RISK MANAGEMENT IN ISLAMIC BANKING
A conceptual framework

Tariqullah Khan

Distance Learning Lecture

2/11/2004

Tariqullah Khan is associated with the Islamic Research and Training Institute (IRTI), the Islamic Development Bank (IDB). Views expressed in the lecture are his own and do not necessarily reflect those of IRTI-IDB and member countries.

Running order

Part 1

Presentation 20 Minutes

Questions

DLCs 2-3 Minutes each

Tehran

Karachi

Lboro

Islamabad

Answers 10 Minutes

TOTAL 40 Minutes

Part 2

Presentation 20 Minutes

Questions

DLCs 2-3 Minutes each

Karachi

Lboro

Islamabad

Tehran

Answers 10 Minutes

TOTAL 40 Minutes

Part 3

Presentation 20 Minutes

Questions

DLCs 2-3 Minutes each

Islamabad

Lboro

Tehran

Karachi

Answers 10 Minutes

TOTAL 40 Minutes

Main References

- **Chapra, M. Umer & Khan, Tariqullah (2000),** ***Regulation and Supervision of Islamic Bank*****, Jeddah: RTI**
  http://www.sbp.org.pk/departments/ibd/Regulation_Supervision.pdf

- **Khan, Tariqullah and Habib Ahmed (2001),** ***Risk Management: An Analysis of Issues in Islamic Financial Industry,*** **Jeddah: IRTI**
  http://www.sbp.org.pk/departments/ibd/Risk_Management.pdf

Presentation outline

- Part – 1: Discusses the systemic framework of the balance sheet of an Islamic bank and its risks and soundness considerations;
- Part – 2: Deals with the unique risks of Islamic modes of finance and the perception of the industry in this regard, and
- Part – 3: Explores the possibility of developing an internal risk rating system for Islamic modes of finance.

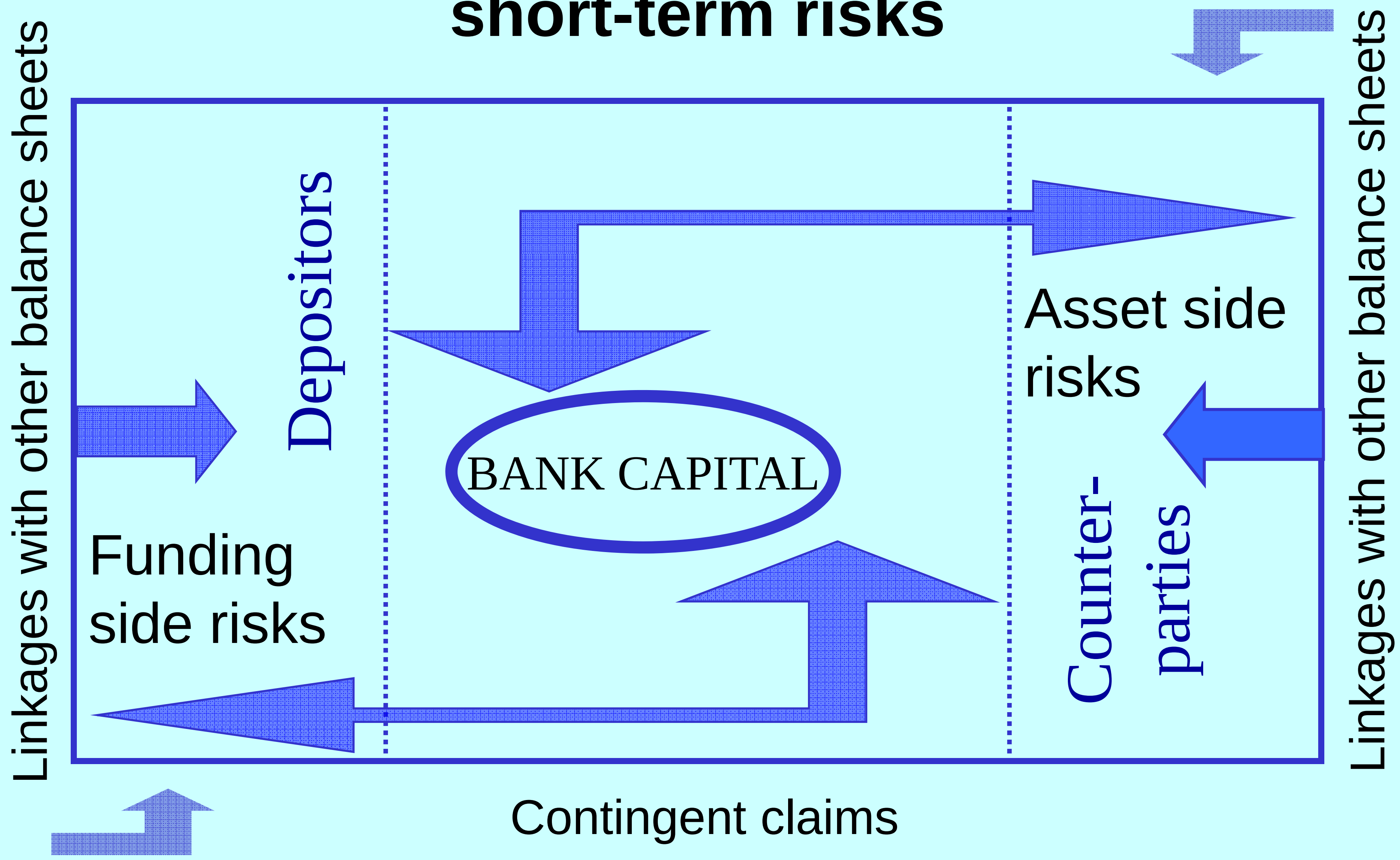
PART I
SYSTEMIC FRAMEWORK

Risks and risk factors

- Risk shall be seen as the *probable* *loss of income and assets' value*. Only unexpected losses are included and expected losses are not included in the definition of risk.
- The sources of the possibility of future losses can be classified into:
  - Financial
  - Business
  - Operational

We will return to these in part – 2 of the lecture

Banking is about intermediation of short-term risks



Key parties and their considerations

1. Depositors: May withdraw;
2. Banks: Tend to accumulate assets to maximize return on equity;
3. Counter-parties: May default;
4. Regulators: Seek banking soundness;
5. Other companies and households within the interlinked balance sheets, have contingent claims on each other and
6. Public/tax payers: Faces the cost of deposit protection and financial crisis.

To establish banks that are Shari'ah compliant, enjoy depositors' confidence, and are efficient and stable!

