

RISK MANAGEMENT ASSESSMENT SYSTEMS: AN APPLICATION TO ISLAMIC BANKS

HABIB AHMED*

Abstract

Risk management is central in operations of financial institutions, both from business and regulatory perspectives. Risk management is not only about identifying and mitigating risks, but involves a strong risk management system that includes establishing appropriate risk management environment, maintaining an appropriate risk management process, and instituting adequate internal controls. This paper provides a measurable tool to assess the risk management framework in Islamic banks. The structured assessment methodology provide indices that gives a quantitative assessment of not only the overall risk management system of a financial institution, but also indicates the strengths and weaknesses of various aspects of this system. The assessment process can be used by Islamic banks and regulatory authorities to identify the weaknesses and improve upon the risk management framework. The paper provides examples of how the assessment method outlined can be used to estimate the status of risk management system for two Islamic banks.

1. Introduction

Risk management is vital for contemporary financial institutions, both for business purposes and regulatory reasons. From a business perspective, profitability and stability of banks depend on how risks associated with financing are managed.¹ As expected higher rates of return can be achieved by increasing risks, successful financial institutions are those which take advantage of the opportunities offered by risk taking and avoiding the associated downsides. On the

* Sharjah Chair in Islamic Law and Finance, Durham Univeirsity, UK. Holds PhD in Economics from Connecticut University, USA and MA in Economics from Oslo University, Norway. The views and opinions expressed in this paper are personal to the author. E-mail: Drhahmed@gmail.com

¹ Allen and Santomero (1997) Heffernan (1996, p.163) and Scholtens and Wensveen (2000) maintain that the main function of financial institutions is to manage risks associated with financing.

regulatory side, the new framework proposed by the Basel II Accord focuses on the risk-based capital in banks, making risk management an integral part of these institutions. Banks can lower holding costly capital by mitigating credit, market and operational risks. Furthermore, pillar II of the Accord (Supervisory Review Process) gives importance to, among others, the role of regulators to monitor and review the risk management practices of banks under their jurisdictions. As a result, financial institutions are expected to pay more attention to evaluation, quantification and disclosure of risks due to regulatory pressures (Rutledge 2005).

Islamic banks face two types of risks – risks that are similar to those faced by traditional financial intermediaries and risks that are unique to them due to their compliance with the Shari'ah. Given the nascent nature of Islamic banking, the inherent risks associated with Islamic instruments and contracts are not clearly comprehended. Furthermore, Islamic banks are constrained in using some of the risk mitigation instruments that their conventional counterparts use as these are not compatible with Islamic principles. Recently, there is a growing literature that studies various issues related to risk management arising in Islamic banking practices and instruments.²

At the regulatory level, Islamic Financial Services Board (IFSB) has issued "Guiding Principles of Risk Management" that provides guidelines of risk management for institutions offering Islamic financial services. These principles complement the Basel II guidelines of managing various risks by catering to the specific risks arising from Islamic contracts. The first principle of the IFSB guidelines of risk management is a general requirement that indicates that each Islamic financial institution should have "a comprehensive risk management and reporting process including appropriate board and senior management oversight, to identify, measure, monitor, and control relevant categories of risks and, where appropriate, to hold adequate capital against these risks." The document further states that "the process shall take into account appropriate steps to comply with Shari'ah rules and principles and to ensure the adequacy of relevant risk reporting to the supervisory authority" (IFSB 2005, p. 6).

As risk management (RM) is becoming increasingly important for financial institutions for sound business practice and regulatory purposes, there is a need to evaluate the nature of RM system at these institutions. The objective of this paper is to provide a framework to assess the RM system of Islamic banks by constructing a measurable index or indicator. The assessment indicator can be used

² Recent literature on risk management in Islamic banks include Khan and Ahmed (2001), Ahmed and Khan (forthcoming), and El-Hawary et.al. (2004).

by regulators and Islamic banks not only to evaluate the status of overall RM system in an institution, but also identify the strengths/weakness of its various components. Note that the paper does not outline the details of how specific risks (like credit and market risks) are managed. It rather provides the basic ingredients of establishing a RM culture and system within an institution to manage the risks arising in financial intermediation. The basic structure or framework of assessing the RM systems in Islamic banks provided in this paper can serve as a basis for the regulatory bodies or banks to build on and develop a comprehensive RM assessment scheme that meets their specific economic reality and financial environment.

The paper is organized as follows. The next section points out the features of a comprehensive risk management system and specific risks arising in Islamic banking. Section 3 provides the basic structure of the assessing RM system. It outlines three components of RM system as establishing appropriate risk management environment, maintaining an appropriate risk management process, and instituting adequate internal control. These components are discussed under common and Islamic factors. Section 4 uses the RM system assessment structure to evaluate the status of common factors of the RM system in two Islamic banks. The last section concludes the paper.

