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Thesis Title:

Profit and Loss Sharing Finance – Application, Risk Management and Theories of Capital Structure

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This thesis is submitted to Bayes Business School, City, University of London, in fulfilment of the requirements for the degree of Doctor of Philosophy in Finance.

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Abstract

Profit and loss sharing (PLS) finance is highly emphasized in the literature of Islamic banking due to higher ethical objectives of Sharia. However, its limited practice at Islamic banks is an unsettled problem in the industry. While various studies explained the reasons for lack of PLS finance application, there is little research on its practical implementation. This thesis investigates the feasibility of PLS finance for its wider adoption by exploring various aspects of its demand and supply sides. It consists of three main research studies.

The first study empirically examines the importance, constraints, and applicability of PLS finance in the context of market forces, using a survey-based research method. The findings indicate strong support for Sharia and economic importance for PLS finance and identifying riskiness as a core constraint. Additionally, the research suggests that a policy of debt-limit intervention could enhance the applicability of PLS finance.

The second study explores various aspects of risk management for PLS finance, including risk type, role of creditworthiness, risk mitigation tools and agency problems. This study employs a case study method of a defaulted Sukuk complemented by a survey on risk management practices for PLS. The results reveal the absence of an effective risk management framework for PLS finance used by lenders, despite having diverse risk type and complex agency problems.

The final study investigates the role of PLS finance within an optimal debt-equity mix in firms. A theoretical model is applied to test the hypotheses related to tradeoff, pecking order and agency theories. The results reveal a surprisingly distinct role for PLS finance compared to other modes of financing in the capital structure theory, which has significant policy and academic implications.

Declaration

I declare that this thesis and the work presented in it is my own achievement, while my supervisors guided and edited this thesis. I further confirm that this work is not submitted to any other institution for any degree or other qualifications.

I hereby give consent for my thesis, if accepted, to be available for inter-library loan, and for the title and abstract to be made available to other Institutions.

Muhammad Nadeem Aslam

*Dedicated to my Parents, whose memory continues to
inspire me and to my Wife and Children, for their
unwavering love and support*

Acknowledgements

Ever since my childhood, I have been full of curiosity and creativity. However, my interest in Islamic banking was ignited during my student life while pursuing chartered accountancy. It was during an accounting class on the Leasing accounting standard that I first encountered the concept of Islamic finance. The rich discussion with my professor on this financing mode sparked a particular interest in the concept of Islamic finance. The principles of Islamic banking have always fascinated me profoundly that I decided to adopt this field as my professional career, and this thesis represents the dedication to exploring this field in depth.

I am grateful for the chance to express my heartfelt appreciation to those who have supported and guided me throughout this thesis journey. This endeavor has been a significant part of my life, and I owe its success to the invaluable contributions of many individuals and institutions. First, I am immensely thankful to my wife and children, whose unwavering support and encouragement have been my bedrock. Their patience, understanding, and sacrifices have been paramount to the completion of this project. I am also wholeheartedly thankful to my elder brother Dr. Naveed Aslam and younger brother Faheem Aslam. Their constant support has been a source of motivation and inspiration for me during this challenging journey.

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Islamic Terms Glossary

Terms	Explanations
<i>Sharia</i>	Sharia is a divine law and Quran ¹ and Hadith ² are its primary sources.
<i>al-Maslaha</i>	Public interest or welfare in the substance of a transaction.
<i>Capital Market</i>	A financial market where long-term debt or equity securities are issued, bought, and sold.
<i>Credit Market</i>	Banking loan market and debt capital market.
<i>Fiqh</i>	Islamic Law or jurisprudence based on human interpretations. It is considered as a secondary source of Sharia.
<i>Fatwa</i>	Sharia Rulings or opinions issued by Sharia Scholars. It is considered the central pillar in Fiqh.
<i>Gharar</i>	Uncertainty and undue risk in a financial transaction.
<i>Maqasid-e-Sharia</i>	Higher Ethical Objectives of Sharia. A substance in a Sharia ruling or form.
<i>Musharaka</i>	A partnership contract in which both parties contribute capital and may form a joint management.
<i>Modaraba</i>	A partnership contract in which one partner contributes capital and the other partner invests time and effort.
<i>Non-PLS</i>	All other products not grouped under PLS Finance such as Ijara, Murabaha, Istisna, Salam etc. are termed as non-PLS in the study.
<i>PLS</i>	Musharaka, Modaraba and Wakala products are grouped under Profit and Loss Sharing (PLS) finance.
<i>Qard</i>	A benevolent (interest-free) loan.
<i>Riba</i>	Any type of loan carrying return (cash or in-kind).
<i>Sukuk</i>	Participation securities, coupons, investment certificate.
<i>Wakala</i>	An agency arrangement between funds providers and business managers.

¹ Almighty Allah's revelations

² Prophet Muhammad (PBUH) teachings, sayings and practices.

List of Abbreviations

Abbreviations	Explanations
<i>AAOIFI</i>	Accounting and Audit Organization of Islamic Financial Institutions
<i>BCBS</i>	Basel Committee on Banking Supervision
<i>BC</i>	Bankruptcy Cost
<i>ECL</i>	Expected Credit Losses
<i>GCC</i>	Gulf Cooperation Council
<i>IFSB</i>	Islamic Financial Services Board
<i>IFRS</i>	International Financial Reporting Standard
<i>IsDB</i>	Islamic Development Bank
<i>KMV</i>	Kealhofer Merton Vasicek (KMV) Model
<i>LGD</i>	Loss Given Default
<i>MM</i>	Modigliani-Miller Theorem
<i>Modarib</i>	Business Manager in a Modaraba contract
<i>PD</i>	Probability of Default
<i>PLS</i>	Profit and Loss Sharing
<i>PSIA</i>	Profit Sharing Investment Account
<i>RAROC</i>	Risk Adjusted Return on Capital
<i>Rab-ul-Mal</i>	Investor in a Modaraba contract
<i>SOFR</i>	Secured Overnight Financing Rate
<i>TB</i>	Tax Benefits
<i>WACC</i>	Weighted Average Cost of Capital

Chapter 1: Introduction

1.1 Motivation of the Study

The central topic of this dissertation is a feasibility study for the application of profit and loss sharing (PLS) finance in the banking and corporate finance world. PLS finance is defined as a participation instrument carrying the risks and rewards of its underlying business or venture (AAOIFI, 2021)³. Unlike fixed income instruments, there is no guarantee of capital protection or commitment for fixed returns in the PLS financing arrangements. Instead, financiers have to bear the residual equity investment risk of the underlying business or venture, which is also defined as capital impairment risk (IFSB, 2021)⁴. The characteristics of PLS products are strictly based on equity concept where rewards are shared based on a pre-agreed profit-sharing ratio while losses are borne according to capital contribution ratio of both parties (Usmani, 2002). Both lenders and entrepreneurs have a natural alignment of economic interests and are motivated to ensure the success of their joint venture or business. These PLS products are *Musharaka* (partnership financing), *Modaraba* (trust financing) and *Wakala* (agency financing)⁵. Conversely, non-PLS products⁶ exhibit financial behaviours that closely resemble to conventional financial instruments. While these products are structured to comply with Sharia principles, including the avoidance of interest (*Riba*) and emphasize over ethical investments, yet their economic effects often mirror conventional counterparts.

PLS finance holds significant importance from both Sharia and economic perspectives. In theory, PLS finance fits better into higher ethical objectives of Sharia, also known as *Maqasid-e-Sharia*, because it encourages true sharing of risks and rewards in a business, based on principles of aligned interest, cooperation and shared prosperity. This also ensures financial stability in a system because of having inherent characteristics of counter-cyclicality and helps businesses during tough

³ Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) is an international body founded in 1991 and based in Bahrain, whose mandate is to develop standards for Sharia, accounting and governance of Islamic finance industry.

⁴ Islamic Financial Services Board (IFSB) is an international standard-setting organization, founded in 2002 and headquartered in Kuala Lumpur, Malaysia, that promotes and enhances the soundness and stability of the Islamic financial services industry.

⁵ These three products of PLS finance are slightly different in their legal settings but are highly inter-related in their risk profile of equity financing. Under *Musharaka* contract, both partner fund a venture and both or either one manage business. Under *Modaraba*, one partner fund a PLS venture while other partner provide business management services. *Wakala* is an extension of *Modaraba* where an investment agent is appointed to manage the PLS venture. Further details are covered in chapter 2 on conceptual framework of PLS finance.

⁶ Non-PLS products are a cluster of *Ijara* (leasing), *Murabaha* (cost plus markup) and other trade finance products which are covered in chapter 2 in details.

economic times. It will also ensure a better financial discipline at firms because of more rigorous monitoring of PLS projects by Islamic banks compared to non-PLS ones. Mian and Sufi (2015) provide a comprehensive analysis on role of debt in causing and prolonging economic downturns and financial instability in the system especially in context of global financial crisis 2008. Similarly, Turner (2016) challenges the belief in his book 'between debt and the devil' that we need credit growth to fuel economic growth, and that rising debt is okay as long as inflation remains low. In fact, most credit is not required for economic growth, but it drives economic booms and busts and causes severe financial crisis and depression. Hyman Minsky, whose "financial instability hypothesis" is now getting greater attention, argued that when each firm finances its own cash flow and plans to invest its own retained profits, there is no problem of effective demand, financial system is robust, and investment has great inertia. But when firms can raise outside finance by borrowing from rentiers or banks, the system is prone to instability (Minsky, 1975). Importantly, Sharia also desires a stronger role of equity over debt in a real economy and Islamic finance should, in its ideal form, help in raising significant share of PLS finance for a just economic system (Chapra, 1985).

From a financial performance perspective, the global Islamic finance industry has shown a remarkable growth over the past few decades. As of recent estimates, the industry's assets are US\$3.3 trillion by 2022 (IFSB, 2023). By 2025, total assets of the Islamic finance industry are expected to reach approximately \$4.95 trillion⁷. However, share of PLS finance in the success story of Islamic finance is very limited. As per IFSB report of 2023, all PLS finance products together represent only 3.4% of Islamic finance share⁸, while non-PLS products represent majority of the global Islamic finance portfolio.

Given the dominant role of non-PLS finance instead of PLS, Islamic finance cannot be referred as true risk sharing in any meaningful sense (Khan, Feisal, 2010). The non-PLS financing may be considered sufficient in meeting the requirement of Sharia compliance by taking a literal and legalistic interpretation of Sharia, but these are clearly incapable to deliver something better than conventional finance due to high resemblance in financial behaviours (Kayed, 2012a); (Mansoori, 2011). However, the limited application of PLS finance creates a conundrum in the industry,

⁷ <https://salaamgateway.com/reports/state-of-the-global-islamic-economy-2023-report>

⁸ [Key Exhibits - Islamic Financial Services Board \(ifsb.org\)](#)

drawing significant criticism from various factions of society. For a better perspective of the requisite of PLS finance for the industry, let us think in this way. Over a three trillion US dollar Islamic finance industry⁹ with a remarkable growth so far, claiming to manage financial affairs of 2 billion¹⁰ Muslims and potentially influencing rest of the world, is still struggling for its own unequivocal identification from the conventional finance. At the best, the destiny of non-PLS products is tied-up with conventional finance due to common economic characteristics. PLS finance has the answer to this problem. It envisions sharing the true risks and better rewards between the lenders and borrowers as it can promote economic welfare, equitable intermediation and resilient financial system in an economy, thus providing a clearer and more distinct identity for Islamic finance (IsDB, 2018). Various critics of conventional finance also desire the need of similar financing structures in place of debt especially in context of global financial crisis 2008 (Mian and Sufi, 2015).

Apart from Islamic banking, application of PLS concept in other financial markets (takaful, assets management industry and Sukuk capital markets) is equally relatable and important. Sukuk being part of debt capital market has higher application of PLS finance because issuers and financial advisors use Islamic finance structures of PLS and non-PLS like Islamic banking. Takaful industry model is based on cooperation and risk sharing, where Modaraba and Wakala structures are used to manage the funds of policy holders. Assets management industry is very rich in application of PLS application and there are various studies aiming to identify how Islamic banks can learn from their operating model and apply PLS in a better and safer way.

1.2 Research Objectives

The primary goal of the study is to investigate a feasibility of PLS finance for its broader adoption within Islamic banking industry. The thesis undertakes an academic investigation of the research objectives and develops a systemic argument for a wider role of PLS finance as a potential substitute or complement of non-PLS in various aspects. The thesis attempts to meet following research objectives:

1. Investigate the beliefs and perceptions of market participants regarding the importance and key constraints of PLS finance (Chapter 4).

⁹ Islamic Financial Services Board, Islamic financial services industry stability report 2023”, www.ifsb.org

¹⁰ <https://worldpopulationreview.com/country-rankings/muslim-population-by-country>

2. Validate a proposal suggesting a larger applicability and complementary of PLS finance, especially if a market intervention in a form of debt ceiling policy is introduced (Chapter 4).
3. Analyze the effectiveness of risk management practices at Islamic banks including risk type, role of creditworthiness, risk-mitigating techniques, profit rate risk and credit losses management (Chapter 5).
4. Evaluate the relevance and severity of agency problems specific to PLS finance at Islamic banks compared to non-PLS (Chapter 5).
5. Examine the relationship between PLS finance concept and determinants of capital structure theories at firms and its fitment into a strategic debt equity mix at firms (Chapter 6).

Chapter 4 examines importance and constraints of PLS finance and assesses its potential as a complement to non-PLS finance with the introduction of a debt ceiling policy, covering the research objectives 1 and 2. Chapter 5 addresses risk management practices at Islamic banks related to PLS finance and explores agency problems specific to PLS compared to non-PLS structures, hence, covers the research objectives 3 and 4 respectively: while in chapter 6, the focus shifts to objective 5, i.e. analyzing how PLS finance fits into capital structure theories at firms.

The research propositions and hypotheses are developed and analyzed within the relevant chapters of this thesis. To meet the first four research objectives, a survey-based study is performed with market participants of Islamic finance while a theoretical framework is developed to achieve the fifth research objective.

1.3 Summary of Main Research Studies

The main body of the thesis is consisting of three chapters (4, 5 and 6) and each chapter represents one research paper or study. Chapters 4 and 5 are studies of PLS finance for banks while chapter 6 is a study of capital structures for firms.

Chapter 4 investigates the importance, constraints and applicability of PLS from the perspective of market forces of demand and supply. Additionally, a regulator's perspective is included to understand the effects of regulatory frictions and controls created by central banks in the credit market. PLS finance importance is due to various aspects of Sharia and economic importance, which are well-documented in the existing literature. The study finds significant support for both

‘importance hypotheses’. Then, it empirically examines the key constraints of PLS finance discussed in the literature and identifies which are ranked as most important by the respondents. The key constraints cover a typology of demand, supply, regulatory and operating model. This is first empirical study in Islamic finance literature to rank key constraints of PLS finance based on respondents’ feedback. In the last section, study investigates applicability of PLS finance across three primary perspectives, which are substitutability of PLS finance with non-PLS or debt, debt ceiling as a policy tool for its better demand and risk-reward parity for PLS and non-PLS modes of finance. The study finds out limitations of PLS finance to substitute non-PLS or debt, while discovers significant support for other two hypotheses of risk-reward parity and debt ceiling. Overall, study 1 is a holistic investigation into the feasibility of PLS finance at banks.

Chapter 5 examines the risk management framework for PLS finance. Lack of effective risk management tools is identified as a significant reason for the limited application of PLS finance. First, the study investigates among respondents about nature of PLS finance risks whether they believe it is credit risk or equity investment risk or a hybrid of both. There was a significant support for hybrid risk type of PLS finance, which was somewhat intuitive but not discussed much in the literature. Given the hybrid risk perception, the study examines the role of creditworthiness in the risk assessment of PLS transactions, particularly within the current institutional settings of risk management. Additionally, it evaluates the effectiveness of risk mitigation tools used by Islamic banks for PLS finance. The research findings on the relevance of profit rate risk and agency problems in PLS finance provide valuable insights for academics, practitioners, and regulators in developing an effective risk management framework. At the end of chapter, a PLS based default case study is reviewed and back-tested with main findings of the study. This comprehensive analysis offers a practical illustration of the study's diagnostic insights. Overall, study 2 is a holistic investigation of risk management for PLS finance in banking and debt capital markets.

Chapter 6 examines theories of capital structures at firms and an application of PLS finance into it as a substitute or complement. The hybrid nature of PLS finance brings it back into an unfinished debate of optimal capital structures in the literature. How is the relevance of PLS finance in context of claims of conventional theories of trade-off, pecking order and agency? This enquiry advances a theoretical understanding of PLS finance as a substitute or complement in an optimal debt equity mix at firms. The unique characteristics of PLS finance should lead to a different optimal value of

a firm due to its distinct effects on the firm's volatility, cost of capital, distance to default, bankruptcy and agency costs. For this purpose, a structural model of Leland (1994) is modified to cater to the unique characteristics of PLS finance. The modified model can drive closed-form results for the value of a levered firm over a given period. The change in parameters of the model for PLS finance has high explanatory power for the valuations of a firm's assets and determines its optimal capital structure points. The results are insightful in many ways. Under trade-off theories, PLS finance has a strong impact on the valuation of a firm, predominantly at high leverage levels and during high volatility conditions. For pecking order theory, PLS finance holds a priority over non-PLS (including debt) even when prices are adjusted for risk-reward parity. Similarly, the agency cost of PLS finance is higher for lenders as a firm is valued higher for it especially during risky economic conditions. This reflects a possibility of transfer of wealth from lenders to firms.

1.4 Contribution to the Knowledge

Considering the remarkable growth of Islamic finance worldwide over last two decades, the lack of PLS finance application becomes more critical because of various reasons discussed in the literature review sections. PLS finance remains under research compared to non-PLS in academic literature. Henceforth, this thesis contributes to the body of knowledge in many ways and pushes forward a deeper conceptual understanding of PLS finance by offering unique perspectives. This study also has significant policy and practical implications for the regulators and practitioners in context of demand and supply perspectives of PLS finance. Key contributions to the domain of Islamic finance are as follows:

Firstly, this study attempts to bridge the gap between theory and practice. The Sharia and economic importance of PLS finance emphasized in the extant literature is tested empirically with market participants. Similarly, key constraints of PLS finance are tested empirically across market forces and ranked in terms of criticality and applicability. This novel contribution of aligning theory with perceptions and behavioural aspects of market participants will help in better understanding the problem statement and formulating new policies for PLS finance.

Secondly, the study tests a proposal of substitutability and ceiling of debt for a wider adoption of PLS finance. This proposal is further validated with respondents from a prudent policy perspective if it should be enforced by bank's internal policies or regulator's supervisor actions. The research

findings have great implications for the development agenda of central banks and finding ways to promote PLS finance.

Thirdly, the study evaluates the relevance of risk management practices and severity of agency problems in the Islamic banking sector for PLS finance. The study contributes to better understanding the risk type of PLS finance between credit and equity investment risks in view of market participants, which will be helpful in filling an understanding gap in the literature. It also validates the role of creditworthiness in managing the unique risks of PLS finance in a better way. The effectiveness of risk tools including expected credit losses and profit rate risk is also validated in the study for a deeper insight of risk management for PLS finance.

Lastly, the study delves into existing ongoing debate of debt equity mix and the relevance of capital structure theories in explaining an application of PLS finance in corporate finance. This is an important contribution of the study to evaluate demand-side perspective in paradigm of optimal capital structure theorem. The research findings have broader implications for PLS finance application in context of variables of volatility, default cost, external funding preference and agency cost.

1.5 Structure of the Thesis

The thesis is organized into seven chapters overall. Following the introductory chapter, the other six chapters in the thesis are closely interrelated and developed over each other. Chapter 2 covers the conceptual framework of PLS finance. This is crucial to understand the importance and characteristics of PLS finance given in the literature before answering the research questions. The literature review for risk management framework and capital structure theories is also helpful in developing the research propositions and hypotheses in subsequent chapters. Chapter 3 details the research methodology of empirical analysis applied for research studies 1 and 2 in chapters 4 and 5 respectively. For this purpose, an online questionnaire was developed to collect data from key stakeholders and market participants across eight countries, which are active in Islamic finance. The main research studies in the thesis comprise of chapters 4, 5 and 6. The conclusion and recommendations for further research are discussed in chapter 7.

Chapter 2: Conceptual Framework of PLS Finance

2.1 Introduction to Islamic Banking

Islamic banking, rooted in the principles of Sharia¹¹, has a history that dates back to the early days of Islam, where financial transactions were adhered to Islamic ethical standards.

2.1.1 An Overview

Mit-Ghamer saving bank, from 1963 to 1967, was an unsuccessful experiment in Egypt but it birthed modern Islamic finance. The bank's core operations can be summarized to include deposit accounts, loan accounts, PLS financing, direct investment and social services. The learnings from its failure played a primary role in shaping the operating model of modern Islamic banking and finance. The bank had 251,152 customers with 9 branches in rural areas. Although it was shut down by regulator due to political reasons in Egypt but overall, the bank was able to validate its operating model with default ratio closer to zero (Orhan, 2018). Another experiment of Islamic finance is Tabung Haji, which was founded in 1963 in Malaysia. Its purpose is to provide Malaysians a systematic goal-based saving plan for their pilgrimage (Hajj) and to manage the savings and investments in a Sharia-compliant manner (Rahman, N. H. A. *et al.*, 2020). Total assets of Tabung Haji under management are about US\$ 20 billion and saving deposits of US\$ 18 billion by the year 2022¹². Apart from being established in the same year, both business models shared a common feature that is sharing and investing of the financial resources of their participants for a shared prosperity (Belouafi, 2020). This notion of sharing and mutuality underpins the philosophy of Islamic finance for a sustainable financial system and is an inherent characteristic of profit and loss sharing (PLS) financing mechanism, which has a global academic appeal for a wider research agenda (Khan, Abdullah *et al.*, 2021). Four key research streams highlighted in the literature for development of Islamic finance are growth and legal framework of Islamic banks, their performance and risk management, customer and marketing perspectives, and efficiency dynamics of Islamic banks (Khan, Abdullah *et al.*, 2021).

Islamic finance introduces a unique set of product structures, which are vastly different from those in conventional banking. These financing structures are grounded in real economic activities such as trade, leasing, and partnership finance, contributing to a more resilient and sustainable economic

¹¹ Islamic code of life or Islamic law

¹² <https://www.tabunghaji.gov.my/en/corporate/corporate-information/five-5year-data-statistics>

system (Brescia *et al.*, 2021). On the assets side, Islamic banks primarily apply two types of products for all kinds of financing needs. The first type was originally conceptualized at the outset of Islamic finance and is based on partnerships and agency contracts, which can be categorized as profit and loss sharing (PLS) finance products. The second type is non-PLS or asset-based financing products such as credit sale and leasing which was conceived in late nineteenth century.

2.1.2 PLS Financing Products

In history, PLS finance practices date back into early ages when concept was used to fund sailing ship voyages. Investors would provide financing for trading expeditions on a voyage-by-voyage basis. Upon return, the cargo and ships would be liquidated and the proceeds of the voyage split amongst investors. The Crown of England, in the thirteenth century, was also associated with Italian bankers Frescobaldi through a production payment loan – a quasi-equity structure to finance the silver mines in the area of Devon (Klarmann, 2003). On similar note, traditionally in Arab peninsula, Modaraba finance concept was used to fund land caravans for a short period arrangement. There are various references in the history books that such funded land caravans were in common practice then. Even prophet Muhammad (PBUH) has resorted to the Modaraba contract as a Modarib (manager) when he led the business caravan towards Syria (Qahf and Khan, 1992). Similarly, Muslim traders in the Ottoman Empire used to finance their maritime projects using the profit-sharing instrument of Modaraba finance.

In profit loss sharing (PLS) finance, there is no fixed pay characteristic and returns on financing are entirely based on the actual performance of the underlying business. In the PLS finance structures, business risk specifically is annexed to the credit risk of the firm. However, there could be a reputational risk for firms if returns are lower than expected or if financial losses occur in PLS ventures. This can result in peer pressure and inhibit their further access to financings with other banks in the market. PLS finance mainly consists of three main products: Musharaka, Mudaraba and Wakala (Ayub, 2013); (Siddiqui, 2008).

- a) *Musharaka* is a partnership or joint venture contract between the bank and its customers with a defined mandate. The underlying business can be managed by either partner or together, depending on the terms specified in the partnership agreement. As per Sharia, the profits of a project or a venture can be shared as per any pre-agreed profit-sharing ratio; however, losses must be borne in proportion to the capital

investment. In addition to profit sharing, there can be specific fees such as active management fee, performance fee etc. for a partner based on certain agreed conditions.

- b) *Mudaraba* is a profit-sharing arrangement with a defined mandate of funds management. The bank provides whole capital while the client acts as fund manager and manages the whole project or business because of its unique business management expertise in a certain sector or segment. As per Sharia, the profits of a project or a venture can be shared as any pre-agreed ratio while losses must be borne by the bank who is capital provider.
- c) *Wakala* is an agency structure for funds management against a fixed fee and variable performance incentive clause. The bank appoints the customer as its agent to manage the funds for a certain project or venture as per agreed agency agreement. Agency can be unrestricted or restricted, however, later version is more practiced by Islamic banks. The substance of *Wakala* financing structure is very close to *Modaraba* despite having few differences in Sharia and legal interpretations.

2.1.3 Non-PLS Products

The history of trade and lease finance reveals the evolution of financial instruments from the Middle Ages to the present, highlighting the centralized role of such credit instruments. Various studies provide a comprehensive overview of international trade finance, tracing its development from localized trade credit by merchants to the emergence of centralized systems in major trading hubs like London. The literature emphasizes how trade finance instruments evolved through different economic eras, particularly noting the significance of the sterling bill of exchange in the 19th century (Accominotti and Ugolini, 2020).

Non-PLS products dominate most of the financing portfolios at Islamic banks (Rahman, Y. A., 2010). These products have distinct characteristics that set them apart from conventional lending. These differences include underlying trade flows, asset ownership risk, purchase and delivery risk of goods, profit rate risk, Sharia compliance risk, legal risk, and more. The magnitude of credit risk, market risk, and operational risk within non-PLS products can vary and different from conventional finance depending on the financing structure and the client's business nature. Non-PLS products are categorized into lease and trade types of financing. *Ijara* is the flagship product

for leasing, while Murabaha, Salam, and Istisna are the primary products for trade financing (Ahmed, Habib and Khan, 2007); (Ayub, 2013).

- a) *Ijara* is a leasing agreement between the Islamic bank and its client. The bank will buy a specific asset upon request of the customer and later lease it to the customer for agreed rentals. The customer will benefit from the usufruct of the assets while bank will receive rentals in return. During this lease period, the ownership of asset will stay with Islamic bank and assume all risks relating to the asset ownership. Intrinsically *Ijara* is a floating rate structure having higher market risk because of long-term asset ownership, lower operational risk because of simple operating process and documentation.
- b) *Murabaha* is a credit sale with disclosed and agreed profit margins. Normally, the bank buys the specific assets or goods and later sells them to the customer at a disclosed cost-plus markup arrangement. Mostly *Murabaha* structure is used for trade or working capital needs of the firms. *Murabaha* is a fixed rate structure having higher profit rate risk because of fixed rate, lower market risk because of short-term asset ownership, higher operational risk because of complicated process flows and documentation.
- c) *Salam* is a forward sale contract. In this financing structure, customers can sell the assets or goods with agreed specifications today at a specific price where payment is received by the seller upfront while delivery of assets or goods to the buyer is scheduled at an agreed future date. However, there is a condition by Sharia that the asset or goods must be homogeneous in terms of its specification.
- d) *Istisna* is a manufacturing order of an asset or goods as per agreed specifications, price and future date of delivery. This structure is mostly used in infrastructure projects or manufacturing enterprises.

All non-PLS products are fixed-pay contracts mimicking the financial behaviour of conventional loaning products and provide a contractual guarantee of principal and fixed returns repayments to the lenders. Although each non-PLS product carries its own unique characteristics and risks as well but eventually each financing structure is tied-up to the counterparty credit risk for repayment purposes. These products have contractual fixed-pay repayments having high similarities to a loan structure in terms of financial consequences, securities, other lending terms etc. and hence, are

widely applied in modern Islamic banking around the world (Khan, Feisal, 2010). For example, Ijara is a leasing contract where bank owns the asset¹³ and rents it out to the customer for agreed rentals. The customer also provides an undertaking to buy the asset during or at the end of the financing period. Rentals are repriced based on interbank rates such as SOFR on a periodical basis as per lease agreement. Murabaha is another widely applied financing structure in Islamic banking, where goods are sold on credit, and the price is determined by adding an agreed-upon profit margin to the cost (Rahman, 2010).

2.1.4 Islamic Banking Operating Model

The operating model of Islamic banking is distinct from conventional banking due to different relationship between asset and liabilities on the balance sheet, which leads to discrete financial performance and stability results analyzed in various studies (Paltrinieri *et al.*, 2021); (Beck, Demirgüç-Kunt and Merrouche, 2013). Overall, Islamic banks raise deposits based on concepts of Qardh (non-profit bearing accounts), Modaraba (deposits entrusted to the bank based on profit and loss sharing concept) and Wakala (deposits entrusted to the bank as investment agent against a fee structure¹⁴(Usmani, 2002). Largely, Modaraba and Wakala deposits together are known as unrestricted investment accounts (URIA) or profit-sharing investment account (PSIA) in Islamic banking (Ayub, 2013).

¹³ Asset can be property, home, plant, machinery, vehicles etc. having a depreciable characteristic.

¹⁴ Qardh is a custodian arrangement for depositor where deposits are guaranteed without any returns. Modaraba is a partnership based contract while Wakala is an investment agency contract and is used for profit bearing deposits.

Operating Model of Islamic Banks

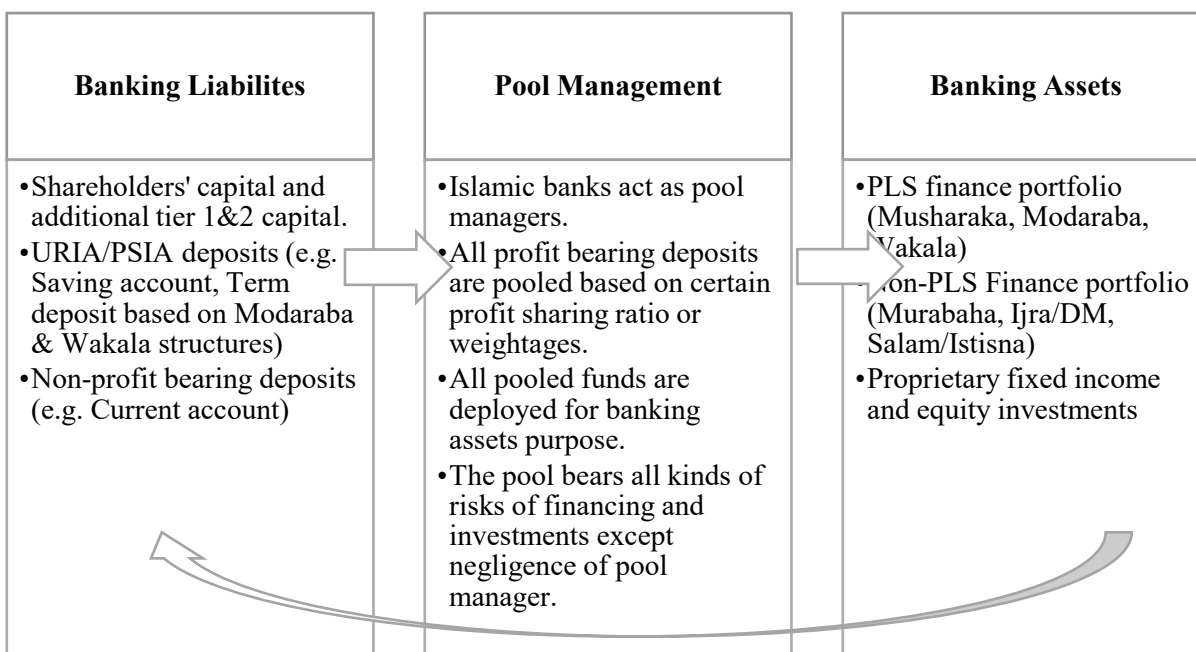


Figure 2.1: Operating Model of Islamic Banks

Returns on banking assets are distributed to depositors at pre-announced profit-sharing weightages sharing ratios while banks take performance fee or profit share.

On the liability side, Islamic banks manage current accounts, savings, recurring deposits and term deposits under contracts of Qardh, Modaraba and Wakala respectively. Returns on PSIA are contingent on the bank's performance on the assets side of its balance sheet. Neither the principal nor returns guaranteed for the PSIA depositors. Owners of PSIA in the pool are constructive owners of banking assets and bear all types of risk and rewards accordingly. These characteristics of PSIA, along with the financing types of PLS and non-PLS used on the asset side, make the risk profile and operating model of Islamic banks very unique compared to conventional counterpart.

How Islamic banks earn profits for their shareholders? They operate on a template akin to the assets management industry. They act like funds manager¹⁵ for depositors. All kinds of deposits received by the bank are pooled into a collective investment scheme called general pool. These pooled funds are then deployed into PLS, non-PLS, Sukuks and other investment activities. If these banking operations are profitable, the bank retains a portion of the profits as per the agreement,

¹⁵ Modarib in a Modaraba deposit contract and Wakeel in a Wakala deposit contract act like a fund manager as they are entrusted to manage their funds as per given investment mandate; which is the product policy of Modaraba and Wakala products published on bank's website and marketing collaterals.

while the remainder is distributed among various types of depositors according to pre-agreed profit-sharing ratios. Conversely, if the bank incurs losses, there is no profit share, and shareholders do not receive any returns (Ahmed, Husnain and Afzal, 2023).

2.2 Sharia, Objectives of Sharia and PLS Finance

2.2.1 What is Sharia and Fiqh

Sharia is a divine law and Quran¹⁶ and Hadith¹⁷ are its primary sources. It consists of divine guidelines, religious rituals, moral values and principles for human conduct and society. Fiqh is an Islamic law and refers to the body of legal rulings and interpretations derived from Sharia by qualified scholars and jurists. Islamic law is the practical manifestation of Sharia in real-world situations. It encompasses legal codes, court decisions, and scholarly opinions (*fatawas*) that address specific legal issues. Fiqh is considered as secondary source of Sharia and is only applicable when primary source of Sharia is silent on any specific matter. Overall, Sharia is a code of life and provides guidelines for all its segments including religious, social, economic and ethical systems of a community. It is very important to understand the letter and spirit of Sharia for its effective application in society (Usmani, 2015).

2.2.2 Integrated Framework of Sharia

The overall purpose of Sharia is ‘guidance of people’ (Al-Quran 2:185). This is for the welfare and success of people in particular and humanity in general, which is equally true for this worldly life as well. For this purpose, an integrated framework of Sharia provides systemic guidelines to humanity for all segments of life including the economic system. All the Sharia rulings related to obligations are meant to bring benefits to the people, in this world and next, and all the prohibitions are meant to prevent harm and hardships from the people. In the words of the prominent scholar Ibn-e-Qayyim, “The Sharia edifice and foundations embody wisdom and benefits for humanity in their worldly life and afterlife. All of it (Sharia) is justice; all of it is benefits, and all of it is wisdom. Anything that lapses out from justice into injustice, and from mercy to its opposite, and from public benefits to harms, and from wisdom into the frivolous, does not belong to Sharia, even if it is inducted into it by interpretations and analogies” (Islahi, 1984).

¹⁶ Almighty Allah’s revelations

¹⁷ Prophet Muhammad (PBUH) teachings, sayings and practices.

Overall, the Sharia framework comprises of the entire sphere of human life, including beliefs, worships, dealings and ethics. For objectives based Islamic banking industry, the economic and financial dealings and their ethical/ moral aspects are directly related to conceptual framework of Islamic finance. Sharia defines Islamic economic and financial system by setting its fundamental objectives of financial justice, economic welfare, fair access to opportunities and equitable distribution of income and wealth in the society (Chapra, 1985). It also forbids harmful economic activities such as Riba (interest), Gharar (uncertainty), Qimar (speculation) and other immoral business activities in a community while they are permissible in the contemporary financial systems (Ayub, 2013). Riba is defined in Sharia as any kind of benefits for the lender over the principal amount of loan in the form of interest or even in-kind (Usmani, 2002). In a conventional system, interest rates reflect the cost of borrowing money and play a central role in saving and lending money through an intermediation process. However, Sharia does not allow direct borrowing rather requires a real economic transaction such as credit sale or lease¹⁸ among market participants. This ensures a close-fitting relationship between real and financial activities to avoid any uncertain elements in the transaction. This provides greater financial stability and resilience to the economic system. Profit and loss sharing (PLS) finance is a seamless fit in integrating finance into real economic activities in comparison to other modes of finance.

2.2.3 Why *Maqasid-e-Sharia* relevant for Islamic Finance

Maqasid-e-Sharia or higher ethical objectives of Sharia are undeniably rooted in the textual commandments of Quran and Sunnah, but they aim largely at the general philosophy and purpose of these religious texts. The focus is not much on words and sentences of the text, rather purpose and goals that are envisioned and advocated therein (Kamali, 2008). In comparison to the legal theory of Sharia, the *Maqasid* are not loaded with juristic interpretations and methodological technicalities of the text. For a *Maqasid-e-Sharia*¹⁹ based Islamic finance industry, its economic, welfare and ethical aspects are relevant for a purposeful Islamic banking industry. A *Maqasid* based framework ensures that the true spirit of Sharia is reflected in the Islamic financing products (Monawer *et al.*, 2022). This means that true Sharia compliance can only be achieved if an Islamic

¹⁸ Asset, trade and service finance is a structure closer to debt in terms of financial behaviour but still have unique and distinguished characteristics of risk sharing to make them Sharia compliant. Most common products are Murabaha (credit sale) or Ijara (lease).

¹⁹ Objectives of Sharia for introducing rules and regulations for prohibition of interest and other matters in a financial system.

bank is not only fulfilling the principles and rules of Sharia in a legal and procedural sense but also the underlying values and spirit of the Sharia.

This means that true Sharia compliance can only be achieved if an Islamic bank is not only fulfilling the legal requirements of Sharia in a mechanical and procedural sense but also the ethical and moral values that underlie the Sharia principles and rules. A Maqasid-based approach is a balanced and moderated one, avoiding the extreme literal and legalistic approach that ignores or even violates the Maqasid for the sake of rigid textual interpretation. A Maqasid based framework for analogical reasoning (Ijtihad) ensures that the true spirit of Sharia is reflected in the legal rulings (Fatawa). Sharia is the foundational source of legal and moral norms in an Islamic community. The difference between a legal ruling and a moral one is that the former has legal enforceability in courts while the latter serves the larger objective of public interest. Overall, Sharia offers a comprehensive framework encompassing legal codes, moral principles, and social guidance for success and welfare of the people in particular and humanity in general (Alziyadat and Ahmed, 2019).

What Higher objectives of Sharia demands from an economic system can be characterized into a strategic agenda (Fig. 2.2) for Islamic finance. This typology of the strategic agenda objectivizing the relationship between Sharia and Islamic finance should be both spirit and rational behind any Islamic finance product and service. In this way, Islamic finance can have its goals aligned with higher objectives of Sharia and support in delivering them for the welfare of people in particular and community in general. It means Islamic finance must move beyond current state of mere complying with the mechanical requirements of the fatwa for an Islamic finance product. If the Maqasid-e-Sharia are not prioritized into products development and emphasize continue on textual compliance to Sharia, then Islamic banking would not be able to free itself from economic harms of an interest-bearing system. A purposeless and directionless Islamic finance just mimicking conventional finance would hold no meaning for economic welfare of the society.

Indisputably it is agreed among all reputed jurists that Quran and Sunnah are the primary sources of Sharia. Since Sharia is based on divine wisdom, it is unanimously believed among all scholars that there is al-Maslaha (public interest or welfare) behind each and every commandment; either obligation to perform or prohibition to avoid. Al-Maslaha is derived from Arabic word “Salaha” meaning goodness, benefits and welfare. Hence, al-Maslaha becomes very pertinent when the

primary sources of sharia do not provide a clear ruling for a specific situation. However, al-Maslaha, in any case, cannot contradict the directions and rulings of the Quran and Sunnah because they are based on divine wisdom which human wisdom may not be able to comprehend sometimes. Al-Maslaha is a central concept for higher ethical objectives of Sharia for a society, which refers to safeguarding public interest and relieving them from hardships. Chapra (1979) referred great philosopher Ibn Qayyim al-Jawziyyah (d.1356) that Sharia integrated framework is based on the divine wisdom and aims to safeguard the interest of people. Catering public interest is also known as welfare (al-Maslaha) and success (al-Falah) of people in both worlds. Sheikh Abu Zahrah has classified objectives of Sharia into three subgroups, namely guiding the individuals, establishing justice, and public welfare (*al-Maslaha*) (Nouman *et al.*, 2021). Imam Ghazali emphasized public welfare (al-Maslaha) as establishing of Sharia objectives for acquisition of benefits or repulsion of harm for the public (Al-Raisuni, 1992). (Kamali, 2008) explains the public welfare (*al-Maslaha*) as the realm of justice. He asserts that the aim of Sharia for public welfare is to ensure justice which means not only its retributive sense to repel harm for public interest but also to establish a distributive justice in the society for promotion of public welfare.

Public welfare (*al-Maslaha*) is further classified into three levels of excellences by several *Sharia* scholars, including Imam Al-Ghazali, Al-Shatibi, and Abu Zahrah, which are *Daruriyyat* (essentials), *Hajiyyat* (complement), and (iii) *Tahsiniyyat* (embellishments). Otherwise, these are three levels of excellence in five main areas for an individual as specifically explained by Imam Ghazali. Every individual strives to excel at these levels for maximization of welfare (al-Maslaha) for himself, his family and community. These five areas of life are protection of religion (*Al-Din*), protection of life (*Al-hayah*), protection of mind (*Al'Aql*), protection of wealth (*Al mal*), and protection of family/lineage (*Nasal*) (Nouman *et al.*, 2021).

While achieving public welfare and economic justice as Sharia objectives, wealth is considered as one of the most important means for it in a society. In any just economic system, wealth of people requires all means of its protection and growth for provision of welfare in a society. For this purpose, Ibn Ashur has further deliberated five subcategories of the protection of wealth (*hifz al-mal*) under Sharia objectives including rawaj (circulation), wuduh (clarity), thubat (stability and proof), and 'adl (justice) and *tanmiyah* (growth and development) (Auda, 2008) as explained in Fig. 2.2.

2.2.4 *Economic substance (objectives) over legal form (rulings) in Sharia*

Hanif (2016) studied legal forms and economic substance of five types of products structures applied in Islamic banking and found out that legal form of the product contracts is fully complied with theory while economic substance is not very different from conventional counterparts. In another studies, a thorough analysis of substance over form for 3 Islamic finance products was carried out in an accounting perspective and found them a replica of conventional products (Ebrahim and Abdelfattah, 2021). Considering such phenomenon in the Islamic banking industry, few thought-provoking questions are relevant here. Is such behavior of Islamic banking products is assenting or conflicting to market expectations? Why such a gap in theory and practice exists? Does Sharia prefer substance over form or otherwise?

A careful review of literature explains that both substance and form are equally important in Sharia. The form is based on juristic interoperations and rulings conditioning the contractual requirements for a transaction between both parties. Substance is linked to the purpose, wisdom and philosophy of Sharia behind such rulings. A practitioner should aim to excel in both as they are not at the direct cost of each other. This concept in Sharia is known as Ihsan or excellence. It is a multilayered concept in Sharia which goes beyond the form of good acts for fulfilling obligations or avoiding haram. It is derived from Arabic root Husn²⁰ which means beautification, excellence and striving for perfection²¹. Taking an analogy from hadith-e-jibreil²², the relationship between form and substance is through Ihsan; by excelling in both will strengthen each other and beautify the deed overall. Similarly, legal form and economic substance are both important in Islamic finance and an excellence in both will help in achieving Sharia objectives in letter and spirit. In fact, a careful review of Islamic finance literature discloses that jurists have viewed *the form of a transaction is meant to protect its substance*.

2.2.5 *What Maqasid-e-Sharia desires from Islamic Finance*

The major objective of *Sharia* is the promotion of economic justice and welfare for its people in a society through various means of excellence in the protection and development of wealth. All economic activities are allowed by Sharia as long as they are explicitly banned in religious texts

²⁰ <https://en.wikipedia.org/wiki/Ihsan>

²¹ It is explained in famous hadith-e-jibreel of Prophet Muhammad (PBUH), “it is to worship Almighty Allah as if you see Him; else know that He sees you” (Sahih al-Bukhari).

²² Three levels discussed in hadith: Islam which is form, Iman which is substance and Ihsan which is excellence in both.

or are against the principles of economic justice and public welfare. Correspondingly, Sharia has disallowed injurious elements of wealth such as Riba (Interest), Gharar (contractual uncertainty) and Qimar (speculations) to protect the community from their harms. For Maqasid realization in Islamic finance, its products and services should adhere to Sharia compliance in letter and spirit, promoting fair dealing, economic justice and values-based intermediation (VBI) leading to socio-economic development and inclusion (Ayub, 2018). VBI in Islamic finance represents an evolving paradigm where its integration with Sharia governance could enhance sustainability and social responsibility in Islamic finance (Ayub, Hassan and Saba, 2023a). Central bank of Malaysia issued a strategy paper in 2017 for promotion of VBI in Islamic banking, which aims at promotion of innovation, efficiency and ecosystem (Roshayani *et al.*, 2018).

Islamic finance is a paradigm and theoretical shift from conventional counterpart and four unique principles must met by Islamic finance transactions to achieve Maqasad-e-Sharia; 1) risk sharing, 2) linkage with real economic activities, 3) Avoiding injustice and financial exploitations and 4) avoiding financing harmful activities (Ayub, Hassan and Saba, 2023b). Chapra (2008b) explains that whatever safeguards of these five essentials of Sharia, as specified by Imam Ghazali, serves public interest and is desirable by Sharia. It is analyzed further by him that economic well-being, fair access to opportunities and equitable distribution of income as core objectives of Islamic economic order (Chapra, 1985). Based on various references to Qur'an and Ahadith, Muslim jurists have been holding a unanimous view that catering for the interests of the people and relieving them from injustice and hardships is one of the basic objectives of the Sharia (Tripp, 2006).

2.2.6 *Why PLS finance important?*

Why PLS finance is important for Islami banking? The answer to it lays in the unique characteristics of PLS finance carrying a different set of economic benefits, which endorses solidarity and fraternity between market participants. This includes true risk sharing, counter-cyclicality and financial stability, reduction of excessive leverage, enhanced financial discipline and support for entrepreneurship and economic growth. Many advocates of Islamic finance are critical that non-PLS products alone not only represent the status-quo with conventional banking and may not conform fully to true spirit of Islamic financial system (Siddiqi, N., 1983). In theory, various studies proved that Sharia desired PLS finance to play a bigger role instead of non-PLS and provide a foundation for Islamic banking (Dar, Harvey and Presley, 1999). In modern era, the

conceptualization of replacing interest with PLS arrangements can be traced back to the pioneering works of Islamic economic thinkers in the mid of twentieth century, which got significant acceptance in academic literature at the end of 20th century (Gafoor, 1995); (Ayub, 2002). Usmani (2003) is of the opinion that Modaraba and Musharaka contracts should be done on preference basis so that PLS finance can play a wider role in an economy. Other scholars including Pakistan's Council of Islamic Ideology states that although the debt-based financing is permissible, it should be restricted or avoided to prevent from the idea of back door to Riba (Chong and Liu, 2009). Scholars (Khan, 2010; Siddiqi, 1983; Usmani, 2003) emphasize that the roots of PLS finance can be traced back to the principles laid out in the Islamic jurisprudence. Siddiqi (1983) underscores the early application of Mudaraba and Musharaka contracts in Islamic trade, illustrating their historical importance as ethical financial instruments. (Mirakhor and Zaidi, 2007) argue that the Islamic economic system, grounded in justice and equitable distribution, finds expression in the principles of Modaraba and Musharaka. These contracts, as highlighted by Usmani (2002), serve as mechanisms for aligning financial activities with Islamic ethical norms. Many advocates of Islamic banking are critical that debt-based instruments not only represent a status-quo with conventional banking but even may not conform to true spirit of Sharia and Islamic economic system (Siddiqui, 2008). The non-PLS financing may be considered sufficient in meeting the requirement of Sharia compliance by taking possible literal and legalistic interpretation of Sharia, but these are clearly insufficient to achieve the specific objectives of the Islamic finance and the broader goals of Sharia (Kayed, 2012a).

In addition to Sharia compliance, public perception in the market about better Sharia compliance is strategically important for the success of Islamic banks (Azmat, Skully and Brown, 2015). If a bank is not perceived as Sharia compliant by its customers, it may turn into a high reputational risk which may dampen its ability to grow and even may question its sustainability if depositors start withdrawing their funds. Customers' positive perception of Sharia compliance is far more crucial for the strategic growth of Islamic banks mainly due to the fact of co-existence with the long-established conventional banks in a dual-banking system (Dusuki and Abdullah, 2007). Islamic banking regulatory framework of Oman has specifically put the responsibility on the senior management of its licensees to take all measures to protect the perception of Sharia compliance (CBO, 2013). Therefore, a dichotomous question is designed to understand if industry believes in

Sharia importance of PLS finance due to its better fitment into Sharia compliance or public perception and respondents are asked to rank the importance of both options.

Another important aspect is the superior economic performance of PLS finance over other modes of finance, especially for economic growth, financial resilience and stability at the firms (Saleem *et al.*, 2023). Scholars such as Chapra (2007) and Usmani (2015) are of the opinion that Musharaka and Modaraba financing is in true spirit of Sharia as it promotes economic justice in the society as one of the primary objectives of Islam. This is because PLS finance applies risk-sharing characteristics so that business risks are not shifted entirely to the entrepreneurs and banks do not earn a fixed return irrespective of the firm's financial performance. Instead, both parties, banks and firms, share profit and risks in order to create more financial stability, welfare and justice in society. Chapra (2008) explains the desired characteristics of Islamic financial system which may be able to promote justice if, among other key factors, risks are shared between the financiers and entrepreneurs. He further emphasizes that Islamic finance should, in its ideal form, help in raising substantially the share of equity in the businesses, projects and ventures through the PLS finance (Chapra, 2008b). The inherent sharing characteristic of PLS finance causes more economic justice and financial discipline as it motivates the banks to assess the risks more carefully and to monitor the usage of funds closely. The twofold assessment of risks by both the financier and the entrepreneur should help to institute a greater discipline into the system and go a long way in reducing excessive lending (Chapra, 2008a). The research findings also indicate that the PLS financings strengthen stability of Islamic banks (Widarjono and Mardhiyah, 2022). Islamic banking claims to evolve as an alternative model to conventional banking in the Muslim societies and is desired as providing socio-economic justice (Abozaid, 2010) by addressing the issues of poverty, inequality and wealth concentration as major corrections in the economy (Chapra, 1985); (El-Galfy and Khiyar, 2012). A neoclassical-inspired study suggests that in a two-tier Modaraba contract, profit-sharing between the bank, depositor, and entrepreneur should ensure capital and labor are compensated according to their marginal productivity (Ben Amar and O. El Alaoui, 2023). In an Indonesian market based study, it is found out that governance practices for PLS finance include flexible repayment schedules and a focus on customer empowerment for achieving better socio-economic justice (Yaya *et al.*, 2021). Given the emphasis on PLS finance rather than debt, more cautious, diverse and perhaps more efficient projects selection by the funds providers and greater involvement of the entrepreneurs in investments than in the traditional fixed interest-

based system (Akacem and Gilliam, 2002). In another empirical study based out of Indonesia, it is found out that PLS has more impact on economic growth than non-PLS (Masrizal and Trianto, 2022).