Sources of funds

ISLAMIC BANKS	TRADITIONAL BANKS
Tier – 1 Capital (equity)	Tier – 1 Capital (equity)
Tier – 2 Capital (?)	Tier – 2 Capital (Subordinated loans)
Current accounts	Current accounts
Saving accounts	Interest-based Saving accounts
Unrestricted Profit Sharing Investment Accounts (PSIAs)	Time & certificates of deposits
Profit equalization reserves (PER)	Reserves
Investment risk reserve (IRR)	

…. Sources of funds

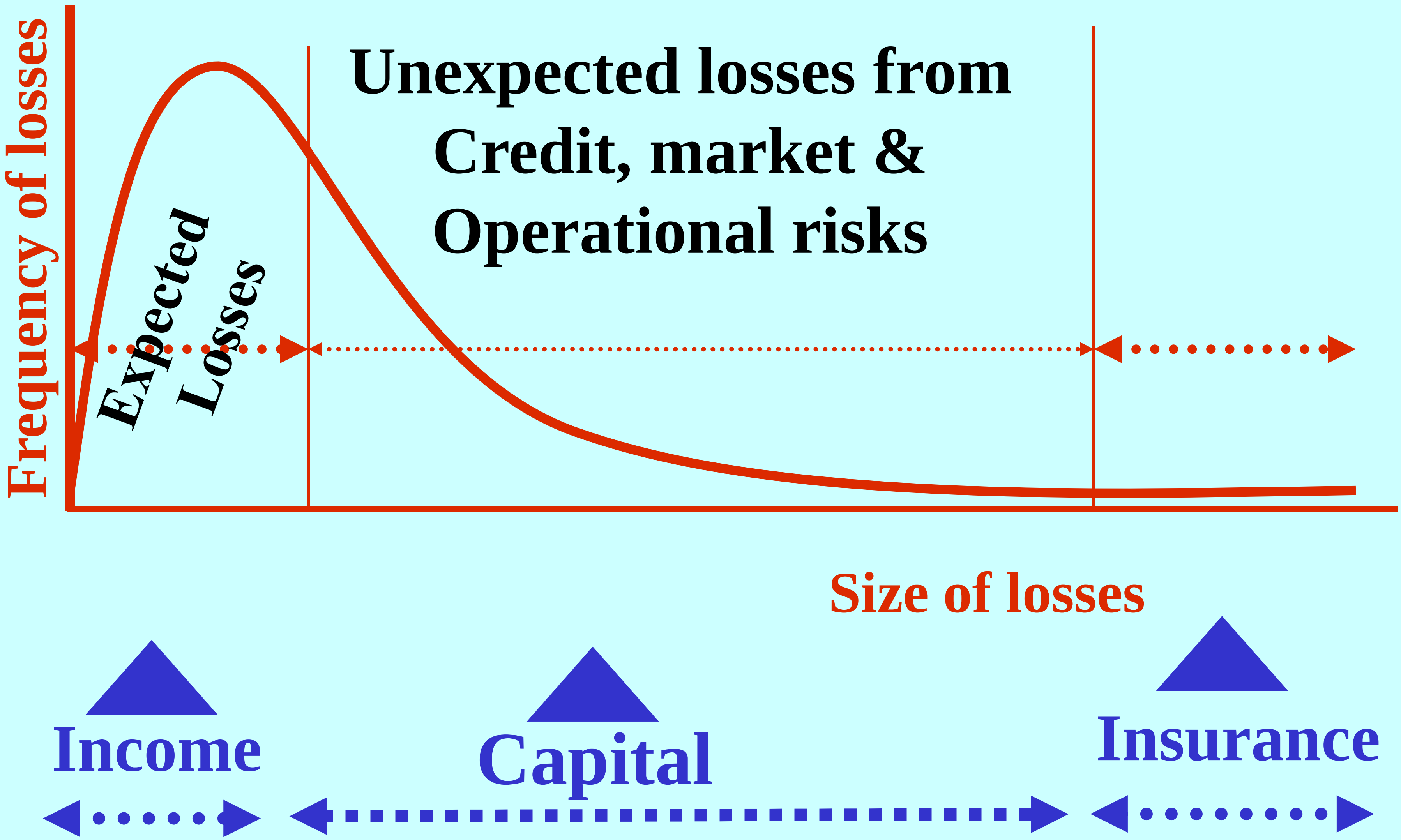
ISLAMIC BANK	TRADITIONAL BANK
Current accounts	Current accounts
Banks in both cases use shareholders' equity to protect these deposits	
Profit sharing investment accounts (PSIA)	Time deposits, certificates of deposits, etc – fixed income liabilities
Shareholders' equity protects these liabilities only in case of fiduciary risks (theory); Profit Equalization Reserve (PER) & Investment Risk Reserve (IRR)	Shareholders' equity and subordinated loans protect these liabilities against all risks
Cost of funds: Variable	Cost of funds: Fixed

Uses of Funds

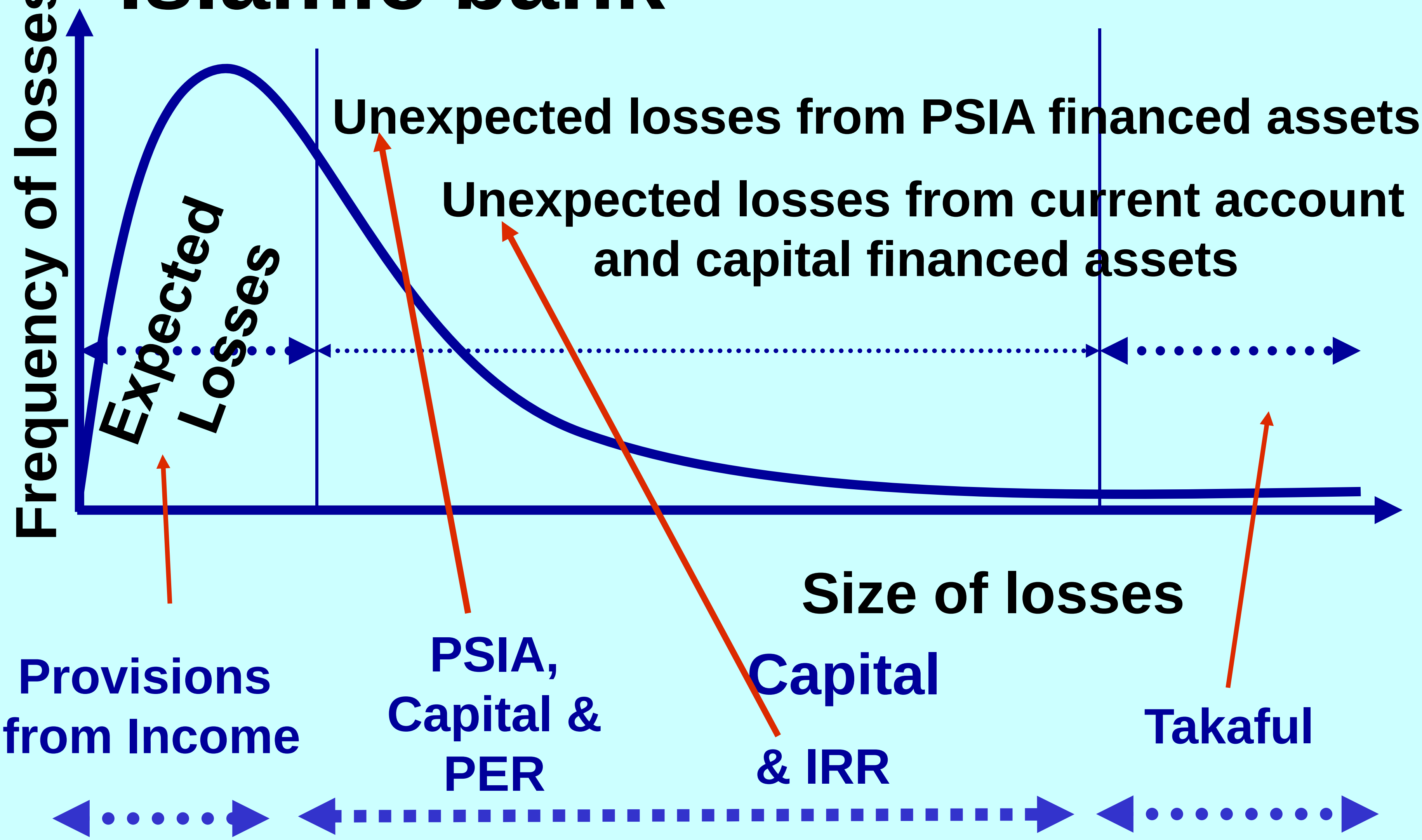
ISLAMIC BANKS
Cash & balances with other banks
Sales Receivables (Murabaha, Salam, Istisna'a)
Investment securities
Musharaka financing
Mudaraba financing
Investment in real estate
Investment in leased asset
Inventories (including goods for Murabaha)

