

# Capital Structure and Risk in Islamic Financial Services\*

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\*The findings, interpretations, and conclusions expressed in this chapter are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.

## **1. Introduction: Information, Risks, and Capital**

Financial intermediation is a critical factor for growth and social inclusion. One of its core functions is to mobilize financial resources from surplus agents and channel them to those with deficits. It thus allows investor entrepreneurs to expand economic activity and employment opportunities. It also enables household consumers, micro- and small entrepreneurs to expand their own welfare and earnings opportunities, and seek to smooth their lifetime outlays. In all cases, financial intermediation drives economic growth and contributes to social inclusion, provided it is conducted in a sound and efficient way.<sup>1</sup>

A financial intermediary's ability to process information on risks and returns of investment opportunities will have a bearing on the soundness and efficiency of its resource mobilization and reallocation function. Conventional financial services (CFSs) process information through institutions or markets, and have generally evolved from the former to the latter. In both cases, markets and agents provide alternative ways of processing information on risks and returns of investment opportunities. In the first form, the intermediary raises capital to set up business to collect generally liquid deposits from surplus agents and reallocates these resources, now in his trust, to ones with deficits in generally less liquid assets. In the second form, surplus agents buy directly financial assets that represent a debt of a deficit agent or an ownership share in its business. In either approach, both categories of agents engage in transactions on the basis of trust and of expectations about the degree of liquidity that would provide the option to re-contract at a reasonable cost.<sup>2</sup> In the case of banks, the trust can be seen as based on proprietary information. In the case of markets, the information is more commoditized and widely available.<sup>3</sup>

Efficiently processed information can support the efficient allocation of capital. It can help a financial intermediary to better define the capital it would need to achieve the

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<sup>1</sup> See Honohan (2004) and Levine (2004).

<sup>2</sup> Sir John Hicks identifies such liquidity as one of the main factors behind the Industrial Revolution.

<sup>3</sup> Actually, a deposit can be viewed as a purchase of a debt asset issued by the intermediary and redeemable at its face value.

returns sought, while maintaining its ability to face the financial consequences of unexpected events that may endanger its stability. Banks engage in gathering and processing information on clients and markets, which allows them to manage different risks by unbundling them and reallocating the components. By performing these services soundly and efficiently, banks can manage to calibrate their capital requirements and receive diversified income streams. Thus a bank's investors and customers can gain comfort as to its reliability in allowing them to access liquidity and maintain stability. In parallel with banks, financial markets can also convey the same sense of access to liquidity and stability based on disclosed and broadly available information on market participants. Markets can provide deficit and surplus agents a direct role in processing information to facilitate the unbundling and reallocation of risks and the efficient use of capital. Thus, banks and markets compete and complement each other in financial intermediation. The competition puts pressure on individual agents to use capital at their disposal efficiently, and results in a system-wide improved allocation of capital resources.<sup>4</sup>

Institutions offering Islamic financial services (IIFSs) also process information on risks and returns of investment opportunities while complying with *Shari'ah* principles.<sup>5</sup> Thus, in principle, they can be expected to increase competition in financial information processing by inducing better risk management and capital use. Such competition can be expected over time to lead to an efficient use of capital at the level of each financial agent, whether they practice conventional or Islamic finance, and in aggregate, system-wide across all modes of financial intermediation. Efficient use of capital is thus a challenge which competition imposes on all financial intermediaries, whether offering Islamic financial services or conventional financial services. At the same time, Islamic financial intermediation needs to comply with *Shari'ah* principles, notably those of risk sharing and materiality of financial transactions. *Shari'ah* compliance, social responsibility, and the discipline of competition compound IIFSs' challenge to process

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<sup>4</sup> The institution–market competition is reflected in the trends of their relative market shares of total financial assets. For example, in the United States, between 1960 and the early 1990s, commercial banks' share of total financial intermediaries' assets fell from around 40% to less than 30%. See Edwards (1996).

<sup>5</sup> They do respond to a latent demand for financial services that do not breach *Shari'ah* principles. Accordingly, they have the potential to contribute to financial deepening, economic growth, and social inclusion. See also Burghardt and Fuss (2004).

information efficiently in order to manage the risks they may face and use their capital endowments. Thus, by their very nature and the environment in which they generally operate, IIFSs need to be well equipped with the information and skills that can allow them to identify their capital resources and use them efficiently.

This chapter argues for the need for Islamic financial services to strengthen risk management practices in the process of defining their own capital requirements in accordance with their loss tolerance. It suggests that IIFSs could invest in the collection of loss information and adoption of loss data management systems. IIFSs would benefit from implementing risk management methodologies and adapting their staffing skills accordingly. The chapter starts in Section 2 by outlining views on the relationship between risk management and capital for financial intermediation. It then overviews risk categories as an initial step in risk management in Section 3. Section 4 discusses regulatory and economic capital, introducing risk occurrence frequency as a distribution probability. Section 5 concludes with suggestions on steps that may help with risk management and improve the competitiveness of IIFSs.

## **2. Bank Capital and Risk Management**

Bank capital may be considered as consisting of (a) equity capital and (b) certain non-deposit liabilities or debt capital (see Section 4). It is both a means of funding earnings-generating assets and a stability cushion. From the perspective of efficiency and returns, capital is part of a bank's funding that can be applied directly to the purchase of earning assets, as well as being used as a basis for leverage to raise other funds for expanding assets with the net benefit accruing to shareholders. From a perspective of stability, bank capital is a cushion for absorbing shocks of business losses and maintaining solvency, with benefits accruing to depositors and other stakeholders. Both financial intermediaries and regulators are sensitive to the dual role of capital, as a means of funding earnings-generating assets and as a cushion for dealing with unanticipated events. Financial intermediaries may tend to be more focused on the former role and regulators on the latter.