2. Risk Management System and Risks in Islamic Banking

Risk management is a broad and comprehensive concept and does not just entail measurement and mitigation of risks. Santomero (1997) identifies four components to the RM process. These are standards and reports, position limits and rules, investment guidelines or strategies, and incentive contracts and compensation. Similarly, Cumming and Hirtle (2001) refers RM to the overall process that a financial institution follows to define a business strategy and identify, quantify, understand, and control the nature of risks it faces.

While risk mitigation is defensive and used to protect firm system from risk by using instruments like hedging, insurance and derivatives, RM relates to using risk to the advantage of the firm by aggressively exploiting uncertainty and risks through various proactive policies that create value (Damodaran 2005). Once a financial institution decides that it has a comparative advantage in taking certain risks, it has to determine the role of risk management in exploiting this advantage (Stulz 1996). Note, however, that a firm's ability to undertake activities involving risk not only depends on risk management policy, but also on its capital structure and general financial health. Risk management and capital are in some ways

substitutes in protection against risks in financial exposures. When firms lower their risks by efficient risk management procedures, the requirement for capital also decreases.

Risk management should be an integral part of the corporate strategy involving everyone in an institution. Though elements of RM would include identifying, measuring, monitoring, and managing various risk exposures,³ these cannot be effectively implemented unless there is a broader process and system in place. The overall RM system should be comprehensive embodying all departments/sections of the institution so as to create a risk management culture. The roles of different stakeholders that would assist in creating an appropriate RM system in financial institutions are shown in Table 1.

The board of directors is responsible for outlining the overall risk appetite, objectives, 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.

Table 1
Role of Different Stakeholders in the Risk Management System

Body/Unit	Function	Duties and Role
Board	Setting overall strategy and policies	Define overall objectives and ensure its implementation by management.
Management	Set up an institution-wide risk management system.	Identify the risks and implement the objectives and policies of the board
Risk Management Dept./Unit	Identify and measure risks	Set up standards, limits, and rules, guidelines, and procedures related to risks. Publish various risk reports periodically (for both current situations and expected future scenarios).
All operational units/employees	Identify and control the risks	Follow the standards, limits and rules, guidelines, and procedures related to risk.
Internal Audit	Monitor risk management process	Ensure that risk related guidelines and policies are followed and implemented at different levels of operations.

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

Senior management is responsible to implement the broad specifications approved by the board through establishing a RM system. To do so, the management should establish policies and procedures that would be used by the institution to manage risk and define the line of authority and responsibility. Banks should clearly identify the individuals/committees/department responsible for various aspects of risk management related issues. The risk management department would set up standards, rules, guidelines, and procedures related to risks and publish various risk reports periodically. All business units and employees should be aware of the risk management goals of the institution and strictly follow the rules and procedures to minimize risks. The role of internal audit department of the bank would be to follow-up and monitor on various operational levels to ensure that the risk management procedures and processes are followed and implemented in the institution.

As controls and monitoring are costly, the incentives given to different employees that reflect the fulfillment of the goals of the institutions will control risks efficiently. Thus, an important component of the RM system is to have an incentive scheme that leads to effective RM. An incentive and accountability structure that is compatible with reduced risk taking on part of the employees can reduce overall risk. 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. A prerequisite of these incentive-based contracts is accurate reporting of the bank's exposures and internal control system.

2.1. Issues Related to RM System of Islamic Banks

Some risks arise due to the unique nature of Islamic banks. These risks are associated with specific Islamic contracts and business model arising from compliance with Shari'ah. These additional risks need to be addressed by Islamic banks and should be included in assessing RM system in these institutions. To understand some of these risks arising in Islamic banks, we briefly examine the various items in their balance sheet.

On the asset side of an Islamic bank, the investment tools are dominated by fixed-income modes of financing and to lesser extent profit-sharing instruments like *muḍārabah* and *mushārahah*. The fixed-income instruments include *murābaḥah/bay' mu'ajjal* (cost plus or mark-up sale or price-deferred sale), installment sale (medium/long term *murābaḥah*), *istiṣnā' salam* (object deferred

sale or pre-paid sale) and *ijārah* (leasing).⁴ On the liability side, Islamic banks have demand deposits or checking/current accounts and saving and investment deposits. Contractually, the two types of deposits are different. While demand deposits are *qard ḥasan* (loans) which the bank is liable to pay without default, the investment deposits are *muḍārabah* contracts that are profit-sharing investment accounts (*PSIA*).