TRADITIONAL BANKS
Cash & balances with other banks
Loans
Mortgages
Financial leases
Investment in real estate
Securities

Sustaining losses



Ensuring the stability of an Islamic bank



Risks of PSIA financed assets

Risks	Risk Mitigation
Displaced commercial risk (withdrawal risk)	Profit equalization reserve (PER) from shareholders' contributions
Fiduciary risk	Capital (%?)
Commercial loss	PSIA-holder, Investment risk reserve (IRR) from PSIA-holders' contribution

Risks of PSIA financed assets: Emerging rules

- Rule – 1: Completely separate the PSIA financed assets from all other assets financed by current accounts and capital
- Rule – 2: Allocate risks between PSIA holders and shareholders, e.g., Regulatory capital for PSIA financed assets = capital/50% of PSIA financed assets
- Rule – 3: Apply Basel risk weighting rules
- Rule – 4: Establish IRR and PER

Unique systemic risks

- Risk transmission between current accounts and investment accounts (between Qard and Qirad)
- Income mixing between Shari'ah compliant and non-complaint sources

Need for separate capital as firewall

Role of capital: Once again!

$$\boxed{Leverage \quad Ratio \ = \frac{Capital}{Total \quad Assets}}$$

- **In the two-tier Mudharabah Model this ratio is 1**
- **People are doing business with their own money**
- **Only 100% loss of asset value will will wipe out equity**

….. Hence, under this model banking instability is not a concern.

Consider ….

Bank capital = $ 10

Assets = $ 100

Capital/Asset Ratio is 1: 10

$ 1 of equity is bearing the risks of $10 of assets;

Only 10% loss of asset value will wipe-out all equity

… consider

Bank Capital is $ 10

Asset are $ 100

Connected lending – funds allocated to owners' interest groups are $ 20

How much is actual capital?

$ 10,

$ - 10 or

$ - 20?

….. Consider

Bank Capital is $ 10

Assets are $ 100

$40 are concentrated on a single client, in a single line of business, and

the client's credit rating has been downgraded

How sound is the Bank?

These and numerous other considerations that effect the quality of assets require risk weighting of assets

Risk weighted assets: A measure of banking soundness

$$\text{Risk-Based Capital Ratio} = \frac{\text{Capital}}{\text{Risk-Adjusted Assets}}$$

Credit

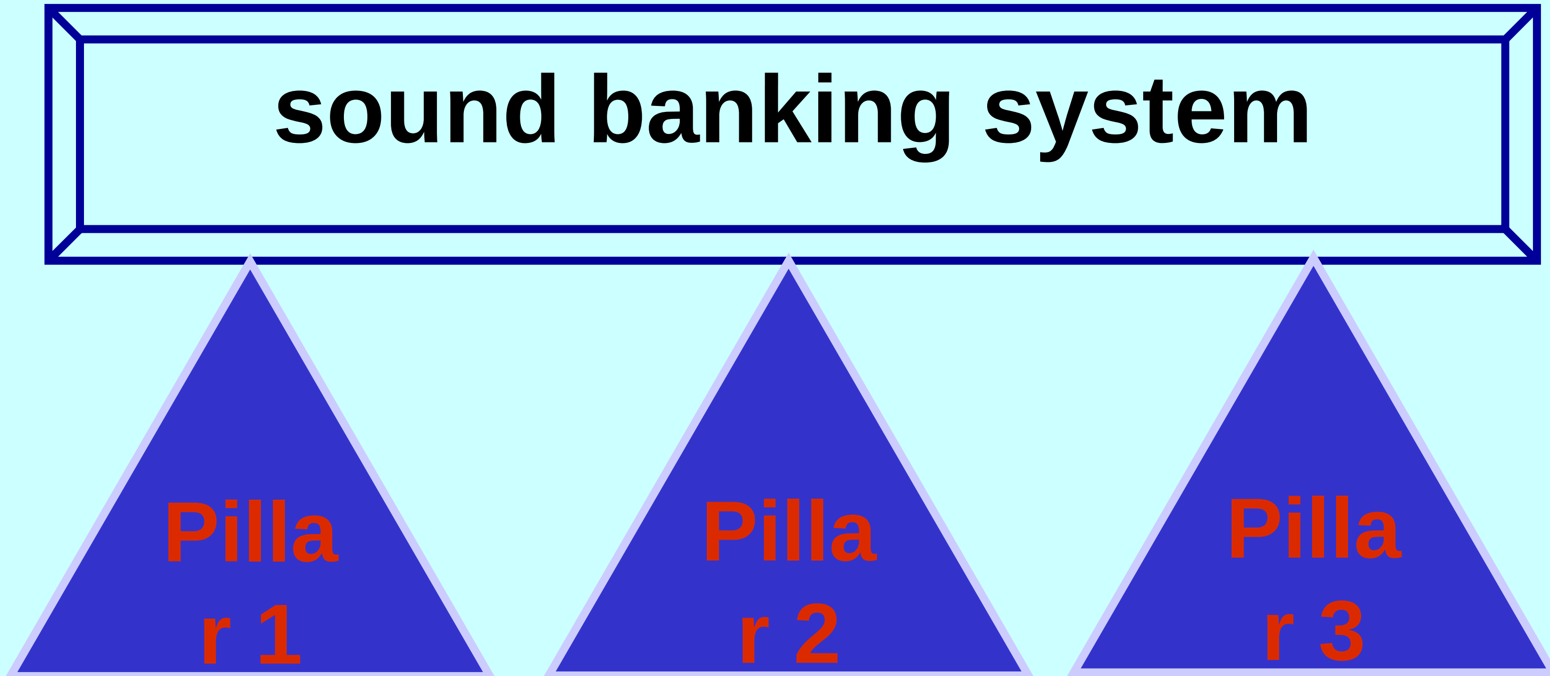
Market

Operational

Standardized risk weighting for all banks

Banks' own internal risk rating systems

The Basel II Pillars of a



Minimum Capital Requirement

Transparency and disclosures

Effective Supervision

PART II
UNIQUE RISKS OF ISLAMIC BANKS

Risk factors

Financial

Business

Operational

Financial risk factors

- **Credit risk**
  - **Default risk**
  - **Down grade risk**
  - **Counter party risk**
  - **Settlement risk**
- **Market risk**
  - **Price risk**
  - **Rate of return risk**
  - **Exchange rate risk**
- **Liquidity risk**
  - **Funding liquidity risk**
  - **Asset liquidity risk**
  - **Cash management risk**

Business risk factors

- **Management Risk**
  - **Planning**
  - **Organization**
  - **Reporting**
  - **Monitoring**
- **Strategic Risk**
  - **Research and development**
  - **Product design**
  - **Market dynamics**
  - **Economic**
  - **Reputation**

Operational risk factors

- People risk
  - Relationships
  - Ethics
  - Processes risk
- Legal risk
  - Compliance
  - Control
- System risk
  - Hardware
  - Software
  - Models
  - ICT
- External risk
  - Event
  - Client
  - Security
  - Supervisory
  - Systems
- Equity investment risk?