A bank's capital structure decision relates to the ratio of capital to deposits and to the ratio of debt capital to equity capital. Its performance, in terms of return on equity capital, will be influenced by its ability to calibrate the level of capital it requires. Through efficient risk management, it can reach a sense of which capital structure can best help it to: (a) achieve profitability while maintaining stability; (b) reassure markets as to the quality of its business conduct; and (c) have a constructive dialogue with regulators.

Efficient use of capital will help IIFSs to achieve *profitability and stability*. Allocating capital resources to low-performing or excessively risky assets is bound to drag down performance, endanger stability, or both. Equally, leaving capital idle entails at best forgoing earnings opportunities. For instance, overly cautious approaches that lead financial intermediaries to maintain larger amounts of capital than warranted by their risk profile may not allow them either to obtain the full potential of their capital or to contribute effectively to the development of the communities they serve. At the other end of the spectrum, a financial intermediary overly eager to achieve returns may allocate resources to highly risky assets that offer high returns but endanger stability. Explicit risk management practices can help in the selection of assets to which capital and other resources are applied and calibrate the level of capital that best suits business objectives and stability tolerance.

The size and composition of the resources that capital enables financial intermediaries to raise are likely to affect their profitability and stability. In a frictionless world where full information is available and markets are complete, the value of a firm would be independent of its capital structure, and so the focus should be on capital level and not structure.<sup>6</sup> Under such circumstances, the method by which a financial intermediary raises its required funds would be irrelevant. However, financial intermediaries do not operate in a frictionless world; they face imperfections such as costs of bankruptcy and financial distress, transaction costs, asymmetric information, or taxes. They also operate within the framework of a governing regulation possibly with a deposit insurance scheme that is expected to provide a safety net. In fact, one may contend that these market imperfections are the very reason for the successful existence

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<sup>6</sup> Modigliani and Miller (1958).

of banks as financial intermediaries. Accordingly, not only a financial intermediary's level of capital but also its structure is likely to bear on its market valuation, its business conduct, and its stability. Effective risk management strategies should contribute to a financial intermediary's ability to assess not only the level of capital it would need in relation to assets and deposits, but also the extent to which its structure affects its value.

*Market discipline* contributes to responsible corporate behavior. Markets' reactions to perceptions of a financial intermediary's business conduct and capital strength may be unforgiving. It is thus in the interest of financial intermediaries to develop approaches to defining capital resource requirements that take into account the institutional environment in which they operate. The market's perception of market imperfections is likely to influence views on the appropriate level of capital and the capital adequacy of financial intermediaries. For example, the availability of a safety net may lead market participants to be less demanding as to the need for capital in relation to bank assets. Conversely, anticipation of high costs of financial distress to depositors and other stakeholders may induce market participants to require the holding of more capital proportionally to assets. Similarly, wherever the institutional environment is weak and contract enforcement is uncertain and costly, markets may expect financial intermediaries to adapt the capital they hold.

The management of capital structure should in principle mitigate the risk of bank failures. When comparing a highly leveraged bank and a bank that is well capitalized, the leveraged bank will likely experience a greater loss of value during times of financial distress when the asset quality deteriorates, due to the increased risk of bankruptcy. To cope with downturns, in most countries banks hold a minimum amount of capital, based on the risk embedded in their asset holding. Accordingly, banks with relatively risky assets would hold a higher amount of capital than those banks with less risky assets. However, fearing the harshness of market discipline, many banks maintain a higher level of capital than the minimum required to allay the perception that they may be undercapitalized and avoid the losses this may induce, as witnessed in the 1980s. The key capital adequacy ratio provides an assessment of just how adequately the capital cushions such fluctuations in the bank's earnings and supports higher assets growth.

Finally, efficient risk management should allow financial intermediaries to have a constructive *dialogue with regulators*. It would help them to articulate their views with respect to capital needs. The regulators' rationale for regulating capital stems from the perception of the public-good nature of bank services, their potential macroeconomic growth and stability impact, and experience with costly bank failures. According to some estimates, such costs have varied between 3% and 55% of GDP.<sup>7</sup> Thus, regulators' concerns with possible systemic risk resulting from the contagion effects of bank runs lead them to seek to mitigate risks of financial distress with regulatory requirements on banks' capital.<sup>8</sup> Regulators' concerns may be compounded by the presence of deposit insurance schemes. The moral hazard that may result from deposit insurance may lead to additional regulatory requirements such as linking the level of insurance premia to the risk embedded in assets and captured in associated risk weights. Indeed, deposit insurance may induce banks to lever up capital by expanding their own funding with liabilities, thus placing more risk on their capital and increasing their vulnerability. Efficient risk management practices would allow banks to improve their dialogue with the regulator and convey more convincingly their views on their soundness and capital requirements.

Regulators would generally also be concerned with the overall impact on the economy of the resources raised by the financial system under their purview. From an economy-wide perspective, banks may be viewed as firms' competitors in raising capital on financial markets. The outcome of this competition has a bearing on economic performance and financial stability, and points to a cost-benefit tradeoff in holding capital. For instance, Gersbach (2002) suggests that a benefit of bank capital is the equity acting as a buffer against future losses, thereby reducing excessive risk taking of the banks. At the same time, raising bank capital may lead to a crowding out of industrial firms, limiting their access to equity and other market funding and also impacting their access to funding from banks and its cost. Furthermore, raising equity on markets may increase the cost of banks' resources, inducing them to seek to invest in higher-yielding but more risky assets and thereby increasing their risk exposure. Thus, while potentially

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<sup>7</sup> See Klingebiel and Laeven (2002).

