract is the responsibility of the bank for the ownership risk. For this risk therefore, capital needs to be allocated.

All these features of contracts serve to mitigate counter party default risks. Similar features can enhance the credit quality of contracts in different circumstances. It is desirable to make a maximum benefit of such features wherever new contracts are being written.

5.2.2.7 Internal Ratings

All banks undertake some form of internal evaluation and rating of their assets and clients, particularly, for maintaining the regulatory loan loss provisions. Depending on the sophistication of banks, these systems can be different in different banks. Some banks have recently developed formal internal rating systems of the client and/or the facility. As discussed above, in a general sense an internal rating system can be described to be a risk-based inventory of individual assets of a bank.

These systems identify credit risks faced by the banks on an asset-to-asset basis in a systematic and planned manner instead of looking at bank's risk on an entire portfolio basis. The asset-to-asset coverage of the system makes it more relevant for banks whose asset structures are less homogenous. The Islamic modes of finance are diverse and have different risk characteristics. For

example, a credit facility extended to a BBB rated client on the basis of *Murabahah*, *Istisna'*, leasing and *Salam* will have different not uniform risks exposures. The risk exposure is expected to be different not only across modes of finance but also across clients. For example, if there are two clients both rated as BBB, due to the different nature of the businesses of the two clients, risk exposure of the same mode can be different for the different clients. In addition, different maturity can have different implication for risk across modes and across clients. Therefore, due to the diversity of the Islamic modes of finance, it is appropriate for the Islamic banks to measure the risk of each asset separately. Developing a system of internal ratings can be instrumental in doing this.

Various banks use different systems. For establishing a basic internal rating system in a bank, two basic information are required - maturity of the facility and credit quality of the client. Maturity of facility is known in all cases of funding. Credit quality of the client can be assessed by various means. The client may have a previous record with the bank, it may be rated by rating agencies and it must have audited reports. Moreover, the general reputation of the client, and the type of collateral provided can also be helpful. Putting all these and other relevant information together wherever available, bank staff can judgmentally assess the clients' credit quality.

Once this information is available, each client can be assigned an expected probability of default. After having information about the maturity of each facility and expected default probability for each client, as a first step, this information needs to be mapped together as in Table – 5.3⁵⁹. As a second step, a benchmark credit risk weight is assigned. In Table – 5.3 this benchmark credit risk weight (100%) is for a probability of default of 0.17% - 0.25% for a facility with a maturity of 3 years. With the same probability of default, the credit risk weight for a facility of 2 years' maturity will be 20% less than the benchmark and for a 4 years' maturity 18% more than the benchmark.

⁵⁹ The table is based on ISDA (2000).

Table 5.3
Hypothetical Internal Rating Index Relative to 3 Year Asset with
(Default Probability of 0.17% - 0.25% = 100%)

Probability of default %	0.5 Ysr	0.5-1Yrs	1-2Yrs	2-3Yrs	3-4Yrs	4-5Yrs	5-6Yrs	6-7Yrs	7-8Yrs	8-9Yrs	> 9Yrs
0.00-0.025	6	8	12	17	21	25	28	32	36	40	43
0.025-0.035	9	12	17	23	29	35	40	46	51	56	60
0.165-0.255	48	69	80	100	118	134	149	164	178	191	203
0.255-0.405	72	86	108	130	150	168	186	202	216	230	241

Most Islamic banks are technically capable to initiate some form of internal credit risk weighting of all their assets separately. In the medium and longer-run these could evolve into more sophisticated systems. Initiation of such a system can be instrumental in filling the gaps in the risk management system and hence enhancing the rating of these by the regulatory authorities and external credit assessment agencies.⁶⁰

At this stage, it is too early for the Islamic banks to qualify for even the foundation IRB approach for regulatory capital allocation. However, one needs also to reemphasize that the IRB approach is more consistent with the nature of Islamic modes of finance. It is with this background that the Islamic banks need to initiate programs for developing systems of internal rating. Regulatory authorities will recognize these systems only if these are found to be robust.

5.2.2.8 RAROC

RAROC is used for allocating capital among different classes of assets and across business units by examining their associated risk-return factors. An application of RAROC in Islamic finance would be to assign capital for various modes of financing. Islamic financial instruments have different risk profiles. For example *Murabahah* is considered less risky than profit-sharing modes of financing like *Mudharabah* and *Musharakah*. Using historical data on different

⁶⁰ Chapra and Khan (2000) recommend the Islamic banks to adopt this system. Bank Negara Malaysia (2001) calls for the BCBS to make this as the primary approach for regulation.

modes of financing for investments, one can estimate the expected loss and maximum loss at a certain level of confidence for a given period for different financial instruments. Then this information can be used to assign risk capital for different modes of financing by Islamic financial instruments.

The concept of RAROC can also be used to determine the rate of return or profit rate on different instruments *ex-ante* by equating their RAROCs as shown below.

$$RAROC_i = RAROC_j,$$

or $(\text{Risk Adjusted Return})_i / (\text{Risk capital})_i = (\text{Risk Adjusted Return})_j / (\text{Risk capital})_j$

where *i* and *j* represents different modes of financing (e.g., *Mudharabah* and *Musharakah* respectively). Thus if instrument *j* is more risky (i.e., has a larger denominator) then the financial institution can ask for a higher return to equate RAROC of the instrument with that of instrument *i*.

5.2.2.9 Computerized Models

Due to the revolutionary developments in the area of mathematical and computational finance and the use of computers, banks are increasingly using computerized models of risk management. These models are actually refined versions of the internal ratings systems. In the internal ratings systems information can be based on qualitative judgment, models are actually based on quantitative data. A number of credit risk management models are now available in the market such as the KMV, CreditMetrics, CreditPortfolioView, CreditRisk etc. In future these models are going to be more important for risk management. Therefore, there is a need for the Islamic banks to make planned and conscious strategies towards developing advanced systems wherever feasible.

5.3 MARKET RISKS

As mentioned before, market risks comprise of interest rate risks, exchange rate risks, and commodity and equity price risks. These are briefly discussed here in perspective of Islamic banks.

5.3.1 Business Challenges of Islamic Banks: A General Observation

It is generally accepted that the non-availability of financial derivatives to Islamic banks is a major hindrance in their way to manage market risks as compared to the conventional banks. The direct competitors of Islamic banks are

however, Islamic banking windows of conventional banks. Obviously, due to religious restrictions, the Islamic banks cannot enter the conventional banking market. But the conventional banks are offering the Islamic products simultaneously with their own products. Competition no doubt enhances efficiency and a leveled playing field is a prerequisite for a healthy competitive environment. A leveled playing field for competition between Islamic and conventional banks in this regard cannot be ensured without a complete separation of the risks of the Islamic products from the risks of conventional banks' other operations. There are a number of difficulties in separating these risks effectively.

As discussed earlier regulators have been trying to bring as many risks under the cover of capital as possible. Since capital is the ultimate protection against risks, it is a prudent policy, for banks to manage the risks of the organization at the group level. Particularly, derivatives for hedging purposes are used to control the risks of the banking organization at the group level rather than using these separately for activities of different units. This implies that the positions of an Islamic banking unit can be left open to comply with the requirements of the Shari[ah supervisors. But at the group level, the bank may not leave any position open without hedging using interest-rate derivatives. As a result, controlling the use of derivatives for hedging the group level positions are beyond the reach of Shari[ah supervisors of an Islamic window in a conventional bank.

In addition to supervisors, owners, credit assessment agencies and depositors are expected to influence the activities of banks. Unlike the owners of Islamic banks, the owners of most conventional banks cannot be expected to offer Islamic products as a result of their own religious beliefs. These products are offered as a result of pure business decisions. External rating agencies also rate banks only on the basis of their financial soundness not on the basis of religious commitment.

Clients, directly or through the Shari[ah boards can also be expected to effect the decisions of banks. The prime concern of Islamic depositors is to avoid any mixing of permissible and impermissible incomes. The clients of Islamic banking windows of conventional banks are mostly on the asset side. In most countries where Islamic banking windows are allowed, mutual funds are offered as an alternative to investment deposits. Islamic depositors in such systems will keep only current accounts. Since current account holders are not

entitled to any income, they will have no incentive in monitoring the management or income earning activities of banks.

Thus, there is no effective mechanism to prevent the conventional banks from using derivatives for managing the risks of their Islamic products. As a result, Islamic banks competing with the Islamic banking windows of conventional banks are in a serious competitive disadvantage as far as the use of derivatives are concerned. This poses to the Islamic banks the most serious business risk – that of competing on a playing field, which is not leveled. As discussed in section four, this playing field can effectively be leveled only if separate capital is required for the Islamic banking operations of a conventional bank.

There is a need to distinguish the environment as described above from an environment where all operations of banks could be subject to the principles of Islamic finance. If the entire banking system is brought under Islamic principles, the nature of this risk will change. In the ongoing dialogue in Pakistan about the introduction of a comprehensive Islamic banking system, the apprehension of local banks has been that as a result of introducing PLS deposits, there would be a quick migration of funds from the weaker (local) banks to the stronger (foreign) banks. This could prompt the collapse of local banks. The apprehension in fact highlights the potential market discipline which withdrawal risk of Islamic banking can introduce if the system is applied economy-wide. In countries where banks are mostly in the public sector, the subject of market discipline is however, not much relevant.

5.3.2 Composition of Overall Market Risks

The above discussion necessitates some analysis of the nature of important risks for which derivatives are used and the types of most dominant derivatives. There is no statistical information, which can tell us exactly about the proportion of each of the various risks in the total global financial risk. However, since derivatives are primarily used for the mitigation of risks, we can use the data on derivative markets to gauge the actual intensity of the various risks in the financial markets.