Islamic modes of finance:
Unique risk factors

- Liquidity originated market risk
- Transformation of credit risk to market risk and market risk to credit risk at various stages of a contract
- Bundling of credit risk and market risk
- Market risk arising from owning the underlying non-financial asset until maturity of a contract or until the ownership is transferred to customer
- Treatment of default

Unique balance sheet features of IBs from market risk perspective …1

- In traditional banks, market risk is mostly in the trading book
- In Islamic banks, market risk is concentrated in the banking book due to Murabahah, Ijara, Salam, Musharakah and Mudharabah in the banking book asset portfolio
- Hence it is unique for Islamic banks that market risk and credit risk are strongly bundled together

Unique balance sheet features of IBs from market risk perspective …… 2

These are re-price-able

Liabilities		Assets	
Capital	10	Murabahah	70
		Istisna	10
PSIAs	50	Ijarah	10
Current accounts	40	Salam	4
		Musharakah	3
		Mudharabah	3
Total	100		100

These are <u>not</u> re-price-able

Banking book market risk in IBs

Assumption: 1 % increase in benchmark price

	IB 1		IB 2		IB 3	
	L	A	L	A	L	A
Re-price-able	10	10	10	4	5	5
Non-re-price-able	0	0	0	6	5	5
Balance Sheet value change	.10	.10	.10	-.02	0	0
Asset value change	0		-.12		0	

Banking book market risk in IBs

Assumption: 1 % decrease in benchmark price

	IB 1		IB 2		IB 3	
	L	A	L	A	L	A
Re-price-able	10	10	10	4	5	5
Non-re-price-able	0	0	0	6	5	5
Balance Sheet value change	.10	.10	-.10	.02	0	0
Asset value change	0		.12		0	

Credit (default) risk

- An unexpected loss in a bank’s income due to delay in repayment or non-repayment in full by the client as contractually agreed
- Default risk covers over 80% of risks in an average bank’s banking book asset portfolio
- It is the cause of over 80% cases of bank failures
- Default risk, also causes market risk and liquidity risk

Unique credit risk features of IBs ….1

- Treatment of default: In Islam, compensation-based restructuring of credit is the most well known form of Riba, namely, Riba Al Jahiliyah – this highly necessitates credit risk management
- Moral issues in loan loss reserves
- Collateral quality (restrictions on use of sovereign bonds)
- Insurance – clients' insurance and facilities insurance
- Diverse modes and bundled risks

Unique credit risks of IBs…. 2

- Mudharabah / Musharakah
  - Default event undefined
  - Collateral not allowed
- Salam / Istisna'
  - Counterparty performance risk
  - Separation of market risk from default risk difficult
  - Catastrophic risk high
- Murabahah
  - Baseline default risk, but counterparty risk due to embedded option (Murabahah, binding non-binding matter) also exists
- Conglomeration of risks – each mode having various risks, credit, liquidity, market, reputation,

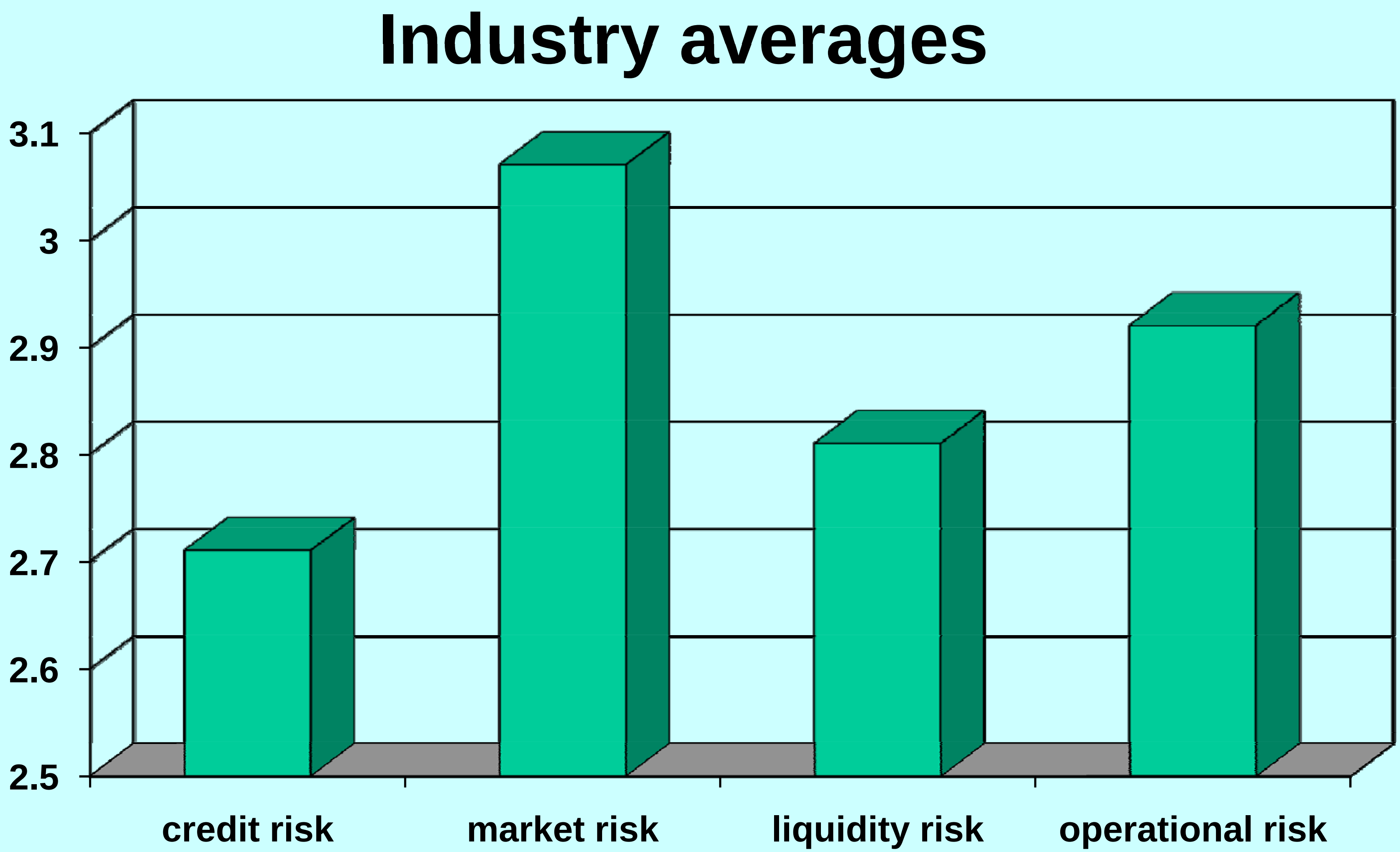
Perception of Islamic banking industry about risks

The research asked Islamic banks to rank the Islamic modes of finance used by them from 1 (least severe) to 5 (most severe) in terms of risks.