<sup>8</sup> Views differ on the need for and extent of regulation, as well as on the usefulness of deposit insurance; see Barth, Caprio, and Levine (2006).

providing a cushion against unforeseen events, a higher level of equity may actually induce more risk taking, notably through raising the cost of funds to banks and their clients. Efficient risk management can provide inputs to both banks and regulators to better calibrate capital needs and deal with the foregoing type of tradeoff.

The level of a financial intermediary's capital may also have a bearing on its ability to provide liquidity. The financial intermediary provides liquidity by funding assets that may be less liquid than the deposit resources it collects. There is a view that requirements for higher levels of capital may have a negative impact on liquidity creation.<sup>9</sup> On the liability side, a higher capital requirement may lead to a corresponding reduction in the level of deposits, thus constraining the ability to provide liquidity. Also, higher capital requirements may induce financial intermediaries to be more restrained in extending financing, thus constraining their ability to provide liquidity. However, according to another view, higher capital would allow the financial intermediary to create more liquidity since its risk-absorptive capacity would be improved.<sup>10</sup> In this regard, an empirical study concluded that for larger banks capital has a statistically significant positive net effect on liquidity creation, while for small banks this effect is negative.<sup>11</sup> Accordingly, each financial intermediary would need to evaluate carefully the level and composition of the capital it needs, since the latter plays a significant role in its ability to function as a liquidity provider. Equally, regulators would need to pay attention to the impact which capital requirement would have on the funding of the economy.

IIFS's risk management arrangements will bear on their ability to calibrate capital to their business objectives and risk tolerance, to deal with market discipline, and to maintain a dialogue with regulators. The IIFS's characteristic of mobilizing funds in the form of risk-sharing investment accounts in place of conventional deposits, together with the materiality<sup>12</sup> of financing transactions, may alter the overall risk of the balance sheet and, consequently, the assessment of their capital requirements. Indeed, risk-sharing "deposits" would in principle reduce the need for a safety cushion to weather adverse

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<sup>9</sup> Diamond and Rajan (2000).

<sup>10</sup> Allen and Gale (2004).

<sup>11</sup> Berger and Bouwman (2005).

<sup>12</sup> By the "materiality" of financing transactions is meant that, in such transactions, capital must be "materialized" in the form of an asset or asset services (as in *Murabaha* credit sales, *Salam* and *Istisna'a* financing, or *Ijarah* leasing), or of a business venture (*Musharakah* or *Mudarabah*). Capital in the form of money is not entitled to any return, as this would be interest (*riba*).

investment outcomes. Similarly, the materiality of investments is likely to modify the extent of their risk and have a bearing on the assessment for the overall need for capital; asset-based modes of finance may be less risky and profit-sharing modes more risky, than conventional interest-bearing modes. Nevertheless, IIFSs would operate within a regulatory framework that is likely to impose on them capital requirements with a view to promoting stability and limiting contagion risks. However, besides regulatory and market demands for IIFSs to hold capital, IIFSs need to put in place risk management assessments for their own purposes of returns and stability in accordance with the requirements of *Shari'ah*, their own mission statements, and the protection of their stakeholders.

### **3. Risk Identification and Risk Management**

Efficient risk management capability is necessary to enable IIFSs to strategically position themselves in the global market by using their capital efficiently.<sup>13</sup> Weak risk management systems may deprive IIFSs of the ability to hedge risks, and undermine their potential contribution to the communities they aim to serve. Adequate resources need to be devoted to risk identification and measurement, as well as to the development of risk management techniques. In this respect, there is a pressing need to combine solid understanding of *Shari'ah* law with a good knowledge of modern risk management techniques so as to be able to develop innovative risk mitigation and hedging instruments.

An initial step is a clear identification of risks that may arise in the conduct of Islamic financial intermediation. In carrying out their function, banks manage portfolios of assets and liabilities as well as their capital. Accordingly, each asset, each portfolio, and the intermediary as a whole are subject to risks. Exhibit 4.1 outlines the main risks intermediaries face under four broad categories. Each risk category captures the occurrence of some event that would affect the performance of an asset, a portfolio, or the whole balance sheet.

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<sup>13</sup> See Bessis (2002) for a thorough treatment of risk management in banking.

**Exhibit 4.1 Outline of the risks facing financial intermediaries**

<b>Type of risk</b>	<b>Rationale</b>
<i>Financial risk</i> Credit risk	The risk of counterparty failure to meet their obligations in a timely manner.
Interest rate risk	(a) Risk of a reduction in the value of a fixed-interest asset (e.g. bond) due to a rise in interest rates (part of market risk, unless the asset is in the “banking book” – see (b)). (b) Risk of an interest rate mismatch between fixed-rate assets and floating-rate liabilities, or vice-versa, resulting in a profit and cash flow “squeeze.”
Market risk	Risk common to entire class of assets or liabilities due to economic changes or external events (systemic risk, e.g. changes in stock market sentiment, interest rates, currency or commodity markets).
Liquidity risk	Risk that arises from the difficulty of trading an asset (asset liquidity risk) and difficulty in obtaining funding at a reasonable cost (financing liquidity risk).
Settlement risk	Risk that a counterparty does not deliver security or its value in cash as per agreement when the security is traded after other counterparty (ies) have delivered security or cash as per agreement.
Prepayment risk	The risk of loans (especially mortgage loans) being prepaid before maturity due to a drop in interest rates.
<i>Operational risk</i>	Risks associated with the potential for systems failure in a given market; usually resulting from inadequate internal processes and strategies, people, and systems, or from external events.
<i>Business risk</i> Legal and regulatory risk	Due to changes in the law and regulations that adversely affect a bank’s position.
Volatility risk	Fluctuations in the exchange rate of currencies.
Equity risk	Depreciation of investments due to stock market dynamics, etc.
Country risk	Potential volatility of foreign assets due to political or financial events in a particular country.
<i>Event risk</i>	Unpredictable risks due to unforeseen events such as banking crises, contagion effects, and such other exogenous factors.