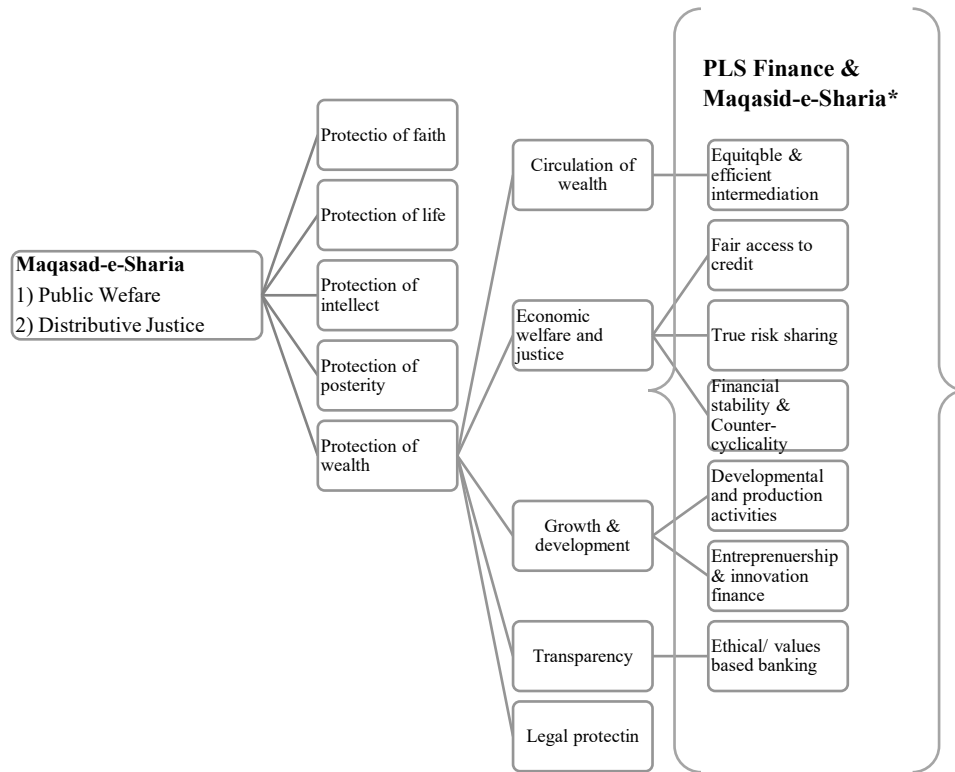


Figure 2.2: Maqasid-e-Sharia and Islamic Finance

Based on extensive literature review, a summarized view for an Islamic economic system is derived from Sharia & Maqasid-e-Sharia. Three (3) levels of excellence for protection of wealth and its components can be categorized as Essentials, Complement and Embellishment.

*These objectives of Sharia for PLS finance are validated with respondents in the survey (Q6.2) for Sharia and economic importance of PLS finance.

2.2.7 What is problem with non-PLS finance?

A careful review of literature reveals that non-PLS finance is equally important and desired by Sharia. Islamic contracts of Ijara, Murabaha and Salam are widely discussed in the extant literature even from early ages of Islam. However, there are various contemporary issues in such products and are rightly criticized for replicating conventional banking practices. Critics argue that there is room for improvement in designing these products to align more closely with Maqasid al-Sharia, instead of merely focusing on textual compliance with rulings without considering their underlying principles. Consequently, having their economic destiny tied up with conventional products, these

products are seen as delivering similar economic benefits along with carrying potential sources of harm, much like their counterpart (Alkhan, 2021). Key issues with non-PLS products covered in the literature are mimicking behavior of conventional banking, controversial products like commodity Murabaha, currency Salam, synthetic structured products, pricing mechanism linked to conventional interest rate benchmark, lack of expertise and commitment for Maqasid-based Islamic finance (Khan, Feisal, 2010).

Moreover, non-PLS products in Islamic banking, by replicating the financial characteristics of debt-based instruments, inherently align their advantages and drawbacks with those observed in conventional banking. Consequently, these products exhibit similar risk profiles and economic impacts, which may lead to benefits and potential challenges closely associated with traditional debt financing practices. Various studies in conventional finance literature highlight debt's role in triggering and extending economic downturns and financial instability, challenging the belief that credit growth is necessary for economic progress and that rising debt is safe if inflation stays low (Mian and Sufi, 2015); (Turner, 2016). In fact, most credit is not required for economic growth, but it drives economic booms and busts and causes severe financial crisis and depression. Hyman Minsky's financial instability hypothesis is now getting greater attention, which argued that financial system remains stable with rely on equity. However, when firms seek external financing from banks, the system becomes prone to instability (Minsky, 1975).

2.2.8 Is there co-existence in literature?

There is a rich debate in the modern literature of Islamic finance between advocates of PLS and its opponents. Advocates adhere to Maqasid-e-Sharia and objectivity of Islamic economic system. They strongly believe that PLS finance instruments should play a bigger and stronger role in Islamic finance industry (Chapra, 2008b); (Mawdudi, 1961); (Usmani, 2002); (Siddiqi, M. N., 2006). Opponents are indifferent between PLS and non-PLS finance as they believe later is equally legitimate by Sharia. In fact, they believe non-PLS finance products are more viable and feasible for Islamic banks (Asutay, 2007); (Yaquby, 2005). Exceptionally, some scholars have claimed inability of PLS finance products in achieving socio-economic welfare (Nagaoka, 2009).

However, in theory, PLS finance fits better into this Maqasad perspective because it has true sharing of risk and reward in a venture rather than transferring risks to the counter party. There are few other economic merits of PLS finance that are discussed in the academic literature of

conventional finance. This includes financial stability, counter-cyclical behaviour, financial innovation, fair access to credit, excessive leverage and higher production activities. The excessive leverage of firms was one of key reasons for the meltdown of global financial system in 2008. Having higher reliance on debt rather than equity may expose firms towards unwanted vulnerabilities and hence it is not sustainable in any cyclical economy (Mian and Sufi, 2015). Prof. Rogoff states, “In an ideal world equity lending and direct investment would play a much bigger role”. He further asserts that, “with a better balance between debt and equity, risk-sharing would be greatly enhanced and financial crises sharply muted” (Rogoff, 1999). What determines the application of PLS finance in comparison to debt finance and how it positions itself in existing capital structure debate is at the heart of my research objectives. PLS finance is a counter-cyclical structure enjoying various characteristics of equity. PLS is a kind of an ideal financing structure that (Damodaran, 2008) quoted as “*a perfect financing instrument*” between optimal mix of debt and equity.

Nevertheless, greater reliance over PLS finance does not mean to rule out debt finance because various types of financial needs of firms cannot be simply fulfilled by PLS structures. Therefore, non-PLS finance is indispensable but should not be promoted in the form of excessive leverage, wasteful consumption, unproductive and speculative assets. The key is striking a healthy balance between PLS and non-PLS financing for establishing a resilient and stable economic system that promotes sustainable growth and shared prosperity for its community.

2.3 Unique Characteristics of PLS Finance

PLS finance holds unique characteristics driven by virtue of its partnership contract and direct linkage to the residual risk of a business or venture.

2.3.1 PLS Performance

PLS performance is based on the underlying business performance concerning returns and repayments for its lenders. PLS finance contracts are different from non-PLS ones in various ways. Non-PLS are fixed-pay contracts, where performance mostly depends upon the capacity and ‘willingness to pay’ of the borrower. In PLS arrangements, returns are not fixed like non-PLS or conventional financing structures. Instead, lenders share in both profits and potential losses of the underlying venture or asset being-financed. This means returns are variable depending on the business performance and future cash flows. When the financed venture succeeds, lenders earn a

return based on a pre-agreed profit-sharing ratio. It is permissible to have performance linked incentive clauses for either party in the PLS contract. However, if the project suffers a loss, lenders may also bear a portion of that loss in proportionate to their capital investments. In fact, PLS structure has moved from the paradigm of ‘capacity to pay’ towards ‘profitability to pay’. If there are no profits in the underlying venture of PLS, lenders have no eligibility to demand repayments. In short, PLS finance is distinct from other financing modes where returns are often fixed, regardless of the underlying asset's performance.

2.3.2 No Guarantee for Profit and Capital

PLS contract is an equity finance arrangement for a firm where lenders assume underlying performance risk of the business. Profit rate risk is the possibility of making profits less than expected due to poor performance of the underlying business. Capital impairment risk is the risk of losing the whole amount (or a part of it) invested in a business or venture (IFSB, 2021). As mentioned in paragraphs 48 and 55 of IFSB-1 standard, under PLS financing modes that the capital invested by the finance providers is not guaranteed one as it is not a debt but is explicitly exposed to impairment in the event of losses. It is not permissible for lenders to ask the counterparty for guarantees of the original capital invested in PLS ventures. However, a third party independent of PLS contract such as a sovereign or state government may provide such guarantees to the lenders for their capital (AAOIFI, 2017). Similarly, it is not permissible to fix the returns on PLS financing arrangements and lenders’ returns are calculated based on the profitability of the underlying business and agreed profit sharing ratio. Here, lenders face the risk of under-performance. It means actual profits generated by the underlying venture or project may be lower than ex-ante profit assessed by the lenders at the conclusion of PLS financing arrangement. In event of unexpected losses, the original invested capital (principal) may be fully or partially wiped-out due to the loss absorption requirements in PLS contracts. This variability in returns is distinct from the fixed interest payments in conventional loans, highlighting a fundamental difference in the form of profit rate risk (IFSB, 2019).

2.3.3 Restricted vs Unrestricted PLS Contracts

In general, PLS contracts can be categorized into restricted and unrestricted arrangements. Under restricted arrangement, lenders allow the borrowing firm to utilize funds as per given investment criteria or restrictions such as type, geography, business segment, economic sector etc. Under

unrestricted PLS finance arrangements, there is no such restriction and borrowing firm is free to utilize funds as per the market norms and general terms of the contract. Furthermore, it is different from a regular equity arrangement where investment is open-ended without any restrictions. Investors hold a kind of voting rights and participate in the residual risk of the whole company or venture or project. However, PLS financing contracts are not necessarily open-ended, with a time-bounded pre-agreed exit arrangement and no voting rights in the company. Unlike equity, PLS contracts can be terminated by a notice from either party especially if there is a contractual breach in its key terms such as performance, negligence, repayments etc. (Hadizada and Nippel, 2022).

2.3.4 Fiduciary Responsibility and Negligence

In a PLS contract, the borrowing firm (acting as funds manager) holds fiduciary responsibility towards the lender (funds provider) because the former is entrusted with managing the investment funds in the best interest of the latter. A borrowing firm must exercise prudence, diligence, and honesty in managing the funds and making investment decisions. They are obligated to act in good faith, avoid conflicts of interest, and prioritize the interests of the PLS lenders. Any breach of fiduciary duty by the firm could lead to legal consequences and potential liability for losses incurred including profit and capital invested. It is permissible by Sharia that any losses in a PLS venture due to misconduct, negligence or breach of contractual terms to be borne by the following firm.

2.3.5 Seniority and Legal Covenants

(IFSB, 2021) states that lenders serve as first lost position and their rights are subordinated to the claim of secured and unsecured creditors. This is the general rule for PLS finance contract because of equity exposure in the residual risk of the underlying business or venture. For given operations of a going concern commercial entity, non-PLS lenders will always get priority to access operating cash flows over PLS because of their fixed pay characteristics regardless of the business performance. This priority is also evident from the fact that PLS lenders must share the risk of dwindling cash flows of a poor performing business entity while non-PLS lenders will have fixed claim. However, in case of default or liquidation, this priority of non-PLS creditors may not hold always. This is primarily due to the legal covenants agreed in the PLS contract which have given exclusive rights to certain assets or residual claim over others. This is also evident in the case of mortgage or lien or fixed charges created specifically in favour of PLS lenders with seniority in

claims over other lenders. So, legal covenants and securities agreed in a PLS contract for seniority to a residual claim may hold legal standing in front of both Sharia and legal courts.

2.3.6 Secured vs Unsecured PLS Finance

Securities or collaterals in PLS finance arrangement largely protect the lenders. This is primarily a risk management tool that is effective to protect lender's interest in case of breach of fiduciary responsibility or default. Furthermore, strong collaterals also have a preferential treatment for expected credit losses (ECL)²³ as required by IFRS 9²⁴. Secured credit backed by collaterals typically benefits the banks in a lower ECL calculation due to the potential for recouping losses through the liquidation of collaterals. Higher security is inversely proportionate to loss given default (LGD). A better security coverage ratio reduces the LGD component of the ECL model, reflecting the expectation of realizing some value from the security held even in a default scenario. As per Basel guidelines, LGD is calculated based on seniority, collateralization and other risk mitigating options, which the bank has secured from the borrower or third party at the time of lending decision.

On the contrary, unsecured credit lacks this protection. With lower-ranked or general claims during a borrower's liquidation, the potential recovery rate is drastically lower, leading to a higher LGD and subsequently, a larger ECL provision. Therefore, the presence or absence of collateral plays a crucial role in determining the expected loss under regulatory standards, directly affecting a financial institution's financial statements and provisioning for credit losses. Consequently, PLS finance secured by collaterals have lower ECL than unsecured PLS because LGD is limited to liquidation value of the collaterals.

2.3.7 PLS Finance - Debt or Equity

In theory, PLS finance is considered equity finance because it operates on the fundamental principles of partnership or trustee arrangements, variable returns, sharing in residual risk, sharing in underlying business profitability and losses. AAOIFI categorizes PLS financing instruments of Musharaka, Modaraba and Wakala as quasi-equity depending due to its core characteristics. It defines quasi-equity as having all primary characteristics of equity such as profit loss sharing,

²³ Empirically, expected credit losses (ECL) is a mean of the distribution of total credit losses for a particular financing choice at any given point in time. Maximum CL is capped at loss given default (LGD) level for a fully secured credit. Generally, LGD is limited for secured exposures compared to unsecured one.

²⁴ International Financial Reporting Standard (IFRS) 9 on "Financial Instruments".

residual risk and reward of the underlying business or assets but having feature of contractual maturity or put option of redemption (AAOIFI, 2020).

However, in practice, there are various debatable PLS finance structures to replicate certain aspects of debt behaviour. These often involve complex combinations of sale-repurchase agreements, capital guarantees or asset-backed structures. The motive behind the practice of such structures is to reduce the unwanted risks of PLS finance for various reasons. The majority of PLS structures implemented at Islamic banks exemplify this trend, which has been extensively scrutinized and debated by critics in the academic literature (Farooq, 2007). Nevertheless, such stipulations in a PLS finance contract establish an advantageous position for the lenders, especially in case of secured PLS finance fully collateralized by a mortgage or other high-quality asset. However, there are various precedents that such legal stipulations are cause of concerns and even disputes in the market (Zada and Muhammad, 2018).

2.4 Application of PLS Finance and Capital Structures

From a market forces perspective, the adoption and prevalence of specific financing modes within the corporate landscape are contingent upon an interplay of factors that shape both borrower demand and lender supply. On the demand side, a firm's decisions to utilize particular financing type are influenced by their unique funding requirements, capital structure, cost of debt capital, legal covenants etc. A deep insight of PLS finance structures will also help to understand its effect on financing choices of commercial firms and their decisions for optimal capital structures. On the supply side, the availability and terms of different financing structures are shaped by prevailing credit market conditions, regulatory frameworks, and lenders risk appetite and lending expertise. Consequently, the application of PLS finance is not solely determined by its inherent characteristics, but rather by the dynamic interplay of market forces in corporate finance.

2.4.1 Application of PLS Finance in Financial Markets

After thorough review of unique characteristics of PLS finance, it is important to understand its application in modern banking, Sukuk capital market, asset management and takaful industries.

2.4.2 Application of PLS Finance in Islamic Banking

The foremost application and potential use of PLS finance in financial markets is Islamic Banks in many ways. First, they act as financial intermediaries in an economic system, pool the society savings and lend to individuals and corporations who fulfill the credit criteria. Second, Islamic banks are obliged due to their unique business model to promote wider application of PLS finance. Third, *Maqasid* based banking requires Islamic banks to practice more profit and loss sharing structures in order to achieve its higher objectives. Application of PLS finance in Islamic banking can be both retail and commercial finance, however, the research objectives set for this thesis is later one. PLS finance structures in practice can be categorized into typical categories of funding requirements in corporate finance (Ayub, 2013); (Sufyati, 2020). A recent study performed in an Indonesian perspective finds-out that in the short term, application of PLS financing is more influenced by changes in the risk-sharing deposits and bank size variables, while in the long term, the growth in PLS financing is more influenced by the shock of PLS financing in the previous period (Ibrahim, Effendi and Kurniawan, 2022). A brief of potential use cases of PLS structures in terms of maturity and seniority is explained in below sections.

2.4.2.1 Term Finance

This is classical PLS finance which is extensively discussed in the literature. Capital structures studies in Islamic corporate finance have also extensively researched over its relationship in finding optimal debt equity mix at firms. This is ideal for funding a firm's balance sheet on long-term horizons. All kinds of Musharaka, Modaraba and Wakala contracts are used for this purpose in the practice.

Term Musharaka – It is a partnership between the bank and the firm, where both contribute capital to a business venture. Profits are shared based on a pre-agreed ratio, while losses are borne in proportion to each party's capital contribution. The partnership is for a certain time period with fixed maturity. The capital repayment can be in lump-sum at maturity, equal installment for a period or step-up installment over the period as agreed between the bank and the borrowing firm.

Term Modaraba – It is akin to Musharaka but largely used to finance only profitable business lines or segments of a firm rather than participating in its entire operations. In this arrangement, the bank provides capital, while the firm manages the business. Profits are shared as per an agreed ratio, but the bank bears full financial losses.

Term Overdraft – This is another type of term finance. It is a PLS contract where the bank appoints the firm as its wakeel (agent) to invest the funds as per the restricted mandate and time span. It is more popular at Islamic banks due to its simple mechanism in eligible profit calculation, fee and incentive clauses for the fund manager.

The common examples of the term PLS finance are senior unsecured or senior secured debt based on the financial strength of the firm's balance sheet, earning power and cash flows.

2.4.2.2 Working Capital Finance

PLS can be used to finance day-to-day business needs. It is widely used for working capital finance purposes in countries, especially where commodity Murabaha is not allowed or discouraged by the regulators. Oman and Pakistan are prominent examples of it. PLS can be structured for working capital finance based on the Islamic contracts of Musharaka, Modaraba or Wakala (Ahmed, Muhammad Mushtaq, Farooq and Arsalan, 2016).

The running Musharaka partnership is akin to running finance concept, permitting the client to inject new capital or withdraw existing capital at any point during the course of the business. Running Modaraba is largely used for financing only profitable business lines or segments of a firm instead of sharing in full-scale operations. Wakala Overdraft product is popular because of its high resemblance with over-draft product in conventional finance.

2.4.2.3 Trade Finance

PLS finance structures are being used for trade finance purposes although Murabaha (cost plus mark-up) is a widely used product in this regard. Musharaka is mostly used for import shipment finance, involving a joint venture between the bank and the client to import specific goods or assets from the international markets. This arrangement typically occurs when there is a confirmed advance order from a reputed buyer or when the local market faces a shortage due to a demand supply gap. Client sells the goods or assets in the local market and share profits with the bank as per pre-agreed profit-sharing ratio. Wakala or Modaraba structures are mostly used for PLS arrangement over export shipment of certain goods or assets. The client, who acts as a seller, could be a trader or manufacturer with a confirmed supply order but lacking adequate funds. Islamic banks enter in a PLS arrangement for the specific export shipment and appoint the client as wakeel (selling agent) or Modarib (funds manager). Client sells the goods or assets and share profits with the bank after taking his share of profit or commission as the case appropriate.

2.4.2.4 Asset Finance

Assets finance is a specialized form of financing that is feasible under PLS finance structures such as Musharaka, Modaraba or Wakala. It is used for acquiring new assets or sale and lease back of existing assets. Mostly, PLS arrangements for asset finance are secured because the underlying asset is mortgaged with the bank and cash earnings of the asset are assigned to the bank for repayment purpose. The philosophy of asset financing is its ability to repay the debt from the cash flows of the asset with limited or no recourse to the shareholders. Commercial real estate, rigs in oil field, airplanes, carriage ships and very large crude carriers, plant and machinery are common examples of assets financed under PLS structures.

2.4.2.5 Project Finance

Project finance is another example of specialized lending where the cash flows generated by the underlying project are adequate to repay to the lenders. In such an arrangement, all cash flows are ring-fenced and assigned to the account bank. PLS arrangements for project finance are equally feasible. Most of the projects are commissioned based on concession agreements from the government or similar bodies. Common examples of project finance are infrastructure finance, airports, marine/ dry ports, toll plaza, independent power plants, independent water desalination plants etc.

Some researchers argue that the PLS structure is a classical application for project finance due to several compelling reasons, which are a) water-tight arrangements which makes project monitoring easier, b) lucrative concessions and subsidies from the government, c) solid project feasibility with healthy internal rate of return which reduces PLS finance risk, d) professional management having expertise in the relevant fields which makes lenders more comfortable, and e) corporate culture mainly due to strong promoters in the form of large corporations. These factors collectively contribute to the suitability of PLS structures for financing large-scale, high-stakes projects, aligning the interests of investors and managers while ensuring rigorous oversight and financial stability.

2.4.2.6 Structured Finance

Structured finance refers to a customized financing arrangement designed to meet the specific needs of firms. However, due to unique requirements of structured finance, there are limited examples of PLS finance application in this area. Nonetheless, there are notable instances where

PLS structures are effectively utilized. For example, 1) Mezzanine financing is widely used for over-leveraged firms that are willing to pay higher cost of funding against their elevated risk profile. Lenders find these high returns as lucrative opportunities and are willing to fund such transactions on PLS arrangement basis. 2) Profit rate swap or 3) precious commodities financing. These applications of PLS finance in structured finance illustrate its flexibility and potential to cater to high-risk, high-reward financial needs, aligning the interests of both lenders and borrowers in a way that non-PLS might not.

2.4.3 Application of PLS in Sukuk/ Capital Markets

A *sukuk* is an Islamic financial certificate having some similarity to a bond. However, Sukuk issuances can be based on either PLS or non-PLS structures. The Sukuk issued based on non-PLS structures are mostly based on Ijara or Murabaha arrangements while Sukuks issued based on PLS structures are based on Wakala or Modaraba or Musharaka arrangements. Under non-PLS arrangement, the issuer of a sukuk essentially sells the investors financial certificates, which represent undivided ownership share in the underlying physical asset. However, in case of PLS arrangements, the Sukuk represents undivided ownership in the underlying business or joint venture (not physical asset). The key difference between both types of Sukuks is that purchase undertaking or corporate guarantee to buy back underlying assets at a pre-determined price is not allowed under PLS based Sukuk (AAOIFI, 2018).

Both corporations and Islamic financial institutions are using PLS and non-PLS structures to issue Sukuks to fund their balance sheets. Furthermore, Sukuks being a capital market instrument with bullet repayment at maturity are preferred by firms and banks for their optimal capital structure purposes. Sovereigns are also active in issuing Sukuks for infrastructure finance; most of them are based on either Ijara or Wakala structures. The common structures of Sukuks used in the capital markets are senior unsecured, senior secured, subordinated /Tier 2, perpetual/additional tier-1 (AT1), with cumulative or non-cumulative options (Paltrinieri *et al.*, 2023).

2.4.4 Application of PLS in Assets Management Industry

The operating model of Islamic banks is very close to assets management industry as explained in Fig. 2.1. Similar to assets management industry, on liabilities side, PSIA holders of Islamic banks bears full risks for performance of financial assets built using PSIA funds. However, there are major differences in investment strategy and assets allocation on assets side (Al-Suwailem, 1998).

Application of PLS finance is already very sophisticated in the assets management industry where investment mandates and assets classes are defined by the asset managers at the initiation of a fund. Assets manager are specialized in distinct assets classes such as equity, fixed income, emerging, alternative etc. and differentiate themselves from others based on their track-record of performance. Mostly, assets managers raised funds from institutional and high net-worth investors who have higher risk appetite than general depositors. Islamic banks needs to learn more from the asset management industry in better application of PLS in their own banking model (Dar, Harvey and Presley, 1999).

2.4.5 Application of PLS in Takaful Markets

The business model of Takaful is based on mutualization and cooperation, which emphasizes sharing of risks among the society members and supporting each other in case of unexpected events. It is unlike conventional insurance which is based on transfer of risks from Insuree to Insurer against a certain fee or premium. PLS is a key mechanism in Takaful models and its application can be seen in various aspects of how risks are shared among participants in a Takaful scheme and how funds are managed. PLS mechanisms provide a framework for participants and Takaful operators to share both profits and losses equitably, creating a cooperative model that aligns with the Islamic view of finance and insurance. For this purpose, Modaraba model is used in family Takaful while hybrid of Modaraba and Wakala model is used in general Takaful. Furthermore, any surplus of funds in Takaful scheme after paying off all claims and operating expenses are redistributed to the pool participants, with an incentive fee to the Takaful operator under PLS arrangements (Khan, Ashraf *et al.*, 2020). In conclusion, the application of PLS in the Takaful market ensures that the operations of Takaful adhere to Shariah principles, promoting risk-sharing, collaboration and mutual benefit.

2.4.6 Limited Application due to Conventional Ecosystem

The predominance of asset-based finance within Islamic banking, as opposed to PLS, is largely attributable to its structural compatibility with conventional financing. This compatibility manifests in several key aspects, including the provision of predictable returns through fixed payment schedules and the perceived reduction of lenders risk through asset collateralization and priority structures. Conversely, the complexity inherent in PLS structures, coupled with the uncertainty associated with profit-sharing arrangements, is an inherent core reason for lower

willingness by banks to supply it. This structural non-alignment with conventional financial system, particularly in terms of risk perception and return expectations, has limited the wider application of PLS finance within the Islamic banking landscape.

2.4.7 Firms and Capital Structures

The modern firms objectivize to minimize their operating cost, maximize their profitability and capitalizations. The firms having borrowing relationship with Islam banks also operate for similar strategic objectives except shared value and social responsibility concept emphasized strongly by Sharia. The Maqasad-e-Sharia approach desires maximization of benefits for all stakeholders i.e. maximization of economic capital invested by firms along with maximization of collective welfare and shared mutuality. It can be fairly assumed that the guiding principles of traditional corporate finance can be applied to the firms borrowing from Islamic banks. It means each firm must decide in an optimal way where to invest its financial resources (investment decisions), how to find strategic funding (financing mix decisions) and how much cash returns for shareholders (dividend decisions) (Miglietta and Battisti, 2014). A central point of maximization of wealth at firms is optimal capital structure decision-making.

2.4.8 Cost of Capital and PLS Pricing

Among others, one key factor of optimal funding mix between debt and equity is the cost of capital. Firms explore funding options by evaluating their costs²⁵ and risk profiles. Managers consider the risk profiles of external funding options and how these align with the residual risks of their firms. Based on which, they compare the cost of financing for the qualified choices best fitting into their strategic funding agenda. The cost of debt or financing has a direct impact on cost of weighted average cost of capital (WACC), which is a core lever for earnings, market price per share and valuations of the firm (Margaritis and Psillaki, 2010). Although PLS and non-PLS options offered by Islamic banks have different risk profiles due to their distinct characteristics, firms often treat these funding choices similarly unless they have borrowing capacity for non-PLS. This approach helps them to minimize their WACC. This brings a ceiling pressure on the pricing of PLS finance compared to non-PLS. On the contrary, bank's capital structures are driven by Basel requirements for risk weightage of financing assets and capital charge (Albul, Jaffee and Tchisty, 2010). This

²⁵ In most of the jurisdictions where Islamic banks are operating, cost of PLS financing is tax permissible like debt finance. I have found not a single incident where effective tax rate is different for PLS finance.

gap in pricing expectations from demand and supply aspects is a major hindrance for the growth of PLS finance and various studies suggest a risk based pricing approach to increase the use of PLS contracts, aiming to optimize the risk-return ratio (Madkour and Motahaddib, 2022).

2.4.9 PLS Finance and Capital Structures

There are numerous capital structure theories and their interpretations throughout the academic literature progressing mainly into two branches; probability of default and cost of capital of a given firm. However, most of capital structure literature assumes uniformity of debt despite the fact that heterogeneity and priorities such as covenants, seniority, subordination etc. are common features of borrowing firms. A handful studies have attempted to address capital structure decisions for firms with multi-tiered capital structures (Hackbarth and Mauer, 2012a). A key question here is which type of firms issue multi-tiered capital structure? (Rauh and Sufi, 2010) indicate that typically low credit quality firms tend to issue more hybrid and heterogeneous debt structures in comparison to high credit quality firms.

Given the inherent characteristics of PLS structure and its direct exposure to a firm's residual risk, it closely resembles equity capital, often exhibiting a risk profile comparable to pure equity. Original PLS structures in the form of Musharaka, Modaraba and Wakala described in the classical literature of Sharia and practiced in history until the 20th century are comparable to the pure equity structures in several ways. During the medieval era, all PLS financing contracts were for definite purpose and full recourse to managing partners in case of negligence. Subsequently, with the evolution of the limited liability concept of firms, various financing structures were developed to accommodate growing needs of the modern businesses. In the contemporary corporate world, we can see a range of capital structures based on different types of external funding in terms of risk profile, tenor, securities and legal covenants. Theoretically, there are various studies categorizing capital structure of a firm into equity, quasi-equity, subordinate debt, junior debt, senior unsecured debt and senior secured debt (Marco Tutino, 2020). Banks mostly work in the senior debt category primarily due to restrictions from the central bank. On the other hand, capital markets operate in a sophisticated environment and cater to all types of capital structures based on demand from the borrowing firm and supply from the lenders in the global financial markets. Similarly, PLS finance contracts can be categorized, theoretically per se, to exhibit a variety of risk profiles from senior debt to the pure equity structure through financial engineering and seniority structures stipulated

through legal covenants. However, various PLS structures which are being practiced in the market in both banking and debt capital market are controversial, have been objected by some Sharia scholars and regulators various times (Chong and Liu, 2009). An exhibit of applicability of PLS finance into different forms of capital structures is summarized in Table 2.1.

Conceptual Application of PLS Finance into Capital Structures of a Firm		
Capital Structures	PLS Finance Structures	Risk Profiles
Common Equity	Shareholders agreement is based on pure Musharaka contract. Similarly, classical PLS structures are comparable to pure equity with few exceptions such as definite financing tenor.	<i>Profit:</i> not fixed; linked to performance of the underlying business. <i>Capital:</i> Neither guaranteed nor protected. <i>Residual Risk:</i> Direct participation. <i>Ranking:</i> Most junior
Quasi-equity and Perpetual	Any perpetual financing type of Musharaka, Modaraba and Wakala without any collateral or third-party guarantees. A profit smoothening reserve or interest-free loan covenant is used but with claw-back clause. Common example is perpetual Sukuks issued by banks and corporates.	<i>Profit:</i> not fixed but indicative; linked to performance of underlying business. <i>Capital:</i> Neither guaranteed nor protected. <i>Residual Risk:</i> Direct participation. <i>Ranking:</i> Senior to common equity.
Subordinate and Junior Debt	Any financing type of Musharaka, Modaraba and Wakala with fixed maturity of repayment without any collateral or third-party guarantees. Sometimes an	<i>Profit:</i> not fixed but indicative; linked to performance of underlying business. <i>Capital:</i> Neither guaranteed nor protected.

	undertaking to buyback PLS finance assets at given market value is used. Common examples are subordinate Sukuk or junior financing tranches.	<p>Undertaking: Buy-back clause at market value rather than pre-agreed price (or par value) is exposed to market risk.</p> <p><i>Residual Risk:</i> Direct participation.</p> <p><i>Ranking:</i> Senior to common/quasi-equity.</p>
Debt (senior secured)	Any financing type of Musharaka, Modaraba and Wakala with fixed maturity of repayment with a tangible collateral or third-party guarantee. Sometimes an undertaking to buyback PLS finance assets at given market value is used. Common examples are senior secured Sukuk or typical PLS financing at Islamic banks.	<p><i>Profit:</i> not fixed but indicative; linked to performance of underlying business.</p> <p><i>Capital:</i> Neither guaranteed nor protected.</p> <p>Undertaking: Buy-back clause at market value rather than pre-agreed price (or par value) is exposed to market risk.</p> <p><i>Residual Risk:</i> Direct participation. Recourse to collateral or third-party guarantee is allowed only in case of negligence or misconduct.</p> <p><i>Ranking:</i> Senior to subordinate structures.</p>
Debt (senior unsecured)	Any financing type of Musharaka, Modaraba and Wakala with fixed maturity of repayment without tangible collateral or third-party guarantee. Sometimes an undertaking to buyback PLS finance assets at given market value is used.	<p><i>Profit:</i> not fixed but indicative; linked to performance of underlying business.</p> <p><i>Capital:</i> Neither guaranteed nor protected.</p> <p><i>Undertaking:</i> Buy-back clause at market value rather than pre-agreed price (or par value) is exposed to market risk.</p>

	Common examples are working capital or short term PLS financing at Islamic banks.	<i>Residual Risk:</i> Direct participation. Recourse to buyback undertaking is allowed at market value only. <i>Ranking:</i> Senior to subordinate structures.
Table 1.1: Conceptual Application of PLS Finance into Capital Structures of a Firm		
An applicability of PLS finance into different forms of capital structures practiced at banks and capital markets.		

2.5 Risk Management in PLS Finance

Since banks are entrusted with the safekeeping of public money especially the hard-earned savings of a large part of society, they have higher fiduciary responsibility to act in the best interest of depositors. This responsibility is even more important in Islamic banking because depositors are essentially investors, who deposit their funds based on profit and loss sharing arrangements. Islamic banks, acting as funds managers for them, should deploy their funds in the most trustworthy manner, exercising due care and professional judgement. This is professional responsibility of Islamic banks to protect and potentially enhance the wealth of the depositors without exposing them to unwarranted risks. This better risk management perspective of depositors is also important for wider application of PLS finance. A recent study indicates that stakeholder contributions, such as management of Modaraba depositors, positively influence PLS financing, while other stakeholder contributions show no significant effect (Vegirawati *et al.*, 2019).

The credit risk assessment process is a critical component of a bank’s risk management strategy, designed to evaluate the creditworthiness and riskiness of a borrowing firm. Banks typically begin with an analysis of the financing purpose requested by the firm. Following this, a rigorous analysis of financial information is conducted, encompassing balance sheet, income statements, existing debts, cash flows and collaterals. A credit score, often derived from the last 3-5 years financials, serves as a quantitative measure of credit risk, reflecting the borrower's capacity and repayment behaviors. Advanced risk models further refine the assessment by predicting the probability of default based on historical data and current economic conditions²⁶. The credit decision through this systemic process enables lenders to make informed decisions on credit approval, terms, and

²⁶ Mostly banks outsourced risk models for PD estimation to credit rating or other reputed companies like Moody, Fitch etc.

pricing, effectively balancing the potential for profit with the risk of default. This meticulous approach of credit prudence not only ensures the financial sustainability in the banking system but also safeguards the depositors' money, who have entrusted the banks with their life savings.

2.5.1 Risk Types in PLS Finance

PLS finance is a kind of counter-cyclical structure (like equity), which provides somewhat more flexibility to a firm than non-PLS structures. This unique characteristic of PLS finance is equally true for both principal (capital invested) and profits (returns thereon). Below are unique risk types whose relevance and severity for PLS finance is different from other modes of financings.

2.5.1.1 Credit Risk

Credit risk is defined as a possibility that a counterparty may fail to fulfil its debt payment or contractual obligations in accordance with agreed terms²⁷. This is also called counterparty risk or default risk. IFSB (2019) defines credit risk as, “the probability or the likelihood of a recipient of financing or a counterparty failing to meet its obligations as set out in the agreed terms of a transaction”. A research study performed in India has found that credit risk consists of 70% of the total risks faced by the banks, whereas the remaining 30% constitute of other types of risks (Arunkumar and Kotreshwar, 2006). In overview, credit risk is treated as the strategic risk, which may cause instability to banks, although an adequate amount of provisions is kept as an effective source of security against such poor risk (Khan, Tariqullah and Ahmed, 2001). Considering the unique nature of PLS finance, there are some additional aspects of credit risk, which are considered in various studies. Increase of market frictions cause adverse selection, which increases audit & monitoring cost and cost of funding for PLS finance compared to non-PLS (Ajmi *et al.*, 2019). While, in another study, it is found out that PLS finance reduces credit risk at Islamic banks (Farihana and Rahman, 2021). There are also interesting studies to find out the relationship between credit risk and liquidity risk. As per a recent research carried out for 52 banks in OIC countries, it is found-out that credit risk and liquidity risk have negative relationship (Hassan, Khan and Paltrinieri, 2019). Similarly, another research paper finds out a strong relationship between corporate governance and poor risk management, which cause an Islamic bank to fail despite having a successful business model (Alhammadi, Archer and Asutay, 2020).

²⁷ <https://www.investopedia.com/terms/c/creditrisk.asp>

An important extension of credit risk (and capital impairment risk for PLS finance) is *migration risk*. It is described as the potential for direct losses (expected/ unexpected) due to significant deterioration in credit quality of a borrowing firm. Furthermore, a judgmental error in credit decisions is called type I error, where a borrower with poor creditworthiness is incorrectly assessed as good credit, directly linked to higher credit losses for lenders. The credit losses rise because the probability of such borrower defaulting is inherently higher, thus increasing the amount a bank needs to provide for potential losses.

2.5.1.2 Capital Impairment Risk

This risk is closely related to equity investment risk for PLS instruments discussed in IFSB standard 1 on guiding principles for risk management (IFSB, 2005). It is defined as risk of losing the amount invested in a PLS business or project primarily for two reasons; a) the business is unprofitable and bank is failed to recover its investment, b) business is profitable but the firm (counterparty) defaulted in payment of eligible profits or capital at maturity as per agreed contractual terms (IFSB, 2019). It is important to note here that impairment of capital due to unprofitable operations of the firm is not a credit default whereas failure of the firm to meet its contractual obligations in the reason (b) will be an incidence of default. It is explicitly stated in IFSB-23 standard that the impairment of capital arising due to unprofitable business of the enterprise does not involve any credit default, whereas the failure of the partner to meet its contractual obligations (if any) will be an incidence of credit default (IFSB, 2019).

In PLS arrangements, a profit-sharing ratio is agreed between the bank and firm, which is based on an indicative profit rate, is as part of key terms of the PLS agreement. This indicative rate is negotiated based on various factors but mainly driven by the creditworthiness of the firm and its pricing on non-PLS financing arrangements. This indicative profit rate is not a guarantee for a fixed rate of return. In reality, the firm may earn below this indicative rate for any given period and the bank has to share the returns as per the agreed profit-sharing ratio in the PLS contract.

Profit rate risk is strongly associated with unprofitable or poor performing business in PLS finance arrangements. Another term used for this is rate of return risk. Theoretically, it is either a risk of loss or lower than expected returns in case of unprofitable or less-profitable operations of a PLS asset. However, most lenders consider expected returns as indicative returns agreed in the PLS finance contract at the outset. In a real-world scenario, this indicative rate is directly comparable

with yields on financing of non-PLS structures for a same borrower. Since, in practical terms, indicative profit rate in PLS or agreed profit rate in non-PLS contracts, which are closely inter-related, are based on prevailing interest rate benchmark (such as SOFR) in the credit markets. This practice of notional benchmarking in the appraisal process and accounting treatment exposes the Islamic banks to interest rate risk, repricing risk and yield curve risk applicable for conventional finance.

2.5.1.3 Market Risk

Another important risk is market risk that represents a critical aspect of financial risk management, encapsulating the potential for losses due to adverse changes in the prices or volatility of financial instruments, in on and off-balance sheet, held by an institution²⁸. Primarily, it arises from the bank's market-related activities, including trading and investment operations. Proper management of market risk is crucial for banks as it directly affects their financial stability and profitability. Market risk stems from the fluctuations in interest rates, exchange rates, and the prices of bonds, equities, and commodities. These changes pose challenges for banks in managing their balance sheets and trading operations. Since market risk is designated for the trading book of a bank while PLS finance is a banking book, market risk is not directly relevant for PLS finance. However, market risk could be indirectly related to PLS-based Sukuk instruments only that are listed on a global stock exchange and are actively traded in the secondary market.

2.5.2 The Basel Accord and IFSB for Risk Management

The Basel accord is at the heart of global best practices for a prudent and risk-based lending business. At its core, this accord encompasses systematic processes for identifying, assessing, mitigating, measuring and reporting a wide array of credit risks assumed by lending products. It integrates quantitative and qualitative methodologies to evaluate the potential impact and likelihood of risk events, enabling banks to manage their lending business efficiently. The Basel Accords, spanning from Basel I to Basel III, with discussions on Basel IV underway, focus on three main areas: minimum capital requirements, supervisory review, and market discipline,

²⁸ Basel Committee on Banking Supervision (BCBS). (2019). Minimum capital requirements for market risk. Bank for International Settlements. <https://www.bis.org/bcbs/publ/d457.htm>

aiming to enhance the banking sector's ability to absorb shocks arising from financial and economic stress.

In context of risk management and PLS finance, expected credit loss and capital charge treatment, IFSB standards are an extension of Basel accord for global Islamic banking industry. It provides guidelines on equity finance risk in addition to credit risk in the banking book of Islamic banks. Equity finance risk is unique to PLS financing and stems from asset-side application of Musharaka, Modaraba and Wakala. It can be defined as the risks arising from entering into a profit and loss sharing arrangement with a firm in general or a specific business activity of a firm as described in the contract, and in which the bank shares in the business risk (IFSB, 2005).

2.5.3 *Strategic Default and Agency Problems*

A strategic default occurs when a borrower, who has the financial capacity to continue making payments on their debt, deliberately chooses to default in full or on certain types of loans. As a result of housing value collapse during financial crises 2008, many Americans opted to default on their commitments when they observed value of their homes is drastically lower than outstanding mortgages loans and are unlikely to restore to pre-crises prices for decades²⁹. Strategic default is grounded in the seminal work of Merton relating to equity of a limited liability firm is a call option on its assets. If the value of assets is lower than debt obligations, shareholders have a right to opt for strategic default and file for volunteer bankruptcy (Merton, 1974).

Research indicates that approximately one in six firms with non-performing loans are opting for strategic default (Malliaropoulos *et al.*, 2016). Their findings demonstrate a positive correlation between strategic default and factors such as high leverage and economic uncertainty, while showing a negative correlation with the value of collateral. Furthermore, they identified profitability and the value of collateral as useful indicators for differentiating strategic defaulters from those defaulting due to financial distress. However, selective strategic default is also a feasible option if it makes more economic sense for a borrowing firm to default on certain types of loans rather than all types of loans and obligations. This could be due to loan type, loan seniority, collateralized vis-à-vis unsecured debt, weak debt structure, poor performance of underlying encumbered assets etc. Strategic default increases the wealth of borrowers but it is driven by both

²⁹ <https://www.uclalawreview.org/the-morality-of-strategic-default/>

pecuniary and non-pecuniary factors such as anger against economic situation, fairness, lack of trust on banks, morality etc. (Guiso, Sapienza and Zingales, 2013).

PLS finance structure is inherently prone to strategic default option due to its profit and loss sharing characteristic, lack of seniority to debt, no guarantee of capital and returns, positive correlation of underlying business performance with repayment propensity, lack of collateralization, weakness in structure requiring more monitoring resources etc. Furthermore, strategic default in PLS finance is more likely due to higher agency problems such as moral hazards because borrowers strategically choose to default on different types of debts.

2.5.4 Risk Appetite, Credit Risk and PLS Finance

The risk appetite is a level of risk a bank is willing to achieve its strategic objectives. This is the main force of the business hunger for an organization to compete and grow within the market. It can be defined as: “The amount of risk, on a broad level, an entity is willing to accept in pursuit of its strategic value. It reflects the entity’s risk management philosophy, and in turn influences the entity’s culture and operating style” (Rittenberg and Martens, 2012). The greater the credit risk on an investment or lending, the higher the yield banks demand to compensate for it if it is within their defined risk appetite. A choice between PLS and non-PLS structures is also dependent upon the risk appetite of the bank and how much additional risk they are willing to assume for strategic growth.

2.5.5 Potential Appraisal Approach for PLS

Credit appraisal for PLS deals in Islamic finance requires a unique approach compared to traditional credit assessment due to the distinct characteristics of PLS structures. A study finds that credit risk, quality of deals screening process and analysis of financial statement have positive influence on the application of PLS financing (Nugraheni and Alimin, 2022). The credit life cycle of PLS finance consists of credit assessment, estimating credit losses and monitoring until full settlement. However, there are no specialized tools with Islamic banks for assessing and managing the unique risks of PLS finance. The credit appraisals, risk models and monitoring tools are borrowed from conventional toolkit designed for conventional finance or non-PLS finance at its best. In an ideal world, a bank is indifferent in extending the credit if risk adjusted returns on capital (RAROC) is equal under both PLS or non-PLS choices. However, the risk- reward parity

requires a bank to charge higher pricing for PLS finance to compensate for higher risk weightage of its assets.

Instead, to better manage the onboarding of PLS proposals, I propose a three steps approach for the credit assessment process³⁰. This approach may enable Islamic banks to manage onboarding of PLS finance deals in a better way. Evaluating a credit proposal of a borrowing firm involves estimating its earning power to perform, capacity to fulfil its financial obligations and willingness to repay. This method of credit decision process will be helpful for lenders to assess and mitigate the risks associated with a borrower and related lending structures based on its business risk, financial strength, structure, collaterals and other credit terms. First, banks assess the creditworthiness of the borrowing firm in terms of its capacity and willingness to pay. Second, banks do a rigorous financial feasibility of the underlying business or project to analyze whether PLS is an appropriate structure for the given financing purpose. A ‘No’ at first step means poor credit for any type of financing while a ‘No’ at step 2 means PLS structure is not appropriate considering elevated risks of the underlying business but non-PLS finance structures may fit into the given financing purpose of the borrowing firm. However, if PLS structure is suitable, then it is to be decided if security required or not for risk mitigation purpose in step 3. This systematic approach will help Islamic banks to make informed credit decisions, manage risks effectively, and ensure the successful deployment of PLS finance structures. A pictorial quadrant of the 3-steps decision process is provided in Fig. 2.3.

		Willingness to Pay	
		High	Low
Capacity to Pay	Good	PLS and non-PLS structures are equally feasible	PLS structure is not feasible due to integrity issues and high agency cost.
	Bad	Unsecured PLS option is also bankable along with secured one	Secured PLS may be feasible due to access to securities due to negligence or unethical aspects of the Manager.

³⁰ This analytical view is important for risk management of PLS finance and provides a conceptual background of Chapter 5 on ‘Risk Management of PLS finance’.

<p>This could be due to type I error at T_0 or migration risk at T_1. PLS is riskier than non-PLS option.</p>	<p>PLS structure is not feasible and may result in a catastrophic loss for the lenders.</p>
<p>PLS structures (secured/unsecured) are not feasible due to direct share in residual risk of a venture. Non-PLS option is bankable.</p>	<p>PLS structures are not feasible at all while non-PLS is bankable if lenders have high-risk appetite and willing to tap high-yield debt/bonds.</p>

Figure 2.3: PLS Finance Appraisal Quadrant

A matrix showing relationship between PLS and Non-PLS financing choices along with ‘capacity and willingness to pay’ of the borrower.

The concept of 3-steps credit decision process is borrowed from debt capital market which is enriched with various types of structured finance products. In the debt capital market, two key concepts are pivotal for assessing credit risk: a) obligor rating and b) issuance rating. The issuance rating holds paramount importance when an obligor has issued multiple securities in the market, varying in type, seniority, and terms. This distinction underscores the obligor’s overall creditworthiness and capacity to meet financial obligations across all issued securities, rather than the credit risk associated with individual issuances, which is the focus of issuer ratings. The relationship between obligor and issuer ratings highlights the layered complexity of credit risk evaluation, which is scaled through a process called credit notching. This process is also called senior rating algorithm by rating agencies (Wang, Moore and Dwyer, 2018). For example, an obligor having BBB rating may have one or two notches higher for subordinate debt and one or two notches lower for a secured loan. Similar methodology is adopted by credit rating agencies for perpetual or contingent convertible bonds in comparison to debt (Moody Rating Agency, 2017). The first step involves a decision to extend credit to a borrowing firm (Obligor) irrespective of PLS or non-PLS structures. An appropriate reward must be earned against the accepted risk for the given risk profile of the obligor. If the answer is yes, move to the next step; otherwise decline the credit altogether. In the second step, there are two choices either PLS or non-PLS, which mode of finance is more suitable for the borrowing firm. A critical review of various factors relating to a borrowing firm’s business is required for suitability of PLS finance such as volatility of firm’s assets, earning power, certainty of future cash flows, sectoral risks, management profile etc. After evaluating the suitability of PLS structure, the final step is to determine if residual risk is aligned with bank’s risk appetite. Otherwise, credit enhancements in the form of a tangible security or

guarantee are required to mitigate the risk. In result, the 3-steps credit decision process provides a conceptual framework for extension of the credit under both PLS and non-PLS finance choices.