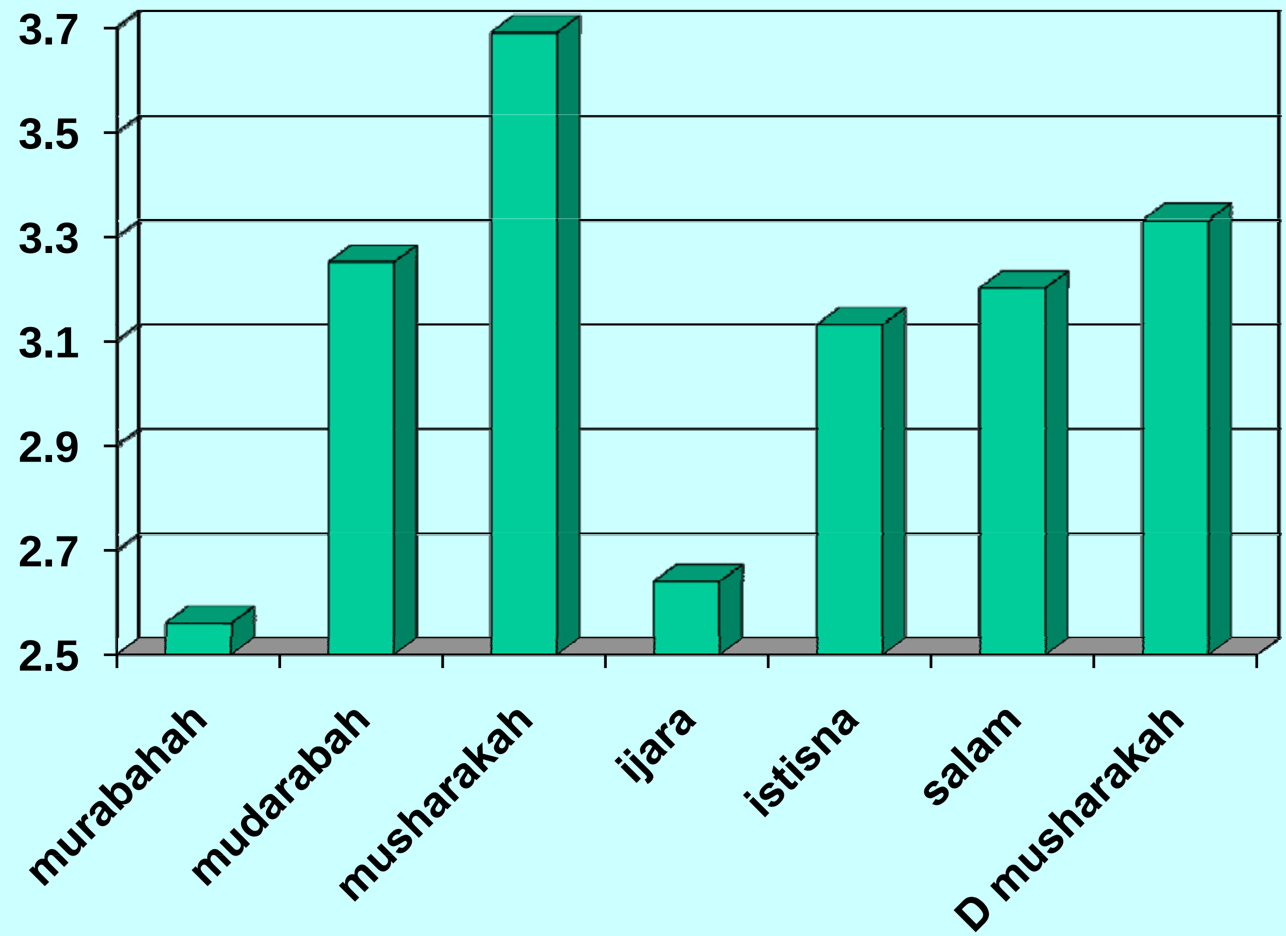
Responses of 15 Major Islamic banks are included.

Outlier responses are not included.

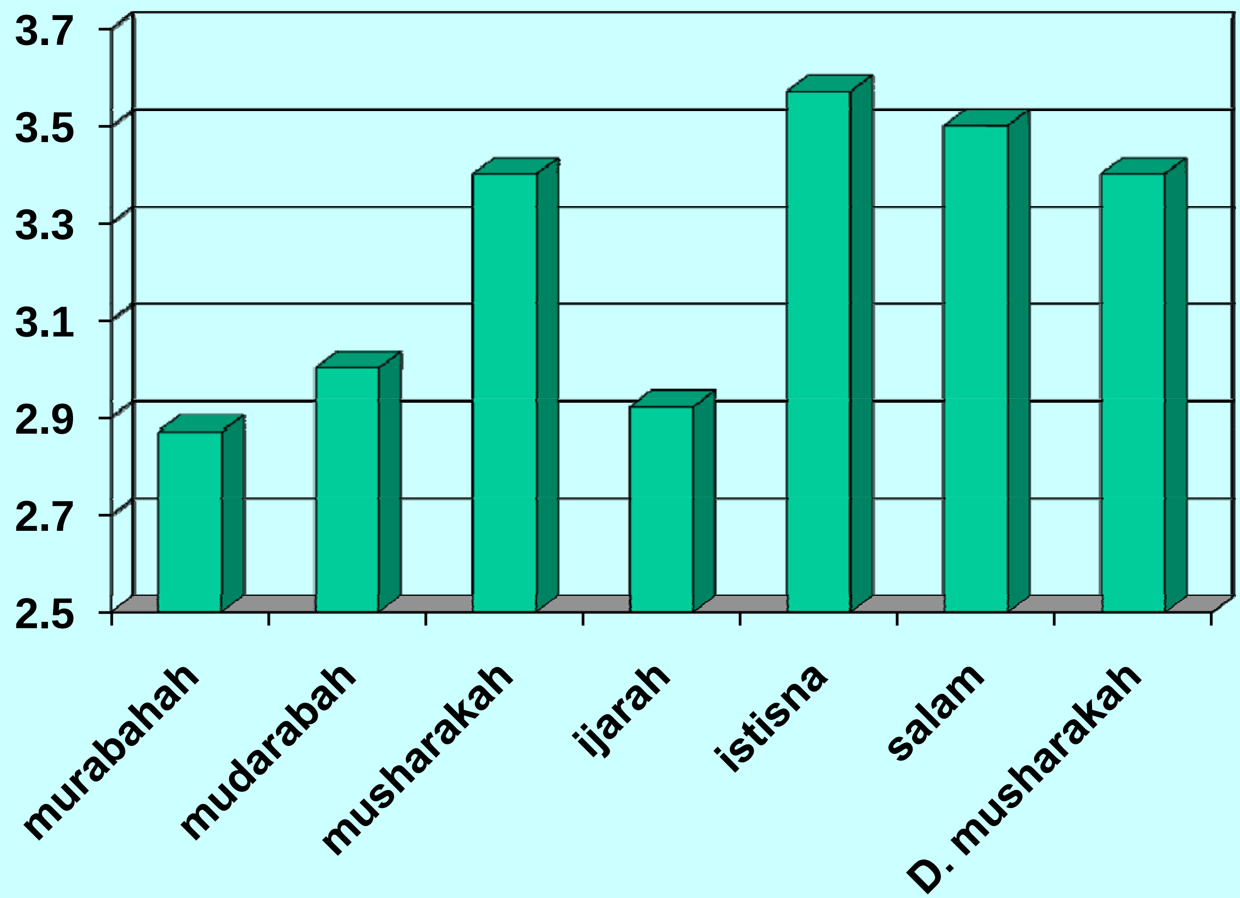
Based on, Tariqullah Khan and Habib Ahmed (2001), ***Risk Management: An Analysis of Issues in Islamic Financial Industry,*** **Jeddah: IRTI**


Industry averages
3.1
3
2.9
2.8
2.7
2.6
2.5
credit risk
market risk
liquidity risk
operational risk