In extending financing and raising resources, IIFSs face risks similar to those encountered by their conventional counterparts, but with variations due to specific requirements to comply with *Shari'ah*. The requirement of materiality of the financing transaction and the prohibition of interest shape the nature of the instruments IIFSs can use and their embedded risk. The foregoing features also put constraints on IIFSs' ability to manage liquidity, as they may not have recourse to repo facilities and interest-bearing instruments characteristic of money markets. In addition, the prohibition of *gharar* constrains the use of hedging instruments useful for asset–liability management. Furthermore, there may be operational risks in failing to ensure *Shari'ah* compliance. Exhibit 4.2 outlines the specific risks facing IIFSs.<sup>14</sup>

**Exhibit 4.2 Risks specific to Islamic financial services**

Type of risk	Rationale
Commodities and inventory risk	Arising from holding items in inventory either for resale under a <i>Murabaha</i> contract, or with a view to leasing under an <i>Ijara</i> contract.
Rate of return risk	Similar to interest rate risk in the banking book. However, IIFSs are not exposed to interest rate risk as such, but to a “squeeze” resulting from holding fixed-return assets such as <i>Murabaha</i> that are financed by investment accounts, the holders of which (investment account holders) expect a rate of return risk in line with benchmark rates. An increase in benchmark rates may result in investment account holders having expectations of a higher rate of return (see also mark-up risk).
Legal and <i>Shari'ah</i> compliance risk	Risks associated with the potential for systems failure in a given market; usually resulting from inadequate internal processes and strategies, people, and systems, or from external events. This includes legal and <i>Shari'ah</i> compliance risk.
Equity position risk in the banking book	Arises from the equity exposures in <i>Mudaraba</i> and <i>Musharakah</i> financing contracts.
Mark-up risk (benchmark risk)	Since IIFSs do not use interest, they use market rates as benchmarks in pricing their products. Hence, there is a risk associated with the changes to the benchmark rate (see rate of return risk).

Credit risk for IIFSs arises in connection with accounts receivable in *Murabaha* contracts, counterparty risk in *Salam* contracts, accounts receivable and counterparty risk

<sup>14</sup> See also El-Hawary, Grais, and Iqbal (2004).

in *Istisna'a* contracts, and lease payments receivable in *Ijara* contracts.<sup>15</sup> On average across IIFS balance sheets, *Murabaha* appears to be the dominant mode of financing (41%), followed by *Musharakah* (11%), *Mudarabah* (12%), and *Ijarah* (10%).<sup>16</sup> Thus the bulk of the financing may still essentially be trade financing, with more limited engagement in profit-sharing assets and leasing. Accordingly, it may still be the case that credit risk is the dominant risk IIFSs need to contend with.

A major cause of serious financial intermediaries' potential distress continues to be lax credit standards for borrowers and counterparties, poor portfolio risk management, or a lack of attention to changes in economic or other external circumstances that can adversely impact the credit standing of a bank's counterparties.<sup>17</sup> It is notably the predominance of this credit risk that underlines the Basel II Accord's recommendations of the three approaches to credit risk assessment for capital adequacy purposes: the Standardized Approach, the Foundation Internal Rating-Based (IRB) Approach, and the Advanced IRB Approach. In various degrees, these approaches provide banks with the opportunity to have their own credit risk assessment methodology contribute to the identification of capital needs. The better equipped a financial intermediary is in risk management, the more opportunity it would have to calibrate its capital needs and use its resources most efficiently, thus strengthening its competitive position. Accordingly, the quality of IIFSs' risk management plays a critical role in determining their competitiveness.

In contrast to the foregoing, there may be a perception within IIFSs that the most critical risk they face may be the mark-up risk or rate of return risk.<sup>18</sup> In order of importance, it would be followed by operational risk and liquidity risk. While credit risk is the predominant risk most financial intermediaries (whether CFS or IFS) deal with, surveyed IIFSs do not perceive it as being as severe as most other risks they identify. IIFSs appear to consider market risk as the least serious (see Exhibit 4.3).

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<sup>15</sup> IIFSs may use an external benchmark such as LIBOR to determine the mark-up in *Murabaha* contracts. Since the mark-up may be tied to LIBOR, changes therein would have an impact on the value of the *Murabaha* contract held by the IIFS.

<sup>16</sup> Iqbal (2005).

<sup>17</sup> "Principles for the Management of Credit Risk," Basel Committee on Banking Supervision, Basel (September 2000).

<sup>18</sup> From Khan and Ahmed (2001). They present a survey of risk management of 17 Islamic financial institutions in 10 countries and rank risk perceptions.

**Exhibit 4.3 Risk perception: Overall risks faced by Islamic financial institutions**

	<b>Number of relevant responses</b>	<b>Average rank*</b>
Mark-up or rate of return risk	15	3.07
Operational risk	13	2.92
Liquidity risk	16	2.81
Credit risk	14	2.71
Market risk	10	2.50

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

Source: Adapted from Khan and Ahmed (2001).

A clear identification of the event and its translation into a measurable variable would be a prerequisite to render the notion of risk operationally relevant, in the sense of guiding actual business conduct. For example, an *Ijarah* contract on a movable asset may not be serviced according to the signed agreement. Assuming, for simplicity, that the contract may be only either serviced or not (that is, there is either no default in payment by the lessee, or there is default), then the risk variable becomes the occurrence of the event of default. It is an observable variable that may take a value of one if there is default and zero otherwise. Over time, observations on the risk profile of various instruments extended to various categories of IIFS clients can be developed. These statistical observations can be used to strengthen risk management and guide the extension of financing. Thus for each identified risk, there is a necessary step to translate it into an observable variable and set up a system to collect and maintain the relevant information, as well as to develop methodologies to process the information to guide decision making. Admittedly, not all possible risks may be anticipated and translated into an observable variable capturing the occurrence of an event. Furthermore, events may not be mutually independent, pointing also to the need to focus on their possible correlation, its observation and measurement. Experience with risk identification and management practices can only be helpful.