2.6 An Alignment of Conceptual Framework with Research Objectives

The conceptual framework provides a contextual background of the research objectives of the thesis. This understanding also provides a base-work for finalization of questions, sub-questions and multiple choices in the survey. A debate of Maqasid-e-Sharia and PLS finance is critical to understand the importance of PLS finance and what Sharia desires out of this financing arrangement. The research study covered in Chapter 4 will be a further development over this concept. A deep understanding of unique characteristics, agency problems, credit and equity investment risks will be very instrumental for chapter 5 of risk management in PLS finance. A case study of a PLS based defaulted Sukuk, analyzed in chapter 5, will further elucidate the unique risks associated with this financing structure. The unique characteristics of PLS finance, discussed in this chapter, help to understand its application in context of its potential of substitute or complement, debt equity mix and capital structure decisions. Chapter 6 of the theories of capital structures is an analytical framework built over this deep understanding of PLS finance.

Chapter 3: The Research Methodology

3.1 Introduction

This chapter describes the research methodologies used for analyzing the defined research objectives, which are comprised of three (3) studies accordingly. The first and second studies are application and risk management of PLS finance, which are discussed in chapters 4 and 5 respectively. Both studies are based on quantitative research methods and have collected primary data through survey from market participants of Islamic finance industry. The third study is a theoretical framework based on the Leland (1994) model and is used in chapter 6 to analyze the theories of capital structure in context of PLS finance. The remainder of this chapter covers the research methodology for research studies 1 and 2 only.

3.2 Research Approach

This research study is based on the positivism paradigm, which adopts a scientific method of collecting factual data and identifying the patterns among them. Furthermore, a deductive approach is used to answer the research questions and test the relationships among variables for given research objectives. This research approach will help in deducing research propositions and hypotheses from literature on application and risk management of PLS finance and suggesting relationships among variables for testing and analysis purposes.

A quantitative research method is designed, for which a survey instrument is used in a way to collect comprehensive responses from market participants for various variables of application and risk management of PLS finance. It was critical to collect primary data through questionnaire for testing the research propositions because of limited availability of secondary data due to lack of PLS finance application in Islamic finance industry. This approach is also evident from previous empirical studies, which have carried out survey research methods to investigate the lack of certain practices at banks.

3.3 Survey Design

The questionnaire is designed considering the literature reviews, practices and gaps of PLS finance mentioned in the conceptual framework discussed in chapter 2 and research propositions developed in chapters 4 and 5. There are mainly 4 sections of the survey questionnaire. The first section of the survey is about general profiling of the respondents including market participant category including demographic (gender, age, education) and geographical (including 8 active

jurisdictions) identifications. Section 2 includes a detailed profiling of each respondent based on market participant category, which includes various control variables such as functions/job nature, experience, expertise, department name, designation etc. Furthermore, it includes questions relating to policy and development variables for wider application of PLS finance. Section 3 is relating to study 1 covered in chapter 4 and section 4 relates to study 2 covered in chapter 5. Based on careful review of existing literature, the questionnaire is designed thoughtfully so that questions are directly linkable to academic literature and understudy propositions. The draft survey was sent to a few practitioners and academics for their initial feedback about contents, scripts and formatting. All valid suggestions were incorporated and survey instrument was finalized for pilot testing purposes.

The target audience was bankers, regulators, standards setting bodies, Sharia scholars, researchers, academics, consultants among others. These variables are categorized mainly into market drivers (demand, supply and control of credit) and market participants (Islamic banks, Islamic windows, central banks, standards setting bodies, consultants and academics). For demand side aspects of the survey, consultants and academics are taken as a proxy of borrowers as they equally understand demand dynamics without any bias for supply-side and are familiar with Islamic finance concepts.

3.3.1 Survey Instrument

Being an exploratory nature of study, a questionnaire is carefully drafted to collect data for given research objectives. There were various quality iterations of editions and rephrasing in the question scripts including a pilot study to make them easy to understand and answerable by the respondents. The total duration of the questionnaire per respondent is carefully estimated not to be more than 10-12 minutes on average. Out of 4 sections, the last 2 sections of the questionnaire are comprising of 18 main questions relating to research propositions. There are a total of 14 multiple choices questions, 1 likert scale question and 3 rankings questions. However, Likert scale question was the key question for risk management related propositions of PLS finance and consists of 5 sub-questions. The 11-points Likert scale was used to get responses on these 5 sub-questions ranging from (0 = least agree to 10= most agree). See appendix 1 for original questionnaire.

The online questionnaire is designed around the main independent variable of market factors (demand, supply and control of PLS finance). Islamic banks and windows are proxies for supply side, regulators, central banks and standards setting bodies are proxies for the control of credit in

the market while consultants and academics are proxies for demand of PLS finance. After the first page of the questionnaire, which records the respondent’s demographic profile, the questionnaire is auto-split into three branches representing each category of market participants. This split aims to personalize and direct the questions in an effective way. For example, “what is regime policy for development of Islamic banking industry?” was a direct question for regulators while question about “market share of Islamic banking” was for bankers. Similarly, active/passive role in Islamic banking development was a question for academics and consultants. This auto-split technique also helped in adding some relevant questions under control parameters to understand the respondent category better.

Being an online questionnaire platform, there were various other techniques and validations were parametrized in the survey apart from auto-split workflow. These validations are answer type (single or multiple options), mandatory type (force, request, optional), question behaviour (skip or display logic), formatting options etc. These validations helped to standardize the survey options, categorization of questions and visual display linked to research propositions, control the behaviour of respondents towards research propositions and better analysis of the study findings in concluding the results.

The questionnaire was developed in English language only and survey was conducted online without any translation or assistance to the respondents in all target countries.

3.3.2 Explanatory Variables Categories

Based on the profile of respondents, there are five (5) main categories of explanatory variables, which are demographic, geographic, functional, policy and development. The policy and development variables are designed as explanatory variables to examine the institutional roles in Islamic banking development for PLS finance application. These explanatory variables were chosen to further dive into each research proposition and investigate any potential relationship with the dependent variable.

Key Explanatory Variables		
Variable Categories	Variable Names	Description
Independent	Relationship of <i>Market drivers</i> and <i>market participants</i> variables with dependent variables of	Market drivers are derived from the interplay of market forces including demand from

	<i>importance, constraints and application</i> (study 1) and <i>risk management practices and agency problems</i> (study 2) of PLS finance.	customers, supply from bank and control of credit by regulators. Market participants include key stakeholders in the industry consist of Islamic banks, Islamic banking windows, regulators, standards setting bodies, academics and consultancy firms.
Demographic	A set of explanatory variables relating to personal attributes of respondents such as gender, age and education.	It is to understand how respondents with diverse background of gender, age and education perceived for given research propositions.
Geographic	It belongs to residing regions/countries of respondents and include GCC, Pakistan, Bangladesh, Africa, Malaysia and Indonesia	It is to understand perceptions of respondents on dependent variables of PLS finance living in different countries.
Functional	A set of explanatory variables relating to professional functions of respondents such as job roles, designation, department and experience.	Understanding the relationship between expertise of respondents and research propositions.
Policy	A set of prudential policies related variables for supervision and control of credit in the market and include variables relating to debt limit and capital charge policy	Any limit of maximum debt by prudential or internal credit policies including capital charge which may impact sources of external funding for firms.
Developmental	Control variables relating to active or passive role of the regulators for	Impact of certain aspects of activism roles on research

	development of PLS finance and market share of Islamic banks/windows.	propositions.
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Table 3.1: Explanatory Variable Categories 2

A summary of variable categories and consist of relationship between independent and explanatory variables.

3.3.3 Pilot Study

Before conducting the actual survey, a pilot study was carried out using a penultimate version of the questionnaire. This pilot survey involved 17 subject matter experts from diverse backgrounds. Out of them, 8 respondents were from Islamic banks, 5 were from central banks and 4 with consultancy background. The objectives of the pilot study were to validate the research objectives with experts; review the questions including structure, scripts, articulation and style; evaluate the length of the questionnaire including the average time spent per respondent and the level of convenience completing the survey; get feedback on user-interfaces and user-experience for the digital aspects; and assess the digital flow of the questionnaire over the web pages in the platform. Furthermore, respondents were requested to identify any sensitivity or complexity of the statements in the questionnaire, and provide other comments and suggestions for improvements.

For these given objectives, a close-ended online questionnaire was tested and the pilot study was administered through a specialized survey platform of Qualtrics. A unique link was created for each respondent and was sent by email. Each respondent was requested to provide feedback by emailing a personalized survey link for the online questionnaire. After expiry of the given time, all responses were collated through Qualtrics automation engine and a report was generated containing the results for each and every question. All responses were reviewed and analyzed for accuracy and consistency with research objectives and potential gaps were identified to improve the questionnaire further. This was further validated by informal discussions with some of the experts in the pilot study for better understanding of their responses and other comments. A direct question was also asked from them for any suggestions to improve the questionnaire further. The pilot study also helped in uncovering potential biases in the survey design. For instance, the wordings of a few questions were unintentionally leading respondents towards certain answers, which were rectified by defusing such impressions from the scripts. In summary, the pilot study helped to minimize the biases induced in the questionnaire and gave confidence in validity and reliability of the survey design for final data collection. Furthermore, it was helpful in aligning the

research objectives with questions and getting test responses for improvement in the research propositions. Following were key improvements in the questionnaire based on the responses of pilot study:

- a) The feel and look of the survey were enhanced with a standardized format, header, footer, navigation within the survey, customized Bayes theme and logo, page layouts, style and motions, instructions page for the respondents, welcome and closing notes etc.
- b) Qualtrics platform's functionality to validate the response fields in the survey, which were improved further based on pilot study responses. These include question type (text/graphic, multiple choice, slider/Likert and matrix table), answer fields (numeric, alpha, dropdown), answer validations, mandatory and optional fields.
- c) Survey flow is very critical for a friendly survey design. Qualtrics platform is dynamic in functionalities like split, skip and display logic of the questions based on certain rules. For this purpose, a concept of blocks and branches was used in building an efficient survey on the platform. Blocks are used in the platform to split or rejoin the survey flows. Based on responses from the pilot study, auto-split and merge functionality for an appropriate flow of questions was refined. There was a total of 3 blocks in the survey, each representing 3 market participant categories. Then, the branch concept was used within each block to skip and display logic of questions based on previous answers or survey participant categories.
- d) All explanatory variables were characterized into 5 categories based on feedback from the pilot study. Based on this, all variables were validated and placed properly in the revised survey flow so that none were left blank.
- e) Previously, there was a list of all countries as per the United Nations. However, based on feedback from the pilot study, country names were limited to active jurisdictions of Islamic banking where it has a significant market share. All other countries were grouped into regions or sub-continent for clarity and ease of respondents.
- f) A number of sub-questions or multiple-choice options were added or modified in the final questionnaire based on the reviews in pilot study.
- g) A set of questions were re-scripted to capture the correct perspectives of market participants for PLS finance. The platform's technical features were used to display the different scripted questions for regulators vis-à-vis Islamic banks.

- h) Various questions were further improved including flow, content, clarity, accuracy, formatting etc. of their scripts.
- i) The terms used in questionnaire such as Musharaka, Modaraba, Wakala, PLS, non-PLS etc. were standardized to ensure clarity and consistency in the final survey.
- j) The response scale was aligned for similar types of questions for better and comparable analysis. For example, a number of questions were moved to binary (yes or no) options from Likert scale so that they are comparable to each other for further analysis.
- k) The response data, standardized results and reports of the platform were reviewed and various gaps were identified that could limit the richness of the results and analysis of the final survey. Furthermore, various analytical features of the platform were tested with the pilot survey data such as response data, metadata, text iQ and crosstab iQ.
- l) Pilot study was also helpful in identifying technical glitches in the platform and fixing them in various ways. For example, a question with a matrix option was not functioning smoothly on the mobile devices of a few respondents, which was then fixed by changing the answer type.
- m) A thank you email was added for all respondents through a personalized link upon successful completion of the survey.

In addition to the above, there was a specific focus in the pilot study on identifying questions causing problems for meaningful results and analysis, which were carefully analyzed for rectification measures. For example, all PLS importance related questions were categorized into three; Sharia importance (Q 6.1), financial stability (Q 6.2) and their reasoning (Q 6.3). Similarly, Questions on key constraints were categorized into four categories of demand, supply, regulatory and operating model based on feedback. Also, multiple choices under each category were updated for an appropriate link with the literature. The applicability section of the survey was revamped and questions relating to debt limit and capital charge policy were moved to the control variables section of the survey. Similarly, many questions in the risk management and agency problems sections were improved based on feedback from the pilot study.

In addition to the above, there were some unexpected results for some questions in the pilot study. Being key contribution of the study, these unexpected results were validated further for their rationality and alignment with the research propositions. For example, greater importance of PLS finance for better public perception management rather than preferences by Sharia was discovered

during pilot study phase. Similarly, a consistent response surfaced from the pilot study was the riskiness of PLS finance as the top-most constraint which was planned further to test for all four types of constraint categories from different aspects. There were also some other unexpected results for risk management and agency problems sections and responses in the pilot study were used to rationalize the research propositions accordingly.

The final questionnaire after incorporating feedback from the pilot study was categorized into seven sections as follows;

A Tabulation of the Questionnaire with the Research Studies 1 and 2			
Section No.	Sections Purpose	Questions Included	Relevance to Research Studies
1.	Explanatory Variables of geography, demography and experience. Also, working categories question to split survey among 6 types of respondents	7 introductory questions	Identifying the respondents into categories of market participants from the first page of the survey for split of the survey to personalize few questions in the survey body.
2.	Additional set of explanatory variables for demographic, functional, policy and development	7 questions but personalized for each market participant using rich technical features of the platform.	Additional characteristics of the respondents such as job role, experience, seniority, debt limit and capital charge policy.
3.	Importance of PLS finance	3 questions (Q 6.1- 6.3)	Sharia and economic importance of PLS finance and reasoning for them. This data to be used in chapter 4

			for the first research proposition.
4	Key Constraints of PLS finance	4 questions (Q6.4 - 6.7) having multiple choices for each constraint category.	Empirical ranking of key constraints and identifying the top-most constraint. This data to be used in chapter 4 for the second research proposition.
5.	Applicability of PLS finance	6 questions (Q6.8 – Q 6.11) for wider applicability of PLS finance.	Direct questions for substitutability, debt limit policing and risk-based pricing. This data to be used in chapter 4 for the third research proposition.
6.	Risk Management of PLS finance	4 questions (Q7.1 – 7.4)	Risk type, risk management practices and mitigations of PLS finance. This data to be used in chapter 5 for the first 5 research propositions.
7.	Agency problems of PLS finance	2 questions (Q7.5 – 7.6)	Relevance and severity of agency problems for PLS finance. This data to be used in chapter 5 for the sixth research proposition.

Table 3.2: A Tabulation of the Questionnaire

A snapshot of the final questionnaire and their relationship with chapter 4 and 5 of the thesis.

The final version of the full questionnaire is attached in appendix 1 of this thesis.

3.4 Primary Data Collection

Primary data is collected through survey-based questionnaire from target audience consist of bankers working in Islamic banks and Islamic banking windows, officials from central bankers and standard setting bodies, academics and consultants related to Islamic finance industry.

3.4.1 Data Collection Exercise

A self-administered online questionnaire form is used to collect responses from the target audience. The questionnaire is an easy way of approaching the research subject for analyzing its objectives, characteristics, attitudes, beliefs and behaviours. It is the most suitable way for achieving the research objectives when sufficient secondary data for PLS finance is not available. It allows the respondents to maintain their privacy while answering some sensitive questions. Despite having some limitations, this approach minimizes researcher biases during data collection and facilitates to gather responses in a standardized manner.

The survey is managed using an online Qualtrics platform, which enables data collection through either personalized invitations or anonymous links. Leveraging technical features of the platform, anonymous link including QR code of the online survey was shared over social media platforms such as LinkedIn and WhatsApp for wider reach to the potential respondents. Furthermore, a collaboration strategy is adopted in order to deliver the questionnaire to the most suitable candidates. Formal letters supported by the Bayes business school or informal emails from the university email address were sent to Central bank of Oman, Central bank of Bahrain, State bank of Pakistan, IFSB, AAOIFI³¹, ISRA, IsDB and various Islamic financial institutions. This approach was adopted to leverage over their global networks to access a wider audience of desired respondents.

The survey was launched on 15th of November 2022 with an initial fieldwork period of three weeks. However, it was extended for one additional week to get more responses. This period of 4 weeks was ideal for data collection exercise as most of the respondents are in their offices before the year-end. Additionally, there were no noticeable market disruptions during this period across

³¹ Accounting and audit organization for Islamic financial institutions (AAOIFI), Bahrain; Islamic development bank (IsDB), KSA; Islamic financial services board (IFSB), Malaysia and Islamic research academy (ISRA), Malaysia.

the eight active jurisdictions, which could have significantly affected the respondents' beliefs or perceptions about the questions in the survey.

Out of a total of 570 respondents who responded to the survey request using both personalized and non-personalized survey links, 213 respondents successfully completed 100% of the survey. Additionally, 44 respondents completed 84% (which means last section of questionnaire about risk management study was missed out). These two categories of respondents combined together are 257 and are considered for further research analysis. All remaining 317 respondents, who did not complete the survey, are classified as incomplete and not included in the analysis.

Market Participants	Count	Pool of Experts	Count
Islamic Banks	108	C-Executives, Directors/Vice Presidents	45
Islamic Windows	23	C-Executives, Directors/Vice Presidents	9
Central Banks	32	Presidents, Directors, Managers	21
Standard Setting Bodies	11	Presidents, Directors	5
Academics	50	Professors/Ass. Professors	29
Consultants	33	CEOs/Presidents/Partners	17
Total	257	Total	126

Table 3.3: A Profile of Respondents.

Respondents' profile across all working categories for section 3 of the survey and splitting between general respondents and subject matter experts.

Note: Total 570 respondents started the survey. However, respondents gradually decreases with the progression of survey until its end due to dropouts. For example, total respondents are 257 for Q6.1 relating to importance of PLS finance. Total respondents reduced from 257 to 221 at start of section 6 (Q 7.1 relating to risk management) of the survey which remains up to the end of survey.

There was a total of 249 personalized invites sent over emails to the pool of experts in the Islamic banking industry across all working categories as market participants. This list of experts was

gathered from my personal connections and in collaboration with friends and colleagues. However, 49 out of them started the survey and 43 finished it completely. There are further 90 respondents from anonymous invites who qualify as subject matter experts based on their credentials and are considered as part of experts' category. This subset of respondent's population is planned to test the robustness of the results. Leveraging over online survey technology, a set of metadata is also collected to authenticate responses which includes started/finished date, percentage of completion, recorded date, IP addresses, geo-locations, spam categories etc. Furthermore, there was a one-time usage validation over survey link for each IP/MAC address in order to avoid duplication of responses.

3.4.2 Population and Sampling Technique

The population of this study includes market participants across the globe. The important geographical locations considered in the survey are gulf cooperation council (GCC) countries including Oman, Saudi Arabia, Bahrain and UAE, Turkey, Pakistan and Bangladesh from the Middle East³² and South Asia (MESA), North African countries³³, Indonesia and Malaysia from South East Asia (SEA). The reason to prefer these active jurisdictions in the study is high market share in Islamic banking. Out of US\$ 3.3 trillion assets of Islamic finance, GCC represents a 54% market share with US\$ 1.7 trillion assets, 23% market share from SEA region with US\$ 757 billion and 17% market share with US\$ 605 billion from MESA region. A breakdown of regional market share is given in Fig. 3.1. In addition to a strong market share, active jurisdictions have some additional unique characteristics. For example, Malaysia. Turkey and Pakistan are considered as most progressive regimes in the industry, Indonesia is the largest populated Muslim country and has a unique centralized Sharia governance model, Saudi Arabia is the largest Muslim economy while GCC houses AAOIFI, a self-governing standards setting body for Sharia, accounting and corporate governance. Based on actual survey data collected and notable participations in the survey, primarily 8 jurisdictions were finally shortlisted out of preferred jurisdictions for analytical purposes in the study, which include Oman, Bahrain, UAE, Pakistan, Bangladesh, Malaysia, Indonesia and North Africa.

³² Iran was not given a drop-down option due to lack of global standardization in Islamic finance reporting.

³³ Although there was no list of countries or regions under African continent but from respondents IPs, it is figured out that most of African respondents from north African belt which include, Algeria, Sudan, Nigeria, Tunisia, Algeria, Morocco etc.

In this research, both purposive and random sampling techniques are used. Under purposive sampling, a conscious decision was taken about the respondents based on their experience, position and professional background. This type of non-probability sampling helps in improving the quality and insight of responses. For this purpose, a list of experts was gathered in the Islamic finance field who were sent specific invitations over the emails using personalized survey links. The bias associated with purposive sampling was mitigated by combining this technique with random sampling. For this purpose, a non-personalized survey link was created and invitations were sent across various active professional platforms.

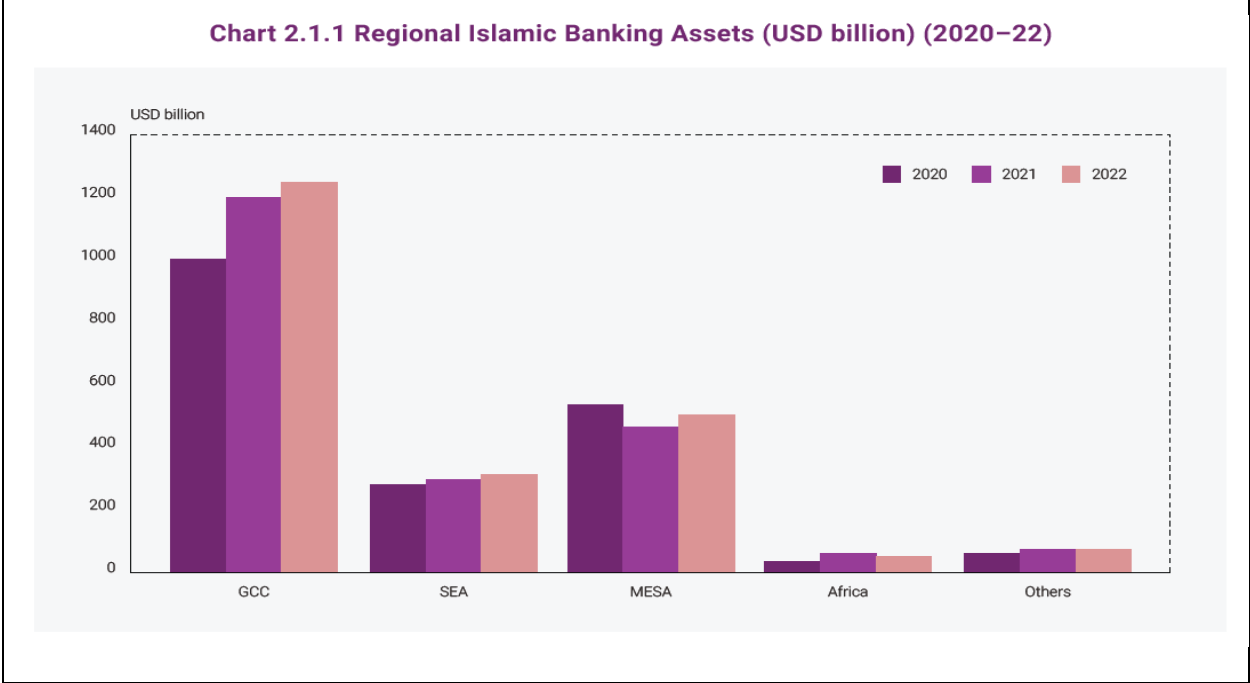


Figure 3.1: Regional Islamic Banking Assets
 IFSB Secretariat workings based on data culled from various central banks and annual financial reports of Islamic banks. (Source: IFSB.org). SEA stands for South east Asia (which include Malaysia and Indonesia as active share of Islamic finance) while MESA includes middle-east south Asia (which includes Turkey, Pakistan and Bangladesh as active share of Islamic finance).

3.4.3 Profile of Respondents and Pool of Experts

Out of total 257 respondents shortlisted for research analysis, 234 are male, 22 female and 1 is preferred not to say. There are 131 respondents from Islamic banking industry (Islamic banks 108 and Islamic banking windows 23), 43 responses from supervisory bodies (central banks 32 and standards setting bodies 11) and 83 responses from third party experts (consultants 50 and academics 33). The majority of the respondents are highly educated (177 out of 257) including

holders of master’s degrees (102), PhDs (50), MBAs (38) and professional qualifications (28) while others are bachelor’s degree holders (76). The count of respondents for the geographical variable region-wise are as follows; GCC region (69), Pakistan (36), Bangladesh (26), North Africa (58), Far-east (38) and rest of world (26). A graphical presentation for the profile of respondents and explanatory variables of demography, function and geography is described in Fig. 3.2.

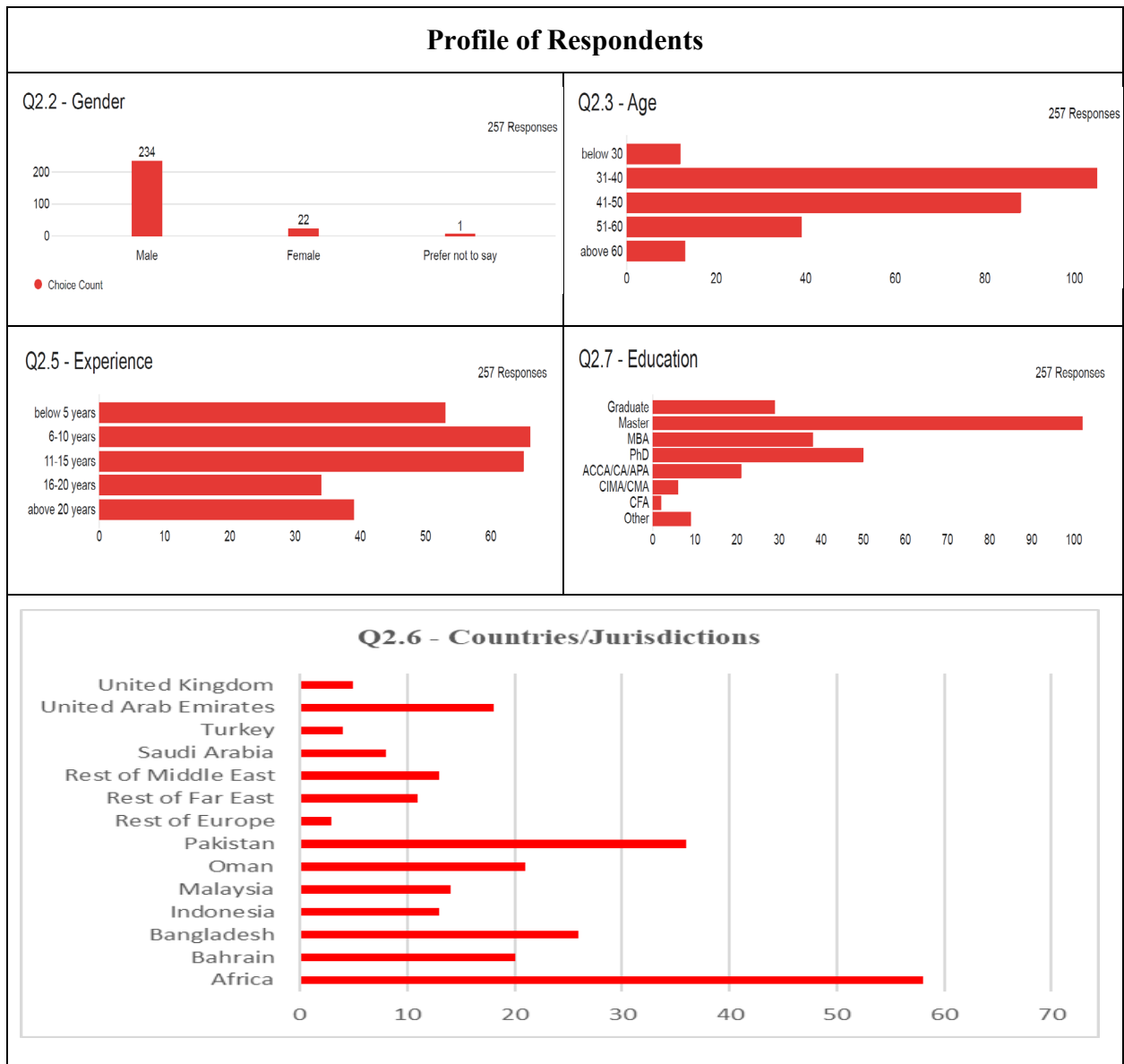


Figure 3.2: Profile of Respondents

A snapshot of demographic, functional and geographic variables of respondents including countries, gender, age, experience

There are a total of 126 subject matter experts identified among respondents to revalidate the hypotheses and robustness of the results. This includes 28 respondents from regulators and standards setting bodies who have designated themselves as managers and above, 54 respondents from Islamic banks/Islamic banking windows category who are directors/C-levels (including 20 responses are from C-level), 46 respondents from third party experts (including 29 senior academics and 17 CEOs/Partners of institutes or firms).

3.5 Limitations and Potential Biases

3.5.1 Limitations of the Study

The study brings valuable insights to its audience by examining critical aspects of PLS finance about its application and risk management. However, analyzing these research objectives through a questionnaire methodology has its own certain limitations:

- a) Complexity of subject matter: PLS finance is a complex topic with nuances in terms of conceptual differences from other financing modes, profit sharing mechanisms, unique types of risk, risk management and agency problems. The depth and breadth of the topics covered in the questionnaire may present some difficulties for its respondents, especially if they are not experts in the field.
- b) Subjectivity and Bias: Since PLS finance is still a debatable topic and respondents may have responded based on personal preferences rather than facts, which may result in personal interpretations and emotionally charged responses.
- c) Response bias - Participants may not provide truthful or accurate responses due to social desirability bias or misinterpretation of the questions, leading to unreliable data.
- d) Sample representation – Ensuring that the survey sample accurately represents the diverse stakeholders’ opinions in the population for PLS finance is critical. A total of 257 respondents could result in an unrepresentative sample and biased results not reflecting the overall population’s opinion.
- e) Anchor bias – Anchor bias in digital surveying refers to respondents’ behaviours when they rely too heavily on the given default value or option on the screen. This is only applicable for likert and ranking questions. This may create a central tendency in the survey responses.

- f) Demographic variability – Since it was an open-ended survey targeting wider audiences across the globe, variability in demographic background of each respondent like financial literacy, banking system, culture etc. may have skewed the data and lack generality.
- g) Little gender diversity – With only 22 female respondents in the sample, there is an under-representation that may skew the data and lack a feminine voice in the results.

3.5.2 Reliability and Confidentiality of the Survey

The questionnaire was designed with two primary objectives: relevance and accuracy. A questionnaire is considered relevant if it successfully gathers the necessary data, and accurate if the information obtained is both reliable and valid. Therefore, the questions were carefully arranged, structured, and worded to promote accurate and informative responses from participants. All efforts were made to keep the statements concise and clear, minimizing uncertainty, misperception, and confusion. Since it was an online questionnaire, a validation in the Qualtrics setup was able to prevent a respondent from filling out the survey multiple times. This was even true for non-personalized survey links because of IP tracking capability in the platform. Furthermore, compilation of the survey was automatic and free from any human error.

Participation in the study was voluntary, with respondents fully informed about its objectives. Completing and submitting the questionnaire online indicated their consents. There was no compensation or risk to participants, and disclosing personal names and employer names was optional.

3.5.3 Generalization of the Study

Generalization refers to the extent to which research findings are applicable to other populations and samples. The results of the current research study are considered generalizable due to achieving adequate responses and high consistent results for most of the questions in the questionnaire. However, these results may need further revalidation before applying to any specific country for further academic study or policy implications.

3.5.4 Data Interpretation and Analysis

Most of the questions in the survey are multiple-choice, prompting respondents to provide clear and specific answers. The interpretation of such results is standardized and accurate due to no variability in the data. This is especially true when most respondents give strong responses to a

particular proposition. However, 1 main question consists of 5 sub-question is relating to study 2 on risk management and is designed over a Likert table of 11 points. Since there are mix responses with most of respondents closer to median, a standardized interpretation approach is adopted that any collective response above 7 on the Likert scale is considered strong support and above 6 is considered moderate support for the research propositions. Furthermore, graphical presentations are applied for all research propositions across independent variables to visualize their impact on the dependent variable of PLS finance.

3.6 Conclusion

The survey consists of seven sections. The first two sections are generic for both research studies in chapters 4 and 5. However, sections 3, 4 and 5 are respectively for importance, constraints and applicability of PLS finance, which are relevant for study 1 discussed in chapter 4. Similarly, sections 6 and 7 are respectively for risk management and agency problems, which are analyzed in study 2 discussed in chapter 5.

Chapter 4: An Interplay of Profit and Loss Finance with the Market Forces

4.1 Introduction

Sharia³⁴ defines theoretical foundation of an Islamic economic system by setting its fundamental objectives of economic justice and welfare in the society (Chapra, 1985). It also forbids harmful economic activities such as *Riba* (interest), *Gharar* (uncertainty), *Qimar* (speculation) and other immoral nature of businesses (Ayub, 2013). A Maqasid based framework ensures that a true spirit of Sharia is reflected in the Islamic financing products. It requires not only fulfilling the rulings of Sharia in a correct legal and procedural way but also achieving the underlying economic goals and spirit of Sharia for a particular product or structure. Sharia does not allow direct interest-based loaning rather requires a real economic transaction such as credit sale or lease³⁵ or partnership finance among market participants. This ensures a close-fitting relationship between real and financial activities to avoid any uncertain elements in the transaction. This provides greater financial stability and resilience to the economic system. Profit and loss sharing (PLS³⁶) finance is a seamless fit by integrating finance into real economic activities in comparison to other modes of finance.

In theory, PLS finance fits better into this Maqasid perspective because it has true sharing of risks and rewards in a business rather than transferring the risks to the counter party. This ensures financial stability in a system because of having inherent characteristics of counter-cyclicity and helps businesses during tough economic times. It will also ensure a better financial discipline at firms because of more rigorous monitoring of PLS projects by Islamic banks compared to non-PLS ones. Hence, Sharia desires more role of equity over debt in a real economy and Islamic finance should, in its ideal form, help in raising significant share of PLS finance for a just economic system (Chapra, 1985). Nevertheless, greater reliance over PLS finance does not mean to rule out debt finance because various types of financial needs of firms cannot be provided by PLS finance. Therefore, non-PLS or assets-based finance is indispensable but should not be promoted in the

³⁴ Islamic code of life or Islamic law

³⁵ Asset, trade and service finance is a structure closer to debt in terms of financial behaviour but still have unique and distinguished characteristics of risk sharing to make them Sharia compliant. Most common products are Murabaha (credit sale) or Ijara (lease).

³⁶ Profit-loss sharing (PLS) finance or equity finance are interchangeable terms in the Islamic finance literature.

form of excessive leverage, partial distribution of credit, wasteful consumption, unproductive and speculative assets (Belouafi, 2020).

However, a joint study by World Bank and the Islamic Development Bank in 2017 on global Islamic banks financing portfolio indicates that Murabaha and its variants account for 78.5% while Ijara accounts for 13.9% as opposed to the 0.6% and 3.3% for PLS finance structures of Modaraba and Musharaka respectively (IsDB, I. D. B. and WB, 2017). Given the dominant role of non-PLS finance instead of PLS, Islamic finance cannot be referred as true risk sharing in any meaningful sense. A preliminary investigation reveals that significant divergences persist between the ideals and practices of Islamic banking, and much of it still functionally indistinguishable from conventional banking (Khan, Feisal, 2010). The non-PLS financing may be considered sufficient in meeting the requirement of Sharia compliance by taking possible literal and legalistic interpretation of Sharia, but these are clearly insufficient to achieve the specific objectives of the Islamic finance and the higher ethical goals of Sharia (Kayed, 2012b); (Mansoori, 2011).

Considering no comprehensive research on lack of PLS finance application in the industry (Bidabad and Allahyarifard, 2016), this study is to explore the following key aspects of PLS finance: Is PLS finance perceived more important from Sharia and economic perspectives? What are key constraints for its wider application? Can PLS finance substitute other modes of finance? To address these research questions, eight (8) comprehensive research propositions are developed based on existing literature and insights from banking experts. This will help to understand further the application of PLS finance in many ways. This is a first empirical study to investigate the adoption of PLS finance application in the Islamic banking industry and exploring its importance, constraints and application across the market forces including demand, supply and regulatory perspectives.

The results of our survey are both insightful and surprising. On one hand, there is a strong support for the propositions of Sharia and economic importance for PLS finance while, on other hand, market participants are divided on its applicability measures such as its complement role instead of substitute, wider adoption be ceiling the debt and lack of risk-reward parity in pricing PLS transactions. The study also analyses four types of constraints around market forces and top-most impeding reasons are identified based on the feedback of market participants. In many ways, the research findings will help the industry and regulators in understanding the problem better and

have a policy impact in wider development of PLS finance. The researchers will use the results to develop new theories aligning the PLS finance. The rest of the paper is organized as follows: Section 2 presents industry settings for PLS finance and various perspectives of the market participants. The extant literature review, gap and research propositions are discussed in section 3. The research findings, discussion and analysis are covered in section 4 while practical and policy implications along with conclusion are discussed in the last section 5.

4.2 Institutional Settings

This is important to understand the context of PLS finance for better evaluation of research questions and different perspectives of key stakeholders. Asset-based non-PLS finance is a mainstream mode of financing and dominate most of the financing portfolio at Islamic banks, which have fixed pay characteristic based on interbank benchmark rate. In profit loss sharing (PLS) finance, there is no fixed pay characteristic while returns on financing are based on actual performance of the underlying business. PLS finance mainly consists of three main products called Musharaka (a profit and loss sharing contract), Modaraba (a profit-sharing contract for funds management) and Wakala (an agency contract for funds management).

4.2.1 Growth of PLS Products

Islamic banking industry have grown rapidly over last two decades and reached to a size of US\$ 2.70 trillion by 2020 with Islamic banking being systemically important in 15 IFSB jurisdictions³⁷. Overall, total assets of global Islamic finance industry have reached to US\$ 3.3 trillion by the year 2022. Although Islamic banking theory claims a PLS financing mechanism as an alternative and superior mode of financing (Aggarwal and Yousef, 2000), various studies have proven that debt-like products are dominant modes of financing on the asset side of the Islamic bank's balance sheet (Asutay, 2007); (Chong and Liu, 2009). Since phenomenon is described by Farooq (2007) as Murabaha syndrome as Islamic banks are extremely comfortable with debt-like financing arrangements. A study by World Bank and the Islamic Development Bank in 2017 on global Islamic banks financing portfolio indicates that Murabaha and its variants account for 78.5% while Ijara accounts for 13.9% as opposed to the 0.6% and 3.3% for Modaraba and Musharaka

³⁷ Islamic financial services industry stability report 2023, IFSB.org

respectively³⁸. According to the latest data published by IFSB for the year 2022³⁹, Murabaha still represents 76% of the global Islamic financing portfolio.

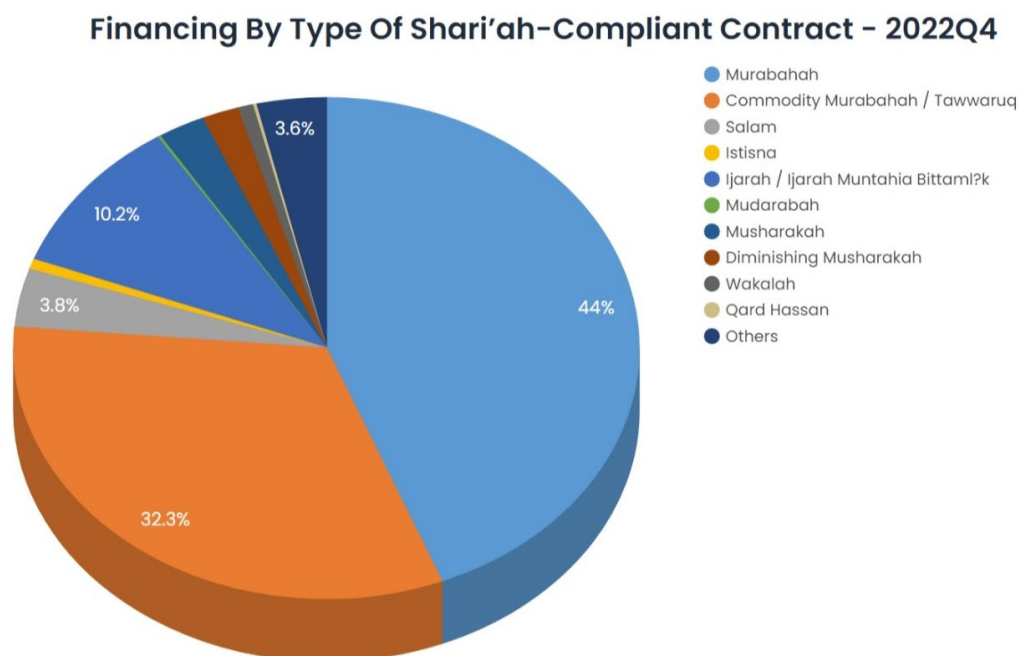


Figure 4.1: Islamic Finance Portfolio Breakdown

A pictorial view of market share of all financing contracts including PLS finance ones. An excerpt from the industry data published by IFSB in 2023⁴⁰.

As per recent global industry data published by IFSB on its website for the year 2022, market share of Musharaka is 2.4% (US\$ 26.8 billion), Modaraba is 0.2% (US\$ 1.7 billion) and Wakala is 0.8% (8.9 billion) of total financing portfolio of US\$ 1.3 trillion for global Islamic finance industry. A comparison of data from 2017 to 2022 demonstrates that the share of PLS financing products in the global Islamic banking portfolio has declined over the five-year period⁴¹ indicating that the industry is moving further away from PLS settings. Major jurisdictions active for Islamic finance display this global trend of dominance of debt-like Islamic financing products despite having robust regulatory frameworks in support of Islamic banking. Bridging the gap between theory and practice is a critical issue for Islamic banks. Islamic banks have often aligned themselves with conventional banks through product innovations like commodity Murabaha, which some argue are

³⁸ Market share of all financing contracts including PLS finance ones. An excerpt from the joint report published by World Bank and Islamic Development Bank in 2017.

³⁹ <https://www.ifsb.org/key-exhibits/>

⁴⁰ [Key Exhibits - Islamic Financial Services Board \(ifsb.org\)](https://www.ifsb.org/key-exhibits/)

⁴¹ Musharaka is reduced from 3.3% to 2.4% and Modaraba is reduced from 0.6% to 0.2% by comparing IsDB-WB (2017) report with IFSB (2022) data.

disconnected from the real economy and the theoretical foundations of Islamic economics as well. There is a need to develop policies that encourage a shift towards PLS instruments, moving away from the heavy reliance on debt-based industry (IsDB, I. D. B. and WB, 2017).

4.2.2 Interplay of Market Forces

Market forces interact through the dynamics of supply and demand, influencing business volume, prices and overall market behaviour. The regulators are mandated to regulate the market forces with given socio-economic objectives. With given market forces and competition, banks tailor their operating models to synchronize resources, capabilities, and risk tolerance levels for achieving their strategic goals.

Market participants of Islamic banking industry view PLS finance in their own perspectives. Azmat *et al.* (2016) postulated that the Islamic debts instrument such as Islamic bonds and Islamic equities has been given equal Sharia legitimacy which has jointly crowd-out the original Islamic risk and return based products such as Musharaka and Modaraba. Each market participant has its own perspective to support PLS finance as they are driven by several factors such as established legacy, best practices of conventional banking, time-tested risk management tools, regulatory frameworks, market dynamics etc. (Nor and Ismail, 2020). Building over existing literature, unique perspectives of market participants are summarized below to put PLS finance into a context of the research question;

4.2.2.1 Supply-side Perspective

The age-old market conventions and dynamics of conventional banking set the paradigm for the senior management of Islamic banking (Dar, Harvey and Presley, 1999). For example, risk management tools of conventional banking established over an age have high influence over the approach of Islamic banking practitioners in developing new products, defining risk appetite, designing risk tools and even in training their organizational capabilities (Febianto, 2012). Moreover, shareholders are driven principally by their investment perspectives and expect Islamic banks to perform in line with peer's performance. Considering investors' expectations and peer pressure of performance, priorities get different for the senior management of Islamic banks. This becomes more relevant when risk appetite of Islamic banks is defined in line with conventional banking. The risk weightages and capital charge for PLS finance is set by the most of regulators compared to non-PLS. Considering this perspective, Islamic banks have no choice but to promote

financing products and structures that imitate the debt in their economic and financial behaviour. This perspective becomes more persuasive for Islamic banking management because of commonalities between non-PLS and debt financings such as skills and expertise, similarity of practices, risk appetite, risk management tools and ecosystem support.

4.2.2.2 Demand-side Perspective

Primarily, the commercial firms choose a debt ratio under their strategic agenda of growth and funding requirement (Rauh and Sufi, 2010). There are various external and internal factors discussed in the literature that determine the debt ratio and capital structure of a firm. This debate of capital structure including optimal leverage, funding order, agency cost, stylized and behavioural effects is extensively covered in the corporate finance discipline. However, most of the literature has assumed simple debt structure in terms of risk profile and priority in case of liquidation (Attaoui and Poncet, 2013). Importantly, since Sharia standards and rulings (*fatawa*) have given legitimacy to non-PLS products equal to PLS finance, there is no additional incentive for customers to prefer PLS finance. The underlying argument is that once a customer's intrinsic need for sharia compliance is fulfilled, commercial factors become more pertinent in deciding between PLS and other financing options. This may be called "Sharia neutrality" between PLS and other modes of financing which creates a state of indifference for the firms. Some researchers consider lower demand from customers is due to their lack of interest and misperception toward PLS finance. They are not willing to consider a bank's role as partner in their businesses because of control, business secrecy and confidentiality matters (Ali, Kishwar and Zulkhibri, 2018). However, it is assumable that there is no inherent preference from firms for PLS finance due to Sharia neutrality or misperception. In this scenario, if a firm is to increase debt ratio and to lower the weighted average cost of capital, they are indifferent between choices of non-PLS and PLS products because importance is shifted from higher Sharia compliance to better commercial terms. Practically, in such scenarios, PLS finance is required to put into a straitjacket of non-PLS finance in terms of commercials, repayments and other credit terms as long as Islamic banks are willing to offer it. This is a classic challenge of a dual banking system where firms get a menu of all financing choices and opt in an order of most favourable commercial terms.

4.2.2.3 Regulatory Perspective

In a financial market, regulator plays a crucial role in regulating market participants, especially on supply side, through various regulatory tools or frictions such as price ceiling, leverage control,

incentivizing, credit rationing, liquidity interventions etc. Overall, regulatory objectives to regulate the financial markets are economic growth, financial stability, consumer protection, stable inflation, market integrity, efficiency and mitigating systemic risks (Pacces and Heremans, 2012). It is evident that providing Sharia compliant financing solutions to society enhances financial inclusion in the economy, which could be an essential part of central bank's goals. However, incentivizing PLS finance over non-PLS finance may not be part of their strategic agenda unless some pressing economic need or problem is addressed by it. Furthermore, conventional wisdom of global best practices such as standardization, governance framework, knowledge base and global financial ecosystem provide more comfort to regulators to use conventional framework for the regulation of PLS finance. Henceforth, the provocative question for regulators is what PLS finance brings different to a financial system compared to its counterparts. The answer to it lays in the unique characteristics of PLS finance carrying a distinct set of economic benefits, which endorses solidarity and fraternity between market participants. This includes true risk sharing, counter-cyclicality and financial stability, reduction of excessive leverage, enhanced financial discipline and support for entrepreneurship and economic growth (Chapra, 2008b); (Siddiqi, M. N., 2006); (Masrizal and Trianto, 2022). However, a prerequisite to realize these benefits is application of PLS finance in its original form without imitating the structures or features of non-PLS. Secondly, regulators must provide a comprehensive regulatory framework for PLS finance instead of accommodating it within existing frameworks developed for non-PLS. This should provide guidelines to banks on appropriate use of PLS models, incentives and preferential treatments, effective risk management and monitoring, further access to client's confidential data and other governance requirements specific to their jurisdictions. International standards setting bodies should also introduce best governance and market practices, Sharia and accounting treatments through exclusive standardization process.

4.2.2.4 Operating Model Perspective

The contemporary banking model is at the helm of market forces, mediating between depositors and borrowers within an economy. Banking depositors are predominately risk-averse without any exception to Islamic banking and their core need is protection of their savings, flexibility of their usages along with earning decent returns. Most depositors choose to place their savings with Islamic banks primarily for Sharia compliance purpose, among other value propositions. In an Islamic banking model, returns of depositors are entirely based on the performance of financing

assets funded by their money because guaranteeing returns even on deposits is not permissible in Sharia (Azmat, Skully and Brown, 2015). Nevertheless, deploying depositors' money into a riskier option of PLS financings may expose them to some unwanted risks and may have some regulatory concerns. This misalignment between the risk-averse profile of depositors and high-risk profile of PLS financing may deter its growth further. The depositors of Islamic banks benchmark returns on their deposits with returns of conventional banking; likewise, they expect protection of their savings. This phenomenon exposes Islamic banks to a unique risk, which is called displaced commercial risk (IFSB, 2005). That is another reason for Islamic banks to use widely non-PLS structures to manage the risk-reward parity for their depositors.

Some researchers argue that the current Islamic banking model is not suitable for PLS concept and that a new operating model, based on the asset management industry, is necessary. This model could involve standalone financial institutions or a subsidiary of existing Islamic banks to manage PLS ventures. Such an approach would not only provide more transparency to the depositors but also will establish a specialized platform for PLS finance application, governance and risk management. Some regulators have provided a provision to Islamic banks in the form of an off-balance sheet book where depositors invest on a restricted basis and Islamic banks deploy their funds in avenues with mandated risk appetite (CBO, 2013).

The institutional settings for PLS finance and various perspectives of market participants are evident of the distinctive role of PLS finance in the modern banking system.

4.3 Literature Review

The classic literature of Islamic finance from the early ages of Islam until the 19th century is rich with PLS contracts like Musharaka and Modaraba, which were typical modes of financing in that era. However, after a few experiments with PLS finance in the mid-1990s, the major growth of Islamic banking came from non-PLS products due to various reasons discussed in the extant literature. Hence, contemporary literature is full of rich debate on lack of PLS finance concerning its importance, constraints and applicability in context of dominant role of non-PLS finance.