Credit risk


3.7
3.5
3.3
3.1
2.9
2.7
2.5
murabahah
mudarabah
musharakah
ijara
istisna
salam
D musharakah

Market risk



3.7
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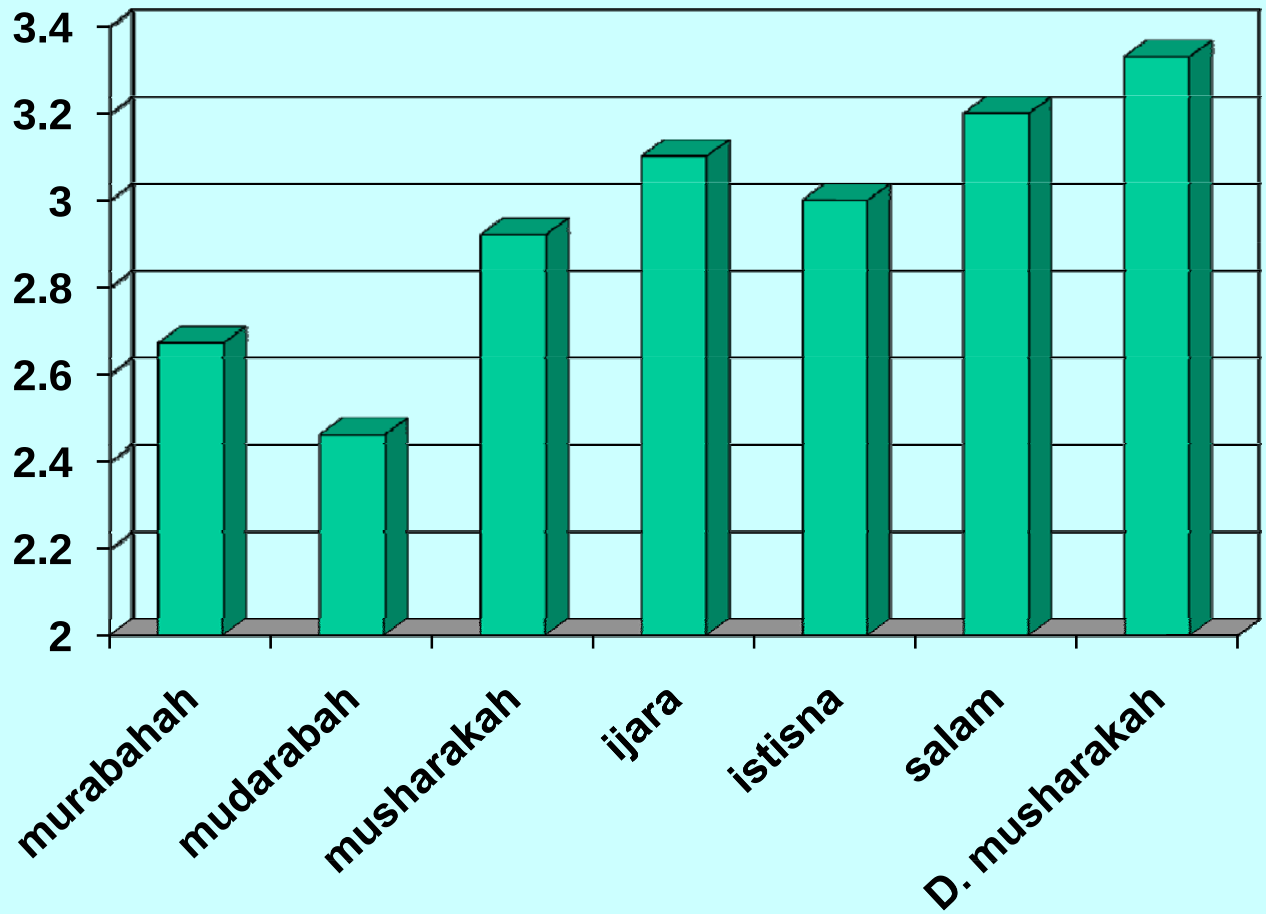
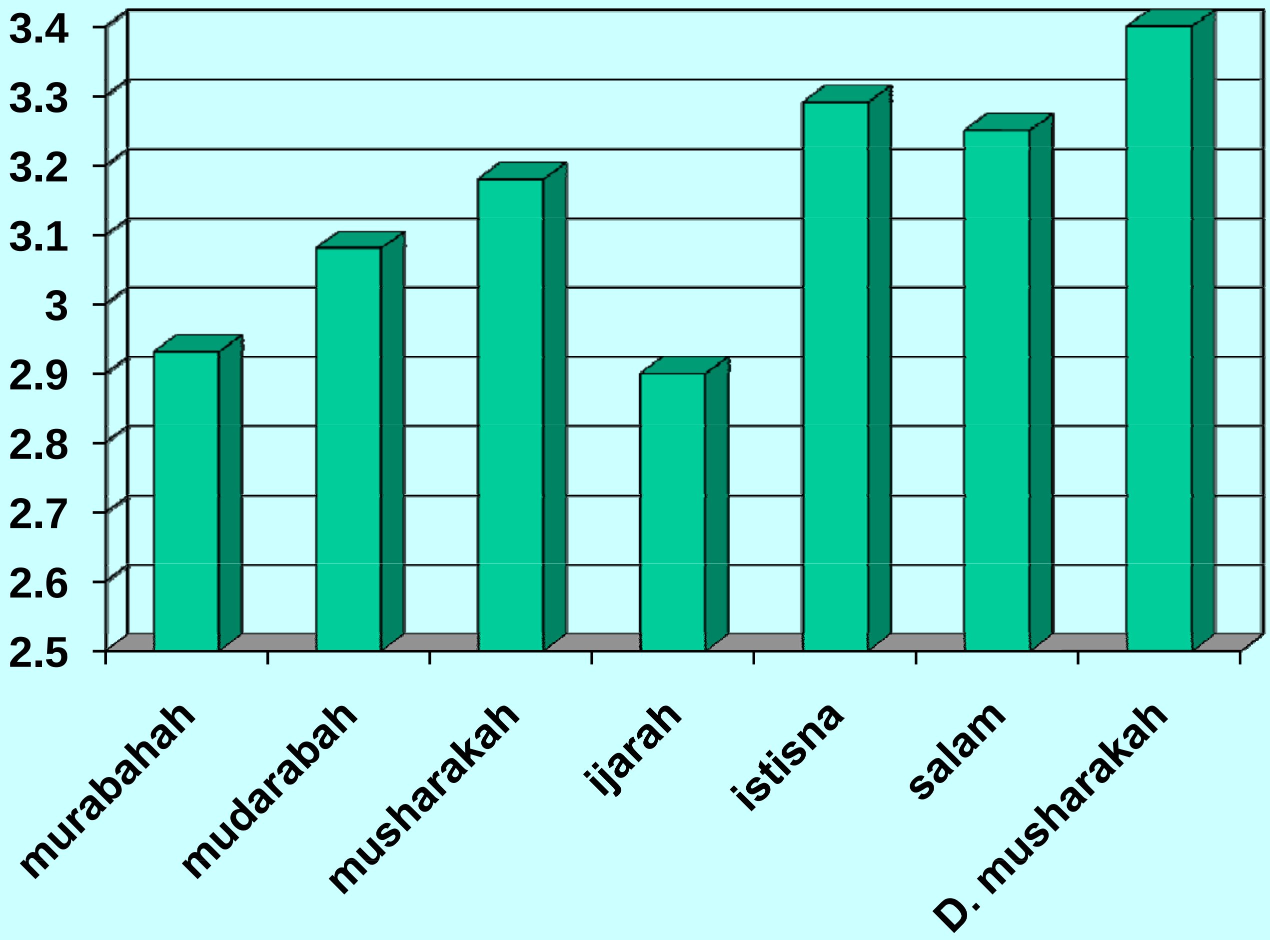
D. musharakah