#### **4. Regulatory and Economic Capital**

Progress in risk management and evolving regulators' and market participants' views are prompting changes in the determination of capital requirements. Regulators may have been initially concerned mainly with depositors' protection, stability and contagion issues, while financial intermediaries' focus would have been essentially on business profitability and expansion. Accordingly, in initial approaches, regulators set a general rule, applying to all without much differentiation, requiring financial intermediaries to hold a minimum amount of capital. Regulators' caution had led to what could be qualified as a relatively blunt capital adequacy rule. Flaws in the rule and a convergence of concerns between regulators and financial intermediaries led to other approaches better adapted to specific conditions of markets and intermediaries. Over time, regulators' awareness of their role in market development expanded at the same time as financial intermediaries' sense of corporate responsibility in promoting market stability. Progress in risk management approaches facilitated the evolution. Accordingly, regulation is evolving from rule-based, relatively blunt capital requirements to risk-based assessments of capital needs, or economic capital.

##### *4.1 Regulatory Capital*

From one perspective, capital is viewed as the funding source to be used to protect the parties who have claims on banking assets, such as depositors, against unexpected losses. In order to ensure that banks are sufficiently funded for that purpose, or adequately capitalized, regulators have come up with regulatory minimum capital requirements under Basel Capital Accords. The focus of the initial 1988 accord was on a cushion for credit risk. This was amended in 1996 to include capital requirements to cover market risks. However, during the late 1990s with the growth of securitization and credit derivatives some financial intermediaries resorted to regulatory arbitrage using regulatory inconsistencies to increase profitability (the return on capital) at the expense of capital adequacy. Another development was the resort to the rolling over of short-term loans

whose risk weight was nil or negligible, thus increasing financial corporate fragility. Concerns about the evolving nature of risks and these developments prompted a review of the Basel I framework and motivated the development of the Basel II Accord. A major thrust was an emphasis on taking better account of the risk profile of the intermediary and its ability to manage risks in reaching a sense of its capital requirement. In addition, in the course of developing the Basel II framework, attention was given to operational risk and a related requirement for a capital cushion.

The capital adequacy pillar of the Basel II framework (Pillar I) proposes three alternative approaches (as mentioned above) to assessing the capital requirement to associate with credit risk.<sup>19</sup> Risk weights to be used in respect of credit risk are obtained based on one of three models that rely more or less on the financial intermediary's own internal risk rating. In the simple model, or standardized approach, the risk weighting system relies on external agency ratings of the borrowers. In a more elaborate model, the financial intermediary uses its own risk management model to obtain internal ratings. Whether externally or internally derived, the risk weights are used to obtain a value of the assets that incorporates credit, market, and operational risk. The banking institution would be expected to maintain a minimum capital to risk-weighted assets ratio of 8% at all times. Hence, regulatory capital requirement is linked directly to an assessment of the degree of risk of the assets a bank holds. Thus, to improve its capital adequacy ratio, a bank would have the option either to increase its capital or to reduce the risky assets it holds, or a combination of both. A contribution of the new Basel Accord is to insert alternative ways of assessing the risks associated with the assets held, with a larger role given to a bank's own risk assessment if the regulator is satisfied with its ability to make such assessments. Salient features of the Basel II Accord are highlighted in Exhibit 4.4.

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<sup>19</sup> The three pillars are: minimum capital requirements, supervisory review, and market discipline.

## Exhibit 4.4 Salient features of the Basel II Accord

### **Pillar 1: Minimum capital requirements**

- Risk-sensitive Standardized Approach proposed.
  - Risk weights derived from the credit assessments of eligible ECAs (Export Credit Agencies) to be used.
  - Operational requirements to ensure for supervisors objectivity in risk assessment.
  - Credit risk mitigation to be done using collateral, derivatives, guarantees, etc. subject to disclosure requirements under Pillar 3.
- More risk-sensitive Internal Ratings Based (IRB) Approach proposed.
  - Banks with more advanced risk management capabilities to use internal assessments.
  - For the foundation approach, banks should use an internal assessment system which could differentiate risks, estimate probability of default, use internal ratings, etc.
  - For the advanced IRB approach, in addition to requirements under the foundation approach, additional requirements to be met for relevant risk components being estimated by them.
- Operational risks to be covered by an explicit capital charge. (Minimum capital charge to be approximated at 12%.)
- Trading book issues: guidelines issued with respect to overall management risk assessment, valuation, etc.
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### **Pillar 2: Supervisory review process**

*Four key principles of supervisory review are issued to complement the supervisory guidelines already established.*

- First key principle: Banks to have a process for assessing their overall capital adequacy in relation to their risk profiles and a strategy for maintaining their capital levels.
- Second key principle: Supervisors should review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure their compliance with regulatory capital ratios. Supervisors should take appropriate supervisory action if they are not satisfied with the result of this process.
- Third key principle: Supervisors should expect banks to operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum.
- Fourth key principle: Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the risk characteristics of a particular bank and should require rapid remedial action if capital is not maintained or restored.

### **Pillar 3: Market discipline**

Specific qualitative and quantitative disclosure requirements in respect of four key areas are issued.