4.3.1 Importance of PLS Finance

In theory, various studies argue that Sharia desires PLS finance to play a bigger role instead of non-PLS and provide a foundation for Islamic banking. As noted by Gafoor (1995), the

conceptualization of replacing interest with PLS arrangements can be traced back to the pioneering works of Islamic economic thinkers in the mid of twentieth century, including Anwar Iqab Qureshi, Mahmud Ahmad, and Abul Ala Mawdudi. However, this idea got significant acceptance in academic literature at the end of 20th century (Ayub, 2002). Usmani (2002) is of the opinion that Modaraba and Musharaka transactions should be done on preference basis and PLS finance should play a wider role in an economy. (Siddiqi, M. N., 2006) underscores the importance of Modaraba and Musharaka contracts as ethical instruments and criticizes mere complying with legalities of rulings instead of achieving objectives of Sharia. (Chong and Liu, 2009) argue that the Islamic economic system, grounded in justice and equitable distribution, finds expression in the principles of Modaraba and Musharaka. These contracts serve as mechanisms for aligning financial activities with Islamic ethical norms. Many advocates of Islamic banking are critical that debt-based instruments not only represent a status-quo with conventional banking and should be restricted; otherwise, Islamic finance may never conform to true spirit of Islamic economic system (Khan, Feisal, 2010). Hence, it is important to understand the beliefs of market participants including banks, regulators etc. if they believe in importance of PLS finance given a full emphasize given by Sharia literature. Hence, first proposition is proposed as follows:

Proposition 1a: PLS finance is unique and preferred by Sharia over other modes of finance.

In addition to Sharia compliance, public perception in the market about better Sharia compliance is strategically important for the success of Islamic banks. If a bank is not perceived as Sharia compliant by its customers, it may turn into a high reputational risk which may dampen its ability to attract business. Also, growing reputational issues due to non-Sharia compliance can endanger a bank into a viability crisis if depositors start withdrawing their funds. Strong perception of Sharia compliance is far more crucial for the strategic growth of Islamic banks especially in a dual banking system where they compete with conventional banks as well (Dusuki and Abdullah, 2007). Islamic banking regulatory framework of Oman has specifically put the responsibility on the senior management of its licensees to take all measures to protect the perception of Sharia compliance (CBO, 2013). Therefore, a dichotomous question is designed to understand if industry believes in Sharia importance of PLS finance due to either its better fitment into Maqasid-e-Sharia or better public perception, where respondents are asked to rank the importance of both options. Therefore, a logical extension of proposition 1a is proposed for testing as follows:

Proposition 1b: PLS finance is important because Islamic banks can benefit from better public perception (of Sharia compliance).

Islamic banking claims to be part of an alternative economic model in the Muslim societies and is desired as providing socio-economic justice (AboZaid, 2008) by addressing the issues of poverty, inequality and wealth concentration as major corrections in the economy (Chapra, 1985); (El-Galfy and Khiyar, 2012). Another important aspect is the economic performance of PLS finance over other modes of finance especially for financial resilience and stability at the firms. Scholars such as (Chapra, 2008b) and (Usmani, 2002) are of the opinion that Musharaka and Modaraba financing is in true spirit of Sharia as it promotes economic justice and welfare in the society. This is because PLS finance applies pure risk-sharing characteristic so that business risks are not shifted entirely to the counterparty and banks do not earn a fixed return irrespective of the firm's financial performance. Instead, both parties, bank and firm, share profit and risks in order to create financial stability and resilience in the system. Chapra (2008b) explains the desired characteristics of Islamic financial system which may be able to promote justice if, among other key factors, risks are shared between the financiers and entrepreneurs. He further emphasizes that Islamic finance should, in its ideal form, help in raising substantially the share of equity in the businesses, projects and ventures through the PLS finance (Chapra, 2008b). The inherent sharing characteristic of PLS finance causes more economic justice and financial resilience as it motivates the banks to assess the risks more carefully and to monitor the usage of funds closely. The twofold assessment of risks by both the financier and the entrepreneur should help to institute a greater discipline into the system and go a long way in reducing excessive lending (Chapra, 2008a). Given the emphasis on PLS finance rather than debt, more cautious, diverse and perhaps more efficient projects selection by the funds providers and greater involvement of the entrepreneurs in investments than in the traditional fixed interest-based system (Akacem and Gilliam, 2002). Therefore, second proposition proposed is:

Proposition 1c: PLS finance can bring more financial resilience and stability for firms because of its unique characteristics.

However, there are few other economic merits of PLS finance that are discussed in the academic literature fitfully. This includes excessive leverage, financial innovation, fair access to credit and higher production activities. Having higher reliance on debt rather than equity, entrepreneurs are exposed more towards vulnerability and hence a sustainability aspect is very important in a debt

equity mix (Chapra, 2008a). PLS finance models are claimed to be more inclusive by removing stringent requirements of substantial collaterals and providing opportunities for underserved segments such as SMEs to access credit (Aggarwal and Yousef, 2000). Equity financing, with its higher risk tolerance, has a more positive impact on promoting technological innovation compared to debt (Zhang, Zhang and Guo, 2019). It encourages companies to take on innovative projects without the pressure of fixed repayment schedules. Equity is crucial for corporate growth as it allows companies to increase real assets significantly. A dollar of equity issuance is associated with an extra \$0.93 of real assets, compared to just \$0.14 for debt issuance. This shows that equity is more effective in driving growth (Frank and Sanati, 2021). Therefore, it is important to assess the role of PLS finance being a kind of equity. For this purpose, a ranking question is included to compare these economic merits with the financial stability hypotheses given in proposition 1c. Hence, another proposition is developed for testing is as follows:

Proposition 1d: PLS finance holds considerable promise in driving economic growth and bringing financial innovations to the market.

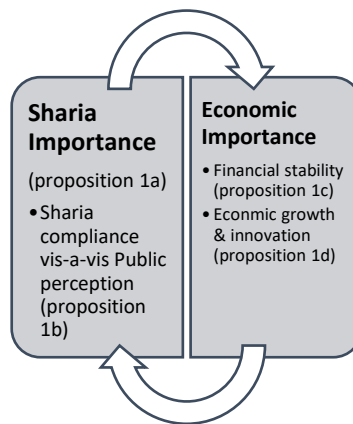


Figure 4.2: The Theory of PLS Finance Importance

4.3.2 Constraints of PLS Finance

The extant literature is divergent, with assorted studies focused on different aspects of PLS finance for lacking practices. Due to this divergence, there is no unified understanding of the constraints to PLS financing (Nouman and Ullah, 2014). Their study has summarized the literature discussion for key constraints of PLS finance into various varieties of constraints. They further extended their own study of literature review and presented a more systematic view for lack of PLS finance practices in the industry. They produced a coherent framework for constraints of PLS finance by

using a method of qualitative evidence synthesis. In their typology analysis, the constraints are classified into three categories 1) uncertainty, 2) low demand and 3) regulations (Nouman, Ullah and Gul, 2018). In an interview-based study with subject matter experts about key impediments of PLS finance in a Malaysian perspective, it is found out that four major challenges 1) high-risk investments, 2) demand from high risk segments 3) selecting a good partner and good transaction; and 4) lack of capital security in PLS finance (Abdul-Rahman and Nor, 2017). Another exploration study on bankers' perspective towards PLS finance in Malaysia finds out that key challenges in application of equity-based financing are high risk, pre-approval or evaluation process, demand from customers and lack of legal framework support (Mohamad, Basah and Aziz, 2019).

The literature on PLS finance constraints can be categorized according to market forces theory which are demand, supply and control of credit. The control of credit is a kind of market friction that is shaped by regulators in their special capacity to regulate the banking industry. It is called regulatory perspective in the study. Another key market driver is banking operating model which enables Islamic banks to steer among demand, supply and control forces. Therefore, the literature review is summarized into four types of constraints in fig 4.3 and research proposition is postulated accordingly.

On demand side of PLS finance, key constraints discussed in the academic literature are lack of demand and unawareness (Ascarya and Yumanita, 2006); (Ascarya, 2010); availability of financing options among various types of financings (Chong and Liu, 2009); (Hanif and Iqbal, 2010), unwilling to pay higher pricing (Dar, Harvey and Presley, 1999), potential of interferences from the bank into day-to-day operations, additional monitoring and disclosure requirements for entrepreneurs (Abou-Gabal, Khwaja and Klinger, 2011), leakage of business secrets to competitors; less applicability and misfit into optimal debt equity mix, complications in profit sharing mechanism (Khan, Feisal, 2010); (Sadique, 2012).

There are various constraints on the supply side of credit that limit the provision of PLS finance by banks. Principal-agent problem of moral hazard and asymmetric information between the bank and firm is a key constraint (Adnan and Muhamad, 2007); (Amrani, 2012) along with inherent characteristics of high risk and uncertainty of PLS finance (Abou-Gabal, Khwaja and Klinger, 2011); (Boumediene, 2010). The limitations also include capacity and human skills at banks along with willingness and lack of commitment especially from upper management of Islamic banks

(Sadique, 2012) (Sadique, 2010); (Ascarya and Yumanita, 2006). IFSB also published a study on lack of PLS finance in the industry, which was primarily exploratory and cross sectional in nature (IFSB, 2019). The study finds out that key reasons for lack of PLS finance are its high risk, expected credit losses and related capital charge required by banks.

Since regulators play crucial role in credit control and development of the banking industry in various ways, there are various regulatory constraints such as absence of supportive regulatory framework (Hesse, Jobst and Solé, 2008); (Zaher and Kabir Hassan, 2001), lack of incentives and support from the governments (Ascarya and Yumanita, 2006). In line with IFSB and Basel requirements, most regulators treat PLS finance under specialized lending category and require higher capital allocation due to its risky structure.

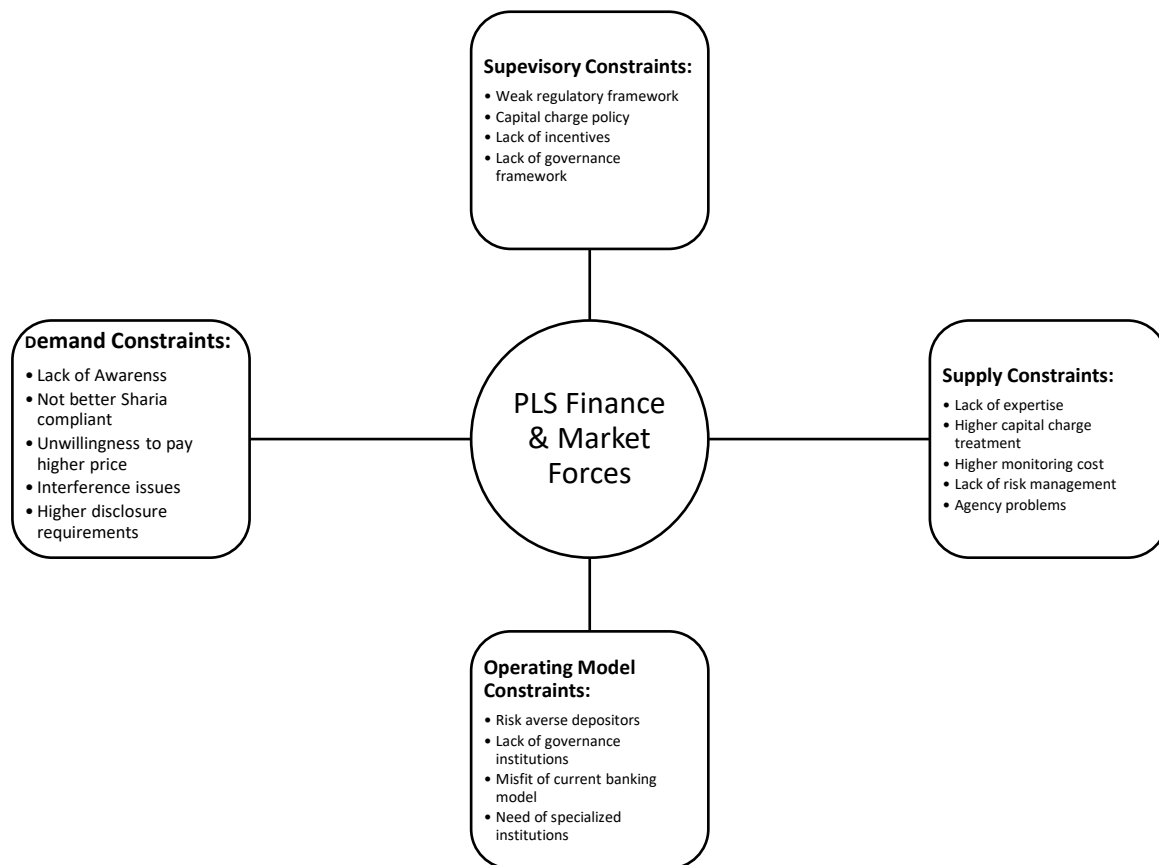


Figure 4.3: Constraints of PLS Finance and Market Forces.

Categorization of various reasons given in literature around market forces and bank's operating model to navigate market forces for PLS finance.

The literature also discuss to some extent about operating model constraints which hinder growth of PLS finance in the industry. Banking depositors are risk-averse while PLS finance is a high-risk

structure which explicitly depicts a mismatch between risk profiles of both sides (Aysan *et al.*, 2018); (ElMassah and Al-Sayed, 2016). Another constraint discussed in the literature is that Islamic banks operate in a model designed for credit intermediation which is not fit for PLS finance. Similarly, another constraint discussed during pilot study and interviews with subject matter experts is that PLS finance being closer to specialized financing can be practiced better by specialized banks rather than commercial banks. All these constraints on operating model are included in the questionnaire to validate with the respondents.

Considering the reviewed studies, it can be concluded that challenges facing PLS finance encompass various aspects such as demand, supply, regulation, and operating models. These constraints collectively hinder its broader adoption and application in the financial industry. Moreover, addressing the multifaceted constraints of PLS finance requires a comprehensive approach, involving enhanced regulatory frameworks, increased awareness, and the development of specialized banking models to better align with the risk profiles and operational requirements of PLS finance. Moreover, a set of questions analyzing constraints described in table 4.1 are included in the survey to understand the perspectives of market participants with a special emphasize on riskiness of PLS and its related aspects across market forces as a core constraint. Therefore, next proposition to test is as follows:

Proposition 2: The riskiness of PLS finance is one of the key constraints in respect of demand, supply, regulatory and operating model, which impedes its wider application.

The following 16 key constraints, repetitive in the literature and significant in its nature, are selected for the survey. Among them, the riskiness of PLS finance on supply side, requirements for higher capital charge from the regulators, pricing expectations on demand side and its alignment with the depositors' profile in the operating model are included for testability purpose of the proposition 2.

Key Constraint Selected for Testing the Proposition	
<i>On Credit Supply-side:</i>	
i. PLS finance is riskier for banks	ii. Bankers are indifferent and consider equally Sharia compliant
iii. No unique risk management tools	iv. No expertise to manage its unique issues
v. Pricing is not reflecting its underlying risk	
<i>On Credit Demand-side:</i>	

i. Customers no more believe it is more Sharia compliant	ii. Not willing to pay higher price
iii. Asset based finance fits best into optimal debt equity mix	iv. Potential interference and monitoring from banks
v. Higher disclosure requirements	
<i>On Control of Credit Supply-side:</i>	
i. Lack of incentives/ support provided by central banks	ii. Higher risk weightage and capital charge requirements
iii. Lack of governance structure tailored-made for PLS finance	
<i>On Operating Model Side:</i>	
i. Misfit of current banking model to PLS finance	ii. Need of specialized banks instead of commercial banks
iii. Mismatch between risk profile of depositors and PLS finance	

Table 4.1: Key constraints of PLS Finance 5

These are selected constraints for four categories given in Fig. 4.3. These constraints are tested with market participants for their beliefs and perceptions about their effectiveness and hindrances on the way of PLS finance.

4.3.3 Applicability of PLS Finance

Although the given importance of PLS finance justifies its wider application but its adoption is hampering severely due to various critical constraints. It is highly probable that that non-PLS structures will continue to dominate Islamic banking due to their strong compatibility with debt finance across various aspects. In a classic market forces perspective, growth of PLS finance is driven by its inherent dynamism and structural superiority, which make it more attractive and preferable to the borrowing firms. Additionally, supply-side factors, such as internal bank policies or regulatory directives, can further promote the widespread adoption of PLS structures within a financial system. Hence, it is important to investigate the application of PLS finance compared to non-PLS finance in a market forces paradigm including demand, supply and regulatory interventions in the credit market. Figure 4.4 illustrates this relationship visually.

The optimal decision regarding the mix of debt and equity at firms has been extensively researched and various seminal studies are available in the finance literature (Attaoui and Poncet, 2013). Firms always analyze available debt and equity choices as per their strategic financial management agenda and optimize the funding mix accordingly. However, PLS finance does not universally suit all situations and comes with its own limitations. As per one research, partnerships as external sources of financing are least preferred in USA market due to its inherent problems and accordingly PLS modes of financing is untenable against other modes of Islamic finance (Farooq,

2007). PLS finance is a better substitute in small and medium size projects with relatively low expected profits while for large size projects, other modes of financing provide a better structure (Dar, Harvey and Presley, 1999). Therefore, it is important to analyze the potential of PLS finance application as a substitute or complement of debt. Next proposition goes into manifold to evaluate its applicability as a substitute of debt fully or partially:

Proposition 3a: PLS finance is a complement to debt not its substitute.

Do credit market conditions affect the capital structure of a corporation? There are several capital structure reactions to the changes in credit market (Leary, 2009). First, leverage ratio of bank-dependent firms decrease (increase) for a contraction (expansion) of bank credit in comparison to firms with access to the debt capital market (Kisgen, 2006). Second, firms alter the composition of external financing sources in response to a tight credit market. Bank-dependent firms shift towards equity issuance while non-bank dependent firms shift to debt capital market. This indicates observed leverage ratio and debt structures are not determined solely by demand factors of a firm's capital structure. Rather, supply frictions in the credit market are an important determinant of corporate capital structure and the inability of bank-dependent firms to substitute freely and economically among external sources of financing (Lemmon and Zender, 2010). Therefore, it is important to assess the impact of any debt limit over firms for wider adoption of PLS finance as follows:

Proposition 3b: The lower debt-borrowing limit of a firm, the higher adoption for PLS finance.

The risk-reward parity theory is a fundamental principle that underlines achieving a balanced relationship between risk and reward for an investment or business. According to this theory, rational investors should seek to allocate their capital in a way that maximizes potential returns while maintaining an appropriate level of risk. This approach aims to align investment actions with individual risk tolerance by achieving a price equilibrium between demand and supply forces in a credit market. Therefore, another research proposition is to validate if PLS finance contracts are holding risk-reward parity in the real practices:

Proposition 3c: PLS finance contracts are underpriced despite having a higher degree of risk.

Applicability of PLS Finance and Market Forces

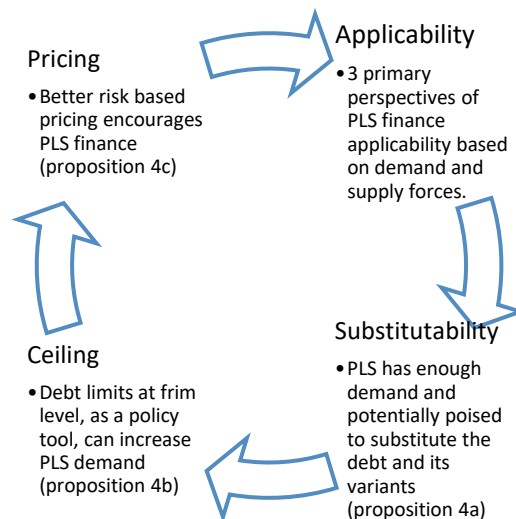


Figure 4.4: Applicability of PLS Finance and Market Forces.

A wider applicability of PLS finance is assumed based on market forces; demand, supply and frictions in credit market. This theory is analyzed into three primary dimensions. First, its inherent demand of the PLS is strong enough to substitute debt completely. If the potential of substitutability is partial, then this can be supported by an action of market friction from the regulators in form of debt limiting policy per firm so that additional external funding requirements can be filled through PLS finance. The third dimension is hold of risk-reward parity to reflect its underlying risk characteristics and pricing to be decided based on market equilibrium between demand and supply.

4.4 Research Findings and Analysis – Importance of PLS Finance

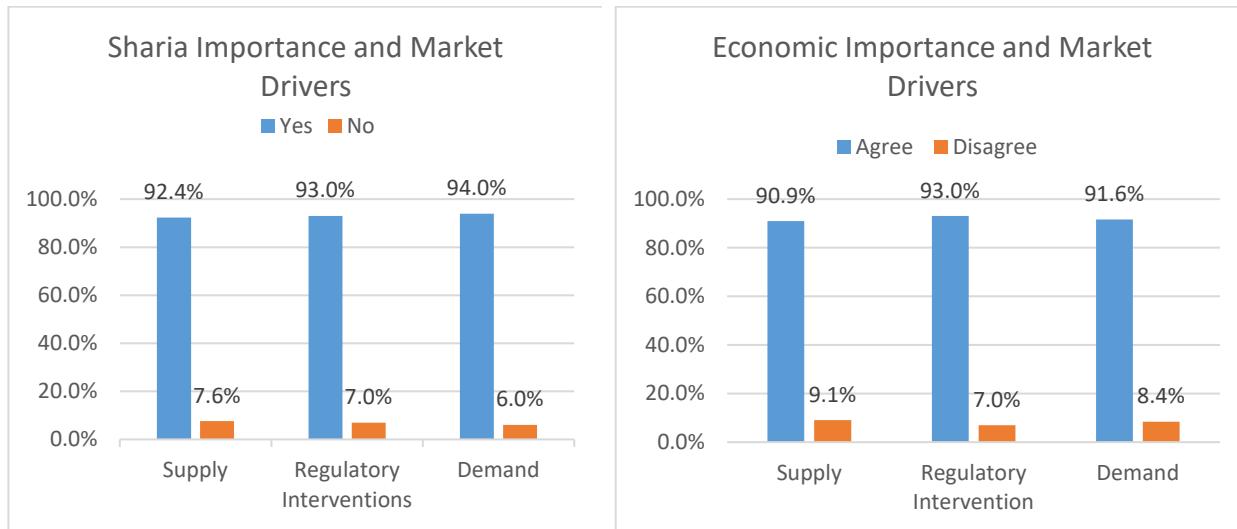
A descriptive statistic of the primary data collected is explained in Chapter 3 on research methodologies. Following are key findings and summary of responses for each research question and proposition of the survey. The results are further analyzed against variables of market drivers, market participants and other explanatory variables.

4.4.1 Sharia and Economic Importance of PLS finance

The respondents were asked to test propositions 1a and 1c about their beliefs on Sharia importance and economic importance of PLS finance over other modes of financing. In line with academic literature for Sharia importance of PLS finance (propositions 1a), most of the respondents believe strongly (93%) that PLS finance is a preferred mode of finance in true spirit of Islamic banking. Also, most of respondents confirm the proposition (1c) that PLS finance is economically important (91%) for financial stability of a firm. The crucial point here is that this is first study of its own kind in Islamic finance industry that is directly confirming the importance of PLS finance with its

stakeholders. Furthermore, a pool of subject matter experts formed to ensure robustness of the results also confirm the importance of PLS finance with 93% supporting Sharia importance proposition (1a) and 91% supporting economic importance proposition (1c).

Dissecting the importance of PLS finance across market drivers, the study also finds a strong confirmatory response for demand, supply and control sides. This depicts that all types of stakeholders behind these drivers believe in PLS finance importance strongly. The results are summarized in Fig. 4.5. The respondents believe in Sharia importance hypothesis strongly on demand (94%), supply (92.4%) and control (93%) sides. Also, economic importance hypothesis is confirmed strongly on demand (91.6%), supply (91%) and control (93%) sides. Upon further analysis of the importance of PLS finance across market participant’s categories, there is a strong confirmatory response by all categories but in different degrees. For validating the Sharia importance hypothesis, academics exhibited the highest agreement rate at 97%, whereas Islamic banking windows showed the lowest agreement rate at 87%, with other key stakeholders falling in between. Both Islamic banks and central banks registered a 94% agreement rate. Regarding the economic importance hypothesis, respondents from standards setting bodies displayed the highest agreement rate at 100%, while Islamic banking windows had the lowest agreement rate at 74%, and other market participants fell in between.



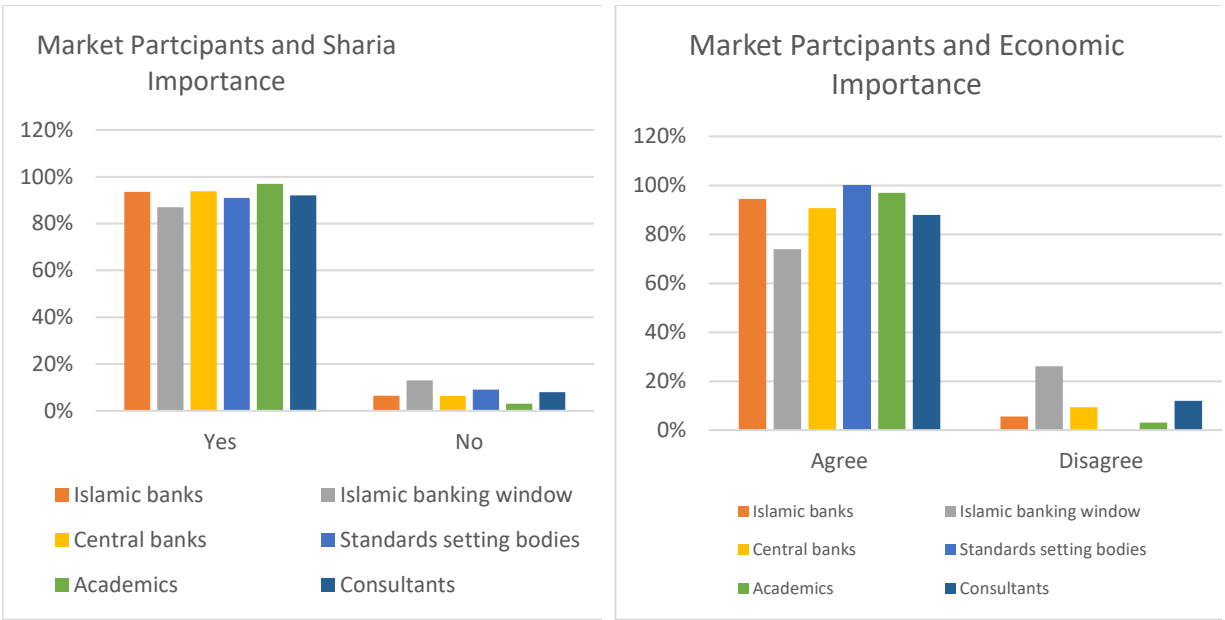


Figure 4.5: Evidence of Sharia and Economic Importance of PLS finance.

Survey evidence on Sharia and economic importance of PLS finance. Key market participants of PLS finance are Islamic banks, Islamic windows, central banks, standards setting bodies, academics and consultants. Market drivers include demand represented by potential customers, supply represented by banks and control of credit represented by regulators.

Relevant Survey Questions Asked:

Q6.1 Do you believe a wider role of profit loss sharing (PLS) finance (such as Musharaka, Modaraba, Wakala) over asset based (AB) finance (such as Ijara, Murabaha) is important and in true spirit of Islamic banking?

Q6.3 Do you think unique characteristics of profit and loss sharing (PLS) finance can create more financial resilience and stability for the firms (obligors) in comparison to other modes of Islamic finances?

4.4.1.1 Discussion and Analysis

Examining the responses based on demographic, geographic, and functional variables reveal interesting findings regarding the propositions on the importance of PLS finance. However, when considering policy and development variables, the results are not different from the main results.

The results for demographic variables are confirmatory to main results except some variations for education variable. Among other degree holders, MBAs are the most believers (100%) in the Sharia importance proposition while graduates are the least believers (83%). For economic importance proposition, again graduate holders are less believers (83%) than primary mean (91%) while other degree holders are in line with overall mean.

The findings concerning geographical variables are generally aligned to main results except Malaysia (100%), Indonesia (77%) and Bangladesh (100%) that are significantly different from

the overall mean (93%) of Sharia importance proposition. For economic importance proposition, Malaysia (100%) and UAE (72%) are outliers from primary results (91%). These variations are due to different regulatory, religious, cultural, financial literacy aspects of Islamic finance in these countries.

The results for functional variables validate the main results with a notable exception: the respondents with experience more than 20 years strongly supports both Sharia and economic importance propositions by 100% (compared to the mean of 93%) and 98% (compared to the mean of 91%) respectively. On an interesting note, c-executives at banks have lowest support for Sharia importance propositions with 86% while Sharia unit has lowest support for economic importance proposition with 82%.

All findings relating to prudential and developmental policy variables are confirmatory to main results for both importance propositions except preferred treatment jurisdictions that believe 100% in economic importance proposition. This means policies for debt limit and capital charge have no significant higher or lower influence over importance propositions. Similarly, market share, active and influencing role of respondents have no significantly different impact over the propositions.

Above findings and analysis suggest that propositions of Sharia importance (1a) and economic importance (1c) holds strongly in the market and are aligned with the theory.

4.4.2 Why is PLS finance important?

To understand further the perspectives of key stakeholders for both propositions of importance of PLS finance, a further question asked was why PLS finance is important? There were seven standard reasons given in the answer list along with eight options as an open-ended text field. These reasons were carefully selected after doing literature review and informal discussions with experts of Islamic finance. Sharia importance reasoning is broken down into two statements of better Sharia compliance and public perception of Sharia compliance. This is to understand which statement contributes more towards importance of PLS finance over other financing modes in the views of respondents. Considering growing criticism of replicating conventional banking products into Islamic banking, PLS finance may perceive better by respondents as a differentiated financing concept having true identification of Islamic finance. Furthermore, there were four distinct reasons added for economic importance along with financial stability and counter-cyclicality reason mostly

found in the academic literature. All choices were mutually non-exclusive, and respondents could select as many as they want. The results are summarized in Table. 4.2. The purpose of exploring these multiple options is to understand if key market participants believe in some other reasons that are not frequently discussed in the literature.

Out of the eight reasons given for the importance of PLS finance, the respondents ranked the most is 'better public perception' for Sharia compliance while 'better Sharia compliance' is ranked in fifth place out of given comparable options. This interesting finding demonstrates that the sheer importance of PLS finance (93% support for proposition 1a) is due to its superior ability to manage public perception rather than Sharia compliance itself. This signifies that Sharia compliance of PLS finance is perceived no more than other modes of finance such as Ijara or Murabaha. This divergence leads to another important perspective of public perception phenomenon that drives PLS finance importance and confirms proposition 1b.

For economic importance perspective of PLS finance, there were five options of economic benefits were given to respondents in the questionnaire and asked them to select as many reasons as relevant for importance of PLS finance. These five economic reasons were financial stability and counter-cyclical, lessen excessive leverage behaviour, enhanced production activities, financial innovation and fair allocation of credit. Although much emphasize given in the literature for PLS finance is for its ability to foster financial stability, reduce vulnerability and cyclicity in the system but the respondents have ranked the most is its potential of financial innovation in comparison to other modes of finance. Furthermore, 2nd and 3rd ranked are enhancing production activities in the economy and lessening excessive leverage behaviour among the corporates. Pooled experts' category also ranked financial innovation over financial stability and counter-cyclicity. These results do not confirm the theory as emphasized heavily in the literature that economic importance of PLS finance is due to its financial stability and counter-cyclicity features. These alternate preferences of respondents for economic importance are found in the conventional equity finance literature for financial innovation (Zhang, Zhang and Guo, 2019) and economic growth (Frank and Sanati, 2021). For this survey, respondents could believe it for many reasons including mere religion, geographical context, or functional backgrounds. This shows that there is a further need for research on the economic importance of PLS finance and to understand it better for application.

Reasoning of importance - Selected Choices (Mutually Non-exclusive)	Count	Ranking
IBs can get better public perception of sharia compliance and avoid criticism of replicating the conventional product	148	1
IBs can do more financial innovations in the banking industry by using unique financing structures of PLS finance.	147	2
PLS finance can enhance more production activities in an economy and discourage consumptive loans.	144	3
PLS finance can lessen the effects of excessive debt leverage behaviour adopted by the firms (and economy in total)	133	4
It is more Sharia compliant than other modes of finances such as Ijara, Murabaha.	123	5
It can foster financial stability in the banking system, reduce vulnerabilities and cyclicity during a financial crisis.	117	6
PLS finance can be more instrumental in fair allocation of credit to the right segment of customers.	94	7
Other reasons (open ended text field)	12	8

Table 4.2: Why PLS Finance is Important?

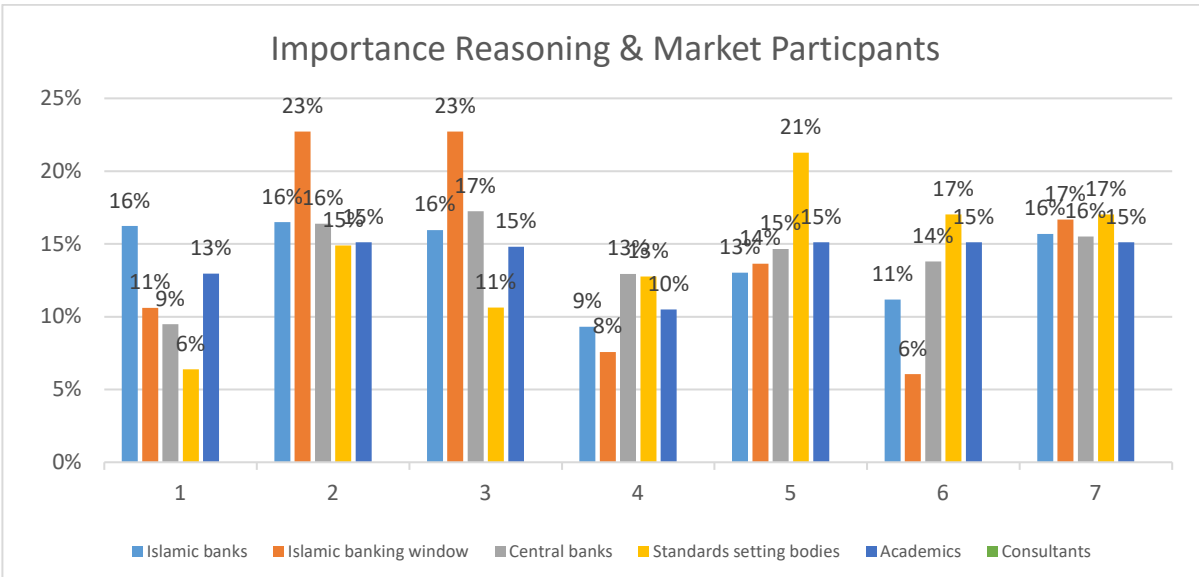
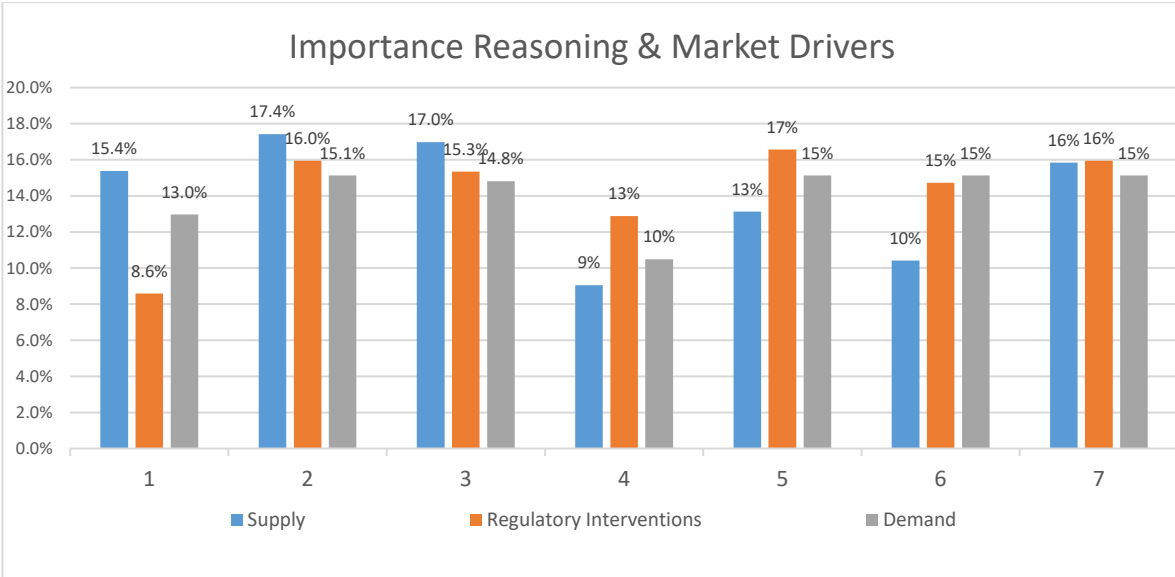
This table is developed from question 6.2 of the questionnaire, which has a list of mutually non-exclusive choices and their ranking from 1 to 8. The respondents have selected as many reasons as they believe are relevant for PLS finance importance.

Relevant Survey Questions Asked:

Q6.2 Why do you think profit and loss sharing (PLS) finance (such as Musharaka, Modaraba, Wakala) is important for Islamic banks (IBs) to practice? *(Select as many as appropriate)*

- It is more Sharia compliant than other modes of finances such as Ijara, Murabaha.
- IBs can get better public perception of sharia compliance and avoid criticism of replicating the conventional products.
- IBs can do more financial innovations in the banking industry by using unique financing structures of PLS finance.
- PLS finance can be more instrumental in fair allocation of credit to the right segment of customers.
- PLS finance can lessen the effects of excessive debt leverage behaviour adopted by the firms (and economy in total) in comparison to other modes of finance.
- It can foster financial stability in the banking system, reduce vulnerabilities and cyclicity during a financial crisis.
- PLS finance can enhance more production activities in an economy and discourage consumptive loans.
- Other reasons _____

In order to ensure the robustness of results, both propositions 1b and 1d are tested with experts' pool category. They also confirm similar results for the reasoning of importance of PLS finance. The propositions (1b and 1d) are further analyzed for market drivers and participants as given in Fig. 4.6.



1. It is more Sharia compliant than other modes of finances such as Ijara, Murabaha.
2. IBs can get better public perception of sharia compliance and avoid criticism of replicating the conventional products.
3. IBs can do more financial innovations in the banking industry by using unique financing structures of PLS finance.
4. PLS finance can be more instrumental in fair allocation of credit to the right segment of customers.
5. PLS finance can lessen the effects of excessive debt leverage behaviour adopted by the firms (and economy in total) in comparison to other modes of finance.
6. It can foster financial stability in the banking system, reduce vulnerabilities and cyclicity during a financial crisis.
7. PLS finance can enhance more production activities in an economy and discourage consumptive loans.

Figure 4.6: Reasoning of PLS Importance.

Importance reasoning by market drivers and market participants of mutually non-exclusive choices and their ranking from 1 to 8. The category of other reasons is not displayed in the graph being insignificant.

Comparing Sharia compliance and public perception for test of proposition 1b across market drivers of demand, supply and control, it is evident that public perception is ranked higher by all respondent categories. However, the degree of gap between Sharia compliance and public perception varies with control side is the highest (8.6% vs 16%) while in absolute terms, supply side has the highest ranking for public perception (17.4%) among others.

On economic importance and test of proposition 1d, supply side has preferred the most for financial innovation (17%), control side has preferred avoiding excessive leverage while demand side has preferred marginally fair allocation of credit.

4.4.2.1 Discussion and Analysis

The review and analysis of five control and explanatory variables for relationship with both propositions (1b and 1d) are discussed below with key findings.

Demographic variables include gender, age and education are no more different from the main results (16%) for proposition 1b except female respondents believe more (21%) in public perception aspects than males (16%). There is no significant disparity from the main results for education variable for both propositions 1b and 1d.

For geographic variables, Malaysia is highly supportive of proposition 1b with the highest gap between Sharia compliance (6%) and (14%) public perception while Bangladesh is most sensitive for both Sharia compliance (19%) and public perception (21%) against the overall means (13% & 16% respectively). Other countries are confirming the main results of Sharia importance without much variation. For economic importance, Oman is less supportive of proposition 1d with the highest gap between financial stability (7%) and other economic merit of fair credit allocation (17%).

For variable categories of professional, prudential and development, there is no significant disparity from main results for both propositions of 1b & 1d with following notable exceptions:

- i. C-executives at Islamic banks/windows are most supportive and sensitive to proposition 1a in comparison to their subordinates that emphasize their acknowledgement for Sharia compliance (19%) and public perception (23%).
- ii. No defined limit of debt in the policy is more sensitive to Sharia compliance aspects against others (18% vs 12%).

4.5 Research Findings and Analysis - Constraints of PLS Finance

Although literature has covered exhaustively the constraints in the theoretical debate, but this study aims at measuring the beliefs of respondents in the background of market drivers, market participants and other explanatory variables for below four types of constraints. The respondents were asked to select the listed reasons under each type of constraints as many as relevant to their perspectives. Across the constraints, top three impeding reasons for PLS finance are its riskiness over other modes of finance (75%), unwillingness to pay higher price by the customers for its underlying risks (64%) and mismatch of profile of depositors with its high riskiness (64%). The top three impeding reasons demonstrate that lack of PLS finance application in the Islamic banking industry is linked fundamentally to its underlying risk, which may not fit accurately into the contemporary banking model due to its own design and limitations. These results somehow confirm exiting theoretical discussion in the literature albeit severity and ranking of constraints was never measured before. The unanimous view over riskiness of PLS finance and its misalignment with the depositor's risk profile as primary constraints for its wider adoption may require looking it differently by the key stakeholders. Lack of willingness from customers to pay higher pricing is due to availability of debt option and is embedded into the theory of optimal capital structure.

However, within each constraint, top three impeding reasons vary and are discussed in the respective sections as follows:

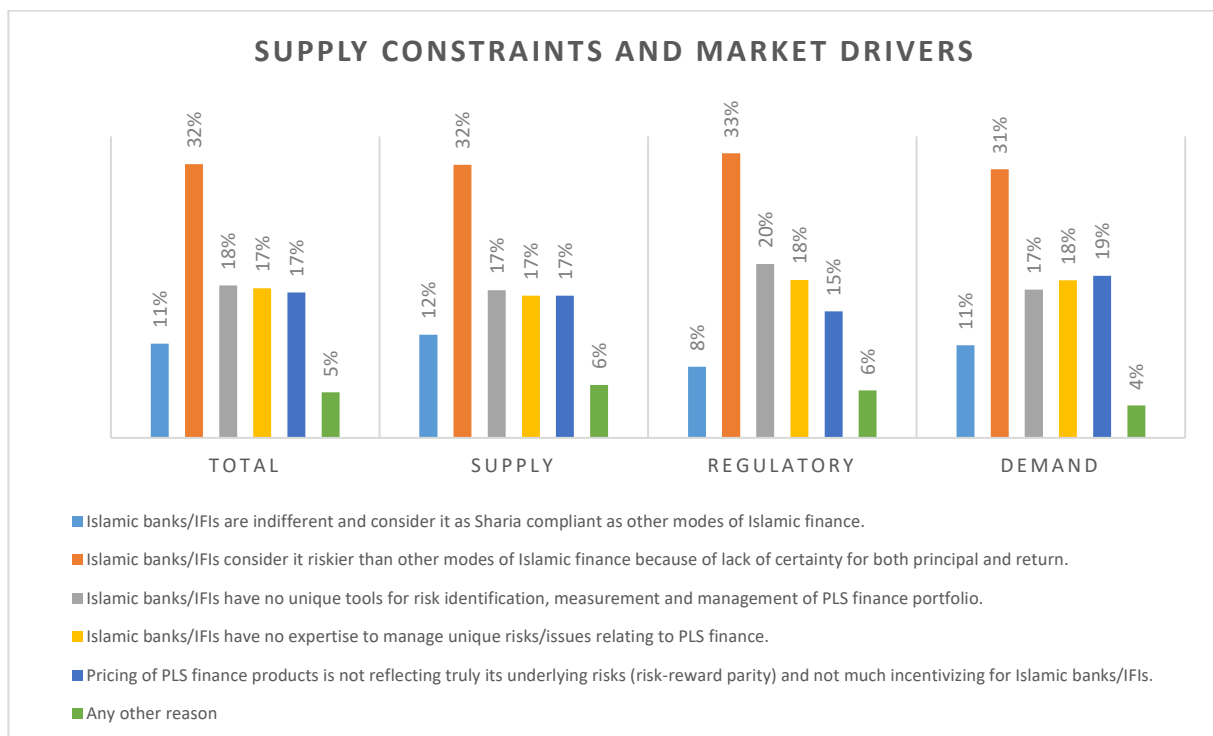
4.5.1 Supply Side Constraints

Supply side constraints are directly linked to capacity and willingness of Islamic banks and windows to provide PLS finance to the firms. Among given reasons on supply side, the riskiness of PLS is ranked the uppermost reason by the respondents in the overall survey (32%). Experts' pool also confirm the robustness of results without any major variation. This also holds equally true for all market drivers with almost similar scale of confirmatory response. This is also true for

all market participants but with different magnitude of scale with Windows (36%) and academics (27%) as outliers. The results are summarized in Fig. 4.7. The second and third most impending reasons given in the survey are lack of risk management tools and human expertise respectively. Interestingly, only 11% of respondents believe that Islamic banks are indifferent in terms of Sharia compliance between PLS finance and other modes of finance. This belief goes further down to 8% in the case of control respondents. This result also confirms further Sharia importance proposition 1a.

4.5.1.1 Discussion and Analysis

There is no significant diversion from the main results of the study for five explanatory variables expect geographic one. For example, Bahrain considers indifference in Sharia compliance treatment while Malaysia considers pricing does not reflect underlying risks of PLS finance consider the top-most reasons on supply side. Results of other countries support the main findings without any major variations.



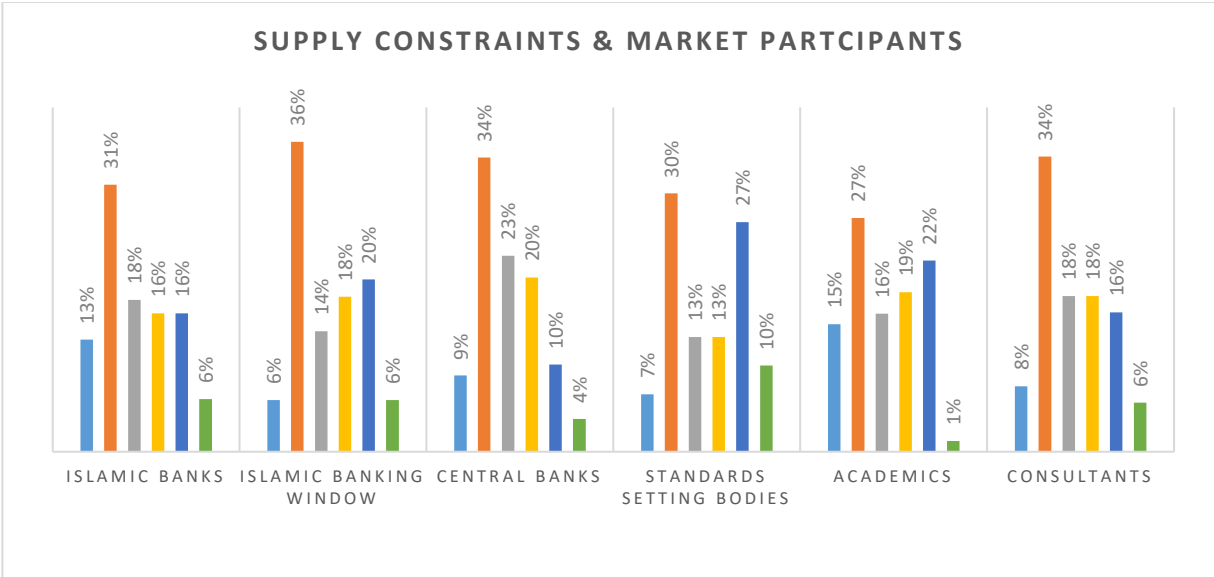


Figure 4.7: Supply Side Constraints.

List of supply side constraints measured with respondents in total and across the market drivers and market participants.

Q6.4 Relevant Survey Questions Asked – Supply constraints of PLS finance

4.5.2 Regulatory Side Constraints

Regulatory interventions create notable market frictions that influence the interplay between supply and demand dynamics. For constraints given for supply control of credit aspects relating to central banks or standards setting bodies, respondents rank the highest is lack of governance structure (32%) specific for PLS finance while lack of incentives and capital charge treatment are similar popular rated reasons as well. However, dichotomizing it into market drivers' analysis, it is found out that supply side respondents rate more lack of governance structure (35%) while control sides rate more lack of incentives (36%) and demand side rate more risk weightage of PLS finance (35%).