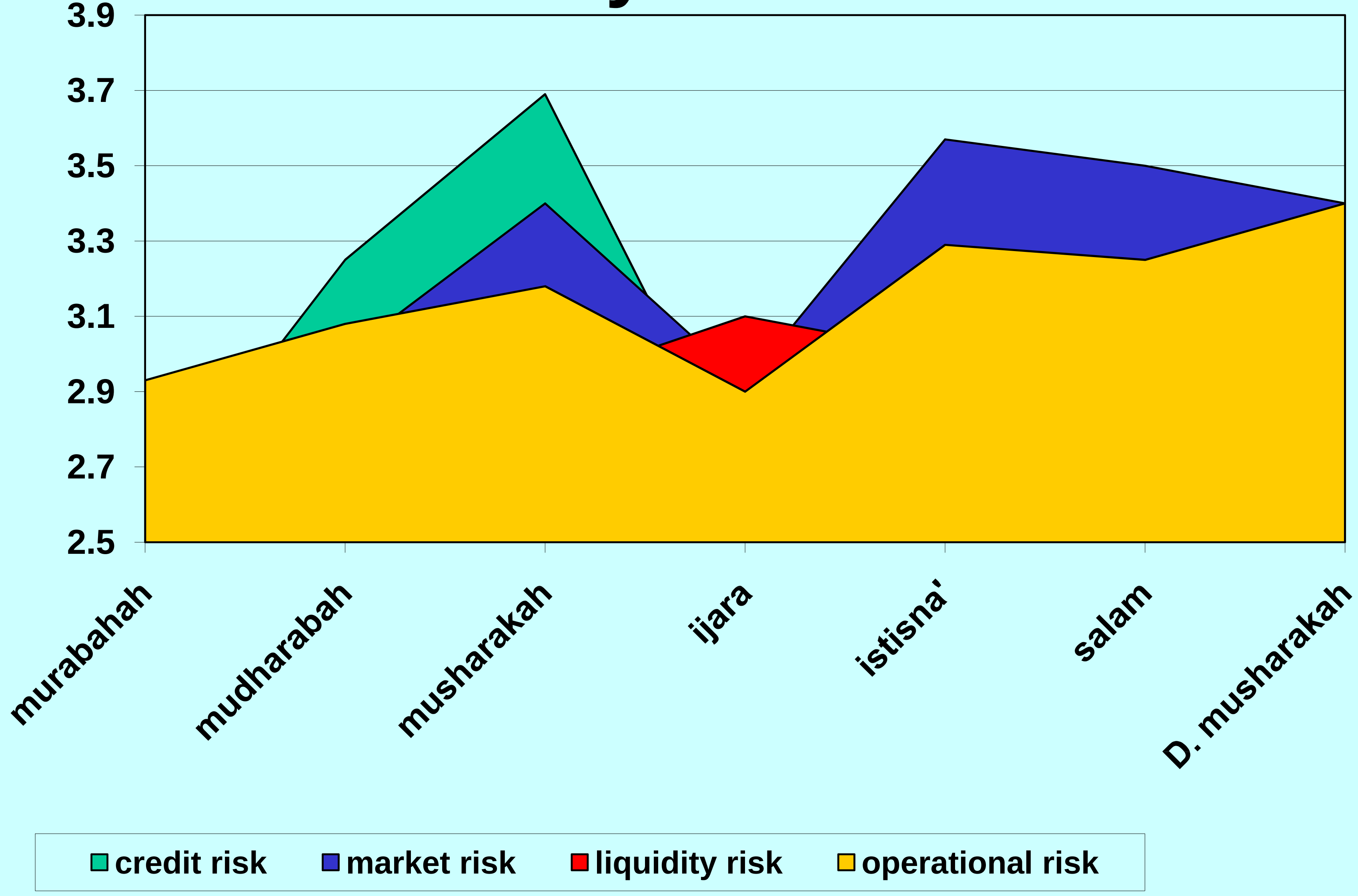
Liquidity risk



Operational risk



Severity of risks

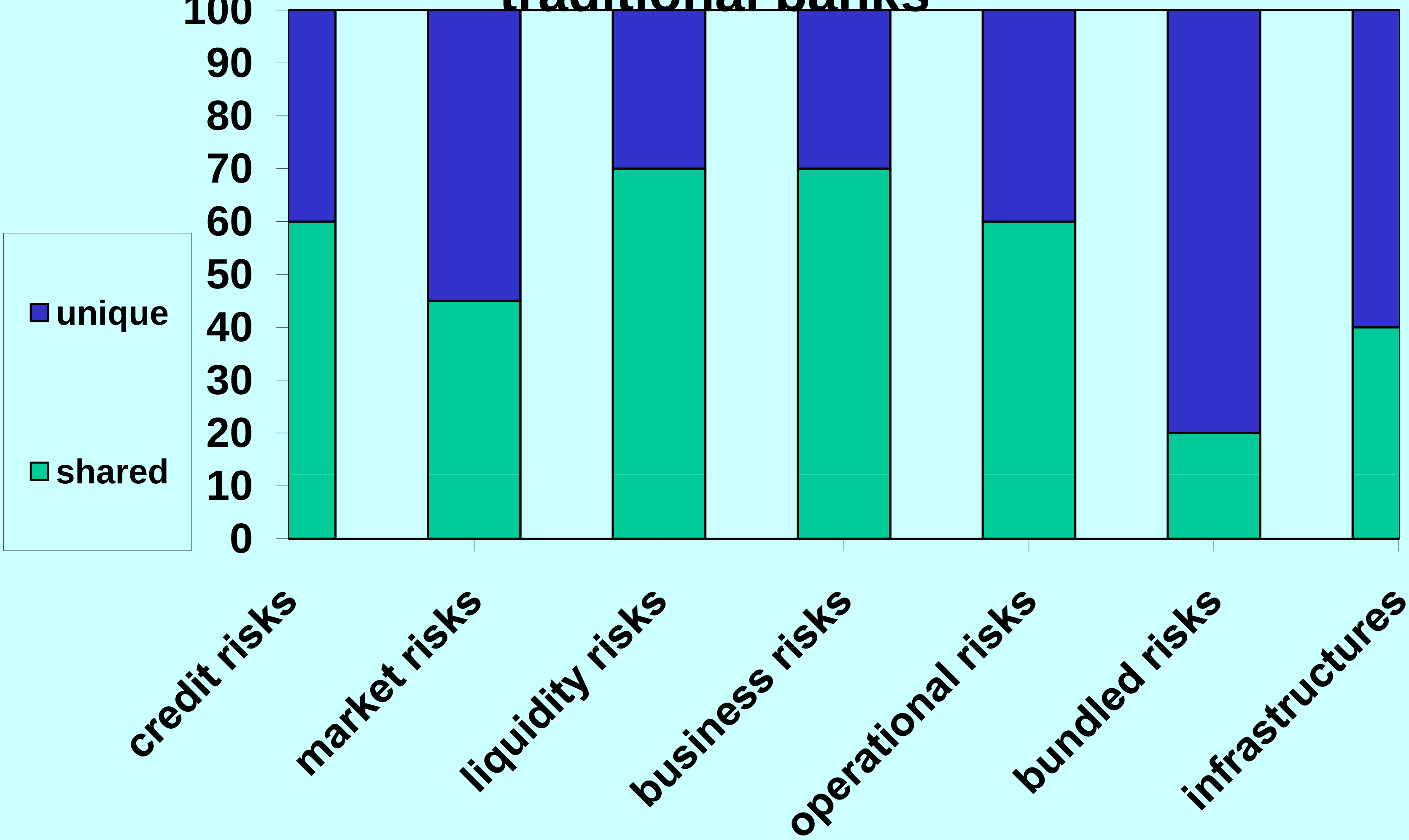


Part III – EXPLORING AN INTERNAL RATING SYSTEM FOR ISLAMIC MODES OF FINANCE

Need for broader look

Mode of finance	Obligor	Business line - 1			Business line - 2		
		< 1 year	1- 2 years	2 -3 years	< 1 year	1- 2 years	2 -3 years
Murabahah	AAA						
	BBB						
	CCC						
Musharakah	AAA						
	BBB						
	CCC						
Istisna’	AAA						
	BBB						
	CCC						
Ijara	AAA						
	BBB						
	CCC						

Islamic banks' risks: Unique versus shared with traditional banks



Challenge: How to capture the unique risks of IBs?

- The answer is to develop Internal Rating Systems (IRSs) in IBs
- IRSs can be considered as risk-based inventories of individual assets of banks either based on the loss given default (LGD) of the facility or probability of default (PD) of the obligor or both
- Most IRSs are **JUDGMENTAL NOT STATISTICAL**
- Rationale for IRSs

Uses of IRSs

- IRSs differ from bank to bank, from use to use
- IRSs are used for a number of purposes:
  - guiding credit origination process,
  - portfolio monitoring and management reporting
  - Analysis of adequacy of loan loss reserves and capital
  - Profitability and loan pricing analysis
  - Input to formal mathematical modes of risk management
  - Facilitate prudential bank supervision

Desirability of IRSs for IBs

- To capture the diverse nature of the Islamic modes of finance
- Internal ratings are based on the profile of individual assets, not on a bucket of assets
- Internal ratings help the development of systematic database of critical financial variables
- Internal ratings supplement external credit assessment
- Internal ratings can enhance external ratings
- Internal ratings improve quality of MISs

……desirability of IRSs

- Formal internal ratings are normally used by large and sophisticated banks
- The size of most Islamic banks is very small and therefore, their capacity to develop internal rating systems is limited in general
- For a long time, this method cannot be utilized for supervisory assessment of individual Islamic banks' risks
- However, initiation of IRS is imperative to develop risk management culture consistent with the Islamic modes of finance

Sources and inputs of IRSs

- Client oriented system - probability of default (PD)
- Facility oriented system - value of an asset expected to be lost in the event of a default (loss given a default: LGD)
- In both cases: balance sheet value of total asset i.e., Exposure-at- Default (EAD)
- Maturity of facility
- Concentration of credit to the specific client as a percentage of total portfolio, etc.

PDs: Starting point in building IRSs

In the framework of Basel II, with the approval of supervisors, banks can use their own internal assessments of their **asset risk components** for meeting regulatory capital requirements.

Asset risk components: Probability of default (PD), loss given default (LGD), exposure at default (EAD), and effective maturity of facility (MOF)

Foundation internal ratings based (IRB) approach – Banks use their own PDs; supervisors assign LGDs, EADs, and MOFs

Advanced IRB approach – banks can use their own PDs, LGDs, EADs, and MOFs

Building judgmental default probabilities

- Analysis of financial statements of the client to assess its future cash flow and its ability to meet its contractual obligations
  - Debt service capacity of the client
  - Liquidity of the clients’ balance sheet
  - Historical earnings