By end of December 2000, the total notional amount of the outstanding volumes of OTC traded derivative contracts was US dollars 64.6 trillion for interest rate derivatives and 15.6 trillions for FX derivatives. This makes the interest rate contracts 78% of the total notional amount of derivatives, and FX

contracts 19% of the total. The remaining 2% of the total were in equity-linked derivatives and 1% in commodity-based derivatives. A further narrowing down of the composition of the most important derivative market, namely the interest rate derivatives into its different components shows that 75% of these are in swaps, 15% in options and 10% in forward rate agreements⁶¹.

From this information we can conclude that interest rate risk and foreign exchange risk are the most important risks. The event of credit default in addition to creating an immediate liquidity problem magnifies the risk of the bank through two more channels. As a result of the delay in repayment, the effect of changes in the market prices will be adverse for the net income of the bank. Furthermore, as a result of the default the firm will be downgraded, again having a negative implication for the bank's net income. Conventional banks effectively use this decomposition of credit risk in mitigating the risks through credit derivatives. Credit derivatives are not available to Islamic banks. Moreover, due to default, the Islamic banks cannot reschedule the debt on the basis of the mark-up rate. Hence these banks are also more exposed to default triggered interest-rate risks as compared to their conventional counterparts⁶².

5.3.3 Challenges of Benchmark Rate Risk Management

Among interest rate derivatives, swaps are the most dominant contracts. Swaps facilitate dual cost reduction role simultaneously. On one hand these contracts enable financial institutions to utilize their comparative advantages in fund raising and exchanging the liabilities according to their needs. Thus, the contract minimizes the funding costs of participating institutions. On the other hand, they are used as effective hedging instruments to cut the costs of undesirable risks. Thus, the effective utilization of swaps undisputedly enhances competitive efficiency. Since swaps are primarily interest-based contracts, these have not attracted the attention of Islamic scholars.

Although Islamic banks do not undertake interest-based transactions they however, use the London inter-bank borrowing rate (LIBOR) as a benchmark in their transactions. Thus, the effects of interest rate changes can be transmitted to Islamic banks indirectly through this benchmark. In case of a change in the LIBOR, the Islamic banks could face this risk in the sense of

⁶¹ For the year 2000 as a whole, the turnovers of exchange traded derivatives were recorded as US dollars 383 trillion (interest 339 trillion, equity 41 trillion, and currency 2.6 trillion).

⁶² The interrelationship between credit and market risk is an important area of current research. But there are still no reliable measures of this relationship.

paying more profits to future depositors as compared to receiving less income from the users of long-term funds. Hence it is only more prudent to consider that the assets of Islamic banks can be exposed to the risk of change in the LIBOR.

Chapra and Khan (2000) argue that the nature of investment deposits on the liability side of the Islamic banks adds an additional dimension to this risk. Profit rates to be paid to *Mudrabah* depositors by the Islamic bank will have to respond to the changes in the market rate of markup. However, as profit rates earned on assets reflect the markup rates of the previous period, these cannot be raised. In other words, any increase in new earnings has to be shared with depositors, but it cannot be re-adjusted on the assets side by re-pricing the receivables at higher rates particularly, due to restrictions on the sale of debts. The implication is that the net *Murabahah* income of the Islamic bank is exposed to the markup price risk. Some techniques to mitigate the *Murabahah* (mark-up) price risk are discussed below.

5.3.3.1 Two-step Contracts and GAP Analysis

One of the most common and reliable tools to manage interest rate risk is the technique of *GAP analysis*⁶³ as discussed in section two. The GAP analysis technique is used to measure the net income and its sensitivity with respect to a benchmark. Risk management tools then target at ideally making the net income immune to any changes in the benchmark rate, i.e., a target net income is achieved whatever the market benchmark may be. If such an objective is achieved, an increase in the benchmark will not pose any risks to the targeted net income. The cash flows of the bank remain stable at a planned level ensuring stability of net income

The effectiveness of interest rate risk management depends on the re-price-ability of assets and liabilities. As for as the Islamic banks are concerned, investment deposits are perfectly re-price-able as the expected rate of return increases and decreases depending on the market rate of return. On the other hand most of the assets of Islamic banks are perfectly non-re-price-able due to restrictions on sale of debts. The effectiveness of a GAP management strategy for the Islamic banks requires flexibility from the two extremes on both liability and assets sides. On the asset side the Islamic banks' managers need to have more re-price-able assets. The list of probable financial instruments as given in

⁶³ See, Koch (1995).

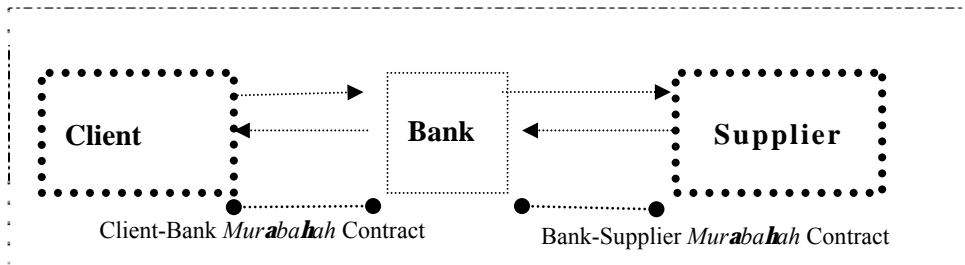
Table 5.4 are expected to make the asset side of Islamic banks more liquid in future.

The re-price-ability of instruments on the liability side shall be in the control of asset and liability managers; the re-price-ability of investment deposits is not in their control. This goal is always very difficult to achieve. However, the availability of more options is always expected to be helpful. One of such options is available to Islamic banks in the form of two-step contracts.

In a two-step contract, the Islamic bank can play the role of a guarantor in facilitating funds to the users. Since guarantee cannot be provided as a commercial activity, in a two-step contract, it can be provided by the Islamic bank's participation in the funding process as an actual buyer. In the existing *Murabahah* contracts the bank makes an up-front payment to the suppliers on behalf of the client. In the two-step contract the bank will have two *Murabahah* contracts, as a supplier with the client and as a buyer with the actual supplier (see Figure 5.3). The bank will hence not make an up-front payment to the actual supplier. The two-step *Murabahah* contract will have a number of implications for the banks.

Figure 5.3

Two-Step Contracts



- i. It can serve as a source of funds. In a longer maturity contract, such funds can be considered as tier-2 capital of the bank, based on the criteria allocated to such capital by the Basel Accord.
- ii. The contracts will enhance the banks' resources under management. This will have both good and adverse implications. The adverse implications will arise from the increased amount of financial risks. If these risks are managed properly, the contracts can prove to be

instrumental in enhancing the net income and hence competitiveness of Islamic banks.

- iii. This will enhance the liquidity position of Islamic banks. Although liquidity is not the immediate problem of Islamic banks, the availability of liquidity always enhances stability.
- iv. It will provide flexibility in liability management by offering different maturity of liabilities. The banks can match the maturity of their liabilities and assets more efficiently.
- v. The banks will actually guarantee the re-payment of the funds by the clients. Hence guarantee is provided in a more acceptable and transparent manner.
- vi. The concept of the two-step contracts is not restricted to *Murabahah*, it is equally applicable to *Istisna'*, leasing and *Salam*.
- vii. Finally, the new contracts would be an addition to the available financial instruments thus paving the way for developing further instruments.

5.3.3.2 Floating Rate Contracts

Fixed rate contracts such as long maturity installment sale are normally exposed to more risks as compared to floating rate contracts such as operating leases. In order to avoid such risks therefore, floating rate leases can be preferred. However, leases will expose the bank to the risk of equipment price risks as discussed below.

5.3.3.3 Permissibility of Swaps

As mentioned above the basic economic rationale of a swap contract is to cooperate in minimizing the cost of funds by reducing the borrowing cost and by reducing the cost of undesirable risks for both parties. In this manner a swap is a win-win contract for both participating parties. To start with, it is obvious that one cannot expect any *Fiqh* objections to such a cooperative strategy. It is the process of implementing the swap contract, which may not be permissible. Particularly, as all swaps are interest-based, there is no possibility for the Islamic banks to use such contracts. To design Shari[ah compatible swaps the following conditions need to be fulfilled.

- i. There is a party whose credit rating is low because it holds long maturity (illiquid) assets and short maturity liabilities. Because, of the shorter maturity of liabilities, this party faces uncertainties in the short-run. Since its assets are long-term it needs to borrow long-term, but its

long-term borrowing cost is high due to its low rating. Due to non-availability of such cheaper and long-term funds, it actually borrows short-term at a higher cost.

- ii. There is another party whose liabilities are long-term but assets are more liquid as a result its credit rating is very good. It has no uncertainties in the short-term but has uncertainties in the long run at the time of the maturity of liabilities. It can borrow long-term at cheaper cost, but its borrowing preference is for short-term to match its asset-liability maturity. These two scenarios simplify the real world situation. Obviously, the *Fiqh* cannot have an objection to these quite natural situations.
- iii. There exists a fixed-income financial instrument, which is used for raising long-term funds and there also exists a floating income financial instrument, which is used for raising short-term funds.

The third prerequisite for having an acceptable swap depends on the availability of suitable Shari[ah compatible instruments. At the present, there are no fixed and floating income Islamic financial instruments available in the secondary markets. However, ideas have been substantially conceptualized and efforts are underway to make institutional arrangements for making such instruments available. Once such instruments become available, the Islamic banks will be empowered with one of the most powerful tools of market risk management, namely, swaps.

As discussed in section two, the objective of a swap is to exchange the costs of raising funds on the basis of comparative advantages. It has been shown there that by means of swap both parties end up with a net financial gain as well as paying in consistency with their own asset and liability structures. Thus the argument for a swap is exactly the same as the argument for free international trade on the basis of comparative advantages. Since swaps are arranged in trillions of US dollars in real life, they are hence the practical manifestation of the theory of gains from comparative advantages under free trade.