Using profit-sharing principle to reward depositors is a unique feature of Islamic banks. The returns on *PSIA* are state-contingent and neither the principal nor a return is guaranteed. The owners of *PSIA* participate in the risks and share in the bank's profit and losses.⁵ Investment accounts can be further classified as restricted and unrestricted (*PSIA_r* and *PSIA_u* respectively), the former having restrictions on, among others, withdrawals before maturity date. These features along with the instruments used on the asset side change the nature of risks that Islamic banks face. Some unique risks arising in Islamic banks that are relevant and should be included in the RM system assessment are discussed below.

Fiduciary Risk

Fiduciary risk can be caused by breach of contract by the Islamic bank. This can take two forms. First, a lower rate of return than the market may introduce 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). Second, the bank may not be able to fully comply with the Shari'ah requirements of various contracts. While, the Islamic banks' business should comply with the Shari'ah, an inability to do so or not doing so willfully can cause a serious confidence problem and deposit withdrawal.

Contractual Nature of Deposits

The contractual nature of demand and investment deposits in Islamic banks are very different. As pointed out, demand deposits are *qard ḥasan* (loans) and investment deposits (*PSIA*) are *muḍārabah* contracts. Given this nature, demand deposits need much more protection than investment deposits and it is important to prevent transmission of risks from the latter to the former (Chapra and Khan 2000).

⁴For a discussion on these modes of financing see Ahmad (1993), Kahf and Khan (1992), and Khan (1991).

⁵Under the *muḍārabah* contract, while the profit is shared between the financier and the manager, loss is borne by the financiers only.

Thus, a part of the fiduciary duty of the management is to keep the risks arising in assets financed by demand deposits separate from those in *PSIA*.

Withdrawal Risk

A variable rate of return on *PSIA* in Islamic banks introduces uncertainty regarding the real value of deposits. From the bank's perspective, this introduces a 'withdrawal risk' that is linked to the lower rate of return relative to the market rate given by other financial institutions.⁶ Withdrawal risk implies the transfer of the risk associated with deposits to equity holders. Displaced commercial risk 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). Even though a bank may operate in full compliance with the Sharī'ah requirements, it may not be able to pay competitive rates of return compared to its peer group of Islamic banks and other competitors. In such cases, depositors may have the incentive to seek withdrawal. To prevent withdrawal and systemic risks, the owners of the bank will need to apportion part of their own share in profits to the investment depositors.

To minimize the displaced commercial and withdrawal risks, Islamic banks operate couple of reserves, in addition to *provision for loan losses (PLL)*. The *profit equalization reserve (PER)* is appropriated from the gross income of the *muḍārabah* for smoothing returns paid to the investment account holders and the shareholders. This reserve is deducted from both the shareholders and investment account holders. Note that while *PER* share of the bank (shareholders) is included in capital, the portion of the depositors is not. The *investment risk reserve (IRR)* is appropriated from the income of *PSIA* account holders only (i.e, after the deduction of the bank's share of the profit) to meet future losses on the investments financed by investment accounts.⁷

Treatment of PSIA as Capital

Economic capital is held to provide comprehensive coverage of losses for institution as a whole and is an important tool for integrated risk management. The amount of capital held by any bank will depend on the risks of its assets. Given the profit-sharing nature of *PSIA* in Islamic banks, there are suggestions that it may be treated as capital (IFSB 2005b). There is, however, need for caution in treating all *PSIA* as capital. Depositors with funds in *PSIA_u* are risk averse and too much

⁶ For empirical evidence and theoretical discussion on withdrawal risk see Chapra and Ahmed (2002) and Ahmed (2006a) respectively.

⁷ See IFSB (2005b) for a discussion.

downside in their returns can lead to withdrawals that can create systematic risks. Thus, to minimize the withdrawal and systemic risk, none or very small portion of $PSIA_u$ should be treated as capital.⁸ When assets are funded by $PSIA_r$, however, larger part of it can use as capital.

Risks in Islamic Financial Instruments

As Islamic finance is either asset-backed or equity-based, market risk becomes an important part of the Islamic banking along with credit risks. Market risks can be systematic arising from macro-sources, or unsystematic that are asset or instrument specific. For equity- and sale-based financial instruments, both types of market risks will be important. 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 *istiṣnā'* contract) or delivers assets (e.g., in a *murābahah*) before receiving its own assets or cash, thereby, exposing it to potential loss. In case of profit-sharing modes of financing (like *muḍārabah* and *mushārahah*), credit risk will be non-payment of the share of the bank by the entrepreneur when it is due. This problem arises due to the asymmetric information problem as the banks do not have sufficient information on the actual profit of the firm.