  - Access to sources of funds
  - Leverage ratio etc
- Peer group analysis
- Audit reports
- External credit assessment reports etc

Internal capital allocation: An Example

Survey results regarding risk perceptions

Rank 1 (not serious) to 5 (critically serious)

• *Musharakah*	3.69
• Diminishing *Musharakah*	3.33
• *Mudarabah*	3.25
• *Salam*	3.20
• *Istisna '*	3.13
• *Ijarah*	2.64
• *Murabahah*	2.56

…. Internal allocation of capital: An Example

Modes of finance	Risk perception		Weight (w), Index Murabahah=100	Capital needs $
	1 to 5	% of 5		
Musharakah	3.69	73.8	144; w=1.44	288
D. Musharakah	3.33	66.6	130; w=1.30	260
Mudharabah	3.25	65	127; w=1.27	254
Salam	3.2	64	125; w=1.25	250
Istisna	3.13	62.6	122; w=1.22	244
Ijara	2.64	52.8	102; w=1.02	204
Murabahah	2.56	51.2	100; w=1	200

Assumptions: Commitment (C) = $10,000; EAD = 50% (of C); LGD = 50% (of EAD); Minimum capital requirement = 8%; Weight (w) base = 100; Actual capital requirement = C*EAD*LGD*W*8%

C commitment, EAD exposure at default, LGD loss given default

Conclusion

- Asset side and liability side unique features of Islamic banks can strengthen linkages between financial and real sectors and enhance financial stability;
- The unique balance sheet features of Islamic banks however, also give rise to significant unique risks;
- The proper management of these risks can strengthen the Islamic banking industry’s role in financing development and enhancing financial markets’ efficiency and stability

….. Conclusion

- The existing standards which are meant for traditional banks need to be complemented with standards covering the unique risks of Islamic banks
- The challenging role is being played by the Islamic Financial Services Board (IFSB)
- Internal Rating Systems are most suitable for Islamic Banks

Thank You

Tariqullah.khan@isdb.org

Tel: 966 2 6466370

Fax: 966 2 6378927

Tariqullah Khan (Ph.D), is currently Senior Economist at IRTI, the Islamic Development Bank. He is also member of the Risk Management Working Group of the Islamic Financial Services Board, Kuala Lumpur. Before joining IRTI in 1983, he held faculty positions in Universities in Pakistan since 1976.

He holds M.A. (Economics) degree from the University of Karachi, Pakistan, and a Ph.D. degree from the Loughborough University, United Kingdom.

At IRTI, he undertakes, manages and supervises research studies, conferences and other academic programs and policy initiatives. His current areas of interest are Islamic financial products and markets, risk management, regulation and supervision and financial stability.

He has several publications and has presented numerous conference papers and presentations in these areas. Some of his recent publications include, *Risk Management: An Analysis of Issues in the Islamic Financial Industry*, Occasional Paper # 5, Jeddah: IRTI (2001) co-authored; "Financing Build, Operate and Transfer Projects: The Case of Islamic Financial Instruments", *Islamic Economic Studies*, (2002); "Pricing of an Islamic convertible mortgage for infrastructure project financing" *International Journal of Theoretical and Applied Finance*, Vol 5 No 7 (2002) co-authored; and "Modeling an exit strategy for Islamic venture capital finance" in *International Journal of Islamic Financial Services*, Vol 3 No 2 (2002) co-authored; Financing Public Expenditure: An Islamic Perspective (2004) co-authored.

His forthcoming publications include: *Islamic Banking: Risk Management, Regulation and Supervision*, co-edited; and *Islamic Financial Engineering* co-edited.