The last question in evaluating a swap contract from the Islamic finance perspective is, is it permissible for two parties to pay the funding costs of each other? As shown, a swap is basically a win-win contract. Both parties are better off and hence there could not be any objection from the Shari[ah point of view. Thus we conclude that there is a great need for swap contracts. There apparently are no Shari[ah restrictions in developing swap contracts as such. The limitation

is that of the availability of Shari[ah compatible financial instruments suitable for using in swap contracts.

5.3.3 Challenges of Managing Commodity and Equity Price Risks

In general, fluctuations in the prices of commodities and equities is not of any serious concern for bank asset-liability managers. The statistical information on derivatives provided earlier confirms this fact. However, banks may consider investment in commodities particularly gold and equities as a source of income for their clients and themselves. Banks' exposures in this regard are normally marginal and are included in the trading books. There are however, some special considerations involved in conceptualizing these risks, particularly commodity price risks, in Islamic banks. First we briefly discuss these considerations. After that the challenges of controlling the risks are discussed.

While conceptualizing commodity price risks in Islamic banking there is a need to clarify a number of points.

- i. The *Murabahah* price risk and commodity price risk must be clearly distinguished. In Islamic banking there could be a misconception about the treatment of mark-up price risk as commodity price risk. The basis of the mark-up price risk is LIBOR. Furthermore, it arises as a result of the financing not trading process. Therefore, in our understanding it shall conceptually be treated as an equivalent of interest (benchmark) rate risk as discussed in the previous section.
- ii. In contrast to mark-up price risk, commodity price risk arises as a result of the bank holding commodities for some reason. Some good examples of such reasons are: a) The Islamic bank developing an inventory of commodities for selling, b) Developing inventories as a result of *Salam* financing, c) gold and real estate holdings and d) holding of equipment particularly for operating leases. There is always a possibility that in leases ending with ownership, the benchmark rate risk and equipment price may not be properly identified and separated. This could be one of the reasons due which the *Fiqh* scholars do not recommend such leases.
- iii. Commodity price risk arises as a result of ownership of a real commodity or asset. Mark-up price risk arises as a result of holding a financial claim, which could be the result of deferred trading. Therefore, under leasing, the equipment itself is exposed to commodity price risk

and the overdue rentals are exposed to interest-rate risks. Similarly, if the lease contract is a long one and the rental is fixed not floating, the contract faces interest rate risk. Thus, a fixed rental, based on a long operating lease is exposed to dual edged risks – commodity and mark-up price. In order to avoid such risks banks shall prefer leases ending with ownership possibly price fixed in the beginning and rentals periodically re-priced. Such a lease would actually be an installment sale contract based on a floating rate mark-up. In this case, the banks can actually minimize their exposure to both the mark-up and commodity price risks. Our survey results reveal that there is a tendency among Islamic banks to prefer such contracts. However, neither such a lease nor such an installment sale is compatible with the Shari[ah].

Thus we can conclude that the *Murabahah* and *Istisna'* transactions are exposed to *Murabahah* (mark-up price) or benchmark rate risk and Salam and leases are exposed to both *Murabahah* price and commodity price risks. Due to *Salam*, and operating leases, commodity price risk exposure of Islamic banks is expected to be higher as compared to their peer group conventional banks. We discuss here some of the techniques which may be useful in managing the commodity and equipment price risks.

5.3.3.1 Salam and Commodity Futures

Futures contracts enable their users to lock-in future prices of their own expectations. For example, a wheat grower typically faces price risk - a deviation of actual future wheat prices from the expected future wheat prices. A farmer whose wheat will be ready for market in six months time may expect its price to be some amount per bushel; after six months the price may actually turnout to be more or less than that. If the farmer dislikes the uncertainty related to the future prices of wheat, he simply has to find a future buyer on the basis of *Salam* who would pay him the expected price per bushel now. If the deal is reached, the farmer has removed the uncertainty by selling the wheat at the price of his own expectations. Removal of the future wheat price risk enables the farmer to project his business forecasts more accurately, particularly, if he had to pay significant amount of debts.

The potential of futures contracts in risk management and control is tremendous. Conventional banks manage risks by utilizing commodity forwards and futures contracts. In these contracts, unlike *Salam* payment of the price of the commodity is postponed to a future date. In the traditional *Fiqh* postponing

both the price and the object of sale is not allowed. Therefore, the Islamic banks at the present do not utilize the commodity futures contracts in a large scale. Nevertheless, by virtue of a number of *Fiqh* Resolutions, conventions, and new research, the scope for commodity futures is widening in Islamic financing⁶⁴. In the future these contracts may prove to be instrumental in managing the risks of commodities.

5.3.3.2 *Bai' al-Tawrīd with Khiyār al-Sharṭ*

As mentioned above the objection of Islamic scholars to delaying both the price and the object of sale is softening. An important reason for this has been the need and sometimes inevitability of such transactions in the real life. The classical example given about *Bai' al Tawrīd* as a long-term contract is the supply of milk by the milkman. At the time of signing the contract, the milk buyer and the milkman (the two parties) agree on the quantity of milk to be delivered daily, the duration of the contract, the time of delivery and the price. The milk is not present at the time of the contract and the price is mostly paid periodically, normally on monthly basis. Public utilities provide a modern example for the case. Public utilities are consumed and the bill is paid when it comes in a future date. In this way, both the price and the service are not present in the beginning. There are numerous other examples from real life where the postponement of the two actually enhances efficiency and convenience and sometimes the postponement becomes in fact inevitable.

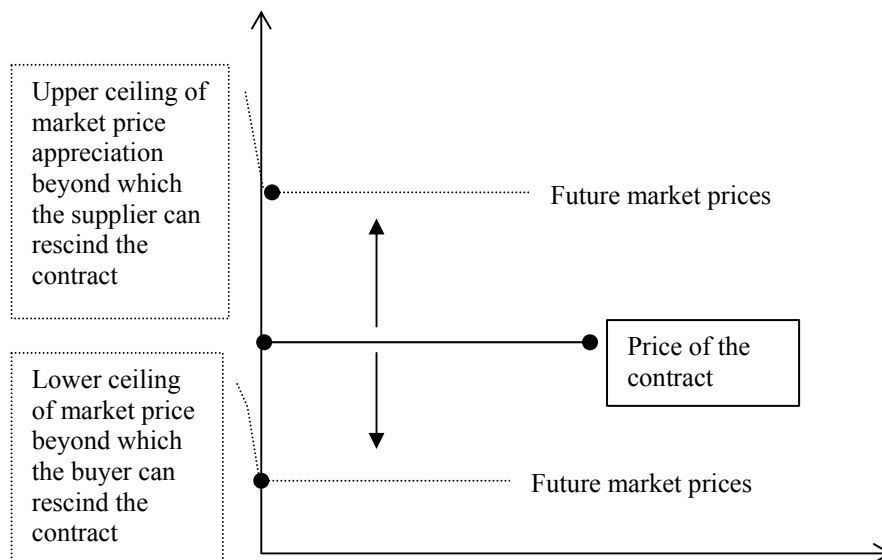
The example of the milkman provides an important basis for extending the postponement of both the price and the object to banking. Any type of Islamic banking contract with a predetermined price, quantity and long duration and in which the price and object are both postponed will have an analogy to the example. In such contracts, both the two parties are exposed to price risk. The risk is that immediately after the contract, of a fixed price and a fixed quantity, the two parties may experience a noticeable change in the market price of the

⁶⁴ The OIC *Fiqh* Academy in its Resolution # 65/3/7 has resolved that in *Istisna'* both the price and its object of sale can be delayed. *Istisna'* is the most dynamic mode of Islamic finance. Thus, such delayed payment *Istisna'* are expected to increase in volume. The *Fiqh* Academy has also resolved on the acceptability of *'arboon*. Since, in *'arboon* most part of the price is delayed as well as the object of sale is also delayed this also falls in the framework of the definition of a forward sale. Islamic banks are using a special variant of *'arboon* in which the client pays small part of the price up-front and payment of the price and the object of sale are both delayed. For all Resolutions of the Academy see IRTI-OICFA (2000). *Bai' al-tawrīd* (continuous supply-purchase relationship with known but deferred price and object of sale) is a popular contract among the Muslims of our time, particularly in public procurements and finally, some prominent Islamic banks are already using currency forwards and futures.

commodity. If the market price declines the buyer will be at a loss by continuing with the contract. If market price rises, the seller will lose by continuing with the contract. Thus, in such contracts of continuous-supply-purchase, a *Khiyār al-Shart* (option of condition) for rescinding the contract will make the contract more just and will reduce the risk for both parties. In Figure 5.4, if the agreed price is P_0 , and the two parties are uncertain about the future market prices, they can mutually determine the upper and lower boundaries for the acceptable movements in market prices. Beyond these boundaries they can agree to rescind the contracts⁶⁵.

Figure 5.4

***Khiyār al-Shart* with respect to future prices**



5.3.3.3 Parallel Contracts

Price risk can either be due to transitory changes in prices of specific commodities and non-financial assets or due to a change in the general price level or inflation. Inflation poses risk to the real values of debts (receivables), which are generated as a result of *Murabahah* transactions. However, as a result of inflation it is expected that the prices of the real goods and commodities, which the banks acquire as a result of *Salam* transactions will appreciate. This

⁶⁵ For more detailed discussion, see Obaidullah (1998).

divergent movement of asset values created as a result of *Murabahah* and *Salam* has the potential to mitigate the price risks underlying these transactions. Although permanent shifts in assets' prices cannot be hedged against, however, the composition of receivable assets on the balance sheet can be systematically adjusted in such a way that the adverse impact of inflation is reduced as explained in Figure 5.5 (A).

Suppose that an Islamic bank has sold assets worth \$100 on *Murabahah* basis for six months, it can fully hedge against inflation by buying \$100 worth on *Salam* basis. If for example, 10% of the value of the previous assets is wiped out by inflation, its *Salam*-based receivables can become valuable by the same percentage. Moreover, as for as the *Salam* is concerned, it can be fully hedged by the bank by adopting an equivalent parallel *Salam* contract as a supplier. Figure 5.5 (B) also explains this possibility.