- General disclosure principle
- Scope of application
- Capital
- Risk exposure and assessment

Capital requirement standards have been developed for IIFSs adapting conventional Basel approaches. A first guidance was given by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) recommending not including the risk-sharing account deposits in capital. Recently, the Islamic Financial Services Board (IFSB) issued a capital adequacy standard based on the Basel II standardized approach with a similar approach to risk weights. However, the minimum capital adequacy requirements for both credit and market risks are set out for each of the *Shari'ah*-compliant financing and investment instruments. The IFSB standard (IFSB, 2005b) calls for supervisory discretion in determining a share “ $\alpha$ ” of risk-weighted assets funded by risk-sharing investment deposits that can be deducted from the total risk-weighted assets for the purpose of assessing capital adequacy. This share “ $\alpha$ ” represents the extent of total risk assumed by the investment account holders, with the remainder absorbed by the shareholders on account of displaced commercial risk.<sup>20</sup> Like for CFSs, the minimum capital adequacy requirement for IIFSs in the IFSB standard is also not lower than 8% for total capital.<sup>21</sup>

#### 4.2 Definitions of Capital

Defining what constitutes capital has been a long-debated issue. However, there is wide acceptance of the capital structure that has been stipulated by the Basel committee, where capital is segregated into three categories, as set out in Exhibit 4.5.

**Exhibit 4.5 Classification of capital in Basel accords**

<b>Classification</b>	<b>Contents</b>
Tier 1 (core capital)	Ordinary paid-up share capital/common stock, disclosed reserves from post-tax retained earnings, non-cumulative perpetual preferred stock (goodwill to be deducted).
Tier 2 (supplementary capital)	Undisclosed reserves, asset revaluation reserves, general provisions/general loan-loss provisions, hybrid (debt/equity) capital instruments, and subordinated term debts. <sup>1</sup>
Tier 3	Unsecured debt: subordinated and fully paid up, to have an original maturity of at least two years and not be repayable before the agreed repayment date unless the supervisory authority agrees. <sup>2</sup>

<sup>20</sup> Sundararajan (2005).

<sup>21</sup> Tier 2 capital is limited to 100% of tier 1 capital.

<sup>1</sup> Eligible tier 2 capital may not exceed total tier 1 capital, and long-term subordinated debt may not exceed 50% of tier 1 capital.

<sup>2</sup> This will be limited to 250% of a bank's tier 1 capital, which is required to support market risks.

To be considered as adequately capitalized, requirements were set for the international banks in the G10 countries to hold a minimum total capital (tier 1 and tier 2) equal to 8% of risk-adjusted assets.

For IIFS, tier 1 capital would be the same as in CFSs. The reserves, however, would include the shareholders' portion of the profit equalization reserve (PER), which is included in the disclosed reserves.<sup>22</sup> In tier 2 capital, there would not be any hybrid capital instruments or subordinated debts as in CFSs, as these would bear interest and contravene *Shari'ah* principles. However, an issue is the treatment of unrestricted risk-sharing investment accounts that may be viewed as equity investments on a limited-term basis, in principle. In the debate on whether or not to include these accounts in tier 2 capital, the AAOIFI committee on capital adequacy concluded that it would not be appropriate to include the PSIA in tier 2 capital.

The Islamic Financial Services Board has taken a similar position. The IFSB Capital Adequacy Standard (IFSB, 2005b) calls for supervisory discretion in determining a share " $\alpha$ " of risk-weighted assets funded by profit-sharing investment "deposits" that can be deducted from the total risk-weighted assets for the purpose of assessing capital adequacy. This share " $\alpha$ " represents the extent of total risk assumed by the investment account holders, with the remainder absorbed by the shareholders on account of displaced commercial risk.<sup>23</sup> As for CFSs, the minimum capital adequacy requirement for IIFSs in the IFSB standard is not lower than 8% of total capital.

The issue is of major importance, as IIFSs use profit-sharing investment "deposits" as a form of leverage (Archer and Karim, 2006; Al-Deehani, Karim, and Murinde, 1999). Such deposits not only expose IIFSs to operational risk; there is also the issue of "displaced commercial risk" mentioned above.

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<sup>22</sup> The IAH share of the PER and the whole of the IRR (none of which is attributable to shareholders) are excluded from capital. They are taken into account in measuring the amount of risk-weighted assets attributable to investment account holders. For a discussion of some issues raised by the use of the PER and IRR, see Archer and Karim (2006).

<sup>23</sup> Sundararajan (2005). See also Archer and Karim (2006).

### 4.3 *Economic Capital*

“Economic capital” represents the emerging practice for measuring and reporting all kinds of risk across a financial organization. Regulators have gradually factored in market development concerns in setting capital adequacy requirements by incorporating improved assessments of the risks embedded in the assets held by financial institutions. The latter have developed improved tools to assess the risks of their assets and their modes of operations. These tools allow financial intermediaries to reach better assessments of the economic capital they may need to best match their profit objectives and risk tolerance.<sup>24</sup> “Economic capital” would measure risk in terms of economic conditions, rather than potentially misleading regulatory or accounting rules. It is called economic capital as its identification involves converting a probability distribution of occurrences of risk events into an amount of possible losses for which capital charges may be required, in line with the institution’s target financial strength (for example, credit rating).<sup>25</sup> As such, it should permit achieving higher economic efficiency in capital use.