The presence of market and credit risks in Islamic modes of financing make the nature of risks more complex as they intermingle and transform from one kind to other at different stages of a transaction. Trade-based contracts (*murābahah*, *salam*, and *istiṣnā'*) and leasing are exposed to both credit and market risks.⁹ For example, during the transaction period of a *salam* contract the bank is exposed to credit risk and at the conclusion of the contract it is exposed to commodity price risk. To manage the risks, there is a need to clearly understand the risks involved in the Islamic instruments.

Limitations in using Instruments to Mitigate Risks

Due to rigidities and deficiencies in the infrastructure institutions and instruments, the risks facing Islamic banks are either magnified and/or difficult to mitigate. Islamic principles prohibit using certain instruments that form the basis of contemporary risk mitigation techniques. Among others, the use of contemporary derivatives and sale of debt make it difficult for Islamic banks to hedge against

⁸ For a discussion on the role of using of different kinds of $PSIA$ as economic capital see Ahmed (2006b).

⁹ See IFSB (2005a) for risks in different Islamic financial instruments and the accompanying regulatory capital allocation.

various risks. For example, there are objections to use foreign exchange futures to hedge against foreign exchange risk and there are no Sharī'ah compatible short term securities for liquidity risk management in most jurisdictions.

Operational Risks

Operational risk is the "risk of direct or indirect loss resulting from inadequate or failed internal processes, people, and technology or from external events" (BCBS 2001, p. 2). 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 when the banks do not have enough qualified professionals (capacity and capability) to conduct the Islamic financial operations. Given the different nature of business, the computer soft-wares 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 risks for Islamic banks are also significant and arises due to various reasons. First, non-standardization of contracts makes the whole process of negotiating different aspects of a transaction more difficult and costly. Financial institutions are not protected against risks that they can not anticipate or may not be enforceable. Standardized contracts also imply that transactions are easier to administer and monitor after the contract is signed. Second, lack of Islamic statutes and courts that can enforce Islamic contracts increases the legal risks of using these contracts.¹⁰ In an environment with no Islamic courts, Islamic financial contracts include choice-of-law and dispute settlement clauses (Vogel and Hayes 1998, p.51).

3. Risk Management System: A Structured Assessment

The various aspects of the RM system can be categorized into three main constituents for assessment purposes. The three components of a RM system are establishing appropriate risk management environment, maintaining an appropriate risk management process, and instituting adequate internal controls.¹¹ Establishing

¹⁰ Most countries have adopted either the common law or civil law framework and their legal systems do not have specific laws/statutes that support the unique features of Islamic financial products. For example, whereas Islamic banks main activity in trading (*murābahah*) and investing in equities (*mushārakah* and *muḍārabah*), current banking law and regulations in most jurisdictions forbid commercial banks to undertake such activities.

¹¹ These three components are derived from BCBS's recommendations of managing specific risks. See BCBS (1999 and 2001).

a RM environment is a policy/strategy level activity whereby the framework of the RM system is established. Maintaining RM process relates to the implementation of policies and strategies. Among others, the risks are identified, measured, and controlled in this phase. Internal control system ensures that the RM process is in accordance with the strategies and policies set up in the RM environment. In case of Islamic banks, these three components of the RM system can be discussed under two headings. First, those elements that are common to all financial institutions and second, items that relate to specific risks arising in Islamic banks. We call the former 'common' factors and the latter 'Islamic' factors.

To come up with a quantitative assessment of a RM system mentioned above, important items in each of the components need to be identified. The quantification of the RM system is done by assigning certain points for different elements in each component and adding them up to get the total numerical score of 100. The resulting RM system index gives an indication of the overall status of risk management in an institution and also shows the weaknesses and strengths in various components of the system. The items that can be included in each of the components under the common and Islamic factors to develop an index of RM system are given below. Note that the items listed under different components of RM system under the common and Islamic factors are not exhaustive and the regulators and financial institutions can expand on the items to suit their needs and environment.

3.1. Common factors

In this section various items that can be included in assessing the RM system of a financial institution are outlined and quantified. As pointed out above, the items are discussed under three components and common to both conventional and Islamic banks.

3.1.1. Establishing appropriate risk management environment

The board and the senior management of the bank are responsible for creating the appropriate risk management environment. 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 and limits and mechanisms designed to assure the bank's risk management objectives are achieved.