Figure 5.5 (A):

Parallel Contracts: Implications for Inflation Risk Mitigation

Panel A. Trader as a Seller

Price Deferred Sale
(Receivables: Debts)

Panel B. Trader as a Buyer

Object Deferred Purchase
(Receivables: Real Assets)

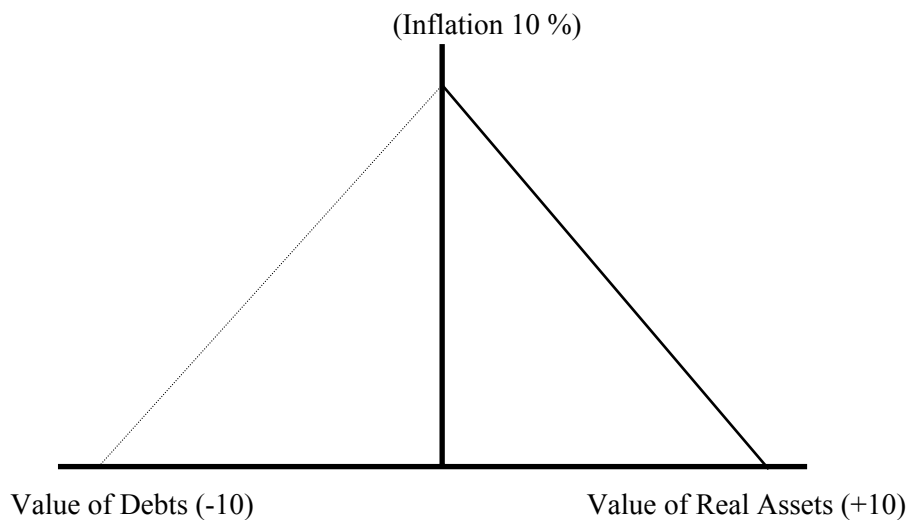


Figure 5.5 (B)

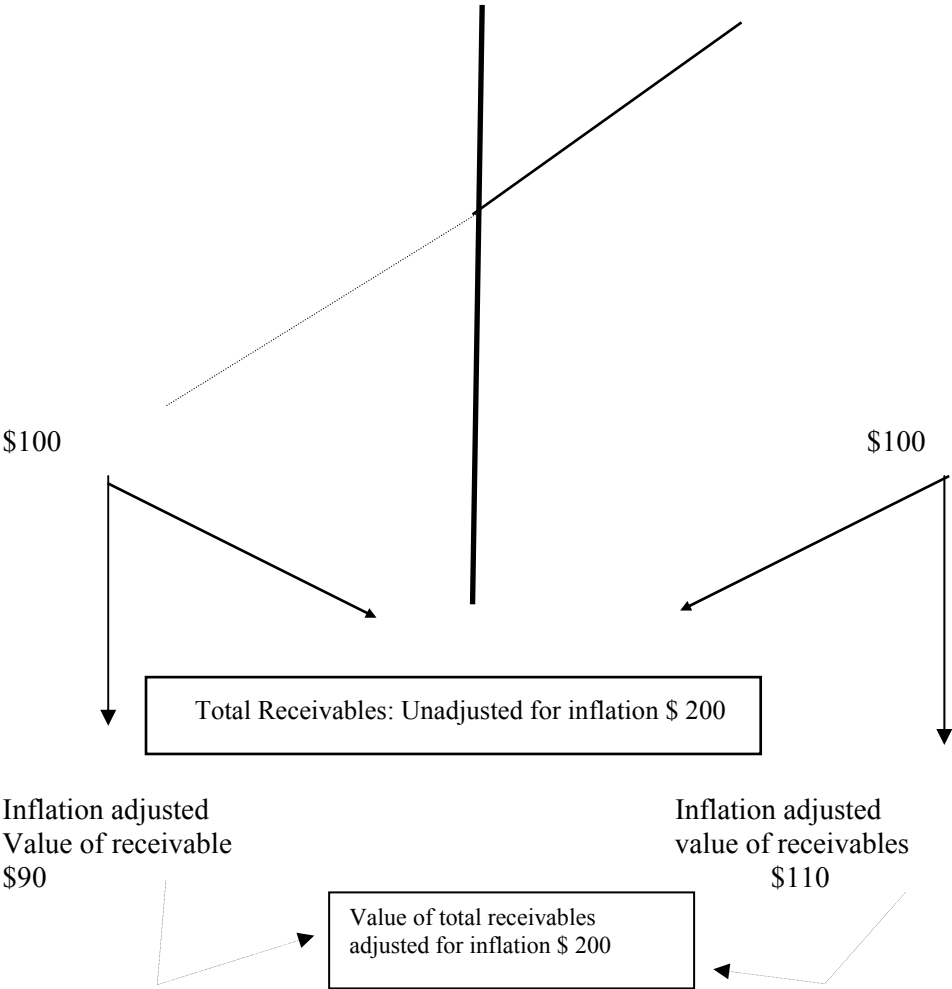
Managing Receivables as a Hedge Against Inflation

Panel A

Panel B

Dollar Value of Price Deferred Sales

Dollar Value of Object Deferred Purchase



5.3.4 Equity Price Risks and the use of *Bay‘ al-‘arboon*

Options are another powerful risk management instrument. However, a Resolution of the OIC *Fiqh* Academy prohibits the trading in options. Therefore, the scope for the utilization of options by the Islamic banks, as risk management tool is limited at the present. Nevertheless, some Islamic funds have successfully utilized - '*arboon* (down payment with an option to rescind the contract by foregoing the payment as a penalty) to minimize portfolio risks in what are now popularly known in the Islamic financial markets as the principal protected funds (PPFs).

The PPF arrangement roughly works in the following manner; 97% of the total funds raised are invested in low risk (low return) but liquid *Murabahah* transactions. The remaining 3% of the funds are used as a down payment for '*arboon* to purchase common stock in a future date. If the future price of the stock increases as expected by the fund manager, the '*arboon* is utilized by liquidating the *Murabahah* transactions. Otherwise the '*arboon* lapses incurring a 3% cost on the funds. This cost is however, covered by the return on the *Murabahah* transactions. Thus, the principal of the fund is fully protected. In this way, '*arboon* is utilized effectively in protecting investors against undesirable down side risks of investing in stocks while at the same time keeping an opportunity for gains from favorable market conditions

5.3.5 Challenges of Managing Foreign Exchange Risk

Foreign exchange risk can be classified into economic risk, transaction risk and translation risk. Economic risk is the risk of losing relative competitiveness due to changes in relative exchange rates. For instance, an appreciation of local currency will increase the relative price of exported goods directly as well as indirectly. There is no better hedge against such a risk except for having subsidiaries in countries of significant markets. This is a crucial matter for non-financial firms, but financial firms at the same time cannot ignore it either. In fact, the dominant Islamic groups of financing have such subsidiaries in important markets.

Translation risk occurs only in the accounting sense. If the subsidiary of a bank is operating in a country, where it may make a 13% profit during a year. If the currency of these earnings depreciates by 10% during the period against the home country currency, the earnings translated into the home country

currency actually increase by 3%. Hence this risk does not affect the value of assets in place.

Transaction risks originate from the nature of the bank's deferred delivery transactions. Typically the implication of transaction risk is similar to that of transitory changes in commodity prices. The currency in which receivables are due (or assets in general are held) may depreciate in the future and the currency in which payables (or liabilities in general) are held may appreciate, thus posing a risk to the overall value of the firm.

This risk could have adverse and severe consequences for a business. Therefore, it must be minimized by various techniques. Any remaining risk must be hedged by using currency futures and forwards. Some of the possible methods of reducing currency transaction risks are briefly discussed here.

5.3.5.1 Avoid Transaction Risks

On the banking book, the most sensible method to avoid transaction risk is to avoid undertaking such transactions, which require dealing in unstable currencies. However, this is not always possible, as by rigidly following this strategy market share can be lost. Banks have to decide carefully to find an optimal trade-off between market shares and possible transaction risks.

5.3.5.2 Netting

On-balance sheet netting is another method used to minimize the exposure of risks to the net amount between the receivables and payables to counterparty. Netting is more suitable for payments between two subsidiaries of a company. With non-subsidiary counterparties, the currency position of receivables and payables can generally be matched so that the mutual exposures are minimized.

5.3.5.3 Swap of Liabilities

Exchange of liabilities can also minimize exposure to foreign exchange risk. For instance, a Turkish company needs to import rice from Pakistan, and a Pakistani company needs to import steel from Turkey. The two parties can mutually agree to buy the commodities for each other, bypassing the currency markets. If the dollar amount of the two commodities is the same, this arrangement can eliminate transaction risk for both parties. If the ratings of the two companies are good in their own home countries as compared to the other country, this swap will also save them some of the cost of finance.

5.3.5.4 Deposit Swap

Islamic banks have been using the technique of deposit swaps. In this method, two banks in accordance with their own expected risk exposures agree to maintain mutual deposits of two currencies at an agreed exchange rate for agreed period of time. For example, a Saudi bank will open a six months account for SR 50m in a counterpart Bangladeshi bank. The Bangladeshi bank will open the TK amount of the SR deposit in the Saudi bank for the same period. The SR/TK exchange rate will be mutually agreed and will be effective for the deposit period. After the six months both banks will withdraw their deposits. In this way the risk exposure for the value of the deposits for the currency involved are minimized according to the two banks' own perceptions.

There are at least two Shari[ah objections to this contract. The exchange rate cannot be any rate except the spot rate. In this case the rate is fixed for a period during which there could be a number of spot rates not only one. The exchange of deposits is also questionable. These deposits are supposed to be current accounts, which are treated as *Qard*. There cannot be mutual *Qard*. Further, *Qard* in two different currencies cannot be exchanged.