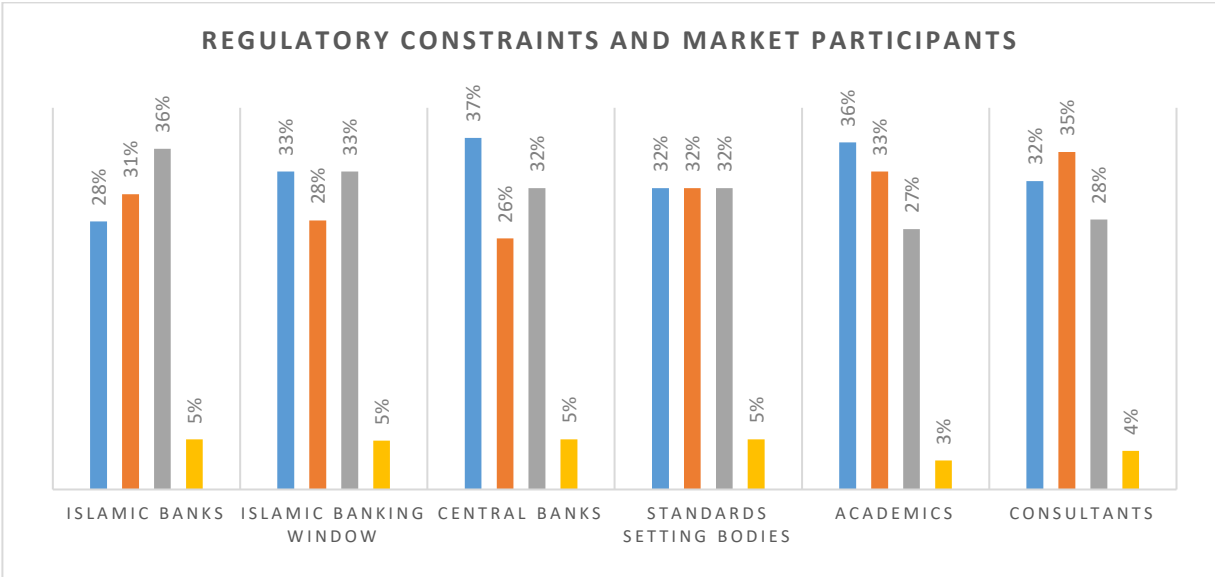
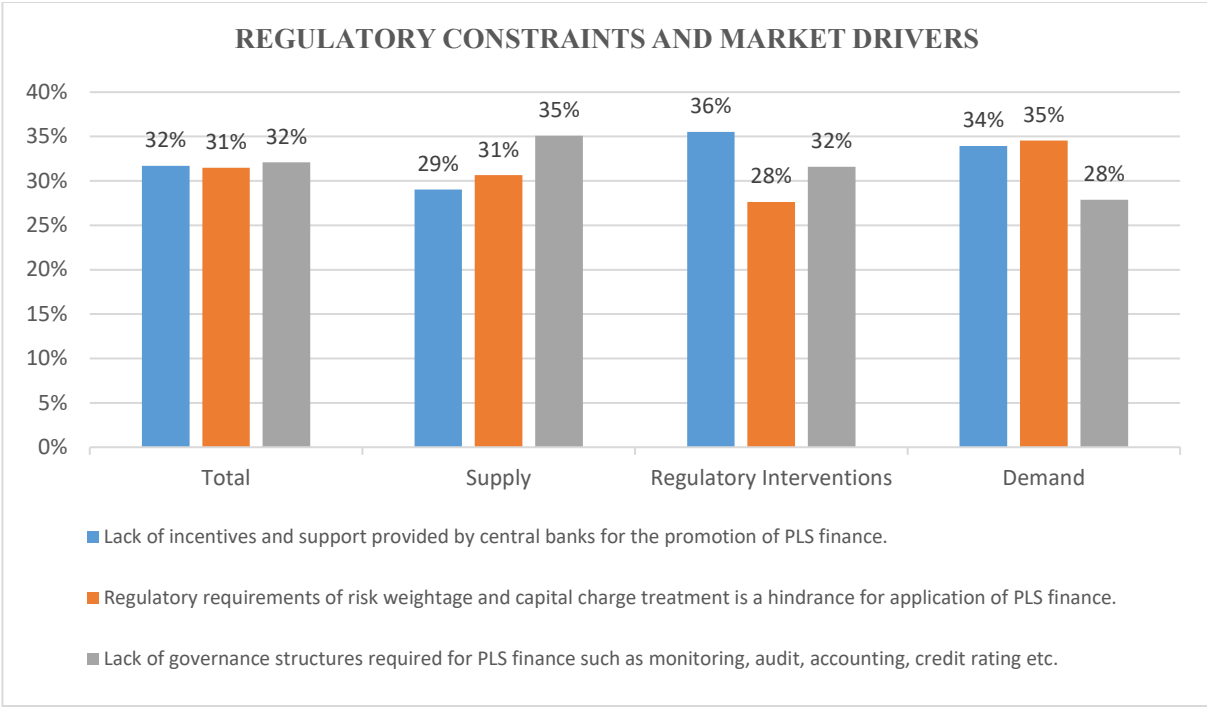


Figure 4.8: Regulatory Constraints
 List of control side constraints measured with respondents in total and across the market drivers of demand, supply and control aspects.

Q6.5 Relevant Survey Questions Asked – Regulatory constraints of PLS finance

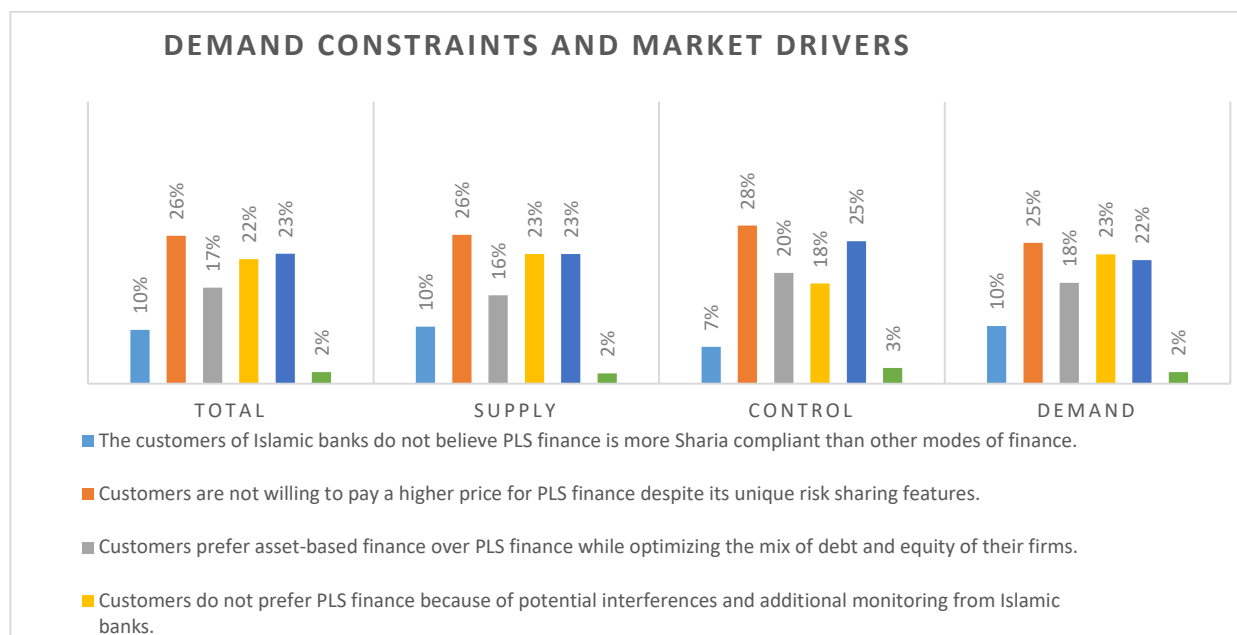
4.5.2.1 Discussion and Analysis

There is no significant diversion from main results for demographic, professional, prudential and development variables. However, there are some notable exceptions at geographical level for the most impeding reasons such as Bangladesh believes (43%) lack of governance structure, Malaysia

& Oman believes (37% & 38%) capital charge treatment while Indonesia and Africa believes (37% & 37%) lack of incentives by the regulators.

4.5.3 Demand Side Constraints

For constraints of PLS finance on demand side, the respondents were asked to respond on behalf of PLS finance customers/firms. Furthermore, academics and consultant's category are taken specifically as a proxy for market driver on demand side to ensure the robustness of the study. It was practically difficult to approach finance executive of borrowing firms for this aspect because of different population of respondents. Furthermore, there was an apprehension about Islamic finance literacy of such executive on challenges and constraints of PLS finance may not be adequate for research purpose. In the survey, overall, the respondents rank lack of willingness (26%) from customers to pay higher price for higher risk of PLS finance in comparison to other modes of finance. There are also similar high rankings for lack of risk-based pricing across all market drivers of demand, supply and control without much variation. This is equally true for market participants with the highest support from central banks (30%). However, this constraint of risk-based pricing goes back to the theory of risk reward parity and optimal capital structure debate in the literature. Other highly rated constraints are additional disclosure requirements and potential interferences from banks. Again, preference for PLS finance because of Sharia aspects is the lowest among given reasons.



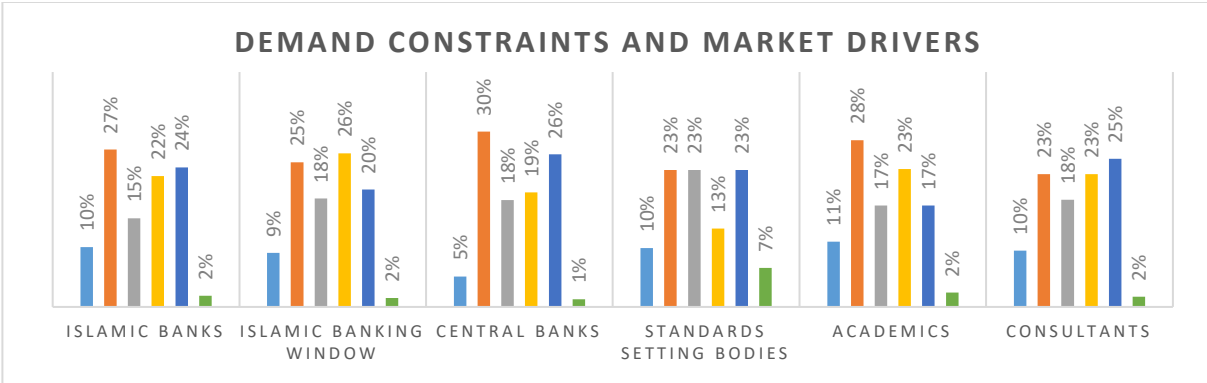


Figure 4.9: Demand-side Constraints

List of demand side constraints measured with respondents in total and across the market drivers of demand, supply and control aspects.

Q6.6 Relevant Survey Questions Asked- Demand Constraints of PLS finance

4.5.3.1 Discussion and Analysis

The main results remain consistent across demographic, professional, prudential, and developmental variables, with no significant deviations. There is no significant diversion from main results for demographic, professional, prudential and development variables. However, there are some notable exceptions at geographical level for the most impeding reasons such as Bahrain supports (24%) assets-based finance fits better into optimal debt equity mix and UAE believes (30%) potential interference and monitoring.

4.5.4 Operating Model Constraints

The review of operating model of Islamic banks & windows is particularly important to understand its suitability with PLS finance. The respondents rank the mismatch between the risk-averse profile of depositors and risk-agnostic profile of PLS finance as the foremost constraint (37%). Across the market drivers, there are almost similar results for all model constraints with a minor variation. This is partially true for market participants as well except standards setting bodies and academics who believe (43% & 34%) that the current banking model is not suitable for PLS finance.

Model Constraints and Market Drivers

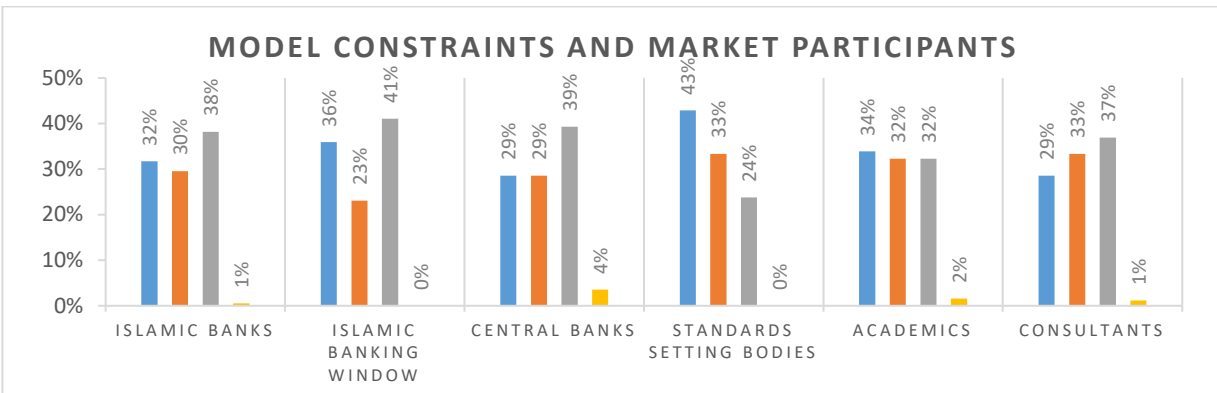
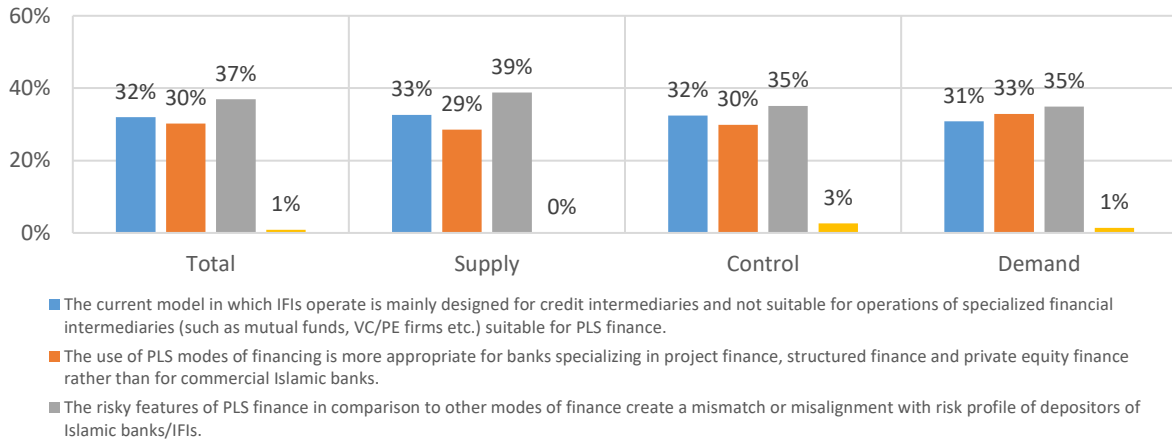


Figure 4.10: Operating Model Constraints.

List of operating model side constraints measured with respondents in total and across the market drivers of demand, supply and control aspects.

Q6.7 Relevant Survey Questions Asked- Operating model constraints of PLS finance

4.5.4.1 Discussion and Analysis

The main results exhibit consistency across demographic, professional, prudential, and developmental variables, with no significant deviations observed. However, there is a notable exception at geographical level for Malaysia which believes (43%) that current banking model is not suitable for PLS finance.

In conclusion, the research findings and discussions strongly support proposition 2, which identifies the riskiness of PLS finance as the primary constraint hindering its wider adoption.

4.6 Research Findings and Analysis - Applicability of PLS Finance

The survey has a separate section for understanding the application of PLS finance across three (3) dimensions in context of its top constraints discussed in the previous section. The first

dimension is the potential of PLS to substitute debt based on market forces of demand and supply (proposition 3a). For this purpose, an extended question is asked to understand which type of financing needs at firms is easily replaceable with PLS finance. This potential to substitute is further validated by imposing a debt limit over firms so that extra demand of external funding to be fulfilled with PLS finance (proposition 3b). Since, pricing is an equilibrium function of market forces and any discrepancy in achieving this balance is due to market disruptions and anomalies, a direct question is asked on applicability of risk-based pricing of PLS finance contracts in real practices of Islamic banks (proposition 3c). The pricing function also helps to understand how it is being positioned in the financial market in context of optimal debt equity mix at firms. The purpose of this section is to explore how a wider adoption of PLS finance is possible in context of market forces, supply side frictions and optimal capital structure.

4.6.1 PLS Finance is a 'Substitute or Complement'

It is particularly important to understand what market participants believe about the role of PLS finance as a substitute or complement of other modes of finance and resultantly how they perceive its role in the capital structure hypothesis. In case of substitute potential, PLS finance can replace other modes of finance including debt and shape up the market over time with an entirely different capital structure. Otherwise, PLS finance will only play a complacent role as a complement of debt in various niche modes of financing. This question of 'substitute or complement' about capability of PLS finance was asked directly from respondents with either option of Yes or No. Out of total respondents, there is 47% confirmatory response that PLS finance can substitute other financing modes. For robustness of the results, same question is validated with pool of subject matter experts and found similar confirmatory response with 47.3% in yes.

Further understanding this phenomenon across market drivers, results are summarized in Fig. 4.11. Interestingly, control side respondents confirm substitutability of PLS finance higher (49%) than other market drivers while supply and sides are comparatively lower and close to average.

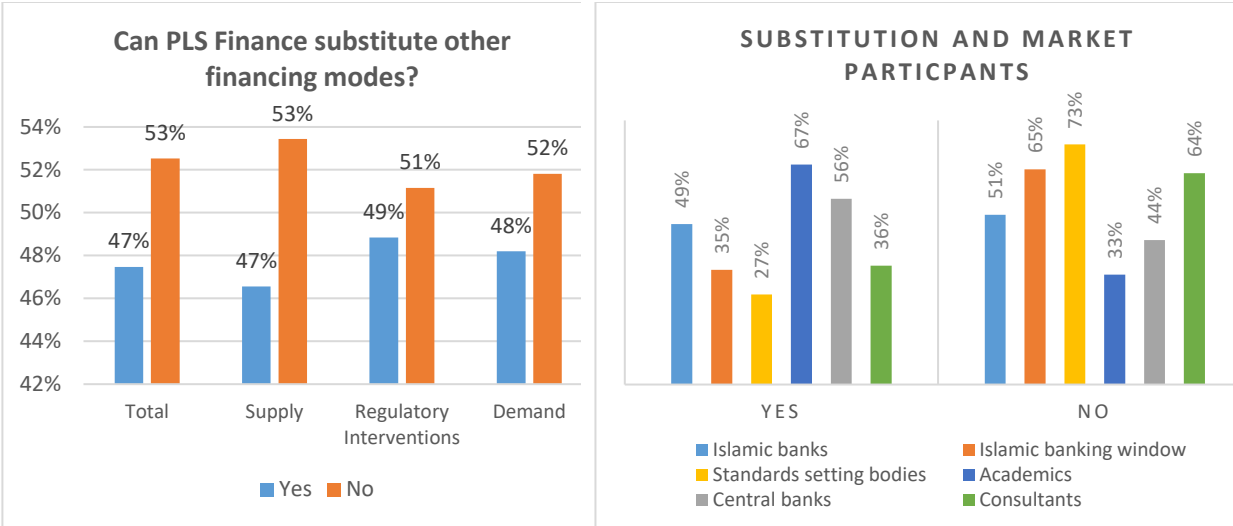


Figure 4.11: PLS Finance is a Substitute or Complement

Survey evidence on the PLS finance capability as a substitute or complement for all respondents and across market drivers' categories.

Relevant Survey Questions Asked:

Q6.8 Do you believe profit and loss sharing (PLS) finance products are capable to replace fully the asset-based finance products at Islamic banks/IFIs?

Analysing further substitute or complement capability of PLS finance among market participants, central bankers believe more in the hypothesis with 56% Yes response while standards setting bodies and Islamic banking windows are outliers with 73% and 65% respectively with response in No. Respondents from Islamic banks are close to average with 49% confirmatory response.

4.6.1.1 Discussion and Analysis

There is no significant diversion from main results for demographic, professional, prudential and developmental variables. However, there is a notable exception at geographical level for UAE (83%) and Oman (58%) which believes that PLS finance is not substitutable while Indonesia (62%) and Pakistan (57%) believes more in its potential of debt substitutability.

4.6.2 Applicability of PLS finance

To analyse further proposition 3a for PLS finance application and how easily it can replace various types of financing needs at firms, a question was asked from respondents to rank given financing types in terms of type, time-horizon and hybridity mix. These six financing types include working capital, short-term, long-term, hybrid, convertible and quasi-equity. The purpose of this analysis is to understand how respondents prefer wider application of PLS finance among working capital,

term and mezzanine finance categories. It also represents the potential of PLS finance to replace first which financing needs as there are different determinants for these categories of financing.

Out of given options, the most preferred option by the respondents (73%) is working capital financing needs, as it is most applicable and easily replaceable by PLS finance. This result is intuitive and evident from the current practices of PLS finance as being used for working capital or short-term structures such as running Musharaka or Wakala overdraft products. Perhaps, practitioners find it less risky or easy to monitor with a visible exit strategy in case the underlying business is not performing as expected. The robustness of results was also evaluated against respondents who were in favour of substitution of PLS finance if they prefer different ranking of its applicability but did not find any significant variation of results across all financing structures. The results are also tested for market forces and market participants but did not find any major variations in the results. However, preference of short term over long term or hybrid structure for early adoption of PLS finance may represent pure liquidity needs of the firms rather than its placement in an optimal debt equity mix perspective. The complete details of the ranking of seven financing structures are given in Fig. 4.12.

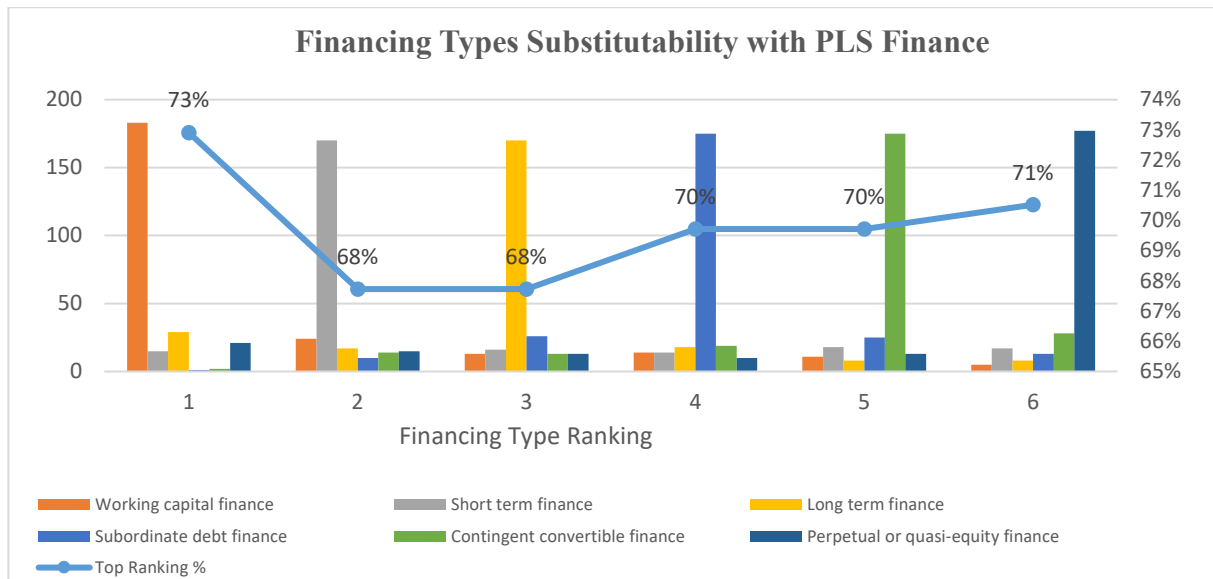


Figure 4.12: Financing Types Substitutability with PLS Finance

Ranking of respondents for several types of external financing across maturity profile to understand which type of financing is more substitutable into PLS finance.

Relevant Survey Questions Asked:

Q6.9 In your view, which of below financing needs of a firm can be replaced easily by PLS finance products at Islamic Banks/IFIs? (*Set priority as appropriate*)

In overview, most of respondents believe in non-substitutability of PLS finance with non-PLS and hence results suggest that proposition 3a does not hold valid. However, they believe this substitutability order is from shorter and simple financing type to longer and sophisticate one⁴². This is an important insight for regulators ad standards setting bodies for future policy directions and development of Islamic finance sector for PLS finance.

4.6.3 Debt Ceiling

There is a hypothesis that debt capacity of firms has direct impact on application of PLS finance. Higher borrowing limit, lower application of PLS finance (proposition 3b). To evaluate it, a direct question was asked to respondents if debt capacity of firms is limited so that they recourse to PLS finance for further funding requirements. Overall, 62% of respondents believe that debt ceiling or other forms of limits will help wider application of PLS finance. However, 39% respondents believe that debt limit should be imposed by central banks while 23% believes that it should be applied by banks through their credit risk polices. However, 39% of respondents believe that debt limit is not going to help in PLS finance application. For robustness of the results, pool of experts also confirms it with 59% respondents believing in either form of debt limit proposition.

⁴² This is also evident from industry data that, now days, most of PLS finance application is in running finance or short-term finance.

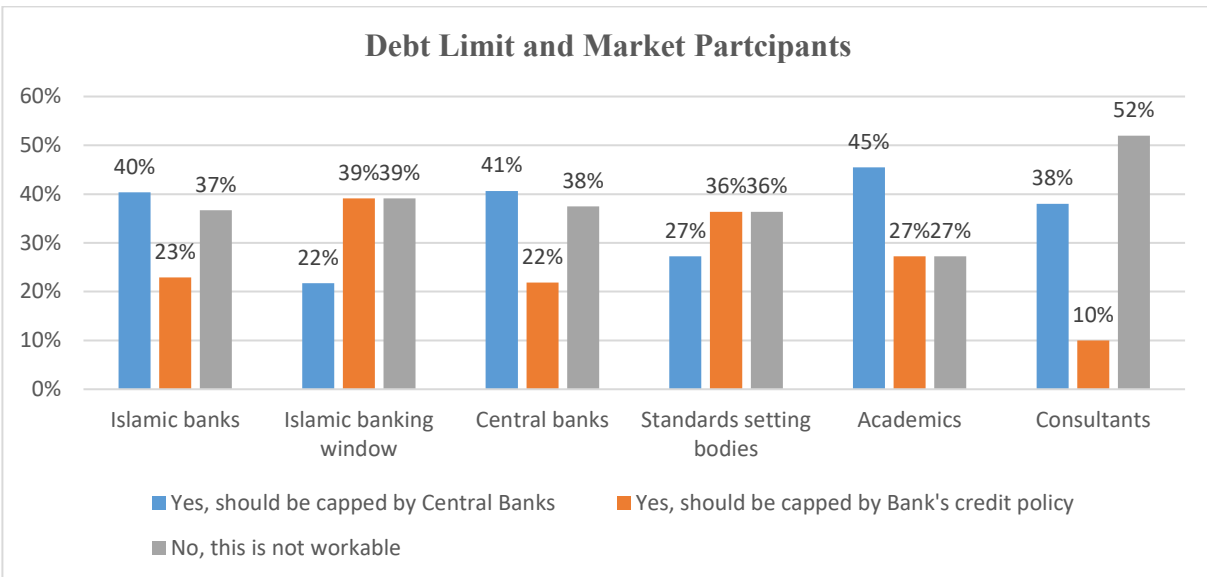
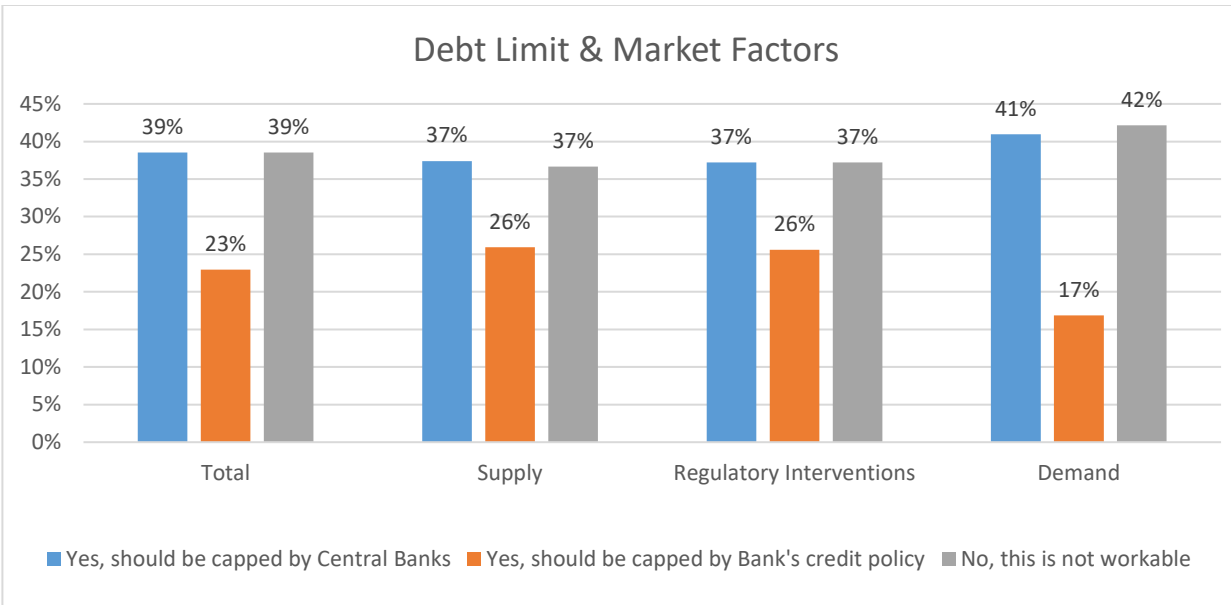


Figure 4.13: Debt Limit and PLS Finance

Survey evidence on the PLS finance application in case of financial constraint over firms by reducing their borrowing capacity through the policy tools on supply and control sides.

Relevant Survey Questions Asked:

Q6.10 Do you agree other modes of finance at Islamic banks/IFIs should be **restricted (or capped)** so that PLS financing can play a wider role in corporates financings?

There was a sub-question to understand further the reasoning behind the debt limit proposition and why respondents are advocates or opponents of it? 67% of respondents, who are in favour of debt limit, believes better financial discipline is a larger objective behind it. Others think diversification and financial stability is another key reason for such debt limiting factor. However, respondents,

who are opposing debt limits and believe such move will not help in wider application of PLS finance, believe IFIs are risk averse and have limited tools for monitoring of such specialized finance.

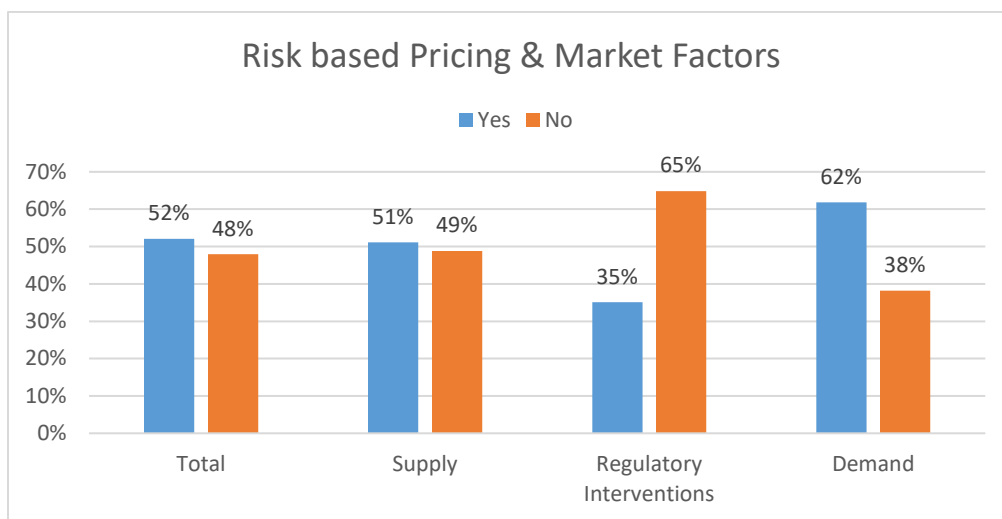
4.6.3.1 Discussion and Analysis

The main results exhibit consistency across demographic, functional, prudential, and developmental variables, with no significant deviations recorded.

In result, respondents believe in debt limit hypothesis that it can work for wider application of PLS finance. However, they differ if it should be enforced by either bank’s internal policies or regulations of central banks. Hence, overall proposition 3b is confirmed and has important insights for regulators and other market participants for policy implications.

4.6.4 Risk-based Pricing

Pricing of PLS finance transactions in comparison to other modes of finance is always a concern from risk reward parity. Higher risk of PLS finance requires better pricing (proposition 3c). This is studied with respondents directly to understand the existing market practices and how they price against the given risks of PLS. When asked a question about current practices of imposing higher profit rates on PLS finance to compensate for corresponding risks, 52% respondents confirm that there is no such policy at their banks and is negotiated based on relationship with and risk profile of clients. For robustness of the results, the pool of experts confirms the hypothesis with 47.5% support which is slightly lower from overall score. However, still it is a sizeable proportion to confirm the hypothesis.



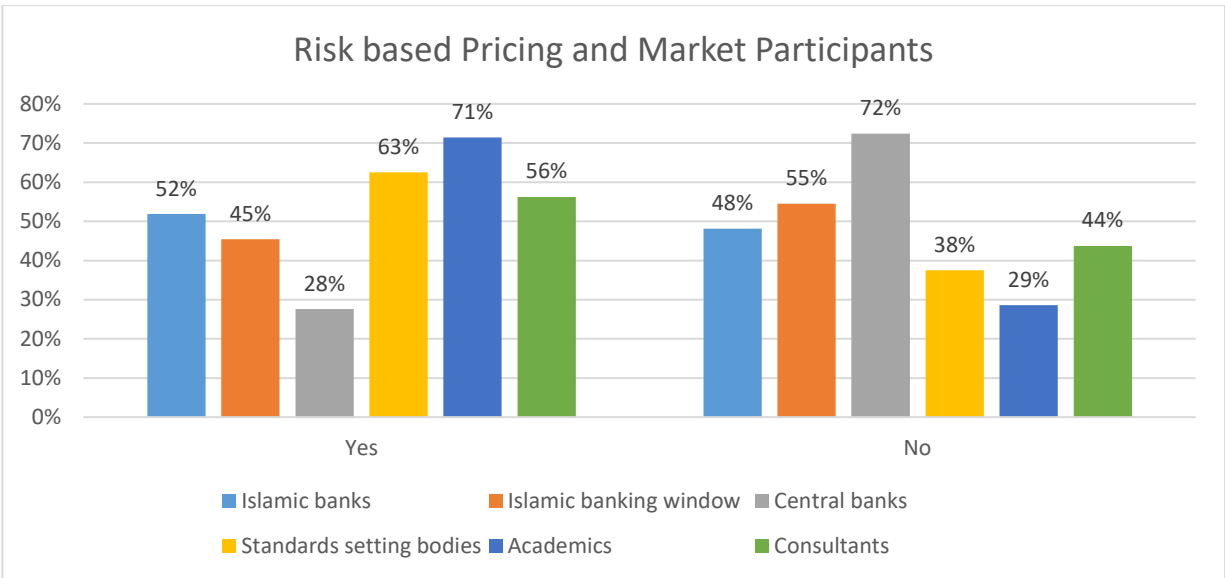


Figure 4.14: Risk-based Pricing in PLS Finance

Survey evidence on the PLS finance pricing practices across various market drivers and participants.

Relevant Survey Questions Asked:

Q6.13 Does your bank's policy require higher pricing of PLS finance deals compared to other modes of finance for a given firm?

Analysing risk based pricing further across market drivers, the results on supply side are close to the overall average. However, there are major variations in responses from demand and control sides which demonstrates a big anomaly in the industry practices. Only 35% of market control side believe that there is fair pricing in consideration of risk characteristics of PLS finance while 62% believes in it on demand side.

4.6.4.1 Discussion and Analysis

There is no significant diversion from main results for demographic, professional, prudential and developmental variables. However, there are notable outliers under geographical variable, which are Oman (33%), Pakistan (35%) and Bangladesh (44%) believing risk-based pricing is not being practiced properly while Malaysia (69%) believes more in practicing of risk-based pricing.

In overview, most of respondents confirms mispricing of PLS finance against its unique risks. Hence, results suggest that proposition 3c of risk reward parity does not hold valid. This is an interesting finding verifying an anomaly in the market which is exacerbated under specific responses of market participants with a noticeable exception of central banks having confirmatory response of 28% only.

4.6.5 Summary Table for Research Propositions

The research propositions and their predictions outlined in the summary table highlight the research findings for each research proposition, their predictions, research findings and literature contributions for PLS finance.

Propositions	Claims	Research Findings	Literature Contribution
Proposition 1a	PLS finance is important from Sharia perspective.	Confirmed	Research findings confirmed theoretical emphasize in Sharia over PLS finance.
Proposition 1b	Public perception is stronger than real objectives of Sharia	Confirmed	There is a literature gap on public perception perspective and requires further research.
Proposition 1c	PLS finance is important from economic perspective.	Confirmed	Research findings confirmed theoretical emphasize of economics in PLS finance.
Proposition 1d	Financial innovation and economic growth are important objectives than financial stability.	Confirmed	There is a literature gap on priority of economic benefits for PLS finance and requires further research.
Proposition 2	There are key constraints among the market forces, especially riskiness of PLS finance.	Partially confirmed	Various constraints in literature are prioritized by systemic research. However, riskiness of PLS is topmost among all perspectives of constraints.
Proposition 3a	PLS finance can substitute non-PLS	Not confirmed	There are different schools of thoughts on wider application of PLS finance and research findings confirm its complementary role only.

Proposition 3b	Ceiling the debt limit can help in wider application of PLS	Partially confirmed	There is a literature gap on debt limit for wider application of PLS, which requires further research.
Proposition 3c	Pricing of PLS is not reflective of its elevated risks	confirmed	An anomaly between theory and practice is identified which requires further research

Table 4.3: Summary of Research Findings (Study 1)
A table of claims of research proposition and study findings confirming (fully/partially/no) them with identified literature gaps.

Collectively, these propositions predict both theoretical and practical limitations for PLS finance and highlight how research findings can help in filling the gaps in the literature.

4.7 Conclusion and Recommendations

The objective of this study was to examine the impact of market forces and participants on the importance, constraints and application of PLS finance. The survey results are both interesting and puzzling. The research findings offer a number of interesting policy and academic implications.

In line with theory of PLS finance, the study validates tremendously the Sharia and economic importance hypothesis of PLS finance across market forces and market participants. However, a further analysis into underlying reasons of its importance is not reassuring somewhat to the general belief and debate in the literature. It is found that Sharia perception of PLS finance is considered more important than its Sharia compliance compared to other financing modes. This better perception is because of its superior ability to distinguish Islamic finance and being helpful in avoiding the criticism of replicating conventional products. Similarly, underlying reasons for economic importance of PLS finance is not somehow supported extensively in PLS finance literature. The most of debate on its economic merits in the literature is financial stability and resilience, counter-cyclical, fairness and access of credit allocation to the lower segments and lessening the effects of excessive debt leverage behaviour in an economy. Instead, the top-most reason considered by market participants is financial innovation and economic growth. Overall, the results of explanatory variables for demographic, geographic and functional are partly confirmatory to the main results with some notable exceptions. These exception variables especially certain countries have significant variations in results, which depicts potential of PLS finance is different across geographies due to varying beliefs in importance hypothesis. The results of policy and development variables have no significant influence on the main results.

Although constraints are discussed extensively in the literature, but key contribution of the study is to order the top-most constraints for PLS finance in an empirical way. This investigation with market participants to identify key constraints is conducted across four (4) perspectives of demand, supply, regulatory interventions and operating model. Overall, the riskiness of PLS finance is perceived as core constraint across all 4 perspectives of market drivers. On supply side, the utmost constraint is of PLS finance while on demand side, lack of willingness from firms to pay higher price compared to non-PLS. Lack of incentives, governance structures and capital charge treatments are equally ordered constraints from the regulatory perspective although these priorities differ within market participants. A mismatch between riskiness of PLS finance and profile of depositors is identified as top-most constraint for the operating model of Islamic banks. These constraints are also studied for market participants having a mix of results around mean across four perspectives.

Finally, the study attempts to investigate the applicability of PLS finance across three important dimensions: a) substitution of debt, b) limiting the debt, c) pricing. These are strategic considerations for a firm to decide on its optimal capital structuring. There are mix of results across these three dimensions. For the inherent potential of PLS to substitute debt, most of respondents do not believe in this hypothesis and consider complement role of PLS. However, they also believe that it is easier to replace first working capital requirements with PLS structure rather than long-term or hybrid capital needs. For hypothesis of the debt (including non-PLS) for the wider application of PLS, majority of the respondents believe it is workable though they prefer regulatory intervention is more effective for it rather than a bank's credit policy. For pricing of PLS, an anomaly is identified in the market practice that it is not being priced properly despite its high riskiness. These three dimensions are further analysed across the market participants and explanatory variables and some insightful results are noted.

The research findings hold considerable importance for policymakers, guiding their decisions, for market participants in practical matters, and for future academic research. While the study confirms the great significance of PLS finance, it also underscores the need to further analyse the public perception and the economic benefits derived from its application. The study requires a policy response to improve the Islamic banking operating model to address the top constraints, among others, risk, pricing and mismatch with depositor's profile that requires some specific

change in the regulations as well. Additionally, there is a requirement to introduce a debt limit policy, which will help in controlling the excessive leverage behaviour of firms while improving PLS share in the capital structuring decisions.

Further research is required on explanatory variables, particularly geographical ones, to comprehend their influence on PLS finance. There have been significant and convincing variations in results among neighbouring countries such as Malaysia and Indonesia, Oman and UAE, Pakistan and Bangladesh. Additionally, there is a need for systemic research on the economic benefits of PLS finance, ranking them in terms of significance and criticality for any given economy.

Chapter 5: Risk Management of PLS Finance: An Interplay of Credit and Equity Risks

5.1 Introduction

The banking sector is inherently exposed to numerous types of risks, each having the ability to impact operational stability, financial performance and the market reputation of banks. The discipline of robust risk management in the banking sector has garnered unprecedented attention in the contemporary financial discourse, particularly in the wake of the global financial crisis of 2008. This pivotal event underscored the importance of risk management for financial institutions in the face of unwarranted practices, lack of risk insights and the cascading repercussions on the global economy. Being a cornerstone of credit intermediation in a modern financial system, the banking industry is inherently exposed to numerous types of interconnected risks (Mian and Sufi, 2015). The failure of Silicon Valley bank⁴³ is a recent demonstration of cruel acts of such risks if not managed appropriately. Within this complex web of risks, credit risk is central to the banking business model, which refers to the risk of losses arising from a borrower's failure to repay a loan or meet contractual obligations (Konovalova, Kristovska and Kudinska, 2016). Universally, it is considered as principal risk faced by banks, as a likelihood of default on loans constitutes a significant threat to their stability and profitability. Effective credit risk management ensures the sustainability of banks by safeguarding their asset quality and strengthening the confidence of depositors and investors in their bank (Bessis, 2015).

Islamic finance claims to be safer and risk averse as Sharia requires to eliminate the elements of Gharar (undue uncertainty), Qimar (speculation) and other harmful economic activities from financing contracts which are allowed by conventional counterparts. However, the unique nature and principles of Islamic financing products are very different from conventional one and, hence, requires additional set of risk mitigating tools especially for credit risk management (Ariffin, Archer and Karim, 2009); (Kusnandar, 2022). Overall, credit risk of Islamic finance can be broadly

⁴³ “The collapse of Silicon Valley Bank: the fallout”, <https://www.ft.com/content/ecc4667e-a944-4d4a-b4db-a2b0276399de>

categorized into asset-based finance⁴⁴ and PLS⁴⁵ finance. In non-PLS finance arrangements, while the lenders do not bear any direct business risk, managing counterparty default risk remains always important. This brings fixed returns to the lenders in case of performing financing. In PLS structures, the lenders directly participate in the business risk of the venture and returns are entirely based on the underlying business performance. This elevates the need for suitable, robust due diligence, close project monitoring, and transparent evaluation of potential outcomes of the underlying business (Ayub, 2013).

However, despite the unique characteristics and risks of PLS finance, a critical problem that hinders PLS finance growth is the inadequacy of its effective risk management tools. The exigency for robust risk management tools, including risk identification and assessment, is paramount for the success of PLS finance. This complexity in risk management is due to the direct linkage of PLS performance with the performance of its underlying business and related residual risks. Another reason for this complexity is relevance and severe agency problems especially moral hazard and information asymmetries in PLS arrangements. Current risk management frameworks, predominantly designed for conventional banking systems, may serve for non-PLS arrangements at its best due to its high resemblance to conventional financing products, but often fall short in addressing the specific challenges posed by PLS financing contracts (Febianto, 2012). These traditional tools do not adequately account for the distinct characteristics and risks of PLS structures. This gap in the industry practices not only hinders the effective mitigation of financial risks but also potentially curtails the growth and broader acceptance of PLS financing in modern Islamic banking.

This study comprehensively examines the risk management practices and agency problems within PLS finance. It explores key questions such as market perception about risk management, role of creditworthiness and other risk mitigating techniques and specific agency problems for PLS finance. Given the growing prevalence and integration of Islamic finance in global financial markets, this study on enhancing the understanding of risk management in PLS finance is both pertinent and timely academic inquiry. To answer these questions, an exploratory empirical study

⁴⁴ Non-PLS finance or also called asset based finance is a structure closer to debt in terms of financial behaviour but still have unique and distinguished characteristics of risk sharing to make them Sharia compliant. Most common products are Murabaha (credit sale) or Ijara (lease).

⁴⁵ Profit-loss sharing (PLS) finance or equity finance are interchangeable terms in the Islamic finance literature. Three common PLS finance product structures used in Islamic banking are Musharaka, Modaraba and Wakala.

is performed. This methodology combines a survey of market participants with a detailed case study of a defaulted PLS Sukuk. Overall, this study aims to advance the discipline of PLS risk management discipline, both theoretically and practically.

The results of the study are insightful and counter-intuitive in many ways. Interestingly, the primary reason for lack of specialized risk management techniques lies in its perception by the market participants as more of a credit risk rather an equity investment risk. Due to credit risk perception, creditworthiness is playing a dominant role in credit decisions of PLS finance transactions. Profit rate risk is considered relevant only in the limited settings while agency problems play a much more severe role in PLS finance arrangements. Overall, the results will be supportive to academics and practitioners in designing better risk management framework for PLS finance. The rest of the paper is organized as follows. Section 2 provides literature review on risk management practices and development of the research hypothesis. Section 3 analyses the responses to the five main research propositions, arguing key findings related to market participants and explanatory variables. In section 4, the research propositions are validated using the default case study of Dana Gas Sukuk. The final section of the paper presents the conclusion and main contributions of the study.

5.2 Literature Review and Hypotheses Development

Khan and Ahmed (2001) highlighted the critical importance of risk management for Islamic finance as they note that traditional Islamic literature provide insufficient guidance for challenges of modern financial system. Similarly, Siddiqi (2006) claims that effective risk management in Islamic finance requires a comprehensive framework encompassing larger objectives of Islamic finance growth (Siddiqi, 2006). In a brief legacy of modern Islamic finance, there are various risk management tools developed to manage the credit and other related risks of non-PLS products. The rapid development of these risk tools in the Islamic finance industry during last two decades were mainly due to the adoption of original tools of conventional banking. This was possible somehow because of the high resemblance between non-PLS products and conventional ones. Risk managers in Islamic banking, with conventional background, further accelerated this adoption process. However, this approach is not feasible for development of risk mitigation tools for PLS finance because conventional finance has no PLS concept.

This section delves into the academic literature on credit risk profiling, focusing on how banks identify, assess, and measure it. It also emphasizes the review of credit risk management within the context of PLS finance.

5.2.1 Credit Risk Management in Conventional Finance

The management of credit risk is a critical aspect of banking operations, as it directly affects a bank's financial stability and performance. A literature review on risk management in banks encompasses a broad range of studies and frameworks aimed at identifying, assessing, and mitigating risks within the banking sector. The literature also often addresses the role of regulatory bodies in shaping risk management practices and the importance of corporate governance and internal controls in mitigating risk. Research indicates that the implementation of Basel regulations has significantly influenced banks' risk management practices, leading to stronger capital bases, improved risk assessment methodologies, and transparent reporting standards (ElBannan, 2017).

5.2.1.1 Credit Markets

Loaning is a main product of the conventional credit. A loan is defined as borrowed money that is paid back either in instalments or in full along with accrued interest at an agreed rate and definite period⁴⁶. Loan market and capital market are two separate and independent functions in a financial system of any country or region. The loan market is mostly operated by commercial banks while the capital market is facilitated by investment banks. Bonds, Sukuks and other fixed income instruments are key products in the capital market. Credit function can be categorized into retail, business and wholesale segments. Retail deals with consumer credit, business is for SMEs and middle corporates while large corporates, treasury, investments and debt capital markets are considered part of the wholesale business. Since business and wholesale banking is for commercial purposes, therefore most of time these functions are combined⁴⁷. Long-term finance, short-term finance, working capital finance and trade finance are the main funding requirements for commercial firms that are packaged into various forms of loan contracts and capital market instruments.

⁴⁶ <https://www.oxfordreference.com>

⁴⁷ <https://www.investopedia.com/terms/w/wholesalebanking.asp>

5.2.1.2 Credit Risk Management Process

Credit risk management, which includes identification, assessment, and measurement, is central to a bank's lending decisions. This process is crucial for identifying counterparty default risk by systematically analysing potential loan requests using various credit assessment methodologies. A comprehensive assessment typically begins with qualitative analysis, examining factors such as the borrower's industry, competitive position, management experience, and historical financial performance. Here, the literature emphasizes the critical role of gearing ratio, debt-service coverage ratios and other financial metrics in evaluating a borrower's capacity (Fatemi and Fooladi, 2006). This is followed by quantitative modelling at the bank for deeper analysis and standardization of the risk across the portfolio and various types of risk models are developed. The known examples are Moody's KMV model and Altman's Z-score. The Moody's KMV model, with its focus on estimating the expected default frequency of a firm, leverages market information to provide real-time assessments of credit risk. Similarly, Altman's Z-score model, through its combination of five financial ratios, offers a predictive tool that has been empirically validated to forecast bankruptcy with a high degree of accuracy (Bhatore, Mohan and Reddy, 2020). Based on credit assessment and risk reviews, lenders use different types of risk mitigating tools to make the transaction more bankable in accordance with their risk appetite which includes cash flows ring-fencing, collaterals, margins, covenants, third party guarantees etc. Risk evaluation is very important because of its wide-range application in modern days banking that includes quantifying the credit risks, provisions and capital charges at credit decision points (Konovalova, Kristovska and Kudinska, 2016).

Five (5) Cs of credit— Capacity, Character, Capital, Collateral and Conditions — serve as a foundation framework in assessing the creditworthiness of a commercial borrower (Baiden, 2011). They are considered time-tested principles in a credit market. Out of which 'capacity to pay' is the utmost important pillar. This examines a firm's ability to repay its debt, focusing on cash flow and profitability analyses. Banks never consider collaterals as primary source of repayment rather they rely on borrower's cash flows. Analysis of capacity includes four criteria that are at core in assessing the financial capacity of a firm. First, every financing must be directly linked to the primary source of repayment. Second, analysis of capacity must consider the quality and reliability of cash flow. The business expertise of the borrowing firm must be able to demonstrate its capability to generate adequate and sustainable cash flows from the primary source. Third, analysis

of cash flow should combine reviews of solid track-record of financial performance for prior periods and robust and credible business plan with reasonable estimation of cash flows projections for future periods. Second C is Character, which is an intangible factor, referring to the trustworthiness, good corporate governance, integrity and competencies of the management team, and are still considered crucial in the credit assessment. It underscores the importance of maintaining a positive credit history without any delinquency and bankruptcy, strong financial discipline and ethical business practices for the corporate borrowers seeking financing. The weak character of the borrowing firm exacerbates the agency issues for the banks. Misrepresentation, moral hazards and assets substitution risks severely undermine due diligence and credit decision-making process. Third C is Capital, which is also known as equity or net-worth, involves the borrower's own investment in the business, which signals the extent of the owner's risk. Studies in corporate finance illustrate that lenders view a strong capital base as a buffer against loan default, implying that higher equity investment by owners can lead to more favourable borrowing terms with banks. Most credit risk scoring models, including those used by credit rating agencies, specifically consider the gearing ratio⁴⁸ of a borrowing firm (Bluhm, Overbeck and Wagner, 2016). Fourth C is collateral that offers lenders a form of security and safety net, typically in the form of assets that can be liquidated in case of default. The relevance of collateral in the recovery process is extensively discussed as tangible assets significantly mitigate the lender's risk and loss given default. Valuation of tangible and intangible assets mortgaged as security remains crucial. However, research highlights that forced liquidation values is highly correlated with the economic and financial conditions of the defaulted firm, emphasizing a need for realistic assessments and understanding bankruptcy priority structures for the underlying collaterals. Fifth is conditions, also known as covenants, which relate to the loan's terms and the broader economic and industry-specific circumstances. Literature highlights the significance of understanding how macroeconomic trends and sectoral dynamics influence a company's financial performance and, by extension, its creditworthiness. The external conditions affecting the viability of the borrowing proposition can be economic trends, interest rates movements, liquidity crunch, significant decline in management quality, technology and legal developments etc.