Risks, such as those highlighted in the previous section, may lead in practice to expected as well as unexpected losses. Both would be based on the frequency of occurrence of an event and the loss that may be associated with it. For the purpose of calculating economic capital, the amount of expected losses is the average of the anticipated losses over a distinct period of time. This expectation should be formed using actual observations that normally happen in the conduct of normal business over a given period. The financial intermediary would factor these expected losses in its pricing and make corresponding adequate provisions. However, there are also losses that may not be part of the normal conduct of business and whose occurrence would be unexpected. They would be the outcome of a worst-case adverse event for which no specific provision can be made as part of normal business conduct. Here the actual losses would be expected to be large and exceed what normal pricing could cover. These unexpected losses may be so large that the financial intermediary may go on to default, but the frequency of

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<sup>24</sup> Their ability to identify and quantify risks has become crucial for their own profitability and stability, as evidenced by the failure of Barings bank, Singapore, where failure can be attributable notably to weak risk measurement techniques, among other things.

<sup>25</sup> [www.erisk.com/Learning/EconCap/econcap1.asp](http://www.erisk.com/Learning/EconCap/econcap1.asp).

occurrence of such catastrophic events would be expected to be very low under normal circumstances.

Exhibit 4.6 provides an illustration of a shape of a distribution of losses, highlighting the notion of expected and unexpected loss. The former is the mean or the average loss over a given period and may be covered by specific provisioning. Losses larger than expected losses would be expected to occur with increasingly lower frequency, the larger they are. Over a given period, covering such losses in all circumstances – that is, irrespectively of the expected frequency of their occurrence – would require a large volume of capital. It would be prohibitive from a business perspective, as costly capital would be locked in low-return-yielding investments, and accordingly be uneconomical. Thus, financial intermediaries and regulators interested in market vibrancy would be interested in identifying the level of economic capital that would provide a sufficient stability cushion without stifling the financial intermediary, given the expected frequency of unexpected losses over a certain period. Hence, in its management of unexpected risks, the financial intermediary may decide to conduct its business accepting that there may be, say, a chance of one in 100 of becoming insolvent in a given time period (say, in the next 12 months). It would just define its economic capital accordingly as that level of capital that would allow it to face unexpected losses whose probability of occurrence in the given time period may be not more than 99%.

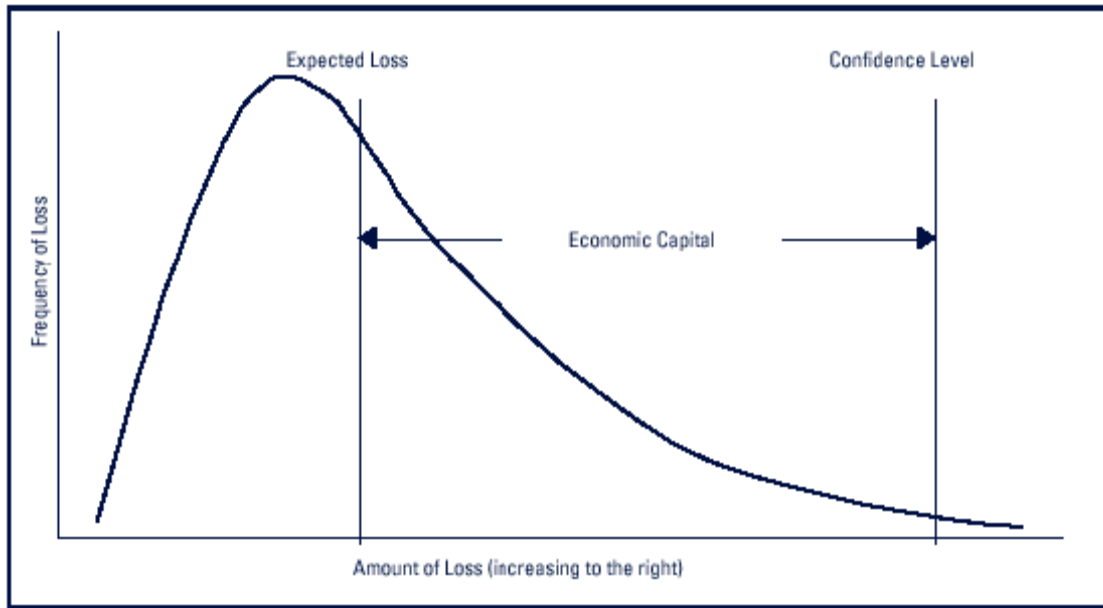
In the above example, the 1% represents the probability that losses may exceed the economic capital. This type of loss may be due to a system shock that is rare, and hence not need to be covered by capital.<sup>26</sup> In computing the economic capital, credit and operating risks could be estimated using the probability distribution of historical losses, while for market risk it is possible to calculate the daily value-at-risk and then convert it to an amount of economic capital. Thus, economic capital can reflect a comprehensive risk measurement addressing the full range of risks faced by the financial intermediary. It is a useful tool in the hands of the management of the financial intermediary, allowing it to calibrate the level of capital that is economical to hold in order to achieve return and stability objectives. Provided the implemented methodology is sound and robust as well

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<sup>26</sup> Financial intermediaries would also use other off-balance sheet methods such as insurance to manage the risks of losses.

as transparent, it can provide a valuable foundation for a constructive dialogue with regulators and other stakeholders that contributes further to market vibrancy and stability.

**Exhibit 4.6 A probability distribution of losses**



Source: Burns (2004).<sup>27</sup>

For simplicity, assume that Exhibit 4.6 provides the probability distribution of losses associated with *Murabaha* contracts that finance trade within a 12-month period. The vertical axis on the left indicates the frequency of various levels of loss, and the horizontal axis at the bottom indicates the various amounts of losses that may occur. Thus, moving from the left to the right of the curve, the frequency of losses on those contracts initially increases with the size of losses; then, beyond a certain size of loss, it diminishes. Thus the expectation of losses over the period would be the sum of losses weighted by the expected frequency of their occurrence. However, larger losses may also occur but with lower and lower frequency as larger and larger sizes of losses are

<sup>27</sup> [www.fdic.gov/regulations/examinations/supervisory/insights/siwin04/economic\\_capital.html](http://www.fdic.gov/regulations/examinations/supervisory/insights/siwin04/economic_capital.html).

contemplated. Beyond a certain size of loss the intermediary would decide not to bother to cope with them and accept the possibility of not being able to protect its solvency. Beneath that size it would keep some economic capital reserve that would correspond to a measure of the sum of the difference between possible unexpected losses and expected losses, weighted by the frequency of occurrences of such differences. The foregoing approach could be extended to various types of contracts and elaborated to address correlations between risks, providing a comprehensive risk management tool.