5.3.5.5 Currency Forwards and Futures

Forwards and futures are the most effective instruments of hedging against currency risks. Most Islamic banks who have significant exposures to the FX risk do use currency forwards and futures for hedging purposes as required by regulators. However, all *Fiqh* scholars unanimously agree that such contracts are not allowed in the Shari[ah. Keeping this apparent contradiction in view and the tremendous difference between the stability of the present and past markets, Chapra and Khan (2000) make a suggestion to the *Fiqh* scholars to review their position and allow the Islamic banks to use these contracts for hedging. Such a change in position will remove the contradiction between the practices of Islamic banks and the existing *Fiqh* positions on one hand and will empower the Islamic banks on the other hand. Furthermore, it may be noted that hedging is not an income earning activity. Since *Riba* is a source of income and hedging does not generate income, there is no question of involvement of *Riba*. On the other hand hedging actually reduces *Gharar*. It is important to note that this a personal opinion of the two writers. *The consensus among Fiqh scholars is that currency futures and forwards are another form of Riba which have been prohibited by the Shari[ah.*

5.3.5.6 Synthetic Forward

As an alternative to the currency forwards and future, Iqbal (2000) proposes a synthetic currency forward contract. The purpose is to design a currency forward without using the currency forward contracts. The synthetic forward can be designed given a number of conditions. These conditions are the need for hedging against foreign exchange rate risk, the existence of an equal tenure local *Murabahah* investment and foreign *Murabahah* investment. The existence of a known rate of return on the *Murabahah*-based investments is another condition. Finally, that the foreign bank, which invests in dollar-based *Murabahah*, is willing to collaborate with the local bank, which invests in the local currency-based *Murabahah*. The dollar amount of the two investments must be the same⁶⁶.

5.3.5.7 Immunization

Once the net exposure is minimized the possibility exists that the exposure can be hedged. Suppose an Islamic bank has to pay in three months time \$1 million for a contract, which it has signed when the exchange rate is Rs.60/\$. The risk is that after three months, the dollar will appreciate as compared to the initial exchange rate. The bank can protect against this risk, by raising three months' PLS deposit in Rupees for the dollar value of 1m and buying with this amount \$1m at the spot rate. These dollars can then be kept in a dollar account for three months. After the three months and at the time of making the payment, the PLS deposit will mature and the bank can share the earning on the dollar deposit with the rupee deposit holders. Thus, the dollar exchange rate risk for the three months' period is fully hedged by the bank.

5. 4 LIQUIDITY RISK

As mentioned earlier, liquidity risk is the variation in a bank's net income due to the bank's inability to raise capital at a reasonable cost either by selling its assets in place (asset liquidity problem) or by borrowing through issuing new financial instruments (funding liquidity problem). All other risks of a bank culminate into liquidity crunch before bringing a problem bank down. Operationally, a bank fails when its cash inflows from repayments of credits, sale of assets in place and mobilization of additional funds fall short of its mandatory cash outflows, deposit withdrawals, operating expenses, and meeting its debt obligations.

⁶⁶ For details of the arrangement see, Iqbal (2000).

A recent study commissioned by the Bahrain Monetary Agency (BMA 2001) shows that in general Islamic banks are facing the phenomenon of excess liquidity. The total assets of the Islamic banks in the sample were 13.6 billion dollars and 6.3 billion dollars were found to be in liquid assets. For Islamic financial institutions with a combined asset of 40 billion dollars, the liquid assets are calculated to be 18.61 billion dollars. The study shows that the peer group conventional counterparts of the Islamic banks in the sample, in average, keep 46.5% less liquidity as compared to the Islamic institutions.

On the average, conventional banks are expected to maintain the bare minimum liquidity, which can satisfy regulatory requirements. The liquidity position of Islamic banks is much in excess of the regulatory requirements. This means that these liquid funds are either not earning any return at all or earning a return much lesser than the market rates. Thus the excess liquidity position of the Islamic banks generates for these banks a serious business risk as it adversely affects the rates of returns offered by them as compared to their conventional competitors. Furthermore, in most cases these banks largely rely on current accounts, which is a more stable source of free liquidity.

However, for a number of reasons, Islamic banks are prone to face serious liquidity risks.

- i. There is a *Fiqh* restriction on the securitization of the existing assets of Islamic banks, which are predominantly debt in nature. Thus, the assets of Islamic banks are not liquid as compared to the assets of conventional banks.
- ii. Due to slow development of financial instruments, Islamic banks are also not able to raise funds quickly from the markets. This problem becomes more serious due to the fact that there is no inter-Islamic banks money market.

Table 5.4

List of Islamic Financial Instruments

CERTIFICATE	BRIEF DESCRIPTION
<i>Declining participation certificates</i>	Redeemable <i>Musharakah</i> certificates were designed by the IFC for providing funds to the Modaraba companies in Pakistan.
<i>Islamic Deposit Certificates</i>	Based on <i>Mudarabah</i> principle, the proceeds of these certificates are meant for general purpose utilization by the issuing institution.
<i>Installment sale debt certificates</i>	Installment sale debt certificate is proposed to finance big-ticket purchases by making a pool of smaller contributions. The certificate represents the principal amount invested plus the <i>Murabahah</i> income. These are issued mostly in Malaysia as Islamic debt certificates.
<i>Islamic Investment certificates</i>	Similar to Islamic deposit certificates, but the proceeds are meant to be utilized in a specific project.
<i>Istisna' debt certificates</i>	Like the installment sale debt certificate, this certificate represents the investors' principal amount investment in the <i>Istisna'</i> project plus the <i>Murabahah</i> income and is proposed for financing infrastructure projects.
<i>Leasing certificates</i>	Leasing certificate represents ownership of usufructs leased out for a fixed rental income. Since usufructs are marketable, this certificate can be bought and sold.
<i>Mudarabah certificates</i>	<i>Mudarabah</i> certificate represents ownership in the beneficiary company without a voting right issued so far by several institutions.
<i>Muqarada certificates</i>	<i>Muqaradah</i> certificate is a hybrid between <i>Mudarabah</i> certificate and declining participation certificates to be issued by the government for the development of public utility projects. A <i>muqarada</i> certificate law was enacted in Jordan during the early Eighties, but these certificates were never issued.
<i>Musharakah certificates</i>	<i>Musharakah</i> certificates are common stocks of companies doing Shari[ah compatible business. In Iran the government for financing infrastructure projects issues these certificates. In Sudan these are issued as an instrument of monetary policy.
<i>National participation certificates</i>	National participation certificates are proposed by the IMF staff as an instrument for mobilizing resources for the public sector. These proposed instruments are based on the concept of <i>Musharakah</i> certificates are issued in Iran. The certificates are assumed to represent as an ownership title in public sector assets of a country.
<i>Property income certificates</i>	Property income certificate is a <i>Mudarabah</i> income note with a secure stream of income from an ownership in a property without a voting right.
<i>Participation term certificates</i>	Participation term certificates were issued by the Bankers' Equity Pakistan in the Eighties. These had some common characteristics of declining <i>Musharakah</i> and <i>Muqarada</i> certificates.
<i>Rent sharing certificates</i>	The holder of this certificate shares in the rental income of the asset against which the certificate has been issued.
<i>Revenue sharing certificates</i>	Revenue sharing certificates were issued in Turkey for re-financing the privatized infrastructure projects.
<i>Salam certificates</i>	The holder of a <i>Salam</i> certificate claims commodities, goods and services in a specified future date against the payments the holder has made.
<i>Two-step contracts – Leasing, Murabahah, Istisna', Salam</i>	In these contracts the bank pays to the suppliers in installment and creates a fixed liability in its balance sheet instead of paying up-front to the suppliers.
<i>Hybrid certificates</i>	Hybrid instruments allow the holder of any of the debt certificates to exchange the certificate for other assets of the issuing entity or in any other entity subject to the offer prescribed on the hybrid certificate.

- iii. The specific objective of Lender of Last Resort (LLR) facilities is to provide emergency liquidity facility to banks whenever needed. The existing LLR facilities are based on interest, therefore, Islamic banks cannot benefit from these and,
- iv. Due to the non-existence of a liquidity problem at the present, these banks do not have formal liquidity management systems in place. Hence there is a large potential to develop financial instruments (see Table 5.4 for a list of potential instruments) and markets, which can utilize the excess utility of the Islamic banks for income earning. The project on the Islamic Capital Markets sponsored by the IDB, BMA and Bank Nagara Malaysia is expected to formally launch a facility for tapping the potential.

VI

CONCLUSIONS

The previous sections of this paper covered a number of important areas concerning risk management issues in the Islamic financial industry. The introductory section covered among others, the systemic importance of the Islamic financial industry. An overview of the various concepts of risks and the industry standards of risk management techniques were discussed in section two along with the discussion of some of the unique risks of the Islamic modes of finance. The perception of the Islamic banks about various risks were surveyed through a questionnaire and analyzed in section three. In section four the emerging regulatory concerns with risk management have been discussed and some conclusions were drawn for the Islamic banking supervision. The Shari[ah related challenges concerning risk management were analyzed in section five. In the present section we summarize the main conclusions of the paper.

6.1 The Environment

Islamic financial industry has come a long way during its short history. The future of these institutions, however, will depend on how they cope with the rapidly changing financial world. With globalization and informational technology revolution, activities of different financial institutions have expanded beyond national jurisdictions. As a result, the financial sector in particular has become more dynamic, competitive, and complex. Moreover, there is a rapidly growing trend of cross-segment mergers, acquisitions and financial consolidation, which blurs the unique risks of the various segments of the financial industry. As a result, the general premise of universal banking is becoming more dominant. Furthermore, there has been an unprecedented development in computing, mathematical finance and innovation of risk management techniques. All these developments are expected to magnify the challenges that Islamic financial institutions face particularly as more well-established conventional institutions have started to provide Islamic financial products. Islamic financial institutions need to equip themselves with the up-to-date management skills and operational systems to cope with this environment. One major factor that will determine the survival and growth of the industry is how well these institutions manage the risks generated in providing Islamic financial services.