Table 2
Establishing an Appropriate Risk Management Environment

	Yes	No
1. Are the members of the board and management able to assess the true risks of inherent in Islamic banks?	2	0
2. Does the bank ensure the integrity of accounting and financial reporting systems including independent audit, systems of control, and compliance with law?	2	0
3. Is there a formal system of Risk Management in place in your organization?	2	0
4. Is there a section/department responsible for identifying, monitoring, and controlling various risks?	2	0
5. Does the bank have internal guidelines/rules and concrete procedures with respect to the risk management system?	2	0
6. The bank has a statement of business practices or code of ethics known to all the employees of the institution	2	0
7. Is there a clear policy promoting asset quality and a system is in place for managing problem assets?	2	0
8. Has the bank adopted and utilized guidelines for a credit approval system?	2	0
9. Does the bank have in place a regular reporting system regarding risk management for senior officers and management?	2	0
Total	18	

Table 2 reports some elements that can be included to assess establishing a risk management environment of banks. The members of the board and management should be able to assess the true risks inherent in Islamic banks. They also ensure the integrity of accounting and financial reporting systems, systems of control, and compliance with law. To ensure this an internal audit department is established in the institution. All financial institutions should have a formal risk management system in place and section/department responsible for identifying, monitoring and controlling various risks. For effective risk management, banks should have internal guidelines, rules and concrete procedures related to risk management. Financial institutions should have procedures and policies that minimize risks ex-ante and ex-post transactions. Specifically, banks should also have a clear policy of promoting asset quality and have guidelines that are used for extend credit approvals. After funds are advanced, banks should also have a system to address problem assets. Sound RM system requires regular reporting of various aspects of risks to senior officials and management. Finally, the Shari‘ah board should review and supervise all the operations of an Islamic bank to ensure conformity with

Shari^h. As Table 2 shows, each element related to establishing appropriate risk management environment carries 2 points so that the total score for this component of the RM system adds up to a total score of 18 points.

3.1.2. Maintaining an appropriate risk management process

The management identifies and categorizes the risks and spells out the tools to control and manage these risks with the help of various departments in the bank. The risk management unit/department of the bank plays an important role to maintain an appropriate risk management process. To assist in identifying the risks, there is a need for standardized financial reports that provides information on various aspects of risks, risk exposures and like asset quality. The RM process should also include position limits and rules that indicate the standards for participation. Clear rules and standards of participation should be provided regarding eligible features for investments, limits of exposures to counterparties, concentration limits, exposure to various types of risks, etc. Other elements of RM process are implementing investment guidelines and strategies, the former for shorter time periods and the latter for longer time frame. These are meant to give a broader picture of the risk at the portfolio level. Investment guidelines and strategies to limit the risks involved in different transactions and activities should be followed. These guidelines should cover the structure of assets in term system of concentration and maturity, asset-liability mismatching, hedging, securitization, etc.

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 are 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 credit ratings.

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.

As maintaining an appropriate risk management process is a significant component of maintaining RM system, it carries large percentage (40 percent) of the scores. For assessment purposes maintaining an appropriate RM process can be divided into four parts: general aspects, risk reports, measuring and management techniques, risk monitoring. These are discussed below.

General Aspects

The general aspects relates to issues that should be in place for successful of RM process of the common risks found in any banking institution. Among others, these include, having a computerized support system to estimate the variability of earnings for risk management purposes. One of the main risks faced by banks is credit risk. To mitigate this risk, credit limits for individual counterparty and a policy of diversifying investments across sectors, industries, and countries should be in place. To account for the risks in different assets, the mark-up rates on funds advanced should take account of the quality of the assets or the risks of the counterparty. To measure and manage liquidity risk, maturity ladder chart to monitor cash flows and gaps should be regularly compiled. To measure benchmark or interest rate risk, simulation analysis can be used. Table 3A shows the specific questions related to the general aspects of RM process. The total score general aspects of maintaining an appropriate RM process equals 12.

Risk Reports

While many different risk reports can be produced, we consider the ones that may be the most important (see Table 3B). Note that some institutions may not have separate risk reports as indicated in the Table 3B, but may prepare report(s) that may include information on some of these risks. Furthermore, some financial institutions may produce other specific risk reports not include in the Table. These may include Compliance Risk Report, Bad and Doubtful Receivables Report, Monthly Progress Report, Defaulting Cases Report, Related Party Exposure Report, etc. These can be added without changing the qualitative aspects of the assessment. Table 3B indicates that a bank can get a total score of 8 points by producing various reports.

Table 3A
Maintaining an Appropriate Risk Management Process-General

	Yes	No
1. Is there a computerized support system for estimating the variability of earnings and risk management?	2	0
2. Are credit limits for individual counterparty set and are these strictly monitored?	2	0
3. Are mark-up rates on assets set taking account of the risk factors or asset grading?	2	0
4. Does the bank regularly (e.g. weekly) compile a maturity ladder chart according to settlement date and monitor cash position gaps?	2	0
5. Does the bank regularly conduct simulation analysis and measure benchmark (interest) rate risk sensitivity?	2	0
6. The bank has a policy of diversifying investment across countries, sectors, and industries?	2	0
Total	12	