⁴⁸ a ratio of equity invested by owners to the debt provided by the lenders.

Post extension of a credit, effective credit risk mitigation involves several key techniques for a high-quality credit portfolio. Diversification is a widely applied tool, which spreads exposure across various borrowers, industries, and regions, reducing the impact of any single default. Credit risk transfer uses instruments like credit default swaps to shift risk to other parties. Collateralization ensures loans are secured with assets, providing recovery options in case of default. Similarly, insurance, guarantees and letter of credit are other examples of risk transfer. However, a specific blend of risk mitigation techniques for a particular deal depends upon the financing structure, economic sectors, borrower's profile and certainty of future cash flows (Bessis, 2015): (Aicher, Cotton and Khan, 2003).

5.2.2 Credit Risk Management in PLS Finance

This is important to understand the risks of PLS finance in comparison to debt and non-PLS products for better evaluation of research objectives in the extant literature.

5.2.2.1 Unique Risks of PLS Finance

The inherent risks of PLS finance are somewhat unique from both non-PLS finance and loan structures. Although non-PLS financing closely resembles loan or debt in terms of risk profile, but PLS finance⁴⁹ is unique in its risk characteristics. PLS finance has no fixed returns contract, having no guarantee (or any kind of protection) for both capital and returns from the borrowing firm. PLS ventures are inherently exposed to market fluctuations and business uncertainties, leading to potentially volatile profit streams. Hence, returns for PLS finance ventures are variable and largely dependent on the firm's real business performance and profit-sharing ratios agreed between both parties. Contrary to predictable fixed payments behaviour of non-PLS finance arrangements, PLS financiers face the possibility of irregular or even zero profit distributions if underlying venture has a poor performance (Nouman, Ullah and Jan, 2019). This unpredictability can be challenging for risk management purpose, particularly for banks whose governance frameworks are not designed to treat such type of financing structures with variable returns.

The key risk in loaning and non-PLS structures is credit risk or counterparty risk i.e. a default in payment of fixed interest or rent or such an agreed amount in the contract on its due date. On the contrary, key risk in PLS finance is poor business performance of the underlying business and its

⁴⁹ In PLS finance, its underlying Sharia compliant product structures are known as Musharaka (partnership with a restricted mandate) financing or Modaraba (funds management with a restricted mandate) financing or Wakala financing (a principal-agency relationship for funds management).

inability to generate enough cash profits for equity financiers (Nouman, Ullah and Jan, 2019). Poor business performance of a firm could be for various internal and external factors. Internal factors are related to poor management of the firm that include negligence, mismanagement, inefficiency, financial discipline issues etc. However, external factors are related to economic and business environment of a particular firm such as GDP growth, inflation, money supply, unemployment, government spends, fiscal discipline, taxation etc. The external factors and most of internal factors have a direct impact on a firm's market, commercial and credit risks (Kusnandar, 2022). In a dichotomous analysis of PLS risks, it is comparable with non-PLS in two aspects. The first aspect is the poor business performance of the firm resulting in no eligible returns for PLS financiers. Hence, there is no legal claim for returns as there is no profitability for a firm. In non-PLS, the poor business performance of a firm diminishes its capacity to pay but lenders still have a legal claim for the contractual fixed returns. This financial inability to pay is called equity investment risk or capital impairment risk in PLS while it is called forced financial default in non-PLS arrangements. In other aspect, even if there is a good business performance, but counterparty may opt not to pay eligible returns to PLS providers for any reason. Similarly, this may happen in non-PLS where borrower may choose not to pay despite having financial capacity to pay. In both financing arrangements, this is called willful default or strategic default. In short, PLS finance has a blend of both credit and equity investment risks which are primarily stemmed from a firm's ability to generate revenues (IFSB, 2021); (Ariffin, Archer and Karim, 2009). It is explicitly stated in the IFSB-23 standard on capital adequacy that the impairment of capital arising due to unprofitable business of the firm does not involve any credit default, whereas the failure of the partner to meet its contractual obligations (if any) will be an incidence of credit default (IFSB, 2021). Profit rate risk or rate of returns on PLS ventures is a key component of equity investment risk for a lender. A poorly managed PLS venture will not only poses a profit rate but also a capital impairment risk because a lender may lose its whole capital investment. On other side, this poor performance may impede a firm's ability to access further funding in both banking and capital markets.

5.2.2.2 Risk Management in PLS Finance

In the corpus of Islamic finance literature, the higher risk associated with PLS mechanisms is a recurrent theme. Scholars posit that PLS, while epitomizing the risk-sharing ethos of Islamic finance, exposes financiers to increased financial vulnerability compared to conventional fixed-

interest models (Khan, M. M. and Bhatti, 2008); (Usmani, 2002). This increased risk emanates from the direct linkage of returns to the unpredictable performance of the business ventures (Siddiqui, 2006). PLS financiers are susceptible to the variations of business cycles, contrasting starkly with the predictable returns of interest-based loans (Masrizal and Trianto, 2022). Consequently, while PLS financing aligns with the ethical imperatives of Islamic finance, it demands a systemic approach to risk assessment and management, a fact that continues to challenge both practitioners and scholars in this field (Nor and Ismail, 2020). In PLS finance arrangements, the shared risk phenomenon inherently reduces the probability of default for a firm largely. Rather the lenders share the risks of the underlying businesses of a PLS venture. This protects a firm by largely reducing its probability of default and default losses in return of losing some controls (Nouman, Ullah and Gul, 2018). Thus, PLS finance offers a more balanced risk profile in a financial system, aligning the interests of both the bank and the business owners.

Since fluctuations in economic conditions, industry trends, and competitor actions can dramatically affect a venture's profitability (Ariffin et al., 2009); (Sundararajan and Errico, 2002), it requires PLS financiers to better understand the reputation and integrity, business expertise and track records of the borrowing firms. It is also important to understand the risks and uncertainties of the economic sector and its correlated relationship with the economic trends for better performance of PLS ventures. Additionally, inherent operational uncertainties like project delays, cost overruns, or unforeseen challenges can further contribute to unpredictable profit streams. PLS deals often require active monitoring and engagement from banks to assess venture progress and mitigate risks. This is more operationally intensive compared to the passive role of lenders in conventional financing (Khan, Tariqullah and Ahmed, 2001).

5.2.2.3 Creditworthiness and Risk Mitigations in PLS

Creditworthiness plays a crucial role in managing unique risks of PLS finance. Extant literature has covered this inverse relationship between creditworthiness and residual risk of the equity. Higher creditworthiness typically means lower residual risk for equity holders, as financially stable companies are less likely to face both instability and insolvency, reducing the repayment risk to equity investors (Altman and Hotchkiss, 2010). The residual equity risk is important to manage PLS risks. The relationship between creditworthiness, residual equity risk and PLS finance is embedded into the three-steps appraisal process approach discussed in the chapter 2 of conceptual framework. If creditworthiness of a borrower is strong, then choice between non-PLS and PLS

structures is a matter of calibrating and notching the risks within an obligor. While a high creditworthiness borrower has higher willingness to honour his obligations or credit commitments, it is also highly likely that he will make extra efforts to fulfil his fiduciary responsibilities in PLS finance ventures. This perspective becomes more important when PLS finance works in a dominant paradigm of credit and any failure to a commitment even due to poor business performance may result in a high public perception and reputational issues for good firms (Branch, 2002). This market discipline plays a positive role in favour of PLS finance that is due to financial market expectations, lending relationships and regulatory frameworks treating PLS and non-PLS alike. Hence, high creditworthiness of a firm mitigates PLS finance risk; even during time-period of low business performance, it is likely that they keep paying indicative profits on PLS arrangements for sake of relationships with lenders and market reputation.

Furthermore, (Ahmed, Habib, 2018) analyses conventional risk management framework and provides a structured risk assessment methodologies for a quantitative assessment of a risk management framework of an Islamic, including its strengths and weaknesses. However, his findings did not address the specific issues of risk management for PLS finance structures. Considering unique risks and inherent uncertainty of PLS structures, the literature also discussed various risk mitigating tools to reduce PLS risks especially profit rate risk at the banks. For this purpose, one common structure is to liquidate the PLS finance deal immediately if its underlying business is not able to achieve the indicative profit agreed in the PLS. In this case, all outstanding principal along with accrued profits are treated as current liability for the firm. This feature acts like a demand promissory note and helps the bank to protect its financial interest largely. However, it requires further research to understand the effectiveness of this risk-mitigating technique and is further discussed under hypotheses development section.

5.2.2.4 Agency problems related risks

The extensive literature review highlights some unique agency issues in PLS finance that are not relevant for asset based or debt finance. It is important to understand how agency issues are relevant for PLS finance and how its severity can impact the risk management system of a bank.

Among agency problems, asymmetric information, adverse selection and moral hazards are the most catalytic factors considering unique risks of PLS financing arrangements (Kayed, 2012); (Adnan and Muhamad, 2007); (Khan, 2010). Information asymmetry is an information gap

between banks and their borrowers (firms) which can happen when later possess more information than former about the underlying assets value, expected cash flows and other operating activities. This can cause an adverse selection problem where financing is awarded to a firm with poor credit standing, which is also called type I error in the credit decision (Chong and Liu, 2009); (Mirakhor and Zaidi, 2007); (Farooq, 2007). Moral hazard is another branch of the agency problem when client misappropriate the funds and manipulate returns of PLS finance (Abou-Gabal, Khwaja and Klinger, 2011). Notably, this issue is more pronounced due to the inherent risk-sharing structure of PLS finance. The flexibility in the model increases the likelihood of misreporting profits or losses by businesses to alter the shared amount with investors (Ahmed, 2013).

Moreover, another agency issue discussed in the literature pertinent for PLS finance is asset substitution problem. This problem arises when managers, after availing the facility, invest in riskier assets or shift to riskier operating activities that exposes the bank to a higher risk. Furthermore, businesses may engage in riskier ventures, knowing the losses are partially absorbed by banks, a phenomenon less evident in debt financing where firms bear the full financial consequences of their decisions (Hasan, 2015). This phenomenon improves the upside for owners of a business while leaves the downside for the creditors. Hence, this requires meticulous due diligence and robust monitoring in PLS arrangements to mitigate its agency problems. These factors necessitate a strategic involvement in the business operations, a departure from the passive role typically assumed in conventional lending (Iqbal & Mirakhor, 2007). Since these agency issues lead to a higher risk in PLS arrangements, the banks often opt for non-PLS finance in order to mitigate such unwanted risks (Febianto, 2009).

5.2.3 Development of Research Propositions

In background of this discussion in the academic literature for credit risk assessment, mitigation and management at banks and their relevance for PLS finance, this section aims to develop a series of propositions to guide the empirical investigation. Drawing on established conceptual frameworks of credit risk management and PLS arrangements, following propositions address the potential relationships between key variables relevant to the research question. Hence, research propositions go as follows:

Proposition 1: PLS finance risk is perceived as an equity risk.

Proposition 2: *The creditworthiness of a counterparty is yet relevant in structuring PLS finance transactions.*

Proposition 3: *PLS finance requires a unique set of risk mitigation techniques that differ from those used in the traditional framework.*

Proposition 4a: *Earning a lower-than-average finance yield of a given firm is perceived as profit rate risk in PLS finance.*

Proposition 4b: *Liquidation of PLS finance in case of lower-than-expected returns is an effective risk management technique.*

Proposition 5: *The perceived credit losses in PLS finance are higher than non-PLS finance.*

Proposition 6: *Agency problems are perceived more relevant and severe for PLS finance than non-PLS finance.*

5.3 Research Findings and Results

Following are key findings and summary of responses for each research proposition of the survey. The results are further analyzed against variables of market participants and other five (5) explanatory variables including demographic, geographic, policy, functional and developmental roles of respondents. Section 6 and 7 of the questionnaire are designed specifically for risk management and agency problems of PLS finance, which are discussed in chapter 2 in detail.

5.3.1 Risk Type of PLS Finance

The respondents were asked about their perceptions on the riskiness of PLS finance over non-PLS finance products. Proposition 1 tests hypothesis of ‘hybrid risk’ which is a mix of credit risk and equity investment risk in PLS Finance. In line with academic literature for risk management of PLS finance (Nouman, Ullah and Jan, 2019), most of the respondents believe strongly (74%) that PLS finance is a hybrid risk having both elements of credit risk and equity investment risk. The important point here is that this is first study of its own kind in Islamic finance industry that is directly confirming the magnitude of riskiness of PLS finance perceived by its stakeholders. Furthermore, the pool of experts formed to ensure robustness of the results also confirm (75%) the type of risk for PLS finance is a mix of both credit and equity investment risks.

Dissecting the perception of PLS finance risk across its key market participants, the study also finds a strong confirmatory response for the hybrid risk hypothesis. The results are summarized in Fig. 5.1. Although key market participants believe in a hybrid nature of PLS finance risk but their magnitude of perception varies among respondents. For example, Islamic banks believe into the hypothesis by 69% in comparison to Islamic banking windows believing by 76%. They also diverge in their perception of counterparty default risk with Islamic banks believing 18% while windows believe 5% only. Similarly, central banks and standards setting bodies perceive the magnitude of hybrid risk differently (82% and 67% respectively) while their belief of its equity investment risk is 11% and 22% respectively. Interestingly, there is also a major deviation among key stakeholders in the second ranking of PLS finance risk as credit or equity investment risk. Islamic banks rank credit risk (18%) while all other stakeholders believe that equity investment risk is more relevant.

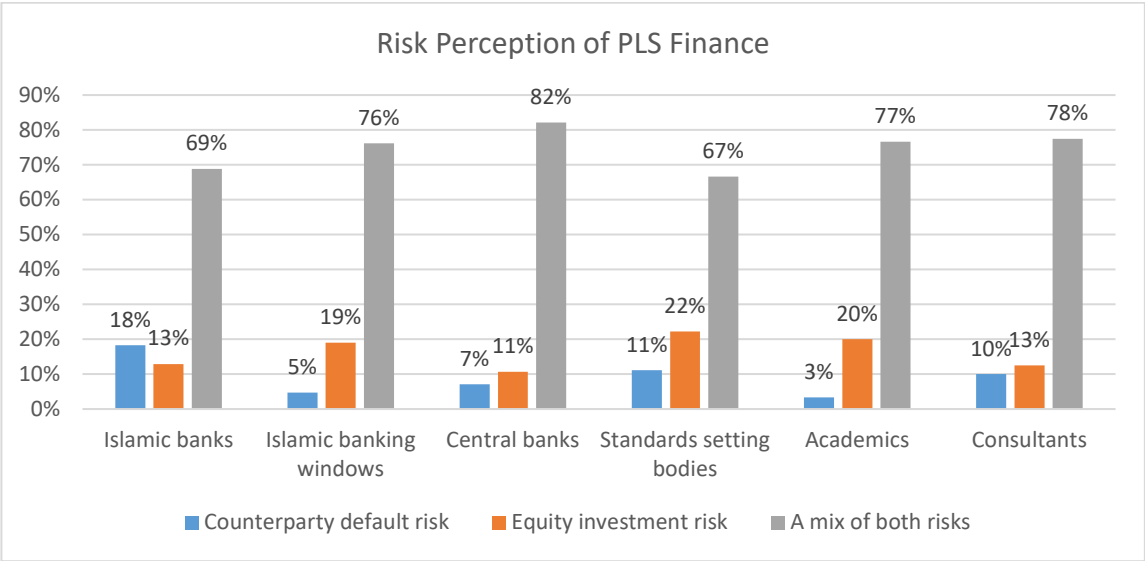


Figure 5.1: Risk Type of PLS Finance

Survey evidence on risk perception of PLS finance perceived by different key stakeholders in Islamic finance industry that are Islamic banks, Islamic windows, central banks, standards setting bodies, academics and consultants.

Relevant Survey Questions Asked:

Q7.1 While Client's on-boarding/ Due-diligence and assessing creditworthiness for PLS financing proposals, which of risks below you think are more pertinent for risk management of PLS financing?

- o Counterparty default risk
- o Equity investment risk of the venture
- o A mix of both risks

5.3.1.1 Discussion and Analysis

There are some interesting results for risk perception proposition of PLS finance by examining the responses conditional on demographic, geographic and functional variables categories while growth and development variables are with mixed results.

The results for demographic variable category are confirmatory to the main results although variations exist within each variable. Female gender believes (47%) far less in hybrid risk type than male gender (76%). The perception of hybrid risk type and age have a linear relationship as it increases with the age. Below age of 30s believes 64% in the hypothesis while above 50s believes 79%. For education variable of degree holders, PhDs believe 67% while MBAs believe 71% and master's degree holders believe 77% in hybrid risk hypothesis.

The results for geographical variables confirm the main results except outliers for hybrid risk hypothesis are UAE (86%), Pakistan (85%) and Africa (59%) that are significantly different from its overall mean (74%). These variations are due to different regulatory, religious, cultural, financial literacy aspects of Islamic finance in these countries.

The results for functional variables are confirmatory to the main results overall, however, in case of job experience, this relationship goes into 'V' shape. Respondents with experience below 10 years believes 74% which goes down to 69% for 11-15 years of experience bracket and again back to 78% for respondents having experience above 15 years. There is no significant variation found in the study relating to the seniority and designation of the respondents.

All results of prudential and developmental policy variables are confirmatory to the main results of hybrid risk hypothesis. However, there are mild variations such as regimes with no capital charge policy for PLS finance are supporting the hypothesis by 69% against regimes with capital charge policy (79%). Similarly, there is a variation in regimes with debt limit policy (75%) and

without policy (66%). On other hand, Islamic banks and windows having more than 20% market share are outliers (58%) to the mean of hybrid risk hypothesis (74%) and relatively weigh more in credit risk type of PLS finance. Other explanatory variables of regulatory regime types and development policies have no significantly different impact over the proposition.

Hence, these results conclude that proposition 1 holds strongly and PLS finance is perceived as a hybrid instrument having both credit and equity investment risks.

5.3.2 Role of Creditworthiness in PLS Finance

With 73% of respondents acknowledging hybrid risk and 18% specifically identifying credit risk (altogether 91%), it becomes crucial to understand the role of creditworthiness in managing PLS finance risks. For further insight into the riskiness of PLS finance, a further question was asked to test proposition 2 on relevance and importance of key factors of creditworthiness while originating and appraising such deals. Respondents were provided with seven mutually exclusive key factors of creditworthiness, which they could rank from 1 to 7 based on their beliefs about their relevance for PLS finance. These key factors were carefully selected after doing literature review relating to credit risk mitigation techniques and informal discussions with experts of Islamic finance based on pilot study results. The results are summarized in Fig. 5.2. The purpose of exploring these factors is to understand how key stakeholders prefer to manage the riskiness of PLS finance while sourcing fresh deals. Out of the seven factors providing for assessing the importance of creditworthiness in originating fresh PLS finance deals, the respondents ranked "integrity and willingness" of the client as the most important factor (72%). Following this, 'proven business expertise' and 'adequate collaterals' were ranked second and third most important factors, respectively.

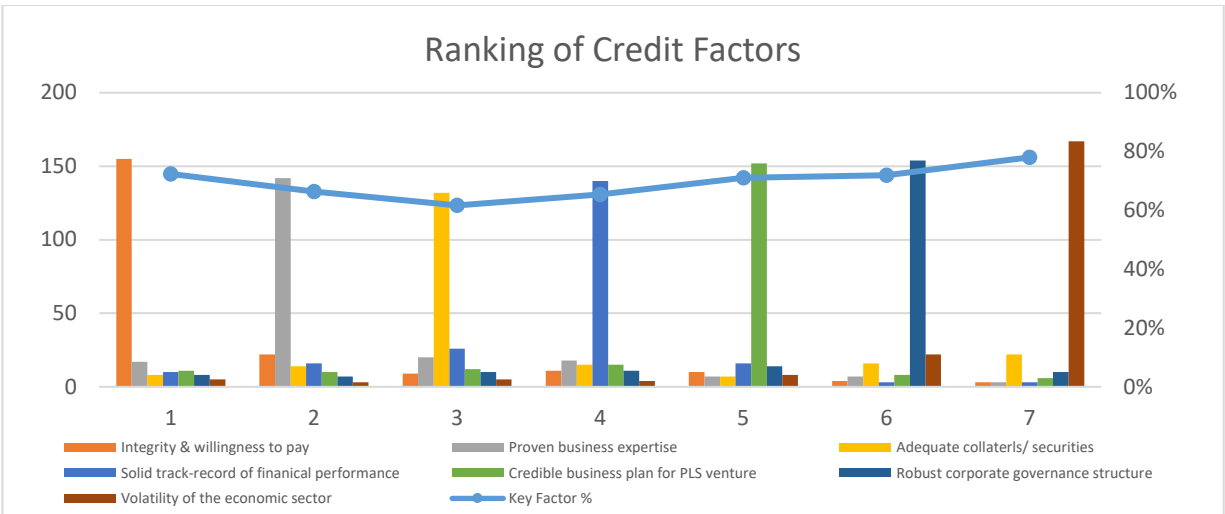


Figure 5.2: Role of Creditworthiness in PLS Finance

List of mutually non-exclusive choices and their ranking from 1 to 7. The respondents have ranked their perception of risk factors for PLS finance.

Relevant Survey Questions Asked:

Q7.2 How important are these factors of **creditworthiness** for PLS finance (*set priority in below table*)?

To ensure the robustness of results, proposition 2 is also validated with ‘pool of experts category’ who also confirm the same ranking for the importance of top 3 factors for on-boarding of fresh PLS finance deals. Interestingly, proven business expertise of the client is given better ranking by the respondents over both collateral and track record of financial performance. The latter is typically considered as the most important metric for PD and estimating capacity to pay in a credit decision process. Similarly, collaterals are very important in credit decision making and have a high correlation with loss given default.

5.3.2.1 Discussion and Analysis

The review and analysis of five control and explanatory variables for relationship with propositions 2 are discussed below with key findings.

Demographic variables including gender, age and education confirm the main results as well. Both male and female respondents support the importance of top three factors for origination of fresh PLS finance deals. However, female respondents are showing stronger support to this proposition than male respondents. Across age category, there is similar support of main results including the importance of top 3 key factors. Under education type, there is equal support for main results from all degree holders except for PhDs holders. They equally support ‘integrity & willingness’ but

have less support for 2nd and 3rd most important factors compared to the total population while originating fresh PLS deals.

The results for geographical variables are confirmatory to the most important factor of creditworthiness ‘integrity and willingness’ except for Oman (33%) and Bangladesh (94%), which are key outliers in the population. The results for functional variables are mostly supportive to main results with the exception of professionals having experience between 16 to 20 years having mixed response. The results of policy variables including regulatory regime types and development policies also support the main results without any exception.

Overall, results confirm the importance of the counterparty's creditworthiness while extending credit under PLS finance arrangements. Hence, proposition 2 holds true.

5.3.3 Risk Management Techniques in PLS Finance

Risk management techniques are important to manage the unique risks of PLS finance in the Islamic finance industry. It is equally important to understand how these risk mitigating techniques are being practiced in Islamic finance industry and are different from traditional tools used for other modes of finance?

The proposition 3 requires applying a different set of risk mitigating techniques from traditional tools used for non-PLS in Islamic finance industry. This is a critical aspect considering the unique risks of PLS finance structures. To understand this proposition, respondents were directly asked about risk management practices and whether they use a different set of techniques for PLS compared to non-PLS finance. There is a partial confirmatory response with a mean of 5.4 (σ :2.66) on a Likert table of 0 to 10 points; where 0 was least-agree while 10 was most-agree. This describes the lack of specialized risk management tools practiced in PLS finance, lacking recognition for its distinctive characteristics and allied risks. For robustness of the results, pool of experts also confirms partially the relevance of risk management tools with mean of 5.2 (σ :2.54). Among working categories, Islamic banks (μ :5.4) and windows (μ :5.5) show a consistent result with the overall findings, whereas regulators (μ :4.97, σ :2.57) demonstrate an even distribution having support for the main results.

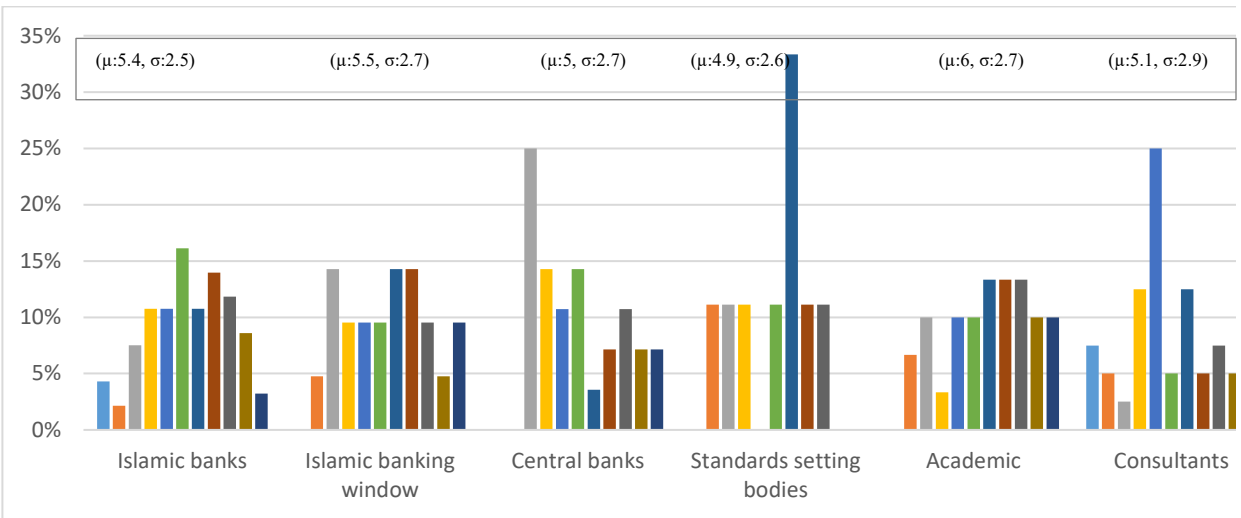
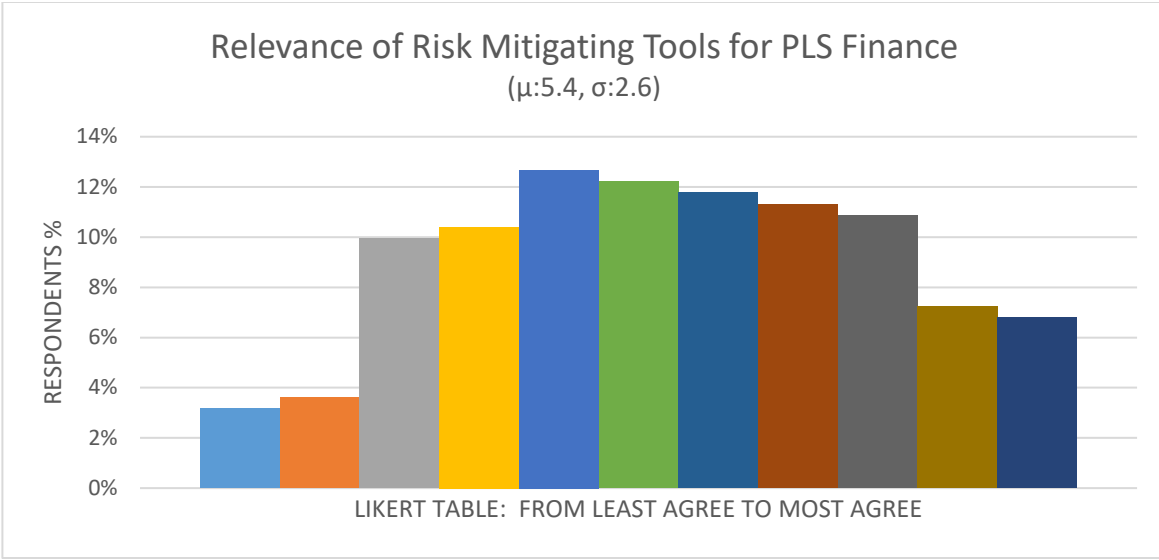


Figure 5.3: Relevance of Risk Mitigating Tools for PLS Finance
 Relevance of risk management practices for PLS finance and differences in respondents’ perception over the likert table in comparison to other modes of finance in Islamic finance. The respondents include working categories of Islamic banks, Islamic banking windows, central banks, standards setting bodies, academics and consultants professions.
 Relevant Survey Questions Asked:
 Do you agree with the below statements?
 “Islamic banks apply similar risk management techniques for PLS finance as of AB finance.”

In a following sub-question, respondents were given seven choices of risk mitigating techniques applied in real practices at their banks or jurisdictions to manage the PLS finance risks. The set of techniques are selected based on pilot study survey with experts and literature review, which are a combination of techniques discussed for PLS finance. The purpose was to explore which risk mitigates are being used and what is their acceptance quotient in practice. They rank (19%) ‘diversification of PLS portfolio’ as the most applied technique whereas ‘risk-based pricing’ (17%)

as 2nd most applied and ‘close monitoring’ (14%) as 3rd most applied techniques at their banks or jurisdictions. In robustness of test, results are compared with pool of experts and found similar support for top 3 most applied risk-mitigating techniques. Among working categories, Islamic banks (19%), academics (18%) and consultants (21%) believe portfolio diversification as topmost risk mitigating techniques while Islamic banking windows (22%) and regulators (18%) believe risk-based pricing is topmost risk mitigating technique.

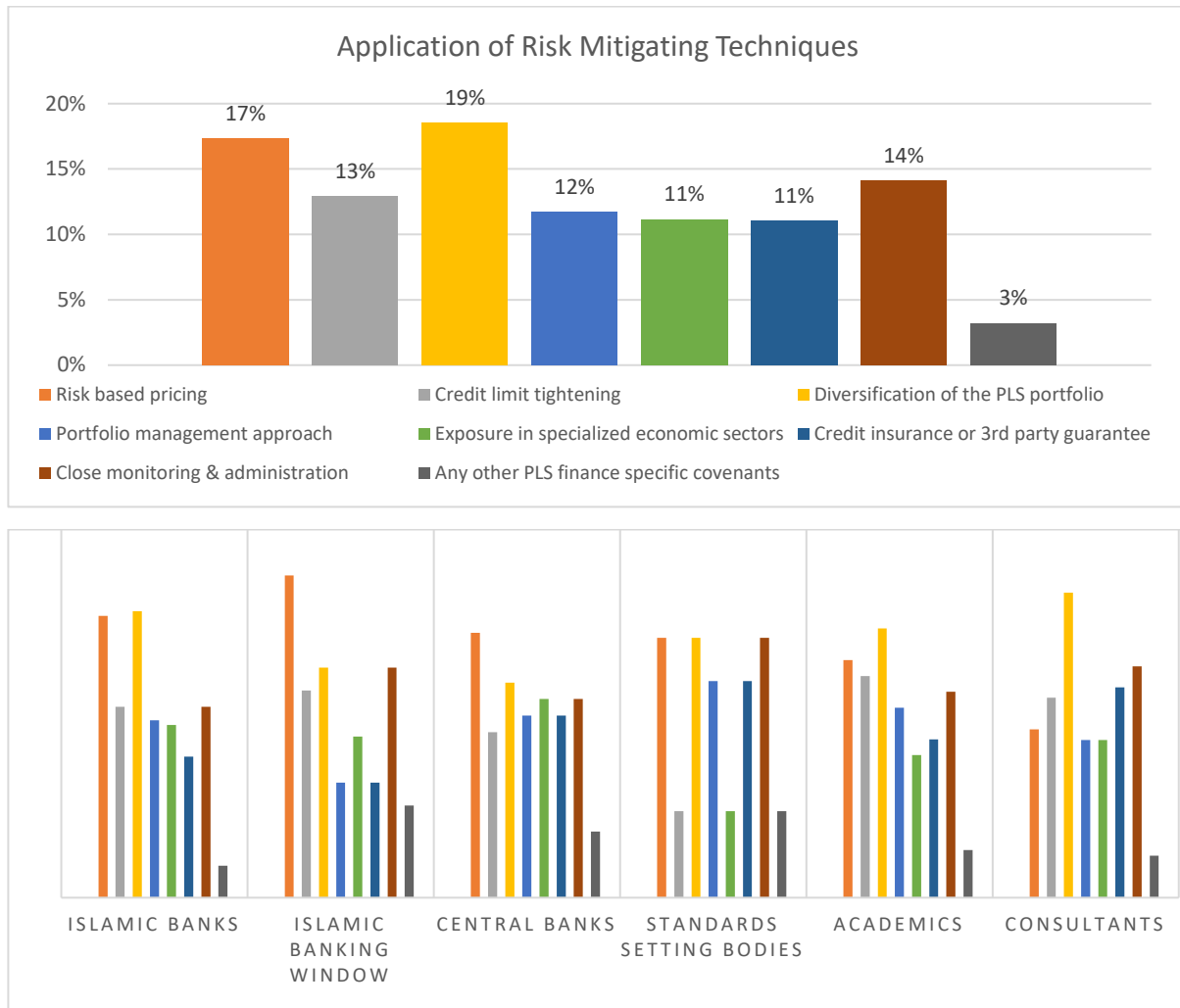


Figure 5.4: Application of Risk Management Techniques for PLS Finance

How these techniques are perceived different from non-PLS finance. The respondents include from working categories of Islamic banks, Islamic banking windows, central banks, standards setting bodies, academics and consultants professions.

Relevant Survey Questions Asked:

Q7.4 What are the additional risk mitigating tools used at your banks for PLS finance deals? (*Select as many as appropriate*)

There was an open-ended question enquiring about any other risk mitigation technique that is not covered under seven choices. Although there were not many responses but few good suggestions for better risk management of PLS finance were provided, which include profit equalization reserve, funding PLS portfolio with a specific pool of funds and implementing an underlying asset substitution clause if performance of an asset is poor.

5.3.3.1 Discussion and Analysis

The review and analysis of five control and explanatory variables for a relationship with proposition 3 are discussed below. The purpose is to identify any explanatory variables having opinions on risk management requirements in PLS finance, that differs from the overall results of proposition 3. Demographic variables include gender, age and education, which overall support the main results. However, female respondents ($\mu:4.5$) have less belief in the proposition than counterparts ($\mu:5.5$). Geographic variable also supports the main results except for Malaysia ($\mu:5.56$, $\sigma:2.97$). Furthermore, functional, policy and developmental variables also support main results without any significant variation.

Hence, it is concluded that proposition 3 has a partially confirmatory response, which means mostly Islamic banks apply similar risk management techniques for PLS finance as for non-PLS.

5.3.4 Managing Profit Rate Risk of PLS Finance

In theory, profit rate risk (PRR) or rate of returns is a relative term for PLS finance which corresponds to a risk of poor performance of its underlying business or venture. However, there is a market practice of benchmarking profit rates of PLS finance with yield of other modes of financing instead⁵⁰. Even such comparable rates are referred as indicative profit rates in PLS financing contracts. It is explored below further about relevance and effectiveness of risk mitigation technique to manage such profit rate risk in PLS finance.

⁵⁰ Refer to Dana Gas Sukuk or such capital market instruments where indicative profit rates are mentioned for provisional periodic payments to Sukuk holders.

To understand the significance of profit rate risk for PLS finance and validate the research proposition 4a, it should be relevant only if the returns on PLS finance deals are lower than the average financing yield of the given firm. Mostly respondents support ($\mu:6.3$ against median of 5.5) the proposition that profit rate risk of PLS finance deals is always measured in context of average borrowing cost of the given firm. The expert's pool has also moderately confirmed ($\mu:5.9$, $\sigma:2.4$) these results. All key players support above the mean for proposition 4 except consultants ($\mu:5.9$, $\sigma:2.5$). These results lead to a conclusion that relevance of profit rate risk in Islamic finance industry is rather benchmarked with the yields of non-PLS finance deals of an obligor. Ideally, this should be with equity related factors such as equity premium, systemic risk, beta etc.

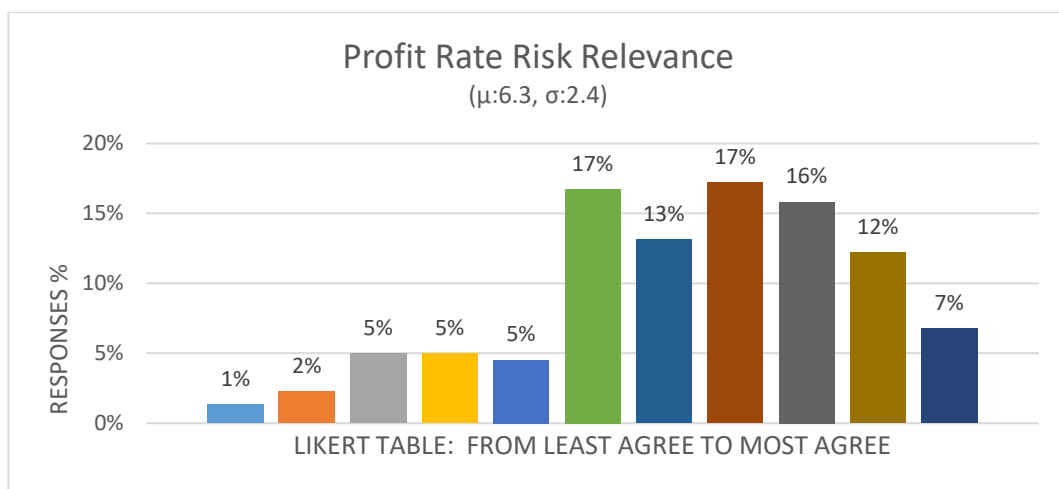


Figure 5.5: Profit Rate Risk Relevance for PLS Finance
Response distribution for relevance of profit rate risk if returns on PLS finance are below average yield of financing for a given firm.

Relevant Survey Questions Asked:

Do you agree with the below statements?

“Profit rate risk is relevant only if returns on PLS finance deals are lower than the average financing yield of the given firm.”

5.3.4.1 PLS Liquidation Technique to Manage Profit Rate Risk

Since profit rate risk of PLS finance is benchmarked with average yields of non-PLS finance deals for a given firm, an important risk mitigation technique is practiced in the banking market. There is a covenant in PLS financing contracts stipulating that if returns are lower than the indicative profit rate, then the borrowing firm has an obligation to communicate this to lenders on an immediate basis. In returns, when returns are lower than indicative, banks have the right to liquidate the PLS deals making all outstanding principal along with accrued profits payable instantly. This forces the borrowing firms to keep paying as per indicative profit rate or opt for a

strategic default. It is observed that strategic default option is more common in capital markets while in the loan market, firm may switch to another bank if strategic default is not a preferred option for some reasons.

To test this phenomenon given in proposition 4b, a direct question was asked to respondents how they support this technique on the Likert scale from 0 to 10 points. The responses mildly support ($\mu:5.46$, $\sigma:2.7$) the effectiveness of this technique. The test of robustness also confirms ($\mu:5.4$, $\sigma:2.8$) the results overall. Among key players, Islamic banking windows ($\mu:6.3$, $\sigma:2.6$) and academics ($\mu:6.2$, $\sigma:2.4$) support it moderately whereas regulators ($\mu:4.9$, $\sigma:3.1$) and consultants ($\mu:4.7$, $\sigma:2.8$) do not support the proposition.

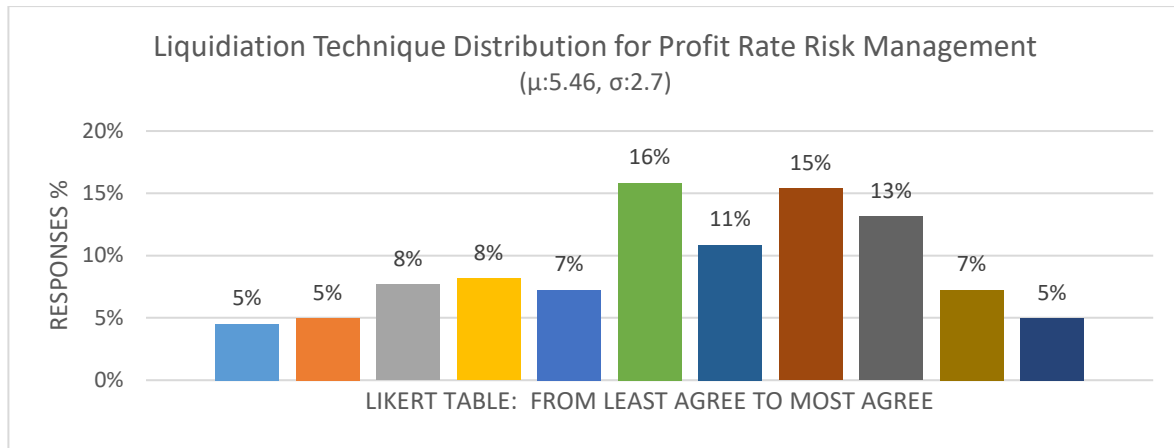


Figure 5.6: PLS Liquidation Technique

Relevant Survey Questions Asked:

Do you agree with the below statements?

“Immediate liquidation of PLS finance contracts in case of lower-than-expected returns is an effective risk management technique.”

5.3.4.2 Discussion and Analysis

The impact of five (5) control and explanatory variables over proposition 4 for relevance of profit rate risk (4a) and liquidation technique (4b) in PLS finance are discussed as follows:

Demographic variables including gender, age and education support the main results of both propositions without significant variation. Geographic variables are also supportive to the main results except Bangladesh ($\mu:7$) for proposition 4a while Oman ($\mu:4.9$) and Malaysia ($\mu:4.6$) for proposition 4b. Other variables of functional, policy and development are also in support of main results of both propositions without major variation.

5.3.5 Expected Credit Losses in PLS Finance

Expected credit losses are calculated as the product of probability of default and maximum loss given default. Since there is no specific risk measurement tool available for PLS finance, it is important to understand the stakeholders' expectations for its expected credit losses.

5.3.5.1 Probability of Default in PLS Finance

The first part of research proposition 4 aims to determine whether the probability of default (PD) for PLS is higher or lower compared to non-PLS. A direct question was asked to all respondents about their perception of the probability of default for firms using PLS finance. Intuitively, most respondents support ($\mu:6.1, \sigma:2.6$) the first leg of the proposition, indicating that PLS finance has a higher probability of default compared to other modes of financings. The robustness test with pool of experts also supports ($\mu:6, \sigma:2.5$) this proposition of higher probability of default. Among working categories, academics strongly support ($\mu:7.3, \sigma:2.1$) the proposition while Islamic windows are least supportive ($\mu:5.1, \sigma:2.5$) of it.

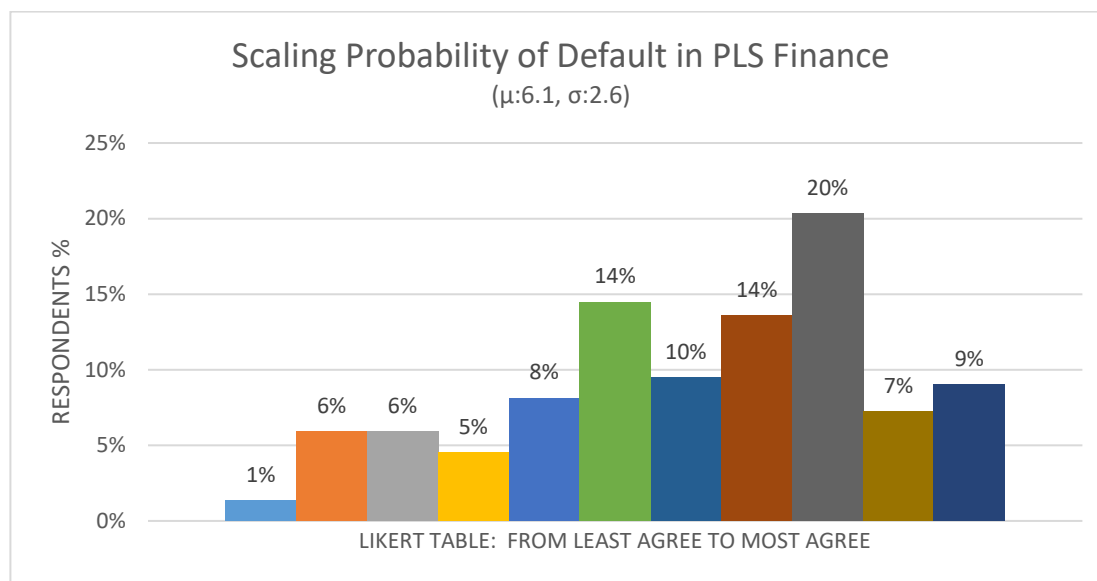


Figure 5.7: Probability of Default Perception in PLS Finance

Relevant Survey Questions Asked:

Do you agree with the below statements?

“PLS finance reduces probability of defaults (PD) of firms because of its unique risk sharing characteristics.”

5.3.5.2 Loss Given Default

The second part of proposition 4 seeks to understand the respondents' beliefs about the maximum loss given default (LGD) in PLS finance. For this purpose, a direct question was asked if they believe LGD is higher in PLS finance assuming a similar set of securities packages for both PLS

and non-PLS choices. Most respondents strongly support ($\mu:6, \sigma:2.4$) this proposition. The pool of experts supports ($\mu:6.2, \sigma:2.3$) even more strongly confirming the robustness. Among key market participants, central banks support ($\mu:6.9, \sigma:2$) the proposition stronger than others while consultants are less supportive ($\mu:4.8, \sigma:2.7$) of it.

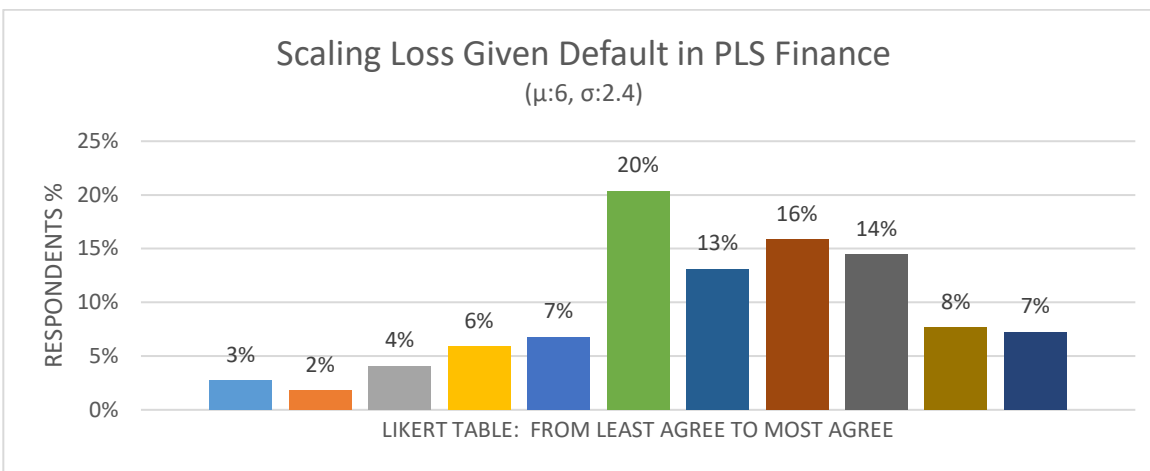


Figure 5.8: Loss Given Default Perception in PLS Finance

Relevant Survey Questions Asked:

Do you agree with the below statements?

“Having a similar securities package for a particular firm, loss given default (LGD) for PLS finance is higher than debt finance because of its unique risk sharing characteristics.”

5.3.5.3 Discussion and Analysis

The impact of all five (5) control and explanatory variables for both parts (PD and LGD) of proposition 4 is discussed as follows.

Demographic variables including gender, age and education are in support of main results without any variation. Geographic variable also supports the main results except outliers of UAE ($\mu:4.8$), Africa ($\mu:6.9$) for PD and Malaysia ($\mu:5.2$), Indonesia ($\mu:7.4$) for LGD. All other explanatory variables of functional, policy and development are in support of main results without major variations.

In result, respondents believe in higher expected credit losses of PLS finance, primarily due to its unique risk structure. However, among market participants, academics strongly believe in higher PD while central bankers strongly believe in higher LGD for PLS structures. Furthermore, in line with existing practices of scaling and notching credit losses for different types of debt, the magnitude of responses can serve as a basis to gauge the credit losses for PLS.

5.3.6 Agency Problems of PLS Finance

The Literature review emphasize most of unique risks in PLS finance are related to agency problems. This is attributed to the broader information asymmetric inherent in PLS finance, which exposes lenders towards higher risks and requires risk-mitigating techniques to bridge the information gap and protect their financial interests. Additionally, these are higher vulnerabilities to moral hazards in PLS structures, which expose lenders towards asset substitution and strategic defaults.

5.3.6.1 Relevance of Agency Problems

Considering the agency problem theory about PLS finance and the validation of research proposition 6, a direct question was asked to respondents if they believe agency problems are more relatable to PLS finance than non-PLS. The majority of respondents confirms (Yes:80%, No:20%) the proposition by agreeing that agency problems are more relevant to PLS finance. The experts' pool category for the robustness also confirms (Yes:82%, No:18%) the proposition albeit slightly stronger. Among key market participants, Islamic banks (Yes:84%) and windows (Yes:86%) strongly support the main results. Central banks and standards setting bodies also support the proposition. However, a disparity exists between academics (87%) and consultants (60%) in endorsing the primary findings requiring further research to better understand their perspective.