6.2 Risks Faced by the Islamic Financial Institutions

The risks faced by the Islamic financial institutions can be classified into two categories – risks which they have in common with traditional banks as financial intermediaries and risks which are unique due to their compliance with the Shari[ah. Majority of the risks faced by conventional financial institutions such as credit risk, market risk, liquidity risk, operational risk, etc., are also faced by the Islamic financial institutions. However, the magnitudes of some of these risks are different for Islamic banks due to their compliance with the Shari[ah. In addition to these risks commonly faced by traditional institutions, the Islamic institutions face other unique risks. These unique risks stem from the different characteristics of the assets and the liabilities. Other than the risks that conventional banks face, the profit-sharing feature of Islamic banking introduces some additional risks. In particular, paying the investment deposits a share of the bank's profits introduces withdrawal risk, fiduciary risk, and displaced commercial risks. In addition, the various Islamic modes of finance have their own unique risk characteristics. Thus, the nature of some risks that Islamic financial institutions face is different from their conventional counterparts.

6.3 Risks Management Techniques

Consequent on the common or unique nature of risks faced by the Islamic financial institutions, the techniques of risk identification and management available to these institutions are of two types. The standard traditional techniques that are not in conflict with the Islamic principles of finance are equally applicable to the Islamic financial institutions. Some of these are, for example, GAP analysis and maturity matching, internal rating systems, risk reports, and RAROC. In addition there is a need for adapting the traditional tools or developing new techniques that must be consistent with the Shari[ah requirements. Similarly, the processes, internal control systems, internal and external audits as used by the conventional institutions are equally applicable to Islamic financial institutions. There is, however, a need to develop these procedures and processes further by the Islamic financial institutions to tackle the additional unique risks of the industry.

6.4 Risk Perception and Management in Islamic Banks

Results from a survey of 17 Islamic institutions from 10 different countries reveals the bankers' perspectives on different risks and issues related to the risk management process in Islamic financial institutions. The results

confirm that Islamic financial institutions face some risks arising from profit-sharing investment deposits that are different from those faced by conventional financial institutions. The bankers consider these unique risks more serious than the conventional risks faced by financial institutions. The Islamic banks feel that the returns given on investment deposits should be similar to that given by other institutions. They strongly believe that the depositors will hold the bank responsible for a lower rate of return and may cause withdrawal of funds by the depositors. Furthermore, the survey shows that the Islamic bankers judge profit sharing modes of financing (diminishing *Musharakah*, *Musharakah* and *Mudarabah*) and product-deferred sale (*Salam* and *Istisna*) more riskier than *Murabahah* and *Ijarah*.

We found the overall risk management processes in Islamic financial institutions to be satisfactory. We apprehend, however, that this may be because the banks that have relatively better risk management systems have responded to the questionnaires. The results from risk management process shows that while Islamic banks have established a relatively good risk management environment, the measuring, mitigating and monitoring processes and internal controls needs to be further upgraded.

The survey also identifies the problems that Islamic financial institutions face in managing risks. These include lack of instruments (like short-term financial assets and derivatives) and money markets. At the regulatory level, the financial institutions apprehend that the legal system and regulatory framework is not supportive to them. The results indicate that the growth of Islamic financial industry will to a large extent depend on how bankers, regulators, and *S Shari*ah scholars understand the inherent risks arising in these institutions and take appropriate policies to cater to these needs. This calls for more research in these areas to develop risk management instruments and procedures that are compatible with *Shari*ah.

6.5 Regulatory Concerns with Risks Management

The primary concern of regulatory and supervisory oversight standards is to ensure a) systemic stability, b) protect the interest of depositors and c) enhance the public's confidence on the financial intermediation system. The Islamic banks could not be an exception to these public policy considerations. Due to the new risks introduced by the Islamic banks, it is expected that regulatory and supervisory concerns will increase with the expansion of the Islamic products.

6.6 Instruments of Risk-based Regulation

The instruments used for the regulation and supervision of financial institutions can broadly be classified into three categories:

- i. Ensuring the maintenance of a minimum level of risk-based capital.
- ii. Putting in place an effective system of risk-based supervision, and
- iii. Making certain the timely disclosure of correct information about risk management systems and processes.

These three instruments constitute the three pillars of the New Basel Accord, which primarily aims at developing risk management culture in the financial institutions by providing capital incentives for good systems and processes. By issuing a consultative document and by inviting comments on the document all financial institutions are provided an opportunity to participate in the process of setting these standards. The Islamic banks must participate in the process so that the standards can cater for their special needs.

6.7 Risk-based Regulation and Supervision of Islamic Banks

Adopting international standards for the regulation and supervision of Islamic banks will increase the acceptance of these institutions in the international markets and hence will prove to be instrumental in making the institutions more competitive. Some standards could be applied without any difficulty. However, there is a difficulty in applying in particular the risk weighting standards to Islamic banks due to the different nature of the Islamic modes of finance. This limitation is overcome by the internal ratings-based approach of the New Basel Accord. It is early for the Islamic banks to qualify for using internal ratings for regulatory capital allocation. However, by opting for this approach in the future, the Islamic banks will not only be able to comply with the international standards but will also be developing risk management systems suitable for the Islamic modes of finance. Moreover, the nature of the Islamic banks' current and investment accounts creates a unique systemic risk, namely, the transmission of risks of one account to the other. In the Islamic banking windows of traditional banks, this systemic risk could be in the form of risk transmission between permissible and impermissible sources of income. These two systemic risks can be prevented by requiring separate capital for the current and investment accounts of an Islamic bank as well as for traditional and Islamic banking activities of a conventional bank.

6.8 Risk Management: Shari'ah -based Challenges

Risk management is an ignored area of research in Islamic finance. The present paper is one of the few written in this area so far. Therefore, a number of challenges are still being confronted in this area. These challenges stem from different sources. First, a number of risk management techniques are not available to Islamic financial institutions due to requirements for the Shari'ah compliance. In particular, these are credit derivatives, swaps, derivatives for market risk management, commercial guarantees, money market instruments, commercial insurance, etc. Due to lack of research efficient alternatives to these techniques have not been explored. Second, there are a number of Shari'ah positions which effect the risk management processes directly. Some of these are lack of effective means to deal with willful default, prohibition of sale of debts and prohibition of currency forwards and futures. Third, lack of standardization of Islamic financial contracts is also an important source of the challenges in this regard.

A number of ideas have been discussed and analyzed in the paper which can be considered to constitute an agenda for further research and deliberations by researchers, practitioners and Shari'ah scholars. For their practical relevance the ideas discussed in the paper must attain the consensus of the Shari'ah scholars. There is a great need to enhance the process of consensus formation on a priority basis so that the Islamic financial institutions can develop Shari'ah compliant risks management systems as early as possible.

VII

POLICY IMPLICATIONS

Based on what has been reported in this study, a number of policy implications can be suggested for the development of risk management culture in the Islamic financial institutions. Some of these are mentioned here.

7.1 Management Responsibility

A risk management culture in Islamic banks can be introduced by involving all the departments/sections in the risk management process discussed. In particular, the Board of Directors can create the risk management environment by clearly identifying the risk objectives and strategies. The management needs to implement these policies efficiently by establishing systems that can identify, measure, monitor, and manage various risk exposures. To ensure the effectiveness of the risk management process, Islamic banks also need to establish a proficient internal control system.

7.2 Risk Reports

Risk reporting is extremely important for the development of an efficient risk management system. We consider that the risk management systems in Islamic banks can be substantially improved by allocating resources to preparing the following periodic risk reports. The sketches of some of the reports are given in Appendix-2.

- i. Capital at Risk Report
- ii. Credit Risk Report
- iii. Aggregate Market Risk Report
- iv. Interest Rate Risk Report
- v. Liquidity Risk Report
- vi. Foreign Exchange Risk Report
- vii. Commodities and Equities Position Risk Report
- viii. Operational Risk Report
- ix. Country Risk Report

7.3 Internal Ratings

At initial stages of its introduction an internal rating system may be seen as a risk-based inventory of individual assets of a bank. Such systems have proved highly effective in filling the gaps in risk management systems, hence enhancing the external rating of the concerned institutions. This contributes to cutting the cost of funds. Internal rating systems are also very relevant for the Islamic modes of finance. Most Islamic banks already use some form of internal ratings. However, these systems need to be strengthened in all Islamic banks.

7.4 Risk Disclosures

Disclosures about risk management systems are extremely important for strengthening the systems. Introducing a number of risk-based systems as given here can enhance risk disclosures.

- i. Risk-based Management Information System
- ii. Risk-based Internal Audit Systems
- iii. Risk-based Accounting Systems and
- iv. Risk-based Asset Inventory System

7.5 Supporting Institutions and Facilities

The risks existing in the Islamic financial industry can be reduced to a great extent by establishing a number of Shari[ah compatible supporting institutions and facilities such as:

- i. Lender of last resort facility,
- ii. Deposit protection system,
- iii. Liquidity management system,
- iv. Legal reforms to facilitate Islamic banking and dispute settlement etc.,
- v. Uniform Shari[ah standards,
- vi. Adoption of AAOIFI standards, and
- vii. Establishing a supervisory board for the industry.

7.6 Participation in the Process of Developing the International Standards

The Islamic financial industry being a part of the global financial markets is effected by the international standards. In fact compliance with these standards wherever relevant and feasible is expected to enhance the endorsement of the Islamic financial institutions by the international standard setters. This in turn is expected to enhance the growth and stability of the industry. It is thus imperative for the Islamic financial institutions to follow-up the process of standard setting and to respond to the consultative documents distributed in this regard by the standard setters on a regular basis.