Table 3B
Maintaining an Appropriate Risk Management Process -Risk Reports

	Yes	No
1. Capital at Risk Report	1	0
2. Credit Risk Report	1	0
3. Aggregate Market Risk Report	1	0
4. Interest Rate Risk Report	1	0
5. Liquidity Risk Report	1	0
6. Foreign Exchange Risk Report	1	0
7. Commodities & Equities Position Risk Report	1	0
8. Operational Risk Report	1	0
Total	8	

Measuring and Management Techniques

There are various risks measuring and mitigation techniques used to measure different risks faced by 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.¹² Another common technique is the use of maturity matching analysis to mitigate liquidity risks. Similarly, the duration analysis is used to estimate and manage mark-up or interest-rate risk. Risk adjusted rate of return on

¹²The 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 an internal rating system to determine the capital requirements of banks in its new standards. The internal rating system that is in the table, however, is the ratings of different assets done by banks to ascertain their quality.

capital (RAROC), can be used to determine the overall risk and performance of the bank. Earnings at Risk, Value at Risk, and simulation techniques can be used to assess different risks including market risks.¹³ Table 3C includes a total of 10 measurement and mitigating techniques giving a total of 10 points for use of these by banks.

Table 3C
Maintaining an Appropriate Risk Management Process -Measuring and Mitigating Techniques

	Yes	No
1. Credit Ratings of prospective investors	1	0
2. Gap Analysis	1	0
3. Duration Analysis	1	0
4. Maturity Matching Analysis	1	0
5. Earnings at Risk	1	0
6. Value at Risk	1	0
7. Simulation techniques	1	0
8. Estimates of Worst Case scenarios	1	0
9. Risk Adjusted Rate of Return on Capital (RAROC)	1	0
10. Internal Rating System	1	0
Total	10	

Table 3D
Maintaining an Appropriate Risk Management Process - Risk Monitoring

	Regularly	Occasionally	Never
1. Does the bank periodically reappraise collateral (asset)?	2	1	0
2. Does the bank confirm a guarantor's intention to guarantee loans with a signed document?	2	1	0
3. If loans are international, does the bank regularly review country ratings?	2	1	0
4. Does the bank monitor the borrower's business performance after loan extension?	2	1	0
	Daily	Weekly	Monthly
5. Positions and Profit/Losses are assessed	2	2	1
Total	10		

¹³ Note that there may be other techniques that can be used by banks to measure and mitigate risks. These include Analysis of the Collateral, Sector Market Experience of Debtors, Lending risk Analysis, and Measuring the effect of price of a particular commodity (like oil) and global stock market on asset.

Risk Monitoring

It is very important for banks to have various monitoring procedures of the risk management process. To ensure the value and quality of assets, banks need to reappraise collateral and confirm a guarantor's intention to guarantee debt regularly. For institutions engaged in international investments, the country ratings and the frequency of assessing profit and loss positions need to be reviewed frequently. As Table 3D indicates, a total score of 10 points arise from risk monitoring activities of the bank.

3.1.3. Adequate internal controls

Banks should have internal controls to ensure that all procedures and 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.

Table 4
Adequate Internal Controls

	Yes	No
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.,	2	0
2. Is there a separation of duties between those who generate risks and those who manage and control risks?	2	0
3. Does the bank have countermeasures (contingency plans) against disasters and accidents?	2	0
4. Does the Internal Auditor verify the authenticity of accounts and risk reports prepared?	2	0
5. Does the bank have backups of software and data files?	2	0
6. Are the bank's records maintained thorough, dependable, and up to date, with safeguards against either the submission of inaccurate or untimely information or for tampering with those records?	2	0
Total	12	

Some aspects of internal controls that banks should have in place are to have some form of internal control mechanism that can promptly identify risks arising

from changes in the environment. The duties of those who generate risks and those who manage and control risks should also be separated. The internal auditor should review and verify the risk management systems, guidelines, and risk reports. A good risk management system would have counter measures such as contingency plans against disasters and accidents and also have backups of software and data files. Table 4 indicates that the total score assigned to adequate internal controls equals 12 points.

3.2. Islamic factors

As mentioned above, the nature of Islamic contracts and instruments introduces some risks that are unique to Islamic banks. A RM system in an Islamic bank should have the necessary framework to address these risks. The various items that can be included under the three components are given below.

3.2.1. Establishing appropriate risk management environment

The board and management of an Islamic bank should be aware of the fiduciary duties of being an agent of both the shareholders and depositors. In particular, the depositors entrust the bank with duties to manage their funds as a *muḍārib*, and the bank should do so in a professional manner and in accordance to the principles of Shari‘ah. To help accomplish the latter, the bank should have a Shari‘ah board to ensure that the operations of the institution are in accordance to Islamic principles. There should also be a business/product development department in the bank that would be responsible, among others, to develop new instruments for raising and investing funds. The bank should also establish two reserves (PER and IRR) to use as an insurance policy for protection against withdrawal and systemic risks. There should be awareness that many conventional risk mitigation techniques cannot be used and necessary precautions should be taken to limits these risks. Furthermore, the employees at different level should be given regular training on RM related issues to raise the awareness of the specific risks arising in Islamic instruments.