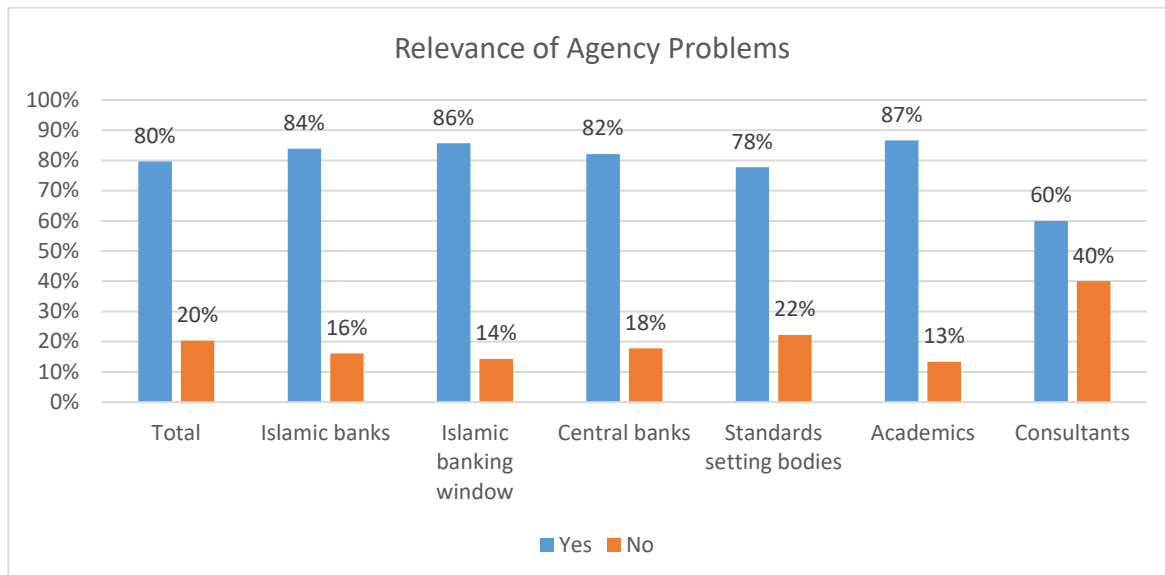


Figure 5.9: Relevance of Agency Problem in PLS Finance

Responses of market participants for relevance of agency problems in PLS finance compared to non-PLS choices.

Relevant Survey Questions Asked:

Do you agree **agency issues** (asymmetric information, adverse selection, moral hazards, lack of trust, monitoring cost etc.) are more relateable to PLS finance than other modes of Islamic finance?

5.3.6.2 Severity of Agency Problems

Among agency problems, research proposition 6 aims to understand which agency problems more severe to PLS finance concept. Respondents were asked to rank the five (5) severity agency problems for PLS on a scale of 1 to 5 (1 being the highest in severity while 5 being the lowest). The chosen agency problems are trust issues, adverse selection risk, moral hazard issues, asset substitution risk and higher monitoring cost relating to PLS structures. These are 5 common agency issues in mainstream finance literature and were selected based on related literature review of Islamic finance. The respondents ranked the trust issue at the top with 74% support followed by adverse selection issue with 67% support. The pool of experts identified for the robustness of test also confirmed the main results for trust issues (72%) and adverse selection risk (68%). All key market participants support strongly the main findings except central bankers category, who support the same ranking of severity but with less magnitude (60% support for trust issues and 60% support for adverse selection).

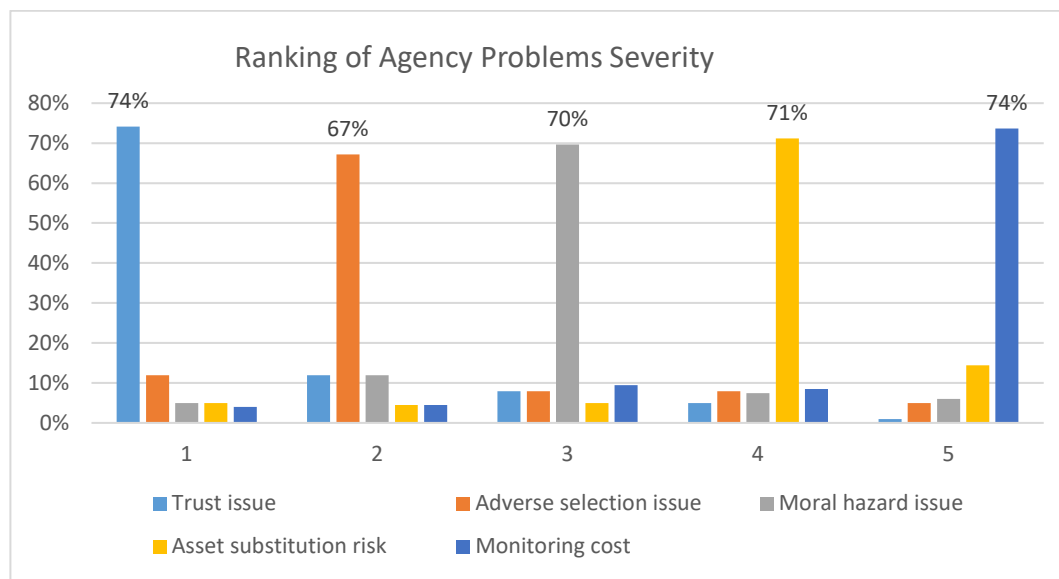


Figure 5.10: Severity of Agency Problems in PLS Finance

Responses of market participants for severity of agency problems in PLS finance compared to non-PLS choices.

Relevant Survey Questions Asked:

How would you rank the relevance and severity of agency issues between Islamic Financial Institutions (IFIs) and firms for PLS finance application? (set severity ranking in below table)

- IFI's concerns about firm's credibility and ability for good financial performance of the underlying venture or project (Trust Issue).
- IFI's capacity to identify and evaluate good projects or ventures suitable for PLS finance (Adverse Selection).
- IFI's concerns about the obligor's potential to divert funds to some other purposes than that for which financing were made available (Moral hazard).
- IFI's concerns about deteriorating health of firm's assets or increase in riskiness of the business after initial PLS finance awarded (Asset substitution risk).
- The higher financial cost and human resources/efforts needed for monitoring obligor's conduct under PLS finance (Monitoring costs).

5.3.6.3 Discussion and Analysis

The impact of all five (5) control and explanatory variables on proposition 6 is discussed as follows.

Demographic variables support both relevance and severity hypothesis of agency problems for PLS finance. However, female respondents are strongly opinionated for ranking of agency problems severity with less dispersion around the mean. Among education holders, MBAs have higher support (90%) while masters have lower support (76%) than the mean results (80%). For geographic variable, Oman (67%) and UAE (71%) are negative outliers while Indonesia (100%), Malaysia (86%) and Pakistan (85%) are positive outliers supporting the relevance of agency problem for PLS finance. All key countries have similar support for main results regarding the ranking of agency problems severity for PLS finance.

For policy variables, higher capital charges for PLS finance are like the main results while debt limits policy has more support (81%) for relevance of agency problems compared to non-debt limits (73%). For functional and development variables, there are similar results to the main findings, except that risk professionals (92%) and C-executives (94%) at banks are more supportive than mean (80%), which is intuitive.

In conclusion, respondents strongly support proposition 6 indicating that the relevance and severity of agency problems are higher for PLS finance, primarily due to its equity characteristics compared to non-PLS.

Another way of validating the research propositions is to analyze them with real time PLS finance case study and develop longitudinal findings, which support or don't support the survey results.

5.4 A Defaulted Sukuk Case Study and Research Propositions

Case studies are a valuable research method as they can provide in-depth insights into complex phenomena within their real-world context. The purpose of a PLS based case study is to back-test the research propositions by providing concrete evidence to support or refute the research findings and draw meaningful conclusions. For this study, a defaulted PLS based Sukuk transaction from the global capital market was selected instead of a banking transaction for several reasons. First, there is more publicly available market information for Sukuk or bonds in the global market compared to banking market, which is more of a private nature. This includes audited financial statements, prospectuses, and other key disclosures by the issuer. Second, third-party data and information are readily available, such as from rating agencies, news outlets, and research institutions.

Now, why was the Dana Gas Sukuk chosen as a case study over other defaulted Sukuks available in the literature? The answer lies in the complexity and sophistication involved in Dana Gas's default. Following a restructuring at its first maturity, the issuer chose a strategic default at the second maturity, driven partly by non-financial factors. Importantly, the Dana Gas Sukuk company was domiciled in the GCC, a region recognized as a key jurisdiction for Islamic finance according to numerous reports. Additionally, various research papers and reports have analyzed this default, providing the researcher with sufficient material to review and validate the case in line with the research propositions set in section 5.2.

This case study is highly relevant for demonstrating the risks associated with PLS finance and how they outplay the lenders in case of financial or strategic default compared to non-PLS structure. All six (6) research propositions defined in section 5.2 are back-tested with the Sukuk default starting from risk perception, onboarding and credit appraisal, risk mitigates applied, expected credit losses and agency problems. A thorough review of the case study and validation with findings of survey results is explained below.

5.4.1 *Dana Gas Sukuk*

Established in December 2005, Dana Gas became the Middle East's first and largest private sector natural gas company. It is publicly listed on the Abu Dhabi Securities Exchange, with an issued and fully paid-up capital of approximately 6.98 billion shares as of June 11, 2017, and a market price of around AED 0.60 per share. The company's exploration and production assets are located

in Egypt, the Kurdistan Region of Iraq (KRI), and the United Arab Emirates (UAE), yielding an average daily production of 69,500 barrels of oil equivalent during the last quarter of 2016—just six months before the company announced a new restructuring. With significant assets in these regions and ambitious expansion plans, Dana Gas aimed to take a leading position in the rapidly expanding natural gas markets across the Middle East, North Africa, and South Asia.

5.4.2 The Sukuk and PLS Finance Contract

Less than two years into its operations, Dana Gas began seeking investors to support the expansion of its projects in Egypt and the Kurdistan Region of Iraq (KRI). Following its strong performance in its first year, the Dana Gas Group issued convertible bonds in the form of Trust Certificates (Sukuk al-Modaraba, a profit-and-loss sharing finance structure) in October 2007, with a total value of US\$1 billion, set to mature on October 31, 2012. The Sukuk offered a fixed profit rate of 7.5% per annum, payable quarterly. Sukuk holders had the option to redeem the trust certificates at any time before maturity and convert them into shares based on the conversion formula provided in the prospectus. In addition to the security package, the Sukuk was backed by purchase undertakings from Dana Gas, obligating the company to buy back the Modaraba assets at a pre-agreed price.

An approved Sukuk structure based on PLS finance contract is depicted in Fig. 5.11 describing transfer of ownership, flow of funds and securities package (Dana Gas, 2007).

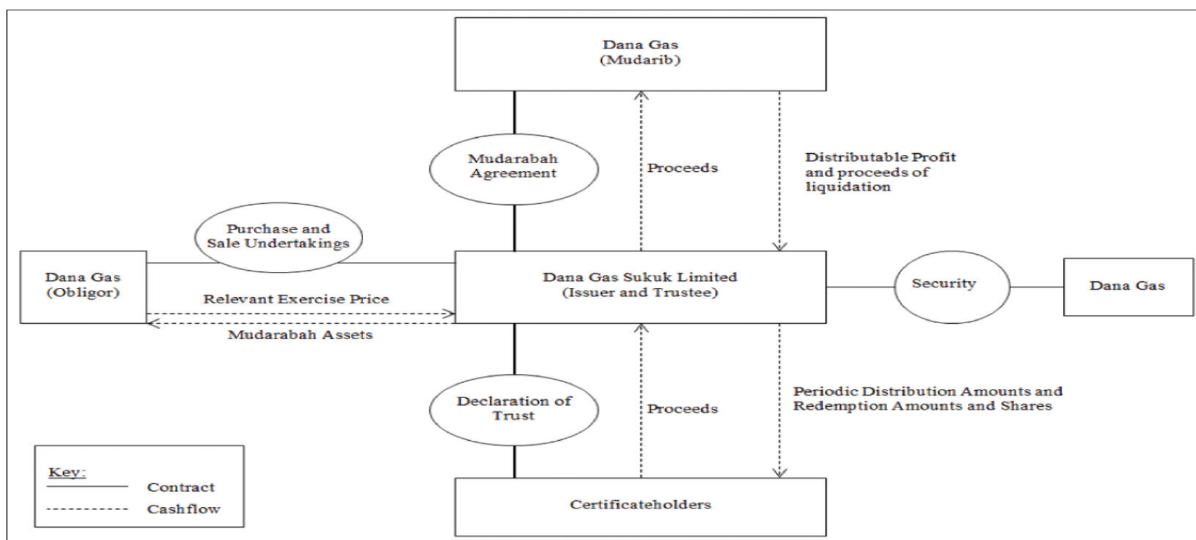


Figure 5.11: Dana Gas *Sukuk al-Modaraba* Structure
Security packages include of a pledge/mortgage over the shares of Dana LNG Ventures Ltd., Sajaa Gas and UGTC. Also, there was a mortgage over land in Sharjah and pledge over 66% shares of Danagz WLL.

5.4.3 The Sukuk Restructuring

The Company announced on 10 December 2012 that a standstill and lockup agreement has been reached with an ad-hoc committee of Sukuk certificate holders for refinancing the Sukuk. The salient features of the agreement were a reduction in the company's outstanding Sukuk amount from USD 1 billion to USD 850 million via USD 70 million of cash pay-down and cancellation of another USD 80 million of the existing Sukuk already owned by the company. The remaining USD 850 million will be split into two tranches being a USD 425 million ordinary Sukuk and USD 425 million exchangeable Sukuk, each with 5-year maturity to ensure long-term financing. The ordinary Sukuk and exchangeable Sukuk have a profit rate of 9% and 7% per annum, respectively (Dana Gas, 2012).

The ordinary and exchangeable Sukuk were secured against the existing security package of shares of Dana LNG Ventures Limited (BVI), Sajaa Gas Company Limited (Sharjah) and United Gas Transmission Company Limited (Sharjah). In addition to the above, the package was enhanced by USD 300 million value of receivables relating to the Company's Egyptian assets, Danagaz W.L.L. (Bahrain) and Sajaa Gas industrial land.

5.4.4 The Sukuk Default Analysis

Amidst speculation, Dana Gas made an announcement on 13th June 2017 for another restructuring of the Sukuk with an outstanding value of US\$ 700 million. Interestingly, the company's claim was based on the premise that key features of Sukuk Al Mudaraba, including purchase undertaking and fixed returns, are not Sharia compliant and hence, there is no obligation on the company to pay quarterly fixed profits on the Sukuk (Haroon, Meenai and Rizvi, 2020). Additionally, the company claimed that the global high yield index has materially improved since 2012, with prices increasing by 25-30% over the period. This means that new profit rate/ coupon on its restructured Sukuk should be in the range of 4% per annum including profit payments options of both cash and payment in kind (Dana Gas, 2017).

5.4.4.1 Was Dana Gas Sukuk based on PLS or Non-PLS Features?

A meticulous analysis of the Sukuk prospectus, along with its underlying PLS finance structure (based on Modaraba contract) and purchase undertaking, reveals several conflicts within the offerings. These discrepancies have largely substantiated the company's claims and demonstrated

that the original PLS structure was significantly distorted by the transaction advisors, aiming to address the investors' expectations for a fixed income instrument.

A comparison of PLS vs non-PLS features in Dana Gas Sukuk			
<i>Key Features</i>	<i>Non-PLS Features</i>	<i>PLS Features</i>	<i>Remarks</i>
Fixed returns	The distribution amount payable in respect of each US\$10,000 in principal amount of certificates shall be US\$187.50 on each Periodic Distribution Date. Fixed rate of 7.50%pa. <i>(clause 5.1 of the prospectus)</i>	Profits generated by Modaraba assets shall be distributed between the obligor and Sukuk holders for each periodic distribution date with a profit-sharing ratio of 1% and 99% respectively. <i>(summary section of the prospectus)</i>	It was not explicitly covered in the prospectus what will be treatment if profits on Modaraba assets are less than distribution amount, although vice versa was covered specifically as an incentive clause.
Purchase undertaking with an exercise price	Under purchase undertaking, obligor will buy the Modaraba assets at an exercise price. The exercise price equal to the aggregate principal amount of the certificates then outstanding that are to be redeemed plus all accrued and unpaid Periodic Distribution Amounts as of such date.	It is not permissible to give purchase undertaking at a pre-agreed price so that capital or principal amount is guaranteed. As per the standards of both AAOIFI and IFSB, in case of Modaraba contract, exercise price can be based on the market value only.	Including a purchase undertaking with an exercise price to guarantee both principal and accrued profits is contradictory to the nature of PLS finance structure.

	<i>(Clause 4 of the prospectus)</i>		
<p>Table 5.1: A Review of PLS vs non-PLS features in the Sukuk An explanation of key terms used in Dana gas Sukuk structures by fabrication and modification of PLS concept into fixed income instrument.</p>			

5.4.4.2 Financial Perspective of Sukuk Issuance, Restructuring and Default

First Dana Gas Sukuk was issued back in 2007 of US\$ 1 billion face value. Then, the total net-worth of the company was US\$ 1,870K while book value of total assets was US\$ 2,178K including fixed assets (property, plant and equipment) of US\$ 644K and intangible assets of US\$ 683K. Here (Table 5.2) is a brief financial snapshot of the company at three different points in time, year 2007 when Sukuk was issued, year 2012 when Sukuk was restructured and year 2016 after which Sukuk was defaulted.

Key Financial Metrics	2007	2012	2016*
	(Issuance)	(Restructured)	(Default)
	US\$, 000	US\$, 000	US\$, 000
Total Assets	2,178	3,520	3,765
Tangible Assets	683	2,167	3,075
Fixed Assets	644	985	1,105
Modaraba Assets	1,000	850	850**
Net-worth	1,867	2,417	2,782
Tangible Net-worth	372	1,064	2,092
Financial Liabilities	470	31	-
Sukuk (Issued/Restructured/Defaulted)	1,000	920	700
Financial Liabilities incl. Sukuk	1,470	951	723
Gross Revenue	283	633	392
Trade Receivables	78	678	1,026
EBITDA	53	312	106
Cash flow from operations	93	167	82
Leverage Ratio incl. Intangibles	0.79	0.39	0.26
Leverage Ratio	3.95	0.89	0.35

Financial Liabilities/EBITDA Ratio	27.7	3.0	6.8
Interest Coverage Ratio	0.6	3.6	1.1

* Financial position 6 months before strategic default

** Agreed value of Mudaraba assets in prospectus 2017 while outstanding value of Sukuk certificates was US\$ 700 million on default

Table 5.2: Key financial indicators of Dana Gas

A consolidated position based at three different points in times (2007, 2012, 2016). (Source: Company's Sukuk prospectus 2007, 2012 and Thomson Reuters/LSEG)

Following the restructuring, the cash position of the company got improved, as it received the first payment worth US\$48 million in December 2012 for its natural gas exploration and production efforts after reaching an agreement with Kurdish and Baghdad government. In 2013, Dana Gas reported growth in both production and revenue. However, challenges arose from the geo-political situation in Iraq where the collection rate was slow compared to billed revenues, resulting in a weaker liquidity situation. The spillover effects of cash shortages, combined with other internal and external challenges, eventually took a toll on the company's revenue. Dana Gas reported a 6 per cent decline in gross revenues and a USD 88 million net loss for the year ending on December 31, 2016.

5.4.4.3 *Financial or Strategic Default*

Most of the debate in academic literature is on legal and Sharia aspects of the default in 2017 when Dana Gas claimed that the subject Sukuk originated in 2007 and restructured in 2012 is not a Sharia compliant instrument. However, financial analysis reveals that despite the company's deteriorating financial performance in 2017, it was still earning an EBITDA of US\$ 106 million and had cash flow from operations of US\$ 82 million. The liquidity position of the company was worsening due to increasing trade receivables (US\$ 1,026 balance in 2016 financials) from Egypt and Kurdistan regions. However, overall, it was a liquidity issue for the company rather than a solvency issue. Furthermore, a careful analysis of company's press releases during year 2017 highlights that management wants to default strategically over the Sukuk in order to maximize financial benefits from the second restructuring, such as the removal of lucrative conversion clause and lower coupon around 4% per annum. For this purpose, the company decided to exploit the compromised PLS structure although it had been honoured since 2007. Hence, it was claimed that purchase undertaking to buy back the Mudaraba assets (trust assets) at a fixed pre-agreed price is not in accordance with AAOIFI Sharia standard (Busari *et al.*, 2019).

5.4.5 Research Propositions and Key Lessons from the Sukuk Default

The purpose of analysing Dana Gas Sukuk default is to validate the research propositions in a real-life case study which include risk type perception, role of creditworthiness, risk mitigation techniques including profit rate risk and agency problems in PLS finance compared to non-PLS ones. This also underscores an outplay of PLS risks in case of both financial and strategic defaults but in different aspects. As evident from default of Dana Gas Sukuk case study, inherent risks of PLS structures may cost lenders in different and severe ways if not implemented with due diligence and care at the beginning. Analysing what has gone wrong at the time of Sukuk origination and restructuring will help to understand how severe the default was. Gaining a profound insight into these issues will help the transaction advisors and lenders in preventing similar mistakes in future Sukuk structuring and lending decisions.

5.4.5.1 Understanding of PLS risks in the Sukuk (Proposition 1)

In the strategic management of a firm's capital structure, the selection of appropriate debt instruments such as long-term banking loans, senior unsecured Sukuk, or convertible Sukuk plays a pivotal role. In 2007, Dana Gas made the deliberate choice to opt for convertible Sukuk issuance, aiming to augment its capital base through the utilization of a quasi-equity instrument. Issuing convertibles also makes financial sense for Dana Gas as their existing leverage ratio was 1.3 limiting their debt capacity. Convertible Sukuk represents a distinct category of debt securities characterized by lower coupon rates, making them less expensive to service in the early years while giving an option of conversion to Sukuk holders. Issuing convertibles was also aligned with the company's growth ambitions by funding expansion projects in the KRI and Egypt.

In the perspectives of Sukuk holders including financial investors such as BlackRock and Goldman Sachs, they invested in a debt capital instrument having an upside option to convert their holdings into equity shares should the company's stock price performs well. Convertibles also provide downside protection if stock price underperforms, Sukuk holders will still receive their periodic profit payments. However, both PLS and non-PLS structures for convertible Sukuk have their own risk characteristics and limitations. Issuing a Modaraba based Sukuk, a type of PLS finance, exposes the investors to downside risks being a quasi-equity instrument. Investors should be cautious of what type of risks they are assuming while making such investment decisions. In Dana gas Sukuk, investors had assumed the equity risk unknowingly from the beginning.

Now question is why transaction advisors have structured the Sukuk based on PLS finance structure instead of non-PLS. Among others, one important factor is the complacent attitude of indifference towards distinguishing between PLS and non-PLS structures. Advisors should have not ignored the substantial equity investment risk in the Sukuk structure. The result of this survey is also evident of the phenomenon that PLS finance risk is being perceived as a hybrid risk (74%) rather than equity one (14%). As an outcome, the Dana Gas case study substantiates proposition 1, wherein the majority of investors regard it as a fixed-income instrument. Had transaction advisors opted for a non-PLS structure for the Sukuk, they would have been able to structure the Sukuk instrument in a better form, especially at the time of restructuring in 2012.

5.4.5.2 Importance of creditworthiness in PLS finance (Proposition 2)

Academically, a strong positive relationship between credit risk, equity risk and returns are discussed thoroughly in the literature. In the subject survey, since 73% of the respondents believe that PLS finance is a hybrid risk while 18% believe that it is a pure credit risk, it is important to understand how lenders of Dana Gas had considered key factors of creditworthiness in their investment decision matrix. Although it was a PLS finance based Sukuk structure but investors' preference of assuming debt risk rather than equity risk due to tweaking of profit payments and purchase undertaking clauses.

Ranking*	Key Factors	Considerations
1 st	Integrity and willingness to pay	<p>There was no credit history of corporate Sukuk issuances as Dana Gas was incorporated in 2005 as a privately owned company. Importantly, Mr. Hamid Jafar representing the largest shareholder of DanaGas was holding positions of both executive chairman and CEO. He was founding director of Abraaj (defaulted and defunct now). Other board members were prominent businessmen in the region including royal family member of Sharjah, ex-minister and under-secretary in Kuwait.</p> <p><i>The profile of chairman and board members may have given higher comfort to the lenders for integrity and willingness to pay.</i></p>

2 nd	Proven business expertise	<p>The company was born in 2006 having no prior experience in the Oil & Gas sector. Furthermore, both the company and issuance were unrated because of no track-record. Rather Sukuk investors had derived comfort based on industry overview and short period of financial performance. However, the management team was fully professional with domain expertise in Oil & Gas sector. Some board members were on the boards of local banks.</p> <p><i>Although company has no proven business expertise in oil & gas sector but investors may have drawn comfort from estimated net present value (NPV) of its concession fields awarded in Egypt and Iraq.</i></p>
3 rd	Adequate collaterals and securities	<p>Referring to table 5.2 of key financial metrics, collateral coverage ratio in 2007 was below 100% as total tangible assets were US\$ 683 million, out of which fixed assets including property, plant and machinery were US\$ 644 million. These securities were less than initially subscribed Sukuk principal of US\$ 1 billion.</p> <p><i>Although lack of collateral coverage ratio and high in leverage ratio of 3.94x at the time of Sukuk Origination, but primarily lending decision was taken based on lucrative sector and concession contracts.</i></p>

Table 5.3: Role of creditworthiness in the Sukuk
* Top 3 factors of creditworthiness studies in the survey section are validated with Dana Gas Sukuk case study for key lessons on their application at the time transaction structuring.

The above table of top 3 key factors of creditworthiness depicts how it played its role in Dana Gas Sukuk. Proposition 2 is validated here for strong role of creditworthiness even for investing or advising a PLS finance deal for debt capital market.

5.4.5.3 Effectiveness of risk mitigates in PLS Structure (Proposition 3)

Being a PLS based structure, Sukuk-holders of Dana Gas were inherently exposed to cyclicity of gas sector, other business uncertainties and poor financial performance leading to potentially

uncertain profit streams. However, the question is what were the risk-mitigating techniques designed in Dana Gas Sukuk structure to protect its lenders from unique risks of PLS finance? Primarily, purchase undertaking to buy back Modaraba assets at the outstanding principal (including accrued but unpaid profits) on the maturity date was the key risk mitigate applied in the Sukuk structure. Most of the discussion in the literature is on validity of purchase undertaking from legal and Sharia perspective because the company has dishonored it due to its Sharia non-compliance claim. However, there is no discussion why a conventional tool was used as risk mitigate which was against the spirit of the PLS structure but also not allowed by AAOIFI and IFSB standards? It was paradoxically assumed to manage the risks of a PLS structure that a debt profile can be camouflaged over it by introducing a purchase undertaking at a pre-agreed price. Nevertheless, unique risks of PLS outplayed on due time and so-called purchase undertaking could not be effective as a protection to lenders. Below table summarizes the key risks of PLS Sukuk structure and mitigating techniques to manage them.

Key risks of PLS finance	Risk mitigates techniques
Exposure to systemic risks of oil & gas sector in selected geographies and idiosyncratic risks of Dana Gas because capital and returns in PLS finance are linked to the performance of underlying PLS assets.	Purchase undertaking from shareholders to buy back PLS assets at maturity having an exercise price as a pre-agreed price. The exercise price is equal to outstanding principal and unpaid accrued profits. In case of failure, liquidation of the securities package to recover the outstanding.
Limited recourse to the shareholders and management in case of poor performance or losses. It is only permissible in PLS structure if negligence or moral hazards are proven.	As above
Table 5.4: Risk Mitigates in Dana Sukuk Review of risk management practices to mitigate the unique risks of PLS and its validation in case of Dana Gas Sukuk study.	

As an outcome of analysis of the Sukuk structure, it is evident that conventional set of risk management techniques were used in Dana gas Sukuk which were not effective in the event of default. There was no specific risk mitigating technique applied in the PLS structure and hence proposition 3 is validated.

5.4.5.4 Management of profit rate risk in PLS structure (Proposition 4)

The profits or returns in PLS are based on the performance of the underlying business. In case of Dana Gas Sukuk, underlying PLS assets were gas exploration and production business in the fields of Egypt, KRI and UAE. The oil and gas sector carries a complex and multifaceted risk profile with numerous factors contributing to its volatility and uncertainty. Although core energy products are in high demand for domestic and commercial usages, there are various risk factors ranging from systemic to idiosyncratic which may affect its financial performance. The Sukuk prospectus has covered them in detail under risk factors section (Dana Gas, 2012). However, after careful analysis of the Sukuk structure, it is found that the instrument was not properly designed to hedge or mitigate profit rate risk. The popular risk mitigating techniques in the Sukuk market such as profit smoothing reserve, sinking fund, volunteer gift or interest-free loan scheme, Modaraba liquidation etc. were not applied in the structure. Instead, profit rate risk was managed by accruing and paying periodic payments to Sukuk holders and linking it to purchase undertaking in case of any short payment.

Relevance of profit rate risk	Risk management
Periodic distribution of Modaraba profits as per expected profit rate of 7.5% pa in the convertible Sukuk and 9% pa in the senior secured Sukuk.	Instead of designing any profit rate risk mitigating technique, it was clubbed into final payment obligation at maturity of the Sukuk under “purchase undertaking at a pre-agreed price” (the price was calculated by aggregating all unpaid accrued profits at expected rates and original principal amount invested).

Table 5.5: Relevance of profit rate risk in Dana Sukuk

Review of risk mitigating techniques to manage them for PLS finance are validated in Dana Gas Sukuk.

Furthermore, it is not clear from the prospectus and related published material in the market domain why expected rates were set at 7.5% pa and 9% pa. However, as a capital market instrument under RegS /144A⁵¹, it is evident that prices were determined based on expectations of investors for similar risk profile. This resonates to proposition 4a that profit rate risk is only relevant for lenders if returns on the PLS assets are lower than the average financing yield of the

⁵¹ <https://www.bloomberglaw.com/external/document/X9GS3MHO000000/capital-markets-overview-rule-144a-reg-s-debt-offering-practice->

given firm. However, proposition 4b couldn't be validated because risk mitigating technique used in Dana Gas Sukuk was purchase undertaking applicable on the maturity rather than liquidation technique of the PLS venture.

5.4.5.5 Credit losses over the lifecycle (Proposition 5)

The company's financial performance has gone through cycles before opting for the strategic default. A new-born company in 2005 with RegS/144A complied unrated Sukuks of US\$ 1 billion in 2007 with a post-issuance financial leverage of 3.95 (2007), which was improved to 0.89 (2012) and then to 0.33 (2016). The company's EBITDA was US\$ 53 million in 2007, which was enhanced to US\$312 (2012) before going down to US\$ 106 million in 2016. Credit losses are a product of probability of default and losses in case of actual default. It is difficult to assess probability of default in the case study due to unrated nature of Dana Gas Sukuk, but an assessment of loss given default (LGD) hypothesis is performed as follows. The value of LGD is between zero (0) to one (1). It means no loss in value even in case of default. Mainly, it is possible due to strong third-party guarantees like sovereign protection or high-quality collaterals. For secured instruments, LGD to be closer to 1 while for unsecured instruments, it is 0. The company had granted the security package in favour of a security agent (representing Sukuk-holders) in case default over its obligations under the purchase undertaking.

However, research proposition 5 claims that credit losses are higher in PLS finance. This is due to the fact that repayment performance of PLS finance structures is linked to the performance of underlying assets and lenders have no right to claim for fixed returns or protection of the principal amount as in the case of non-PLS arrangements. Hence, as result of Dana gas Sukuk default, if lenders were able to recourse to the securities package freely and liquidate them for their recovery without any legal implications, then proposition 5 does not stand valid. It means LGD is same for both PLS and non-PLS for a given security package; otherwise, credit losses are higher for the former.

On its announcement of default in June 2017 by Dana Gas, the company retreats from its obligation of purchase undertaking to buy back PLS assets at a pre-agreed price given in the security package. They claimed that such an undertaking is against the nature of PLS contract and hence it is no more Sharia compliant and legally valid. In order to strengthen its claim, they approached *Sharja court*, which gave verdict in favour of the company. However, the council of lenders approached

the *English court* in London based on the premises that there is a prior-agreed condition in the Sukuk prospectus between the company and lenders that such undertaking is enforceable under English law. English court gave judgement in favour of lenders based on the prior-agreed condition regardless of the PLS financing structure used in the Sukuk. However, the enforceability of English court's verdict was not possible because the company was domiciled in UAE not UK. As per legal structure, purchase undertaking was secured by the security package. In case of dishonour of purchase undertaking, the security package was to be liquidated to fulfil the obligations. However, enforceability of purchase undertaking couldn't happen due to Sharia compliance issue and lack of UK court's jurisdiction over the company domiciled in UAE. This resulted in inaction over the enforcement of the security package.

Another scenario of recovery for Sukuk-holders is the possibility of recourse to underlying PLS assets of the Sukuk being co-owner (Rab-ul-Mal) of Dana gas assets. Let us assume there is no legal enforceability of the purchase undertaking due to *Sharja court* verdict. However, the basis of court decision nullifying purchase undertaking was that since Sukuk-holders are co-owners (based on PLS structure of Modaraba) of Dana gas assets and hence any undertaking to protect one partner at the cost of others is not allowed. The Sukuk-holders are real owners of underlying PLS assets due to Modaraba structure of the Sukuk. In this scenario, if proportionate market value of PLS assets due to Sukuk-holders is more than outstanding face value of Dana Gas Sukuk, then there is no loss for Sukuk-holders because of their recourse to assets by virtue of equity interest (not security interest). The prospectus 2012⁵² of Dana Gas Sukuk mentioned that the Trustee and Sukuk-holders' principal source of funds will be its entitlement to its share of profit and the proceeds of liquidation of the Modaraba assets under the Modaraba Agreement and amounts payable by Dana Gas under the terms of the purchase undertaking. The Trustee is therefore subject to all the risks applicable to Dana Gas and its business.

Let us review the actual financials of the company to understand this scenario. Total value of assets of the company was US\$ 3.8 billion as on December 2016, 6 months prior to the default. However, the value of tangible assets and fixed assets was US\$ 3 billion and US\$ 1.1 billion respectively. Total financial obligations then were US\$ 723 million including US\$ 700 Sukuk certificates outstanding. However, total receivables then were US\$ 1,026 million, which were doubtful due to

⁵² Page# 36 of the prospectus 2012 under section 4 "Trust"

various issues from Egypt and Kurdistan regions. The Sukuk al-Modaraba holders represent US\$ 850 million value of assets in Dana Gas PJSC under Modaraba agreement signed in 2012 which represent 39% (US\$ 1,199 million) of total tangible assets and 62% (US\$ 752 million) of liquidate-able assets⁵³ of the company as per audited financials of 2016. So, Sukuk-holders' share in value of Modaraba assets was slightly more than their outstanding (US\$ 700 million) by virtue of equity interest in the company's assets (either tangible or liquidate-able assets). However, there could be financial haircut to Sukuk-holders if they want to liquidate their share on immediate basis because of forced sale value of distress assets.

This is evident that the loss severity rate in case of default for PLS lenders is higher than non-PLS ones and support the proposition 5. These results are in line with primary results of the study where respondents believe that loss given default of PLS is higher.

5.4.5.6 Agency problems and strategic default in PLS finance (Proposition 6)

The relevance and severity of agency problems is extensively covered in the survey and fully evident in the default case study of Dana Gas Sukuk. As most of the respondents also believed that agency issues are more problematic inherently in case of PLS finance structures, it contains risks of both financial default due to poor financial performance and strategic default due to unwillingness to pay behavior of the borrowing firm. Strategic default is a specific scenario where customers selectively choose to default on certain types of debt or obligations only due to various reasons. Such kinds of defaults maximize the wealth of the borrower at the cost of the lender. Financial default is linked to adverse selection and asset substitution risk while strategic default is due to moral hazard issues relating to agency problems.

Agency problem and strategic default	Impact over PLS structure
There are various agency related issues in PLS finance which may cost lenders more than non-PLS arrangements. Among others, moral hazard is a prominent issue in the case study where company opted for strategic default to gain maximum benefits out of the second restructuring.	Moral hazard causes strategic default that is highly relevant for PLS structure because lenders has to share risks of underlying business. After the company publicly disowned the purchase undertaking, lenders became directly exposed to the underlying PLS assets, their business performance, related

⁵³ Liquidate-able assets are defined as total tangible assets less sub-standard receivables less short term liabilities

	problems of looming receivables and worsening liquidity issues. The given securities package was another protection for lenders, but it can only be enforced in certain conditions in PLS arrangement such as proven negligence or misconduct. A poor business performance is not allowed to be compensated with the given securities package under PLS contract.
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Table 5.6: Agency Problems in PLS Finance
 Out of 5 agency problems questioned in the survey, moral hazard in the form of strategic default is tested with Dana Gas Sukuk case study.

Agency issues are very relevant and severe for PLS finance as claimed by proposition 6. In the case study, it is evident that moral hazard caused a strategic default, which had exposed the lenders to unusual risks that may not be relevant in case of non-PLS finance. Furthermore, the respondents in the survey have ranked moral hazard more severe than asset substitution risk and monitoring issues in PLS finance structures. Hence, proposition 6 is supported and validated in the case study.

5.4.6 Summary Table for Research Propositions

Here is summary of lessons from back testing of the Sukuk case study with research propositions and a comparison with survey results evaluating the unique risks of PLS arrangement.

Proposition Claims	Survey results	Evidence from Dana Gas
Prop#1: PLS finance is perceived as an equity risk	Not supported (only 14% believe PLS is an equity risk.	Not supported because Sukuk was structured to replicate a debt product by stipulating a purchase undertaking.
Prop#2: Creditworthiness is significant for structuring of PLS finance deals.	The top 3 factors are willingness to pay, proven business expertise and adequate collateral.	Lenders weigh in the strong profile of promoters for ‘willingness & capacity to pay’ regardless of PLS structure in the Sukuk.

Prop#3: PLS requires unique set of risk mitigating techniques	Weak confirmatory response (μ :5.3), due to strong belief in hybrid risk.	There is no specific risk mitigating technique found for PLS finance in Dana Gas Sukuk.
Prop#4a: Profit rate risk is only relevant if returns are lower than average yield	Moderately supported (μ :6.3), due to strong belief in hybrid risk.	Fully supported as fixed periodic payment is required in the prospectus irrespective of actual performance.
Prop#4b: Liquidation of PLS venture in case of poor performance is an effective risk mitigating tool.	Weak confirmatory response (μ :5.46) for this technique	Instead purchase undertaking from Obligor to buy-back assets at outstanding principal and accrued profits was applied.
Proposition 5: Credit losses are higher in PLS finance	Partially supported (μ :6.1) for PD and (μ :6.0) for LGD.	In reality, lenders had born higher credit losses and limited legal recourse to obligors due to complexity of PLS structure.
Proposition 6: Agency problems are higher in PLS finance.	Strongly supported (79.6% in yes)	Strategic default and manipulation of purchase undertaking by the obligor are evidence of higher agency problems.

Table 5.7: Summary of Research Findings (Study 2)

A table for support analysis of research propositions by validating with Dana Gas Sukuk case study.

5.5 Conclusion and Recommendations

The objective of this study was to understand the market belief about unique risks, role of creditworthiness, risk management and agency problems of PLS finance. The survey results are both supportive and disproving of academic literature on PLS finance.

The results identify a gap between the literature that claims PLS structure as an equity investment risk and market participants who perceive it as a hybrid risk. This shift is primarily attributed to the application of PLS finance by firms as a substitute of debt arrangement in terms of structuring

and risk mitigates as evident from the Dana gas Sukuk case study. This behavioral insight of the market participants regarding the disparity between theory and practices can help the regulators and practitioners to develop a better policy for its wider application. Central banks are the highest believer in mix of credit and equity investment risk of PLS finance. Islamic banks, in contrast, have a highest belief in its counterparty credit risk while one of the lowest belief in its equity investment risk compared to other market participants. Overall, the results of explanatory variables are confirmatory to the main results except demographic and geographic variables. Female respondents are less inclined to believe in hybrid risk of PLS finance. Among the eight active jurisdictions, Bahrain and Malaysia are the highest believer in equity investment risk of PLS finance.

The role of creditworthiness in managing the risk of PLS finance is important, especially considering that the majority of market participants view it as a hybrid risk rather than equity risk only. Out of top 3 factors, respondents have chosen ‘integrity & willingness to pay’ and ‘adequate collaterals & securities’ which demonstrates a strong role of creditworthiness in credit decision making for PLS transactions. The study also reveals a partial confirmatory response for lack of risk management practices for PLS finance as lenders use conventional toolkit extensively. The strategic default of Dana Gas Sukuk is a validation of this market phenomenon. They study also explored risk-mitigating techniques in-practice and identified that diversification of PLS finance portfolio, risk based pricing and close monitoring are perceived as top-three most applied techniques. Additionally, the study investigates about the perception of profit rate risk in case of poor performance of a PLS venture and finds out that most market participants consider it relevant only if returns on PLS finance deals are lower than the average financing yield of a given firm. This complacent attitude towards unique risks of PLS finance is also further evident from Dana gas Sukuk where controversial purchase undertaking was used as a sole risk management tool. The study also finds a mild support for higher expected credit losses for PLS finance transactions compared to non-PLS. This is equally true for probability of default and loss given default for PLS structures.

Lastly, the study underscores strong support for relevance and severity of agency problems in case of PLS finance compared to non-PLS. Among geographic variables, Indonesia shows the highest belief while Oman exhibits the least belief in the agency problem hypothesis. Market participants

also believe that, among the given list of agency problems, trust deficit, adverse selection and moral hazard as more severe forms. Strategic default is more probable due to poor business performance and inherent moral hazard issues within PLS arrangements.

Overall, the results are of significant importance for policymakers, practitioners and academics suggesting key areas for further research and improvements in this regard. Following are key recommendations in moving the risk management discipline of PLS finance:

- a) There is a pressing need of further research on explanatory variables, especially geographical ones, to understand better risk management in a societal context.
- b) There have been significant variations in results among neighbouring countries such as Malaysia and Indonesia, Oman and UAE, Pakistan and Bangladesh, which necessitates for further investigation.
- c) A systemic approach to gauge capital charge, PD and LGD of PLS finance compared to non-PLS, which can help the industry to adopt it in a prudent way.
- d) Further research is essential to address agency problems, especially adverse selection and moral hazard issues for an effective and prudent risk management framework for PLS finance.

Chapter 6: PLS Finance and Theory of Capital Structures

6.1 Introduction

Commercial firms, among others, are the main sources of demand for commercial borrowings in an economic system. However, what drives their strategic funding decisions has been a matter of research interest for various decades. The whole realm of capital structure debate, both theoretically and empirically, is linked to a firm's value, cost of capital, probability of default and various characteristics of the borrowing such as tax advantages, business cycles and volatility, collaterals and covenants, agency cost etc. (Kisgen, 2006). The researchers have further ventured into social and behavioural factors influencing capital structure decisions of a firm such as gender, demographics, culture, religion, age, growth and personal borrowings of executives etc. The unconcluded debate of optimal debt-equity mix gets more complicated with financial innovations of hybrid debt structures in modern financial markets such as subordinate debt, perpetual bonds, mezzanine equity, preference shares, contingent convertibles etc. (Attaoui and Poncet, 2013).

Maqasid-e-Sharia framework⁵⁴ of Islamic banking has preferential treatment of profit and loss sharing (PLS) finance⁵⁵ over its typical non-PLS products⁵⁶. However, hybrid characteristics of PLS structure bring them back into conventional debate of optimal capital structures for a firm. Despite a supply-side push by central banks in various Muslim's jurisdictions, lack of PLS finance application is very challenging for Islamic finance industry. On the demand side, there is no clear understanding how firms consider PLS concept as a substitute or complement of a typical conventional debt or non-PLS finance. There is no systematic study done so far explaining any relationship between contemporary theories of capital structures and PLS financing option. Is it a complement of debt or equity in a capital structure? How can PLS finance impact the value of a firm and its weighted average cost of capital (WACC) in search of an optimal capital structure?

⁵⁴ Sharia is an Islamic law or Islamic code of life governing whole spectrum of life including social, financial and religious dealings. It is primarily interpreted from Quran and Hadith. However, Maqasid-e-Sharia deals with goals of Sharia, explaining why behind what having wisdom behind a ruling (Auda, 2008). This is explained in details in chapter 2 on conceptual framework.

⁵⁵ Profit-loss sharing (PLS) finance or equity finance or participatory finance are interchangeable terms in the Islamic finance literature and explained in details in chapter 2.

⁵⁶ Asset-based (AB) finance, which are clustered as non-PLS finance, is a classic structure applied mostly at Islamic banks which is closer to loan (or debt) in terms of financial behaviour and has high similarities in terms of pricing mechanism, securities, collaterals, covenants, lending norms etc. This is also discussed in chapter 2 in details.

This paper advances theoretical understanding of PLS finance for capital structure decisions for firms especially in context tradeoff, pecking order and agency theories.

The results are very interesting and insightful for a wider application of PLS finance for firms and policy makers. This study shows that PLS finance enhances a firm's value considerably, especially in a high leverage state. This primarily happens because of the lower bankruptcy cost of PLS finance compared to non-PLS finance. A protective covenant for exogenous default has a higher impact on value of a firm than an un-protective one. Furthermore, in the pecking order setting, managers may prefer debt over PLS finance at low leverage state due to lower cost of capital, but PLS finance has a significant impact on a firm's value in a high leverage state. However, agency cost related to PLS finance is higher than debt finance and can be a manipulative tool for transfer of wealth from the lenders to the shareholders. The paper develops into four sections. The first section reviews the existing literature on optimal capital structure theories and they relate to PLS finance. The second section explains the theoretical model of Leland (1994), which is modified to test the hypotheses developed in this study. The third section examines the role of PLS finance as a substitute or compliment to debt finance, and how this relationship impacts a firm's value. The final section concludes the study by summarizing key findings and their implications.

6.2 Literature Review

6.2.1 *The Evolution of Capital Structure Theory*

The optimal decision of debt and equity mix is extensively researched, widely discussed and various seminal studies are available in the corporate finance literature (Attaoui and Poncet, 2013). There have been various explanations for optimal capital structure like trade-off tax policies favouring debt, bankruptcy cost, term structure of credit spreads, loan maturity structure, preferences linked to inherent asymmetric information associated with external financings, agency issues, corporate governance, market timing etc. (Myers and Majluf, 1984); (Gaud, Hoesli and Bender, 2007).

A review of capital structure theory always starts with (Modigliani and Miller, 1958) who had argued that a financing does not matter in a perfect capital market⁵⁷. The MM propositions say that financing doesn't affect the value of a firm except for imperfections of capital market or

⁵⁷ It takes some time to sort out what "perfect" means in MM context. Ezra Solomon once remarked: "A perfect capital market should be defined as one in which the MM theory holds."

specifically identified costs. It says value of total assets of a firm is constant regardless of the proportions of debt and equity provided that total assets and growth opportunities of a firm are held constant. It means financial leverage is irrelevant and various characteristics of debt doesn't matter to the value of a firm such as mix, duration, seniority, types, callable, puttable, convertible etc. MM propositions also means that a firm's overall cost of capital (WACC) is constant regardless of its debt ratio⁵⁸. In other words, cost of equity in MM world – the returns demanded by investors - increases proportionally with the increase of debt-equity ratio.

Although MM theory is intuitive in its predictions, but it is difficult to hold it in a real world. Various theoretical and empirical studies prove that there are investors in the real world who are willing to pay extra for certain debt-equity mix or for a particular type of corporate security. Perhaps, demand and supply forces for assets, cash flows, opportunities, control etc. value a firm's assets in different ways. As Merton quoted, "... showing what doesn't matter can also show, by implication, what does" (Miller, 1998). MM proposition II relaxes for debt related tax advantages over equity assuming interest as a tax-deductible expense. It means a firm paying extra dollars of interest receives an off-setting tax shield which lowers the total tax payable on its operating profits. Since financing a firm's balance sheet with a debt instead of equity increases total return on capital of a firm, it should increase the firm's value as well. Under the revised proposition of debt and taxes, managers seek to maximize leverage share in its optimal capital structure in order to maximize a firm's value. However, trade-off theory is able to justify moderate debt ratios at firms (Kraus and Litzenberger, 1973), which was further refined by (Myers, 1984). It theorizes that a firm will borrow to optimize its capital structure unless marginal value of tax advantages of debt is just offset by present value of financial distress⁵⁹ or cost of debt. This theory also assumes that a firm that has high cost of financial distress always opt for less quantity of debt in its capital structure and vice versa. They also advocate that firms adopting the trade-off theory set a target debt ratio and try to move towards this target. Tradeoff theory of optimal capital structure has a strong logical and intuitive appeal. It predicts moderate debt ratios and rationalize⁶⁰ certain facts that firms with strong cash flows, tangible assets can borrow more than of with risky and intangible assets. However, it is troublesome to explain why empirically high profitable firms have low

⁵⁸ MM proposition 1 assumes no tax advantage for debt.

⁵⁹ Financial distress refers to costs of bankruptcy or reorganization and agency cost as well.

⁶⁰ High business risk increases the odds of financial distress and intangible assets are less likely to payback debts.

leverages (Myers, 2001). Alternative to trade-off theory, a pecking order theory was established (Myers, 1984); (Myers and Majluf, 1984) which explains some of the limitations of tradeoff theory. The pecking order theory postulates that managers know more about a firm's value than potential investors and act in the best interest of their existing shareholders to protect their wealth. The theory suggests that managers prefer internal to external finance, less risky to more risky funding options based on the cost of financing. They prefer retained earnings as internal source of funding and issue debt before equity if external financing is required. This is because retained earnings have the lowest agency problems associated with it and less risky with notional cost only. Among external sources of funding, equity is costlier than debt as outside investors perceive adverse selection and agency problems. Due to the existence of asymmetric information, outside investors are skeptical when managers issue new securities or buy back the existing securities. (Myers, 2001) says: "Equity issues will occur only when debt is costly – for example, firm is already at a dangerously high debt ratio where managers and investors foresee cost of financial distress". He further analyses: "as the requirement of external financing increases, the firm will work down the pecking order, from safe to riskier debt, perhaps to convertible securities or preferred stock, and finally to equity as a last resort".

Jensen and Meckling (1976), in their path-breaking research, challenged MM assumption that investment decisions are independent of capital structure and argued for inevitability of agency cost in corporate finance. Agency theory posits inherent conflicts of interest between shareholders and creditors as well as between managers and shareholders. These conflicts are mitigated in some notional scenarios such as full managerial ownership aligns managerial incentives with those of shareholders and risk-free debt eliminates the potential for creditor-shareholder conflict. However, these inherent conflicts exist in real corporate life and cause agency problems especially due to asymmetric information. This is also called information failure between managers and creditors, which happens because managers possess more information than creditors about the firm's earning power, value of its assets, expected cash flows and other operating activities. Suppose managers⁶¹ of a firm perform in the best interest of their shareholders and a typical risk of default exists in the firm's borrowings from banks or debt capital market. Here, agency theory predicts that managers can transfer wealth from debt holders to equity holders in several ways. First, managers can invest

⁶¹ In addressing the research question of PLS finance, it is assumed that there is no agency cost between managers and shareholders.

debt money in riskier assets or shift to riskier operating activities subsequent after raising the debt. This subsequent upshift in the risk of a firm's assets increases the upside for stockholders while downside is more absorbed by the creditors. It is known as the 'asset substitution problem'. Second is 'moral hazard problem'. An asymmetric world of information can create more disparity between two transacting parties when one party with superior knowledge has no good faith in the transaction. A manager with moral hazard is in a more advantageous position to substitute the firm's assets as well. (Myers, 1977) proposes that the moral hazard issue becomes more critical for firms whose value stems from the expected profits of forthcoming investment prospects rather than from current assets. Third is 'adverse selection problem' by lenders during credit appraisal process. Lenders, who have inferior information than managers of a firm, are not able to differentiate between good or bad lending (or investments). This conflict between debt and equity investors becomes more relevant if managers of a firm are pushing for financing of the projects having over-investment or entrenching investment problem (which means investments in projects having internal rate of return below cost of capital). Since equity is a residual claim in case of default, shareholders can gain at the expense of creditors when value of existing debt falls even though overall firm's value remains constant (Myers, 2001).