7.7 Research and Training

Risk management systems strengthen financial institutions. Therefore, risk management needs to be assigned as a priority area of research and training programs. Given the nascent nature of the Islamic financial industry there is a need to develop Shari[ah compatible risk management techniques and organize training programs to disseminate these among the Islamic banks. In the present research we have made an attempt to cover a number of issues. These and other issues can constitute an agenda for future research and training in the area. The training programs need to be designed for Shari[ah supervisors, regulators and managers of the Islamic financial institutions.

APPENDIX 1: LIST OF FINANCIAL INSTITUTIONS INCLUDED IN THE STUDY

Name	Country	Type
ABC Islamic Bank	Bahrain	Offshore
Abu Dhabi Islamic Bank	U.A.E.	Commercial, Investment, Retail, and Foreign exchange dealers
Al-Ameen Islamic Financial & Investment Corporation	India	Non-Banking Finance Company
AlBaraka Bank Bangladesh Limited	Bangladesh	Commercial
AlBaraka Islamic Bank	Bahrain	Commercial, Offshore, and Investment
Al-Meezan Investment Bank Limited	Pakistan	Investment
Badr Forte Bank	Russia	Commercial
Bahrain Islamic Bank	Bahrain	Commercial
Bank Islamic Malaysia Berhad	Malaysia	Commercial
Citi Islamic Investment Bank	Bahrain	Investment
First Islamic Investment Bank	Bahrain	Investment
Investors Bank	Bahrain	Investment
Islami Bank Bangladesh Limited	Bangladesh	Commercial
Islamic Development Bank	Saudi Arabia	Development
Kuwait Turkish Evkaf Finans House	Turkey	Commercial, Investment, and Foreign Exchange dealers
Shamil Bank of Bahrain E.C.	Bahrain	Commercial and Offshore
Tadamon Islamic Bank	Sudan	Commercial, Investment, and Foreign exchange dealers

Note: We could not include two banks in the study for reasons mentioned here. Faisal Islamic Bank Egypt - because of receiving the questionnaire at a very late stage of the study. Al-Barakah Turkish Finance House - because of data gaps.

APPENDIX 2:

SAMPLES OF RISK REPORTS

We outline some sample risk reports used by financial institutions here.⁶⁷ While the actual reports can be complicated, the examples given here represent the basic format of these reports.

1. Bank Level Credit Quality

In this report, the bank ranks all its receivables (different types of consumer and commercial loans, leases, etc.) and contingent claims (like unused commitments, stand-by letters of credit, commercial letters of credit, swaps, etc.) according to an internal risk rating criterion. The averages of these risk ratings give an indication of the quality of loans and overall portfolio. Note that internal risk ratings for various institutions are based on different scales. The example below uses a five-point scale.

A Sample of Bank Level Credit Quality Report

	Risk Rating					
Receivables/Commitments	1	2	3	4	5	Total
Receivables						
-Consumer Loans						
-Commercial Loans						
-Leases						
.						
.						
Contingent Exposures						
- Unused Commitments						
- Standby Letters of Credit						
- Swaps						
.						
.						
Total						

2. Credit Risk Exposure by Industry Sectors

In this report, all assets are categorized according to different industries and the exposure of these industries are examined by taking some external rating agency's ranking of these industries (like Moody's). This report not only gives an idea of the concentration of the investments and commitments in different industries, but also identifies the risks involved in these categories.

A Sample of Credit Exposure by Industry Groups Report

Industry Group	Outstanding			Commitments		
	% of Total	Term to Maturity	Risk Rating	% of Total	Term to Maturity	Risk Rating
Automobile						
Banking						
Beverage and Food						

⁶⁷ The basic formats of the risk reports are adapted from Santomero (1997).

3. Net Interest Margin Simulation

In this report the effect of changes in the interest rate on the net income is summarized. The effect of interest changes on net interest income (i.e., interest income on assets-interest payable on liabilities) is estimated for different scenarios. A limit that represents the maximum acceptable change in net income is also indicated.

A Sample of Interest Rate Simulation Report

	Rate Scenario					
	Unchanged	+100 bps	+200 bps	Limit	-200 bps	Limit
12 Month Net Interest Income						
Total Earning Assets						
-Change in Net Interest Income						
-%Net Interest Income						
Portfolio Equity						
Market Value						
Change in Market Value						
% Shareholder's Equity						

4. GAP Report

The GAP report estimates interest rate risk by distributing assets and liabilities in time bands according to their maturity for fixed rate assets and first possible repricing time for flexible rate assets. For each time bucket the GAP is calculated as the difference between assets and liabilities. If the financial institution uses interest rate swaps, these are factored in to find the Adjusted GAP.

A Sample of GAP Report

	0-3 Months	>3-6 Months	>6-12 Months	>1-5 Years	Non- Market	Total
Assets						
-Commercial Loans						
-Consumer Loans						
-Lease financing						
.						
Total Assets						
Liabilities						
-Interest-bearing Checking Deposits						
-Savings Deposits						
-Savings Certificates						
.						
Total Liabilities						
GAP before Interest rate Derivatives						
Interest-rate Swaps						
Adjusted GAP						

5. Duration Analysis

Duration analysis compares the market value of assets and liabilities resulting from changes in the interest rate. The formula for calculating duration is given in Chapter 2 (Section 6). It is the time-weighted measure of cash flows representing the average time needed to recover the invested funds. After the duration of assets and liabilities are estimated the Duration-GAP can be calculated.

Sample of Duration Analysis Report

	On-Balance Sheet		
	Balance	Rate	Effective Duration Years
Assets			
<i>Variable Rate Assets</i>			
.			
<i>Fixed Rate Assets</i>			
.			
Total Assets			
Liabilities			
<i>Variable Rate Liabilities</i>			
.			
<i>Fixed Rate Liabilities</i>			
.			
Total Liabilities			

6. Operational Risk Report

Operational risk may arise from different sources and is difficult to measure. The risk management unit of a financial institution can, however, use judgements regarding different kinds of operational risks based on all the available information. The list of sources used to gather information to measure operational risk is given in Table below. From this information, the risk management unit can classify the different sources of operational risks as low, medium, and high. A sample of a typical operational and strategic risk report is shown below.⁶⁸

Sample of Operating Risk Report

Category	Risk Profile ^a
People Risk Incompetence Fraud	
Process Risk <i>A. Model Risk</i> -Model/methodology error <i>B. Transaction Error</i> Execution Error Booking Error Settlement Error Documentation/Contract Risk <i>C. Operational Control Risk</i> Exceeding Limits	

⁶⁸ These reports are adapted from Crouhy et.al. (2001, Chapter 13).

Security Risk Volume Risk	
Technology Risk System Failure Programming Error Telecommunication Failure	
Total Operational Risk	
Strategic Risk Political Risk Taxation Risk Regulatory Risk	
Total Strategic Risk	

a- Risk Profile can be Low, Medium, and High.

Sources of Information used as input to Measure Operational Risk

Assessing Likelihood of Occurrence	Assessing Severity
Audit Reports Regulatory Reports Management Reports Business plans Budget plans Operational plans Business Recovery plan Expert Opinion	Management interviews Loss history

APPENDIX – 3:

QUESTIONNAIRE

ISLAMIC DEVELOPMENT BANK ISLAMIC RESEARCH & TRAINING INSTITUTE

PROJECT ON “A SURVEY OF RISK MANAGEMENT ISSUES IN ISLAMIC FINANCIAL INDUSTRY”

Questionnaire for Islamic Banking and Financial Institutions

I. GENERAL

1. Name and location of the Bank: _____
2. Year of Establishment: _____
3. Respondent’s Name: _____ Position: _____
4. Number of Branches: _____
5. Number of Employees: _____
6. Legal Status of the Bank:
Public limited Company: _____ Private limited company: _____
Partnership" _____ Other (please specify): _____
7. How many shareholders do you have at present?: _____
8. What is the largest percentage share of a single share-holder? _____
9. Name of the Chief Executive: _____
10. Names of the Shari’ah Board: _____
11. Nature of Activities: (Please mark the appropriate boxes with **X**)

- | | | | |
|------------------------------|--------------------------|--------------------------|--------------------------|
| Commercial Banking | <input type="checkbox"/> | Investment Banking | <input type="checkbox"/> |
| Offshore Banking | <input type="checkbox"/> | Foreign Exchange dealers | <input type="checkbox"/> |
| Investment (including funds) | <input type="checkbox"/> | Stock Brokers | <input type="checkbox"/> |
| Insurance | <input type="checkbox"/> | Others (please specify) | <input type="checkbox"/> |

II. FINANCIAL INFORMATION

1. Most Recent Basic Balance Sheet Figures: Year

	Local Currency	US Dollars
Total Assets		
Total Liabilities		
Equity (Capital)		

2. Term Structure of the Assets (% Distribution)

- | | |
|----------------------|-----------------------|
| Less than 6 Months % | 6-12 months % |
| 12-36 months % | More than 36 Months % |

3. Profit-Sharing ratio between the bank and the depositors

Depositors Share on:

		<u>Investment Accounts of</u>	<u>Savings Accounts of</u>
a)	Less than 6 months	_____	_____
b)	6-12 months	_____	_____
c)	12-24 months	_____	_____
d)	More than 24 months	_____	_____

4. Geographical Distribution of Investment

Year	Domestic	Foreign					
		Total Foreign	US, Canada & Europe	Japan	Middle -East	Asia & Africa	Other
1996							
1997							
1998							
1999							
2000							

5. Details of Default

Year	Total No. of Default Cases	Total Value of Default	No. of litigation cases	Cost of Litigation	Average time lost in litigation
1996					
1997					
1998					
1999					
2000					

6. Comparative Rates of Return (in percentage) for Depositors and Equity Holders

	1996	1997	1998	1999	2000
<i>Your Bank's Equity Holders (dividend share %)</i>					
Deposits of your bank (average)					
Deposits of competing Islamic Banks (average)					
Deposits of Competing Commercial Banks (average)					

NOTE: Information on questions 6,7, and 8 can be skipped if you can provide us with the Annual Reports of the latest two years (1999 and 2000).