3.2.2. Maintaining an appropriate risk management process

In performing the fiduciary duty, an Islamic bank should be aware of the nature of demand deposits and PSIA accounts and have a clear policy to separate the risks arising from assets financed from these. Furthermore, unrestricted PSIA should not be used as capital to minimize withdrawal risk. To mitigate risks in different instruments, it is important to understand the inherent credit and market risks. To minimize the legal risks, Islamic banks should have standardized contracts for different types of transactions and arbitration under Islamic law should be added in 'dispute settlement clause'.

3.2.3. Adequate internal controls

Ideally all Islamic banks should have a resident Shari'ah scholar/committee who can oversee the day to day operations of the bank and serve as Shari'ah auditor. This would not only ensure that banking practices are in accordance with Islamic principles and increase the transparency of operations. Furthermore, the Shari'ah board should approve all the new instruments and products used by the bank. As Islamic banks can have problems of invest and raise funds for short-term from the market due to unavailability of instruments, they should have contingency plans to tackle liquidity problems. Given that many transactions in Islamic banks are not similar to those of their conventional counterparts, the banks should have computer soft-wares that are compatible to their business and should have in-house support system to manage these.

Table 5
Islamic Factors in RM System in Islamic Banks

	RM System Component	Yes	No
1. Are the Board and management aware of the fiduciary duties of acting as agent on behalf of shareholders and depositors?	I	2	0
2. Does the Shari'ah Board ensure that the operations of the bank comply with Shari'ah?	I	2	0
3. Does the bank have PER and IRR?	I	2	0
4. Is there a business/product development department in the bank?	I	2	0
5. Are the officials of the bank trained regularly on issues related to RM arising in Islamic financial institutions?	I	2	0
6. Is there awareness that some risks cannot be hedged due to unavailability of instruments and precautionary steps taken accordingly?	I	2	0
7. Are the credit and market risks in Islamic instruments clearly understood?	II	2	0
8. Are the risks of demand deposits and PSIA separated?	II	2	0
9. Is only restricted PSIA considered part of capital?	II	2	0
10. Are all financial contracts used standardized?	II	2	0
11. In dispute settlements, arbitration is preferred over courts?	II	2	0
12. Does the bank ensure that contingency plans are in place to manage liquidity problems?	III	2	0
13. Is there an in-house support system for computer soft-wares being used?	III	2	0
14. Does the Shari'ah Board review and supervise the new products and instruments that are introduced by the institution?	III	2	0
15. Does the bank have a resident Shari'ah scholar/committee for Shari'ah auditing the operations?	III	2	0
Total		30	

The various items under Islamic factors that should be considered in the RM system are given in Table 5. Note that the component of RM system where each item belongs to is identified in column 2 of the table. With 15 items, the total score for Islamic factors add up to a total score of 30. The distribution of points under the Islamic factors into the RM environment, RM processes and internal control components are 12, 10, and 8 respectively.

3.3. RM System Assessment Criteria

In order get an overall assessment of the RM system of Islamic banks, we add the scores of all three constituents of the RM system under two factors to get one index. The distribution of a total score of 100 into different components and factors is shown in Table 6. As Table 6 shows, the RM system in an Islamic banks consists of common factors that are similar to conventional financial institutions. The common factors of the RM system accounts for 70 percent of the scores while the remaining 30 percent of the scores come from Islamic factors. Under common aspects, maintaining RM processes constitutes 40 percent followed by establishing the RM environment and adequate internal control (with corresponding weights of 18 percent and 12 percent respectively). When Islamic aspects are added, the total for establishing RM environment component accounts for 30 percent of the scores, maintaining RM process constitutes half of the scores (50 percent), and an adequate internal control takes the remaining 20 percent.

Table 6
Distribution of Scores of RM System into Common and Islamic Items

	Common	Islamic	Total
I: RM Environment	18	12	30
II: RM Processes	40	10	50
III: Internal Controls	12	8	20
Overall	70	30	100

The scores for the RM system and its components are classified into four ranks. An Islamic bank is ranked as excellent (A) if a score of 90 percent or more is achieved. The rank is considered good (B) for the scores between the 75 percent and 89 percent. The RM system and its components are considered 'satisfactory' if the scores lie between 60 percent and 74 percent. For scores of less than 60 percent, the RM system of a bank and its components are ranked as poor. Table 7 shows the breakdown of scores for the RM system and its various components. Note that the rankings given here are suggestive only. A regulatory authority/Islamic bank can come up with rankings that are more/less stringent than the ones given in the paper.