While IIFSs' and CFSs' modes of intermediation, financial instruments, and risks may differ, the general approach would be applicable to both types of financial intermediaries. A better-circumscribed economic capital can allow IIFSs to manage their resources more efficiently while providing comfort to their stakeholders. A major difference between IIFSs and CFSs relates to investment account deposits. While for IIFSs, the expected losses would be borne by the income, as in CFSs, the risk capital needed to meet unexpected losses may be less for IIFSs since, theoretically, they accept investment deposits which are risk-sharing contracts. In principle, the Islamic financial intermediary would share in the profit as an *agent-Mudarib* with the depositor, but the latter would bear losses that are the outcome of market conditions but not of a *Mudarib's* misconduct. Hence the risk-sharing feature of investment account deposits would reduce the overall risks for IIFSs in principle. Under the circumstances, and going back to the *Murabaha* contract illustration in the foregoing, the IIFS would be expected to conduct business in such a way as to deal with expected losses, pricing its products and accumulating provisions accordingly. The IIFS would identify economic capital to deal with unexpected losses that are due notably to misconduct. Unanticipated adverse events that are beyond the reasonable anticipation of the IIFS would normally not need to be cushioned, as profit-sharing investment account "depositors" would share the losses attributable to the assets (or the proportion of assets) financed by their funds.

In light of the above, the PER and investment risk reserve (IRR) may be considered in terms of the perspective of dealing with expected and unexpected losses to

the extent that funds in these reserves provide cushions similar to capital.<sup>28</sup> Pricing designed to cope with expected losses should limit the need for a PER to addressing errors in setting pricing and other such unexpected events. Similarly, the IRR could address unexpected losses (excluding those due to misconduct or negligence), as pricing would be expected to generate resources to fund provisions for expected losses. Investment account deposits, PER, IRR, and capital could usefully be considered within a comprehensive risk management framework in order for IIFSs to best calibrate their economic capital, strengthen their ability to compete, and maintain stability.

## 5. Conclusion

The chapter argues for developing and implementing risk management approaches and methodologies for IIFSs. Whether for the latter or CFSs, capital is both a core input for business development and a sustainability cushion against the consequences of unexpected adverse events. This double perspective entails a tradeoff in identifying the level and composition of capital a financial intermediary maintains. An over-emphasis on stability may stunt the intermediary's vibrancy, while too much focus on business development may eventually jeopardize stability.

The evolution of regulators' and market participants' thinking is leading them increasingly to take more account of the intermediary's risk profile and tolerance in assessing capital requirements. Technical innovations are allowing both to make professional progress in this direction. These developments are giving them better ways to calibrate the level and composition of capital requirements to balance more efficiently requirements of market development and stability. IIFSs cannot but gain in developing and adopting sound advanced risk management methodologies. They would allow them not only to achieve their business objective of profitability more easily, but also to cope better with the discipline which markets impose, as well as to conduct a beneficial and constructive dialogue with regulators.

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<sup>28</sup> PER cannot be used to offset an overall loss during a period, as this would contravene the *Shari'ah*; IRR is used for this purpose. PER is employed to enhance the distributable profit if the profit earned is considered inadequate, and this may be due to the effects of asset write-downs or write-offs.

Seeking to implement improved risk management practices entails as a first step an effort to identify clearly the risk categories an IIFS may face. These would then need to be translated into variables representing the occurrence of the risk events and the losses these may entail. Some probability distribution would then be associated with each category of risk to provide a framework for assessing the likelihood and extent of losses that may occur. Such a framework would also allow the IIFS to conceptualize the economic capital that corresponds to a level of risk tolerance. It would also provide an approach to setting pricing policies that would incorporate the losses that can be expected in the normal conduct of business.

Implementing a framework incorporating the foregoing features entails the availability of loss data that reflect their historical occurrences within given time periods. The richer the data set in terms of number of observations and their categorization, the better informed the risk management framework can be, the better the pricing policy and the more efficient the identification of the level and composition of capital. Accordingly, IIFSs (like other banks seeking to develop an IRB approach and other sophisticated risk measurement techniques) need to put in place data management systems to collect and process loss data. However, collecting a data set sufficiently large to provide robust inferences on the actual risk the IIFS faces may take some time. An option would be for IIFSs to join efforts and pool data sets to accelerate the process of improving their risk management practices. In parallel, IIFSs would be investing in enhancing the risk management skills available to them.

IIFSs are already engaged in strengthening their stability and competitiveness through improvements in risk management capabilities. Over time, these efforts should enable IIFS to reach assessments of their capital requirements that would permit them to use their resources efficiently and offer services that contribute effectively to the development of the communities they want to serve.

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## **Islamic Financial Terms**

*Shari'ah* - Islamic canon law as revealed in the Qur'ân (the revelational text) and the Sunnah (examples given by the Prophet Mohammad).

*Murabahah* - credit sales (cost + mark up sale)

*Musharakah* – joint venture

*Mudarabah* – limited partnership – profit sharing investment accounts

*Mudarib* - agent/ financial institution offering financial services

*Istisna'* – contract of manufacture

*Ijarah* – leasing

*Riba* - Interest

*Gharar* - uncertainty or risk