7. Structure of the Assets (US\$ Millions)

Year	Total	Reserves & Cash in Vaults	Debts due	Deposits with other banks	Securities	Physical Assets	Others
1996							
1997							
1998							
1999							
2000							

8. Capital and Structure of the Liabilities (US\$ Millions)

Year	Total Capital	Total Liabilities	Total Deposits	Investment Accounts	Saving Account	Current Accounts	Deposits of Other Banks
1996							
1997							
1998							
1999							
2000							

9. Modes of Finance:

Year	Total Financial Operations	Murabahah /Install. Sale	Musha-rakah	Mudarabah	Leasing	Istisna/Salam	Others
1996							
1997							
1998							
1999							
2000							

III. ISSUES IN RISK MANANGEMENT: A SURVEY

- 1. Severity of Various Types of Risks in Different Financial Instruments**
 (Can you please rank the seriousness of the following overall and instrument specific risks in the tables below. Please mark the appropriate boxes with X)

Credit Risk	Not Serious					Critically Serious
	1	2	3	4	5	N. A.
(The risk that counterparty will fail to meet its obligations timely and fully in accordance with agreed terms)						
1. Overall Risk						
2. <i>Murabahah</i>						
3. <i>Mudarabah</i>						
4. <i>Musharakah</i>						
5. <i>Ijarah</i>						
6. <i>Istisna</i>						
7. <i>Salam</i>						
8. Diminishing <i>Musharakah</i>						

Markup (Benchmark) Rate Risk	Not Serious				Critically Serious	
	1	2	3	4	5	N. A.
(The risk arising from changes in the level of market interest rate or benchmark rate)						
1. Overall Risk						
2. <i>Murabahah</i>						
3. <i>Mudharabah</i>						
4. <i>Musharakah</i>						
5. <i>Ijarah</i>						
6. <i>Istisnaf</i>						
7. <i>Salam</i>						
8. Diminishing <i>Musharakah</i>						

Liquidity Risk	Not Serious				Critically Serious	
	1	2	3	4	5	N.A.
(The risk of insufficient liquidity in meeting normal operating requirements and taking growth opportunities)						
1. Overall Risk						
2. <i>Murabahah</i> / <i>Bay'-mu'ajjal</i>						
3. <i>Mudharabah</i>						
4. <i>Musharakah</i>						
5. <i>Ijarah</i>						
6. <i>Istisnaf</i>						
7. <i>Salam</i>						
8. Diminishing <i>Musharakah</i>						

Market Risk	Not Serious				Critically Serious	
	1	2	3	4	5	N. A.
(Risk incurred on instruments traded in well-traded markets, e.g., commodities and equities)						
1. Overall Risk						
2. <i>Murabahah</i>						
3. <i>Mudharabah</i>						
4. <i>Musharakah</i>						
5. <i>Ijarah</i>						
6. <i>Istisnaf</i>						
7. <i>Salam</i>						
8. Diminishing <i>Musharakah</i>						

Operational Risk	Not Serious → Critically Serious					
	1	2	3	4	5	N.A.
(The risk of losses from inadequate or failed internal processes, people, or systems)						
1. Overall Risk						
2. <i>Murabahah</i>						
3. <i>Mudharabah</i>						
4. <i>Musharakah</i>						
5. <i>Ijarah</i>						
6. <i>Istisna'</i>						
7. <i>Salam</i>						
8. Diminishing <i>Musharakah</i>						

Please list below any other risks that you think affects your institution:

Other Risks	Not Serious → Critically Serious					
	1	2	3	4	5	N.A.
1.						
2.						
3.						
4.						
5.						

A Survey of Issues related to Islamic Banking

(Please mark the appropriate boxes with X)

How would you rate the following issues according to their seriousness	Not Serious → Critically Serious					
	1	2	3	4	5	N. A.
1. A low rate of return on deposits will lead to withdrawal of funds?						
2. Depositors would hold the bank responsible for a lower rate of return on deposits?						
3. The rate of return on deposits has to be similar to that offered by other banks.						
4. Lack of short-term Islamic financial assets that can be sold in secondary markets						
5. Lack of Islamic money markets to borrow funds in case of need.						
6. Inability to re-price fixed return assets (like <i>Murabahah</i>) when the benchmark rate changes.						
7. Inability to use derivatives for hedging.						
8. Lack of legal system to deal with defaulters.						
9. Lack of regulatory framework for Islamic Banks.						
10. Lack of understanding of risks involved in Islamic modes of financing.						

3. Please Rank the top ten (10) risks faced by your organization in order of severity

1.	_____	6.	_____
2.	_____	7.	_____
3.	_____	8.	_____
4.	_____	9.	_____
5.	_____	10.	_____

ISSUES IN RISK MANAGEMENT: GENERAL

Please mark the appropriate boxes with **X**.

	YES	NO
1. Do you have a formal system of Risk Management in place in your organization?		
2. Is there a section/committee responsible for identifying, monitoring, and controlling various risks?		
3. Does the bank have internal guidelines/rules and concrete procedures with respect to the risk management system?		
4. Does the bank have in place an internal control system capable of swiftly dealing with newly recognized risks arising from changes in environment, etc.?		
5. Does the bank have in place a regular reporting system regarding risk management for senior officers and management?		
6. Is the Internal Auditor responsible to review and verify risk management systems, guidelines, and risk reports?		
7. Does the bank have countermeasures (contingency plans) against disasters and accidents?		
8. Does your organization consider that the risks of investment depositors and current accounts shall not mix?		
9. Is your bank of the view that the Basel Committee standards should be equally applicable to Islamic banks?		
10. Is your organization of the view that supervisors/regulators are able to assess the true risks inherent in Islamic banks?		

11. Positions and profit/losses are assessed:
 Every Business Day Weekly Monthly
12. Would you prefer repricing of leased assets?
 Periodically (e.g., monthly) Continuously (benchmark rate + markup)
13. Do you think that the capital requirements for Islamic banks as compared to conventional banks should be
 More Same Less

ISSUES IN RISK MANAGEMENT: MEASUREMENT AND MITIGATION
Please mark the appropriate boxes with **X**.

	YES	NO
1. Is there a computerized support system for estimating the variability of earnings and risk management?		
2. Is there a clear policy promoting asset quality?		
3. Does the bank have in place a support system for assessing borrowers' credit standing quantitatively?		
4. Has the bank adopted and utilized guidelines for a loan approval system?		
5. Are credit limits for individual counterparty set and are these strictly monitored?		
6. Are mark-up rates on loans set taking account of the loan grading?		
7. Does the bank have in place a system for managing problem loans?		
8. Does the bank regularly (e.g. weekly) compile a maturity ladder chart according to settlement date and monitor cash position gaps?		
9. Does the bank regularly conduct simulation analysis and measure bench-mark (interest) rate risk sensitivity?		
10. Does the bank have backups of software and data files?		
11. Does the bank use securitization to raise funds for specific investments/projects?		
12. When a new risk management product or scheme is introduced, does the bank get clearance from the Shari[ah Board?		
13. Is your bank actively engaged in research to develop Islamic compatible Risk Management instruments and techniques?		
14. Is there a separation of duties between those who generate risks and those who manage and control risks?		
15. Do you have a reserve that is used to increase the profit share (rate of return) of depositors in low-performing periods.		

16. Does the bank produce the following reports at regular intervals?

	YES	NO
a) Capital at Risk Report		
b) Credit Risk Report		
c) Aggregate Market Risk Report		
d) Interest Rate Risk Report		
e) Liquidity Risk Report		
f) Foreign Exchange Risk Report		
g) Commodities & Equities Position Risk Report		
h) Operational Risk Report		
i) Country Risk Report		
j) Other Risk Reports (Please Specify)		

17. Do you use any of the following procedures/methods to analyze risks?

	YES	NO
a) Credit Ratings of prospective investors		
b) Gap Analysis		
c) Duration Analysis		
d) Maturity Matching Analysis		
e) Earnings at Risk		
f) Value at Risk		
g) Simulation techniques		
h) Estimates of Worst Case scenarios		
i) Risk Adjusted Rate of Return on Capital (RAROC)		
j) Internal Rating System		
k) Other (Please Specify)		

	YES	NO
18. Does the bank have a policy of diversifying investments across:		
(a) Different countries?		
(b) Different sectors (like manufacturing, trading etc.)		
(c) Different Industries (like airlines, retail, etc.)		

19. Do the accounting standards used by the bank comply with		
a) International standards?		
b) AAOIFI standards?		
c) Other (please specify)		

	Regularly	Occasionally	Never
20. Does the bank periodically reappraise collateral (asset)?			
21. Does the bank confirm a guarantor's intention to guarantee loans with a signed document?			
22. If loans are international, does the bank regularly review country ratings?			
23. To keep the rate of return in line with other banks, do you transfer profit from shareholders to depositors?			
24. Does the bank monitor the borrower's business performance after loan extension?			

25. Does the bank engage in the spot market and any of the following derivatives for *hedging* (risk management) purposes?(Please mark the appropriate boxes with ✕)

	Spot	Forwards	Futures	Options	Swaps	None
Currency						
Commodity						
Equity						
Interest Rate						

26. Does the bank engage in the spot market and any of the following derivatives for *income generation*? (Please mark the appropriate boxes with ✕)

	Spot	Forwards	Futures	Options	Swaps	None
Currency						
Commodity						
Equity						
Interest Rate						

27. We will appreciate if you could share with us any Islamic compatible Risk Management instruments and techniques that your institution uses.

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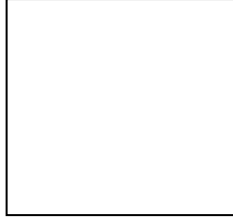
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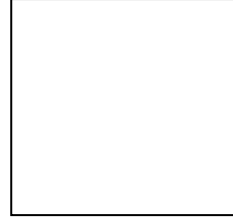
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