Table 7
Assessment of Risk Management Systems in Financial Institutions

	Total	Excellent (A)	Good (B)	Satisfactory (C)	Poor (D)
Common Factors					
I: RM Environment	18	17-18	14-16	11-13	Below 11
II: RM Processes	40	36-40	30-35	24-29	Below 24
III: Internal Control	12	11-12	9-10	7-8	Below 7
Total Common Factors	70	63-70	53-62	43-52	Below 43
Islamic Factors					
I: RM Environment	12	11-12	9-10	7-8	Below 7
II: RM Processes	10	9-10	8	6	Below 6
III: Internal Control	8	7-8	6	4	Below 4
Total Islamic Factors	30	27-30	23-26	18-22	Below 18
Overall RM System Rankings					
I: RM Environment	30	27-30	23-26	18-22	Below 18
II: RM Processes	50	45-50	38-44	30-37	Below 30
III: Adequate Internal	20	18-20	15-17	12-14	Below 12
Total Overall Ranking	100	90-100	75-89	60-74	Below 60

4. RM System Assessment in Islamic Banks: An Application

In this section, the RM system is evaluated for two Islamic banks using the assessment framework developed above. Note, however, that due to lack of information on the Islamic factors, only the common factors of the RM system are ranked. The information on different elements of the assessment of the common factors are assembled from two surveys of Islamic banks.¹⁴ Two banks that responded to both surveys are picked for the assessment exercise. To maintain anonymity, we call these banks X and Y. The various scores obtained from the surveys for banks X and Y are reported in Table 7.¹⁵

¹⁴ The results are based on a survey on risk management of 17 Islamic banks conducted in 2001 and a survey on corporate governance of 14 banks conducted in 2002. For details of the former survey, see Khan and Ahmed (2001) and latter Chapra and Ahmed (2002).

¹⁵ Note that while the questionnaire on risk management (Khan and Ahmed 2001) had Yes/No answers to queries, the questions in the corporate governance survey (Chapra and Ahmed 2002) had four answers: fully observed, largely (usually) observed, materially not observed, and never observed. For the current exercise, the former two answers (fully observed and largely observed) are interpreted as 'Yes' and the latter two (materially not observed and never observed) are inferred as 'No'.

Table 7 shows that bank X scores a total of 14 for establishing a RM environment getting a B (good). The bank gets 24 points for maintaining RM processes and 8 for adequate internal controls getting a C on both accounts. The total score of the common factors of RM system for bank X is 46, which is a C. Bank Y has better scores for all three components of the common factors. It scores 16 (B) for establishing an appropriate RM environment, 37 (B) for maintaining RM process, and has an excellent adequate internal controls scoring full points of 12 (A). Bank Y scores a total of 65 points for its the RM system getting an overall rank of B for the common factors.

Table 8
Assessment of RM Systems in Islamic Banks-Common Factors

	Total	Bank X	Bank Y
I: Establishing RM Environment	18	14 (B)	16 (B)
II: Maintaining RM Processes	40	24 (C)	37 (B)
III: Adequate Internal Controls	12	8 (C)	12 (A)
Overall Ranking	70	46 C (Satisfactory)	65 A (Excellent)

The above example shows the strengths and weakness of the RM systems in two banks. Banks and regulatory authorities can use this information to take necessary steps to resolve the problems. The regulators may require all bank under their jurisdictions to have a minimum of certain score. For example, to strengthen the RM systems, the regulatory authorities may insist on all banks to have a minimum ranking of B (or have scores of 75 percent or more).

5. Conclusion

The paper provides a framework to assess the RM system of an Islamic bank. Given the importance of RM in contemporary financial institutions, it is important to assess the RM system and identify its strengths and weaknesses. For any bank to have a comprehensive RM system, some basic elements should be present. The RM system is divided into three components under common and Islamic factors. The latter factors are unique to Islamic banks due to compliance with Shari‘ah rules. The paper identifies items that can be used in different components under the

two factors. These are quantified to produce indices of the RM system and its components.

Risk management is going to be increasingly important for financial institutions in the new regulatory and business environments. With a quantified index of the RM system, the regulators would be able to identify the risks inherent in different banks and propose remedial guidelines and policies. While the RM system of individual financial institutions will depend on the nature of activities and the size and sophistication of an institution, the framework outlined here can be a basis to build and expand on. The modified version of the RM system assessment framework can be used by both, regulators and Islamic banks, to ensure that a comprehensive RM system is in place.

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