There are various theoretical structural models in academic literature, which have tested optimal capital structures at firms and impact of volatility, bankruptcy cost, agency cost, taxation benefits etc. over cost of capital and value of a firm. However, Merton's seminal work became the workhorse for financial economists to understand how firms choose their capital structures (Merton, 1974). He argues that, given the limited liability nature of a firm, equity is a call option for equity holders who exercise it only if value of assets is more than value of debt at the maturity. Black & Cox (1976) extends the Merton's framework by contributing that default can happen anytime during loan period when value of firm's assets drops below outstanding loan amount. Leland, (1994) extends the work (Black and Cox, 1976) further by estimating tax benefits of debt and bankruptcy cost which allows a formal characterization of optimal capital structure, debt capacity and credit spreads in a classic trade-off model. Later, Leland and Toft (1996) did extension to consider term structure of debt and (Goldstein, Ju and Leland, 2001) used operating cash flows-based model for categorization of optimal capital structure. Leland (1998) examined the joint impact of dynamic trade-off theory and agency theory over leverage and capital structure of firms. He finds out that agency cost restricts leverage and hedging permits greater leverage to a

firm. Crosbie and Bohn (2003) have explained the Moody's KMV model who have used empirical distribution of defaults unlike normal distribution used by Merton (1974). Sundaresan (2013) analysed various stylized facts of capital structure theories and evolution of structural models for credit spread, probability of default and contingent convertibles of banks. Strebulaev (2007) tests capital structure theories in a dynamic model where firms adjust their capital structures infrequently. He finds out that properties of leverage in true dynamics and in comparative statistics at refinancing points differ dramatically. There are also extensive empirical studies available, which aim to examine relationships between capital structure, valuation, firms performance and efficiency (Frank and Goyal, 2009).

6.2.2 Capital Structure Literature in Islamic Finance

There is a dearth of literature on relation of Islamic finance including PLS with the value of a firm and its alignment with prevailing capital structure theories. Although there is no study on PLS finance role in capital structure decisions at firms because of lack of data, but there are few empirical studies exhibiting effect of largely Islamic finance over capital structure of the borrowing firms. In a study of non-financial firms from fourteen developing countries for a period of 2005-2009, it is found out that Islamic financing instruments form a significant portion of the capital structure while less profitable firms have higher leverage ratio with a strong preference for Islamic finance (Minhat and Dzolkarnaini, 2017). For compliance to Sharia indexing purpose, many scholars and regulatory agencies have allowed firms having conventional debt threshold up to 33% of total capitalization. This limitation may have a major effect on the capital structure of a borrowing firm. If this threshold is breached, the firm is removed from the Sharia compliant index that has a major impact on its price and reputation in the market. Dow Jones Islamic Index and Saudi exchange (Tadawul) require similar debt ratio of 33% (Kahya *et al.*, 2020). Because of debt ratio limitation in a Sharia index, it is expected that a compliant firm and a non-compliant firm will exhibit different capital structure (Gunn and Shackman, 2014). However, their study, using static panel data for 657 firms across 16 countries, finds no significance difference in debt ratio and capital structure between both types of firms, except former has a stronger preference for short-term debts. In another empirical study, a panel date of 2,443 firms from seven countries across seven industries is used to analyse the key determinants (i.e. profitability, growth opportunities, firm size, tangibility, business risk and GDP growth) of capital structure between Sharia compliant and non-compliant firms (Yildirim, Masih and Bacha, 2018). They also find out that financing mix

decisions of both Sharia compliant and non-compliant firms are better explained by pecking order theory for book leverage and trade off theory for market leverage. In another similar study by for Saudi Arabian market (Guizani, 2020), they tested pecking order theory for Islamic financing instruments of 66 Sharia compliant firms and find out the support from asset-based financing modes which are preferred being cheaper and no dilution of ownership at firms. They also find out that firms move to PLS finance and Sukuk options respectively for additional funding if debt-ratio limit is full. In another study on financial leverage and capital structure of firms, impact of Islamic debt finance over financial performance and valuation of firms is empirically tested and found a positive relationship in the Malaysian market. The study also reveals that trade-off theory holds well in the Malaysian context for Islamic finance (Fauzi *et al.*, 2015). On supply side of credit, there have been limited empirical studies on capital structure of Islamic banks where book leverage is tested against variables of size, profitability, tangibility, growth etc. and found significance of relationships (Khokher and Alhabshi, 2019).

6.2.3 Literature Gap and Development of Hypotheses

As examined in Chapter 2, PLS finance has no contractual fixed payment of profits, and its risk characteristics are very different from non-PLS finance because of its unique nature. Ideally, this should have a different role in a debt equity mix of a firm.

Although there are few empirical studies on testing capital structure theories for firms apply Islamic finance structures in their debt equity mix, there is no proper study for a relationship between PLS finance, a firm's value and cost of capital in context of capital structure theories such as trade-off theory, pecking order theory and agency theory.

Conventional theory	Claim of the theory	PLS finance relevance	Gaps in the literature
MM theory	Capital structure or debt equity mix is irrelevant for a firm's value.	If PLS characteristics are different from debt, is still this irrelevant?	There is no literature on PLS role in capital structure. However, an analogy could be built that MM theory holds in case

	With tax-shield benefits of debt, value of a firm increases with more debt	If PLS is tax permissible with an equal effective rate, the effects on a firm's value should be similar.	of PLS finance being a type of financing.
Trade-off theory	There is an optimal capital point where bankruptcy cost (BC) of debt outweighs its tax benefits.	If BC of PLS finance is not equivalent to debt for a firm, then optimal point of valuation should be different.	There is no specific study on estimation or impact of BC over a firm's value. There are few empirical studies to test trade-off theory for Islamic finance products in general.
Pecking order theory	Due to asymmetric information and other reasons, firms follow a certain order of internal and external financing.	Since PLS finance is a kind of external financing, it is important to understand how it fits into the pecking order.	There is no study specific to PLS finance even under empirical literature.
Agency theory	Agency cost is inevitable and influence capital structure decisions in many ways, mainly assets substitution, adverse selection and moral hazard problems.	PLS finance is very unique in its nature and carries agency problems higher than other modes of finance which should result in different agency cost as well for the capital structures of a firm.	How agency cost of asset substitution, adverse selection and moral hazard is relevant for PLS finance in comparison to other modes of finance?

Secured vs Unsecured Financing	Capital structure theories have different predictions for secured and unsecured finance.	Like other debt finance, secured finance collaterals should have different impact on the capital structures of a firm.	There is no study on addressing this issue in Islamic finance.
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Table 6.1: PLS Finance and Theories of Capital Structure

Explaining the prediction of capital structure theories for financing and literature gaps for PLS finance.

Considering the above gaps in the extant literature for Islamic finance, this study aims to fill this gap with special emphasize on static tradeoff theory, pecking order and agency theories. The following hypotheses are developed to find an answer for the research question. These hypotheses focus on the impact of PLS finance over various determinants of capital structure at firms.

***Hypothesis 1:** PLS finance has a positive impact on the total value of a firm (trade-off theory).*

***Hypothesis 2:** PLS finance has priority over debt finance in capital structure decisions (pecking order theory).*

***Hypothesis 3:** Agency cost of PLS finance is more severe on the total value of a firm (agency theory).*

6.3 Analysis Plan

This section covers fitment analysis of PLS structure into an analytical model for testing of trade-off, pecking order and agency theories, which consists of conceptual context, parameters, assumptions and initial assessment.

6.3.1 Defining Default Point in PLS Finance

Taking an insight from chapter 5, the inherent characteristics of PLS finance is a mix of credit and equity investment risk. Since 74% of respondents believe in this phenomenon of hybrid risk when making credit decisions for PLS deals, it somehow indicates a strong notion of its equity characteristics. It is also evident from the fact that only 12% respondents believe that it is a counterparty default risk and is treated as pure credit risk. Generally, lenders assess credit riskiness

of a firm based on certain quantitative metrics⁶², which are used by rating agencies as well. For this purpose, the debt ratio⁶³ of a firm is most important, which requires firms to maintain certain value of its assets. The gap between outstanding loan value and a firm's assets value is also considered as distance to default. Since lenders always prefer a specific charge or mortgage on a firm's tangible assets instead of a general charge. Similarly, secured and unsecured bonds in the capital market are considered two distinct investment products targeting the different profile of investors. Cash flows of a firm are equally important in estimating a firm's riskiness or credit rating, which is measured through various types of coverage ratios. For this purpose, the most common measures are EBIT to loan ratio, debt service coverage ratio (DSCR) and loan life cover ratio (LLCR)⁶⁴. Furthermore, lenders impose various financial covenants such as cash reserve account, ring fencing of cash flows, capital repatriation or dividend stopper conditions etc. for an effective credit control purpose.

In this context, it is important to understand the default point for PLS finance. Mostly a loan is assumed in-default when a firm's assets value is lower than debt value because its shareholders have no economic interest in carrying a negative net assets value. Merton (1976) also explains an endogenous default point is when value of a firm's assets is below certain threshold known as default boundary. Similarly, if the outstanding value of PLS finance is more than its underlying asset or venture, then shareholders of a firm have no interest in it and can opt for a default. This definition is comprehensive despite the fact PLS finance is directly related to the performance risk of its underlying venture and there is no contractual commitment of fixed pay on the borrowing firms. Because a firm may opt for a strategic default if the value of outstanding financing (including debt and other liabilities) is more than the net present value (NPV) of its future cash flows. There is no point of investing additional efforts and resources if projected cash flows are not enough to pay back to the lenders. On the other note, if a firm is not able to maintain the financial covenants of a loan for a certain period, its lender can force a default or liquidate the firm.

⁶² Chapter 2 and chapter 5 have discussed the risk assessment process in details including 5 Cs of credit.

⁶³ It is loan to asset value of a firm. Alternatively, it is measured as gearing ratio i.e. debt to equity ratio.

⁶⁴ Earnings before interest & tax (EBIT) and earnings before interest, tax, depreciation and amortization (EBITDA) are most popular proxy for free cash flows of a firm. DSCR is the ratio between the annual unlevered free cash flow and the annual debt service (principal and interests); LLCR is calculated as the ratio between: 1, the sum of the present value of unlevered free cash flows of the project plus outstanding debt reserve; and 2, the outstanding amount of the loan at the date of calculation. The unlevered free cash flows considered in the numerator of LLCR are those expected from the date of calculation until the final year of principal repayment.

This is also equally applicable for PLS structures if any such financial covenant is agreed in the financing contract. For example, if cash profits paid on PLS finance for a period (T) is less than initial expected profit rate agreed in the PLS contract, lender may ask to liquidate the PLS project or venture. This phenomenon is studied thoroughly in chapter 5. In summary, an endogenous default of PLS finance can be defined when a firm value falls below default boundary and an exogenous default can be considered when a firm is not able to maintain its positive net-worth or not able to maintain the financial covenants for a reasonable period⁶⁵.

6.3.2 *PLS Finance and Trade-off Theory*

Considering the above understanding of default for PLS finance, the next step is to understand how to compare probability of default (PD) and bankruptcy cost (BC) of PLS finance with debt finance. Nevertheless, it is obvious from PLS finance concept that PD and BC of PLS finance for firms is much lower than of debt finance because of its unique flexible nature. Furthermore, we have understood from chapter 5 that PD and LGD for PLS finance is perceived higher by the lenders compared to non-PLS. PD is related directly to asset's volatility of a firm and PLS risks are directly based on its creditworthiness and financial performance. One way to measure PD is its calibration to a firm's rating and scaling PLS instrument proportionately downward. If the rating of a firm is A, then the rating of its PLS instrument can be 2-3 notches lower considering the higher level of risks. This methodology is adopted by credit rating agencies for perpetual or contingent convertible bonds in comparison to debt⁶⁶. However, this method is relevant for empirical studies and difficult to adjust into a theoretical model. The approach taken in the study is to link PD directly with volatility of a firm's assets and drive bankruptcy cost based on it. Because, considering a lower PD and loss severity rates for PLS finance structure, BC can be assumed lower to some extent for the firm. BC can be adjusted by a factor having values between 0 and 1. Let's name it a '*PLS factor*'. If factor value is equal to 1, we can assume that BC of PLS finance is equal to a debt instrument for a firm while 0 means that there is no BC just like of equity. There are various reasons to assume a range of possible values for the PLS factor because of unique nature of PLS finance such as flexible repayment structure, profit loss sharing instead of fixed pay and

⁶⁵ As per IFRS and other prudential regulations, it is 90 days of non-repayment of any due installment.

⁶⁶ For reference, Moody rates subordinate debt 1 notch lower than senior unsecured debt at average loss severity rate of 40% while preference stock 3 notches lower with 85% severity rate.

performance-based returns. However, PLS factor cannot be assigned a value of 0 because PLS finance is not perpetual in nature and must be paid back at the end of term as per financing contract.

With respect of trade-off theory for an interplay between tax benefits and bankruptcy cost, a general mathematical equation can be expressed as follows:

$$V_L = V_U + TB - BC \quad \dots\dots\dots \text{(Equation 1)}$$

The trade-off theory argues that value of a levered firm (VL) > value of unlevered firm (VU) because of a function of positive tax benefits (TB) at initial stages and negative bankruptcy cost (BC) at later stages as a firm increases its debt ratio. Since PLS finance is also assumed⁶⁷ tax exempted like debt finance, we can assume safely that the impact of tax benefits on capital structure for both financing structures would be equal. However, bankruptcy cost of PLS finance needs to be estimated and how much it differs from debt finance.

6.3.3 PLS Finance and Pecking Order Theory

Asymmetric information is a base concept for pecking order theory, which theorizes how information gap outplays in funding choices and capital structure decisions. Since the theory postulates that cost of financing increases with asymmetric information, firms prioritize their sources of financing according to its funding cost; preferring first internal use of funds and when that is depleted, debt is issued. When it is either not sensible to issue any more debt because of high bankruptcy cost or not feasible to bank more debt due to credit rationing or debt ratio ceiling, equity is issued. We have studied certain characteristics of PLS finance in chapter 5. First, it is a riskier structure, as 76% respondents believe it the top-most reason for lack of application. IFSB (2021) also requires higher capital charge for PLS structures due to its high riskiness for banks. Secondly, risk reward parity requires the cost of PLS financing to be higher than debt finance, somewhere between cost of debt and cost of equity. This is also supported in the survey that 52% of respondents say higher pricing for PLS finance structures is required by their internal credit policies of the bank. Considering this unique nature of PLS, following two aspects of agency problem are relevant for pecking order in considering its role as substitute or complement of debt:

- a. If there is an asymmetric information problem between managers and creditors as pecking order theory assumes, then financial consequences for PLS finance providers are far riskier

⁶⁷ This is a given tax treatment in many tax jurisdictions where PLS finance is being practiced.

than debt finance. If managers believe that a firm's assets are overvalued, they will opt for PLS finance instead of debt finance as in this case, the probability of downside is more than its upside and PLS finance providers will be bound to share the expected losses.

- b. The firm is more inclined towards PLS or non-PLS finance based on funding cost per unit of risk for the given choice. The existence of asymmetric information coupled with agency issues may incentivize managers to opt for PLS finance. They have more leverage to reduce funding cost per unit of risk especially if a firm's assets are over-valued or its operating activities are riskier (or going to be riskier in future) than lender's initial estimation.
- c. However, if a firm is over-leveraged and no lender is willing to provide additional debt finance, then demand for PLS finance is as subordinate or mezzanine finance. This will definitely increase the cost of funding for a firm but still lower than the cost of equity. Furthermore, a firm still prefer it because of no dilution of ownership for existing shareholders (Hackbarth and Mauer, 2012b). Here, the decision point for a firm is to issue equity or go for quasi-equity structures like PLS finance. These simple options of debt (non-PLS), PLS and equity can be drawn on a graph for an *efficient frontier* between risk and weighted average cost of capital (WACC) of a firm in search of its optimal point of financing mix.

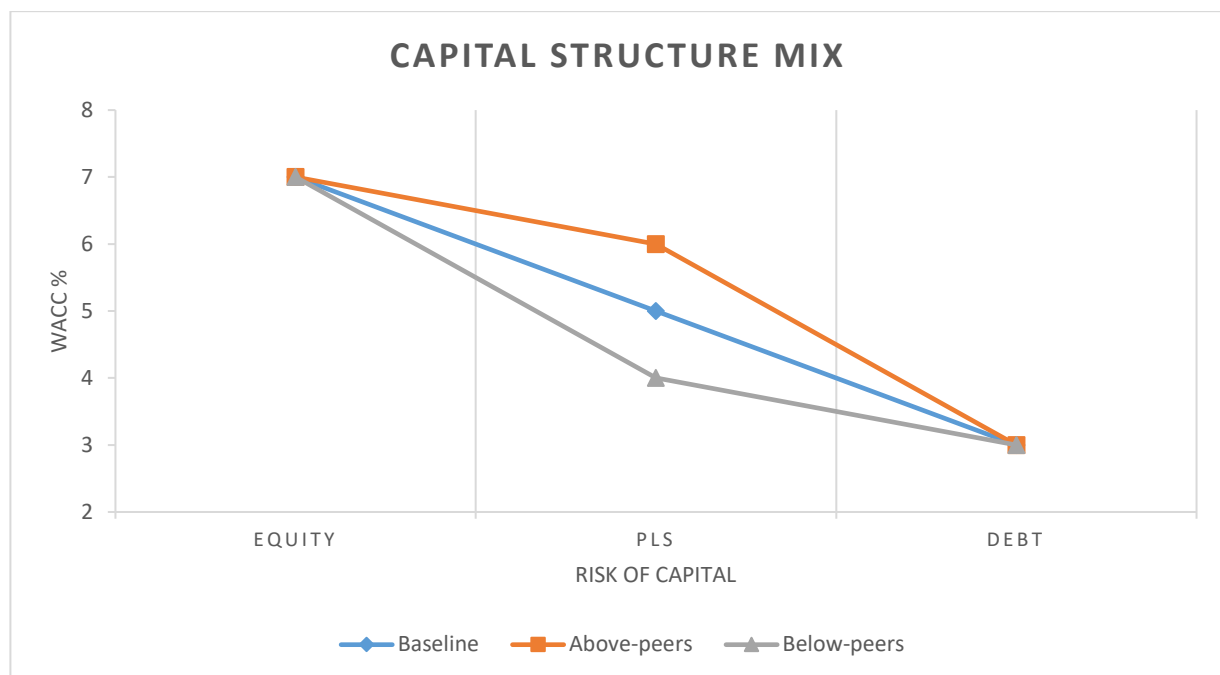


Figure 6.1: PLS Finance and Capital Structure Mix

A matrix of three type of capital structures including debt (non-PLS), PLS and equity on x-axis and weighted average cost of capital (WACC) of a firm on y-axis. Baseline is built based on theoretical risk-reward parity while above/below peers line is based on cost of PLS finance option negotiated by the firms. Below-peers line is an efficient frontier, which every manager strives to achieve due to information asymmetric phenomenon. Above-peers is an inefficient path, which may happen due to negligence or incompetence or agency issues between managers and shareholders.

Initially it is evident that PLS finance can substitute the order of debt finance only if cost of financing per unit of risk is equal or lower than debt due to information gap. Managers are incentivized to opt for PLS finance for their risky projects. A lower weighted average cost of capital (WACC) per unit of riskiness of capital will maximize the financial value of a firm. However, for average risk of projects, managers may consider absolute WACC in \$value rather than per unit of risk and prefer non-PLS (or debt) finance to minimize cost of capital.

6.3.4 *PLS Finance and Agency Theory*

Considering the impact of agency problems over investment decisions and optimal capital choices, it is more evident for PLS finance than debt because managers hold more information than creditors. This context is important for PLS structures where returns of PLS finance depends wholly on the underlying venture performance rather than a contractual fixed-pay nature of non-PLS. The interplay of agency problems become more problematic with existence of asymmetric information gap. Following is unique impact of agency problems for PLS finance compared to non-PLS;

- a. In an asymmetric world of information, moral hazard is more pertinent for PLS finance providers during the repayment period of financing. A firm with a high level of outstanding long-term debt may choose to undertake risky projects or negative NPV projects which transfers wealth from creditors to shareholders under limited corporate liability concept. It is expected that firms with PLS finances are tempted more to go for such risky projects than of debt finance. Myers (1977) argues that moral hazard problem is more critical for firms whose cash flows or value are dependent upon anticipated rents from future investment opportunities rather than from existing assets or assets which firm is committed to purchase.
- b. Extending over moral hazard problem, asset substitution problem becomes a high-risk affair for PLS finance. The managers, acting in the best interest of their shareholders, will invest in the future in risky assets or increase the risk of the operating activities. In both cases, PLS

finance is more vulnerable because of its unique nature of loss sharing or less-than-expected profit sharing in comparison to fixed pay attribute of debt finance. This problem is more pertinent to PLS finance especially if there is performance covenant restraining upside gain to PLS finance providers.

- c. In PLS finance, adverse selection is more pertinent than debt finance. Creditors are more to lose because of high agency costs. Is it sound to lend a growth firm on the strength of its management promise to undertake all underlying or future investment projects with a positive net present value (NPV)? Even if all positive NPV projects are identifiable by the lenders, there is a high monitoring cost⁶⁸ to enforce such a contract.

This is also evident from responses of respondents studied in chapter 5. When asked about relevance of agency problems for PL finance, 79.6% of respondents gave affirmatory response. In summary, agency problems and its related cost are more precarious for PLS finance, being a riskier structure for the lenders.

6.3.5 *The Model*

Capital structure theories are tested through various structural, reduced form and empirical models and extensively covered in academic literature. Among them, structural models are widely used for choices of capital structure, probability of default, debt pricing and valuation of a firm. For the given research propositions, a unified analytical framework is adopted based on the structural model of Leland (1994) which can derive closed-form results for the value of a levered firm, value of long-term debt and optimal capital structure. Optimal leverage and capital structure in the model are explicitly linked to firm's riskiness, tax benefits, bankruptcy cost, risk-free interest rates, volatility, payout rates and debt covenants.

Leland (1994) is a simple structural model built based on insights of trade-off theory and can demonstrate scientifically an interplay of tax benefits with bankruptcy cost. It is a unique and simplified model to prove mathematically trade-off theory (equation 1) for valuation of a levered firm and its optimal capital structure. Furthermore, its special feature to gauge change in magnitude of parameters over the period (ΔT) can be used as proxies to test pecking order theory and agency theory for tabulated propositions. The model is designed to address plain form of debt structures

⁶⁸ In project financings, banks charge firms/SPVs separately project commissioning and monitoring cost in a range of 0.5-2% pa. In addition to this, debt is classified as special lending under Basel III and price is higher than other corporate loans by and large.

with no cash payment during the financing tenor. It is assumed in the model that PLS finance and debt finance are pari-passu in the ranking. Following table depicts features of debt (non-PLS) and PLS structures and explanation power of the model;

	Explained by the model	Not explained by the model
Debt (non-PLS) structures	A perpetual debt paying coupons/ interest periodically. It can differentiate between protected (exogenous default) and unprotected debt (endogenous default).	A single debt with term maturity of principal on time (t) or a debt with principal amortization repayment profile or heterogeneity of debt having senior-junior tranches.
PLS finance structures	A perpetual PLS finance instrument paying profit sharing portion out of the underlying venture on a periodical basis.	A PLS debt with term maturity of principal on time (t) or with amortization schedule.
Information asymmetry	The model can explain a firm's preference for funding choices of debt and PLS finance in terms of WACC. The pecking order theory assumes debt is preferred for external funding due to less cost and no dilution of ownership for existing shareholders.	The model is not able to explain funding order between internal (retained earnings) and external funding (debt and equity issuance) choices.
Agency cost	A shift of firm's state from low volatility of assets to high volatility is a general proxy	Adverse selection problems and type I errors in credit

	for agency problems of asset substitution risk and Moral hazard. Bankruptcy cost is part of agency cost as well.	decisions are not covered specifically in the model.
Table 6.2: Limitations of the Model		
Explaining power of the model with regards to determinants of an optimal capital structure at a firm.		

We can assume a firm in an ideal world with no leverage. It has a theoretical book value of \$100 which is also equivalent to its value of assets in the market. Since the firm has no liability, its equity value is \$100 as well.

The formulas for tax benefits (TB) and bankruptcy cost (BC) are given below by the model;

$$TB(V) = T/r (V/V_B)^{-x} \dots\dots\dots (Equation 2)$$

T = tax rate

$$V_B = (1 - T) \times C / (r + 0.5 \sigma^2) \dots\dots\dots (Equation 3)$$

TB is an increasing concave function of V

$$BC(V) = \alpha V_B (V/V_B)^{-x} \dots\dots\dots (Equation 4)$$

Where

α = firm value lost in bankruptcy

$$x = 2r / \sigma^2 \dots\dots\dots (Equation 5)$$

BC is a decreasing convex function of V

Key observations from equation (3) for bankruptcy cost are as follows;

- a) BC increases as debt amount (V_B) increases
- b) BC increases as debt cost (C) increases
- c) BC is independent of default cost (α)

PLS finance is treated at pari-passu with debt in the model. Although the nature of PLS finance makes it junior to debt but it is legally possible to rank it at part with debt due to agreed terms in the financing contract. This topic is discussed in detail in chapter 2 under characteristics of PLS finance. There are different mixing ratios of PLS and debt finance used in the analysis plan starting

from 1% to 99%. However, if we assume BC of debt is 1 and of equity is 0, then BC of PLS must be between 0 and 1 depending on the characteristics and related risks of a particular deal between firm and lenders. This is given a name of ‘*PLS factor of volatility*’ in the study which will reduce the magnitude of BC in equation 3. We assume a PLS factor of 0.50 in the model in comparison to debt finance. In the model, asset value at default boundary is default point (VB) i.e. bankruptcy triggering asset level. Optimal debt level or capital structure is linked to a point where value of a firm is maximized, or weighted average cost of capital is minimized and vice versa.

Furthermore, for better analysis of optimal capital structure implications, PLS finance structures can be assumed into two risk profile types;

- a) PLS finance (complement) - It is assumed closer to equity type and complements debt finance only. It replaces only a portion of debt finance.
- b) PLS finance (substitute) – It is assumed closer to debt type and substitutes debt finance wholly. It is an extreme scenario and replaces debt finance fully.

Another option was to consider *PLS factor* different for both complement and substitute types of PLS finance. For example, financing type (a) can have a PLS factor of 0.25 while type (b) can have a factor of 0.75. However, a uniform factor is considered in the study for the sake of simplicity.

Following are parameters descriptions of the model;

Parameters	Description
Asset value (v)	Total value of a firm’s assets. It is total of equity and debt value assuming there is no other liability component on the firm’s balance sheet.
Asset volatility (σ)	Volatility in returns of assets. It measures riskiness of the firm’s assets.
Agency Cost => (σ_L) and (σ_H)	Low and high-risk states of a firm during life of financing is proxy of asset substitution risk and moral hazard.
Time period (t_0, t_1)	t_0 is current period and t_1 is state of time after one period
Expected asset return (μ)	Expected cash flows generated by the firm’s assets.

Payout rate (δ)	Debt/ coupon payout rate from a firm's cash flows.
Interest rate (IR/ r)	Risk-free rate in the market irrespective of a firm's credit rating
Tax rate (\mathbb{T})	Effective tax rate for the firm.
Default point (V_b)	Firm value at endogenous default boundary.
Debt value (V_D)	Value of debt with respect to riskiness of the firm
Default point ($V_b = V_D$)	Exogenous default boundary when firm value is equal to debt value
Default cost (α)	% value of the firm's assets lost in bankruptcy. $(1-\alpha)$ is a recovery rate.

Table 6.3: Parameters of the Model

An explanation of parameters of the model which are proxies to determinants of the capital structure theory.

Here are assumptions taken in the Leland model;

- i. Leland (1994) assumes, in spirit of trade off theory, value of levered firm (V_L) > value of unlevered firm (V_U) because of a function of positive tax benefits (TB) at initial stages and negative bankruptcy cost (BC) at later stages on the firm value.
- ii. The model is to test static trade-off theory where it further assumes that interest rate and volatility are constant throughout the life of financing.
- iii. Debt is assumed unprotected when default happens at V_b and assumed protected when default happens at $V_b = V_D$. All else equal, the model calculates a higher V_D value than V_b which means BC is higher when debt is assumed protected.

6.3.6 Model Validation with Initial Debt Structure

Initially the firm is unlevered but chooses an appropriate level of debt (D) at time t_0 . The other parameters to consider for an optimal leverage are asset return (μ), payout rate (δ), interest rate (r), effective tax rate (\mathbb{T}), default point (V_b) and default cost (α). The following analysis shows an interplay of all these variables and describes an optimal debt level which maximizes value (v) of the firm. In the beginning, total asset value and unlevered firm value are equal to 100.

Let's assume $v_u = v = 100$ where TB and BC in equation 1 are 0 because of zero leverage. Initially, both volatility (σ) of asset and equity is same because of no leverage. Now we assume that the firm begins to borrow a single-type debt (D) gradually. Although total volatility (σ) of a firm's assets remains unchanged but its bankruptcy cost will increase as debt ratio increases.

6.3.7 The Endogenous Bankruptcy Case

The endogenous bankruptcy case is applicable when there is no protective covenant and a firm default at a default point (V_b). Mathematical equations 2, 3 and 4 explain how firm value is impacted by five key parameters (leverage (D), rate (r), volatility (σ), tax rate (t) and default cost (α)) while analyzing various mixes of debt and equity finance. Below 3 scenarios demonstrate the impact of interplays among these key parameters on a firm's value.

Scenario 1: Impact of changes in volatility ($\Delta\sigma$) and leverage (ΔD) on firm value (v)

		<<< Volatility vs Leverage and Firm Value >>>									
Leverage →		10	20	30	40	50	60	70	80	90	99
Volatility ↓		10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
10.0%		101.50	103.00	104.50	106.00	107.50	109.00	110.50	112.00	113.43	114.18
20.0%		101.50	103.00	104.50	105.97	107.37	108.57	109.33	109.22	107.53	103.76
30.0%		101.49	102.93	104.21	105.22	105.81	105.84	105.12	103.47	100.71	97.09
40.0%		101.41	102.55	103.32	103.67	103.55	102.90	101.71	99.93	97.53	94.83
50.0%		101.23	101.99	102.34	102.28	101.85	101.03	99.86	98.32	96.43	94.43
60.0%		101.00	101.47	101.56	101.33	100.81	100.03	99.00	97.74	96.26	94.75
70.0%		100.80	101.08	101.04	100.75	100.24	99.55	98.68	97.66	96.49	95.32
80.0%		100.63	100.79	100.70	100.40	99.95	99.35	98.63	97.79	96.86	95.93
90.0%		100.51	100.60	100.48	100.21	99.81	99.30	98.70	98.01	97.25	96.51

Figure 6.2: Matrix of Volatility vs Leverage and Firm's Value

Keeping all other variables in the model constant ($IR = 11\%$, $t = 15\%$, $\alpha = 80\%$), scenario 1 shows an interplay of leverage (D) with volatility (σ) and demonstrates a range of the firm's value with various values. A levered firm has a maximum value of 114.18 \$ at a debt level of 99% and business volatility of 10%, which depicts 14% growth in value as leverage benefits. However, as we increase volatility (σ) above 10%, the firm's value begins to drop gradually. At 20% volatility, a maximum firm' value (v) is 109.33\$ at maximum leverage of 70%. At 50% volatility (σ), a maximum value is 101.85 US\$ and optimal debt is 50% and so on. The higher the volatility, the lower the value of a firm and maximum leverage point.

Scenario 2: Impact of changes in coupon (Δr) and leverage (ΔD) on firm value (v)

		<<< Coupon vs Leverage and Firm Value >>>									
Leverage →		10	20	30	40	50	60	70	80	90	99
Rate (r) ↓		10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
3.0%		101.44	102.64	103.50	103.94	103.91	103.33	102.17	100.37	97.88	95.03
4.0%		101.48	102.85	103.98	104.76	105.08	104.82	103.85	102.08	99.38	96.05
5.0%		101.49	102.93	104.23	105.26	105.89	105.94	105.26	103.64	100.87	97.22
6.0%		101.50	102.97	104.36	105.56	106.43	106.78	106.39	105.00	102.28	98.42
7.0%		101.50	102.99	104.43	105.74	106.80	107.40	107.30	106.16	103.57	99.61
8.0%		101.50	103.00	104.46	105.85	107.04	107.85	108.01	107.14	104.74	100.74
9.0%		101.50	103.00	104.48	105.91	107.20	108.17	108.56	107.96	105.78	101.81
10.0%		101.50	103.00	104.49	105.95	107.30	108.40	109.00	108.65	106.71	102.82
11.0%		101.50	103.00	104.50	105.97	107.37	108.57	109.33	109.22	107.53	103.76

Figure 6.3: Matrix of Coupon vs Leverage and Firm's Value

In scenario 2, an interplay of leverage with coupon (r) is demonstrated while all other parameters are constant ($t=15\%$, $\sigma=20\%$, $\alpha=80\%$). In Fig. 6.3, a firm has a maximum value of 109.33\$ at 11% coupon rate and 70% debt level. However, firm value decreases as interest rate (r) decreases which is counter intuitive. In fact, tradeoff theory is based on assumption that more interest rate provides more tax benefits to the firm and higher interest rate maximizes a firm's value as long as bankruptcy cost outweighs it. In result, the model predicts low level of optimal leverage at lower interest rates.

Scenario 3: Impact of changes in default cost ($\Delta\alpha$) and leverage (ΔD) on firm value (v)

Leverage →	10	20	30	40	50	60	70	80	90	99
Alpha ↓	10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
10.0%	101.50	103.00	104.50	105.99	107.46	108.87	110.14	111.15	111.67	111.46
20.0%	101.50	103.00	104.50	105.99	107.45	108.83	110.03	110.88	111.08	110.36
30.0%	101.50	103.00	104.50	105.98	107.43	108.78	109.91	110.60	110.49	109.26
40.0%	101.50	103.00	104.50	105.98	107.42	108.74	109.80	110.32	109.90	108.16
50.0%	101.50	103.00	104.50	105.98	107.41	108.70	109.68	110.05	109.31	107.06
60.0%	101.50	103.00	104.50	105.98	107.40	108.66	109.57	109.77	108.71	105.96
70.0%	101.50	103.00	104.50	105.97	107.38	108.61	109.45	109.50	108.12	104.86
80.0%	101.50	103.00	104.50	105.97	107.37	108.57	109.33	109.22	107.53	103.76
90.0%	101.50	103.00	104.49	105.97	107.36	108.53	109.22	108.95	106.94	102.66

Figure 6.4: Matrix of Default Cost vs Leverage and Firm's Value

Scenarios 3 illustrates an interplay of leverage with default cost while other key parameters are constant ($t=15\%$, $r=9\%$, $\sigma=80\%$). A firm gained a maximum value of 111.67\$ at a default cost of 10%. As a firm's default cost increases, optimal level of leverage is reduced gradually. At 20% default, optimal debt level is 80%; at 50% default cost, optimal debt level is 40% and at 90% default cost, optimal debt level is 30%. This is intuitive as increasing default costs means most of a firm's value is lost in bankruptcy.

6.3.8 The Exogenous Bankruptcy Case

In general, agency costs and asset substitution incentives may encourage protective debt option. In case of exogenous default (V_{bp}) when debt is protected and firm value cannot be less than debt value i.e. $V_b = V_D$, optimal value of the firm will be reduced at same parameters ($IR=11\%$, $t=15\%$, $\sigma=20\%$, $\alpha=80\%$). The optimal value between V_b and V_{bp} scenarios is reduced from \$113.52 to \$110.6 and optimal debt equity mix is also reduced from 99% to 80%.

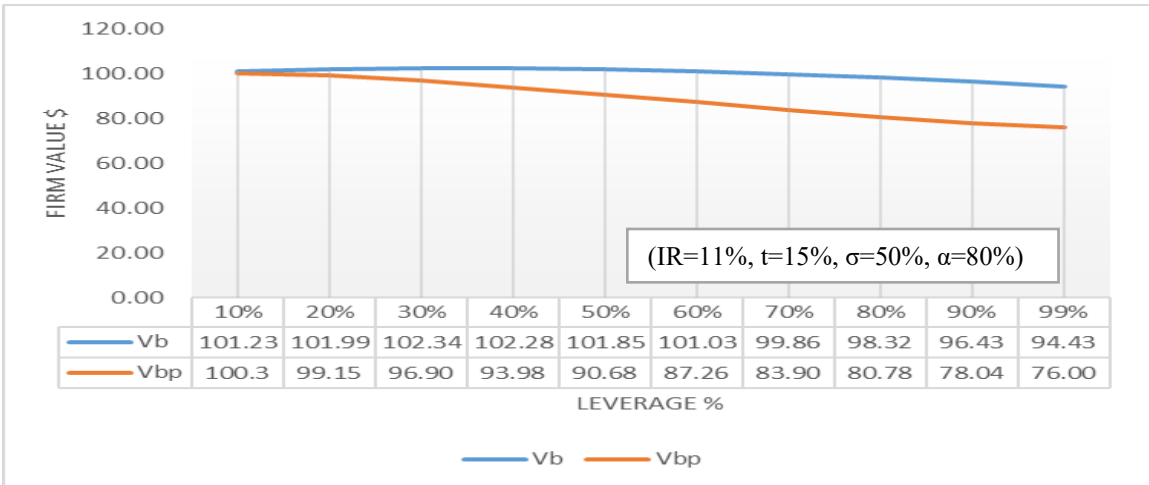
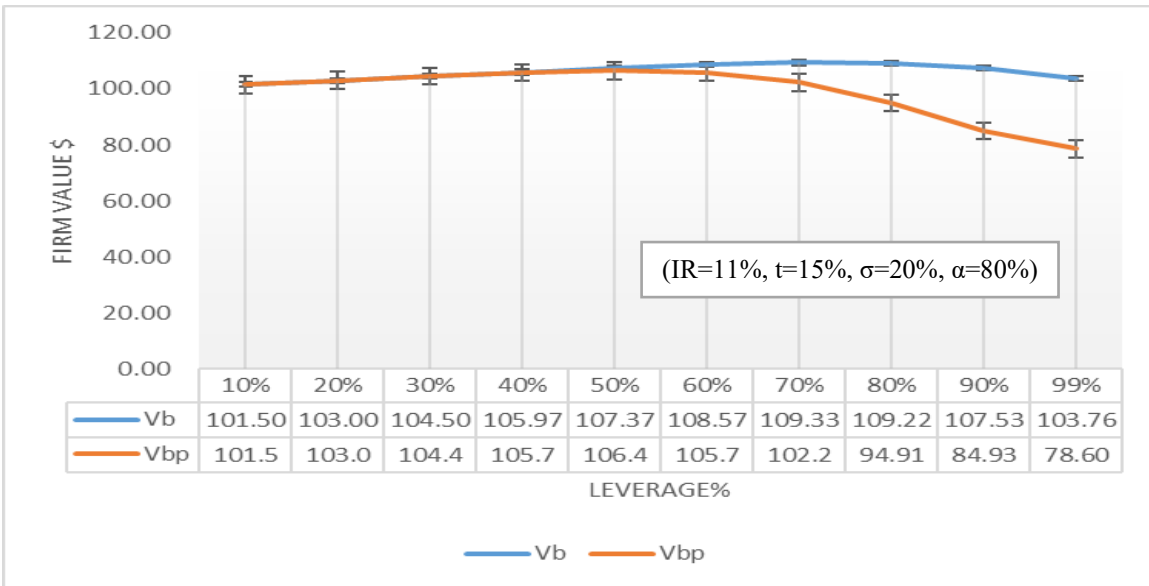


Figure 6.5: Debt, Exogenous Default and Volatility Levels

In case of exogenous default (V_{bp}) when volatility is changed from 20% to 50% with given parameters ($IR=11\%$, $t=15\%$, $\sigma=50\%$, $\alpha=80\%$), optimal firm value will be lower because of debt protection covenant. The optimal value between V_b and V_{bp} scenarios is reduced from \$102.34 to \$100.3 and optimal debt equity mix is also reduced from 30% to 10%.

These are base scenarios of the model for debt over a firm's value and testing of tradeoff theory for PLS finance. In next section, we will examine an application of the model for PLS finance and change in value of a firm (ΔV) compared to debt finance.

6.4 Research Hypotheses Testing and Findings

The model is applied first for debt structures as a base scenario for trade-off theory and then extended into similar scenarios for PLS finance to determine an effect of PLS finance on a firm's

value and testing of trade-off theory. Subsequently, the model is applied for testing the pecking order and agency theories.

6.4.1 Testing Trade-off Theory for PLS Finance

The model can provide a closed-form solution even for PLS finance after some mechanical adjustments in assumptions and parameters. Equations 2 and 4 can determine the respective values of TB and BC. However, debt level (D) in the model will include both debt and PLS finance in calculation of default boundary (V_b). Equation 4 will calculate bankruptcy cost based on both debt and PLS finance amounts altogether, but PLS related BC will be adjusted by *PLS factor* because of its unique nature of no-fixed payment. Furthermore, equation 2 will include any profit paid under PLS finance as a tax-deductible expense like a debt coupon because it is assumed that cost of PLS finance is a tax permissible expense like of debt. This makes PLS a perfect financing instrument desired by firms which carry all tax benefits while preserving partial flexibility of equity which lowers bankruptcy cost of a firm significantly.

With PLS factor adjustment in the model, the value of a levered firm is always an increasing function if PLS finance substitutes debt finance fully (100%). The model shows when there is lower bankruptcy cost by assuming PLS factor less than 1, the value of a firm always increases by substituting PLS finance with debt finance. TB are identical between PLS and debt finance. This conclusion is direct and logical that the more PLS finance substitutes with debt in a financing mix, the higher is a firm value. This recommends an optimal capital structure level of 99.99% PLS finance and 0.01% equity having no room for debt. This is considered as PLS finance (substitute) scenario in the analysis when PLS replaces debt fully. Similarly, if PLS finance complements debt finance with a certain percentage, the results are similar on proportionate basis. The value of a levered firm is always an increasing function but with lesser magnitude. PLS factor is adjusted in the model with the weights of PLS and debt finance to take its weighted average effect. This is considered as PLS finance (complement) scenario in the analysis when debt is 60% and PLS is 40% of a given leverage ratio.

6.4.1.1 Scenario 1: Impact of PLS finance and changes in volatility ($\Delta\sigma$) on a firm value (v)

Keeping all other variables in the model constant (IR =11%, t=15%, $\alpha= 80\%$), scenario 1 in Fig. 6.6 shows how PLS finance impacts value of a levered firm if it is replaced fully (substitute) or partially (complement) with the debt (Fig. 6.2). Under PLS substitute option, at 10% volatility level of a firm, its value has increased from 114.18\$ to 114.55\$ at a leverage point of 99%. This

shows a 0.03% difference in value of a firm between both financing choices. However, at 90% volatility level, the firm's value is decreased to 102.71\$ (PLS-substitute choice in Fig 6.6) compared to 96.51\$ (debt only choice in Fig. 6.2) at a leverage point of 99%. This shows a 6.4% difference in valuation of a firm between both choices. Hence, the effect of volatility is almost negligible at its lower bounds while significant at its upper bounds with a given leverage point. This is intuitive as PLS finance is counter-cyclical and a firm having PLS option is showing higher value compared to others during both highly volatile economic conditions and weak financial performance of a firm.

PLS (substitute)		<<< Volatility vs Leverage and Firm Value >>>									
Leverage →		10	20	30	40	50	60	70	80	90	99
Volatility ↓		10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
10.0%	101.50	103.00	104.50	106.00	107.50	109.00	110.50	112.00	113.47	114.55	
20.0%	101.50	103.00	104.50	105.99	107.44	108.81	109.97	110.74	110.79	109.81	
30.0%	101.50	102.97	104.36	105.63	106.70	107.49	107.94	107.95	107.42	106.40	
40.0%	101.46	102.77	103.91	104.83	105.51	105.94	106.09	105.94	105.48	104.79	
50.0%	101.35	102.46	103.35	104.02	104.49	104.76	104.83	104.71	104.41	103.97	
60.0%	101.22	102.14	102.84	103.36	103.72	103.93	104.00	103.94	103.76	103.49	
70.0%	101.08	101.85	102.43	102.86	103.16	103.34	103.43	103.42	103.32	103.16	
80.0%	100.95	101.61	102.10	102.47	102.73	102.91	103.01	103.04	103.00	102.92	
90.0%	100.84	101.41	101.84	102.17	102.41	102.58	102.69	102.74	102.75	102.71	

PLS (complement)		<<< Volatility vs Leverage and Firm Value >>>									
Leverage →		10	20	30	40	50	60	70	80	90	99
Volatility ↓		10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
10.0%	101.50	103.00	104.50	106.00	107.50	109.00	110.50	112.00	113.44	114.29	
20.0%	101.50	103.00	104.50	105.97	107.39	108.64	109.52	109.66	108.48	105.52	
30.0%	101.49	102.94	104.25	105.34	106.07	106.32	105.94	104.78	102.66	99.80	
40.0%	101.43	102.62	103.50	104.01	104.12	103.79	102.98	101.68	99.84	97.73	
50.0%	101.26	102.13	102.63	102.79	102.61	102.12	101.30	100.18	98.75	97.20	
60.0%	101.06	101.67	101.94	101.92	101.66	101.17	100.46	99.55	98.44	97.29	
70.0%	100.88	101.30	101.44	101.36	101.09	100.65	100.06	99.33	98.48	97.60	
80.0%	100.72	101.03	101.11	101.00	100.76	100.39	99.90	99.32	98.65	97.97	
90.0%	100.60	100.84	100.88	100.78	100.56	100.25	99.86	99.39	98.85	98.32	

Figure 6.6: Matrix of PLS Finance and Volatility Levels for a Firm's Value

Under PLS finance substitute option, debt is completely replaced by PLS finance and all other parameters in the model are kept constant. Under PLS finance complement option, PLS finance substitute debt with 40:60 ratio only.

However, keeping all other variables constant ($IR = 11\%$, $t = 15\%$, $\alpha = 80\%$), if PLS finance complements debt with a ratio of 40:60 within given leverage ratio, value of a firm drops to 114.29\$ which is lower than PLS finance (substitute) scenario but higher than the pure debt choice (114.18\$). At higher bounds of volatility and a given leverage ratio, difference in valuation of a firm is 1.9% higher for PLS (complement) choice compared to debt only.

In result, above analysis is evident that the impact of PLS finance over a firm's value is always positive especially at high levels of volatility and leverage ratios.

6.4.1.2 Scenario 2: Impact of PLS finance and changes in coupon (Δr) on a firm value (v)

An interplay of leverage with coupon (r) is demonstrated while all other parameters are kept constant ($t=15\%$, $\sigma=20\%$, $\alpha=80\%$) and PLS finance substitutes debt fully. In Fig. 6.7, a firm has a maximum value of 110.32\$ at 11% coupon rate and 80% leverage level. Again, this valuation is higher than the debt-only scenario by 0.9%, which is 109.33\$ at 79% debt level in Fig. 6.3. As per tradeoff theory, the coupon has direct positive impact on a levered firm's valuations compared to unlevered one due to TB. Throughout the matrix of coupon and leverage, this positive impact carries although in an inverse U shape. This drop in valuation is due to the high potential of BC at high leverage levels.

PLS (substitute)	<<< Coupon vs Leverage and Firm Value >>>									
Leverage →	10	20	30	40	50	60	70	80	90	99
Rate (r) ↓	10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
3.0%	101.46	102.77	103.86	104.70	105.22	105.40	105.21	104.62	103.59	102.28
4.0%	101.49	102.90	104.17	105.23	105.99	106.39	106.35	105.81	104.68	103.11
5.0%	101.50	102.96	104.33	105.54	106.50	107.11	107.26	106.83	105.70	103.96
6.0%	101.50	102.98	104.42	105.73	106.84	107.64	107.98	107.70	106.62	104.77
7.0%	101.50	102.99	104.46	105.84	107.07	108.02	108.54	108.43	107.44	105.54
8.0%	101.50	103.00	104.48	105.91	107.22	108.30	108.98	109.04	108.17	106.27
9.0%	101.50	103.00	104.49	105.95	107.32	108.50	109.33	109.55	108.82	106.95
10.0%	101.50	103.00	104.49	105.97	107.38	108.64	109.59	109.97	109.39	107.58
11.0%	101.50	103.00	104.50	105.98	107.42	108.74	109.80	110.32	109.90	108.16

PLS (complement)	<<< Coupon vs Leverage and Firm Value >>>									
Leverage →	10	20	30	40	50	60	70	80	90	99
Rate (r) ↓	10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
3.0%	101.45	102.69	103.64	104.24	104.43	104.16	103.39	102.07	100.17	97.93
4.0%	101.48	102.87	104.06	104.95	105.44	105.44	104.85	103.57	101.50	98.88
5.0%	101.50	102.94	104.27	105.37	106.13	106.41	106.06	104.92	102.80	99.92
6.0%	101.50	102.98	104.38	105.63	106.60	107.13	107.03	106.08	104.01	100.96
7.0%	101.50	102.99	104.44	105.78	106.90	107.65	107.80	107.07	105.12	101.98
8.0%	101.50	103.00	104.47	105.87	107.11	108.03	108.40	107.90	106.11	102.95
9.0%	101.50	103.00	104.48	105.92	107.24	108.30	108.87	108.60	107.00	103.87
10.0%	101.50	103.00	104.49	105.96	107.33	108.50	109.23	109.18	107.78	104.72
11.0%	101.50	103.00	104.50	105.97	107.39	108.64	109.52	109.66	108.48	105.52

Figure 6.7: Matrix of PLS Finance and Coupon for a Firm's Value

A matrix of firm's valuation for a range of coupon payment against all level of leverage ratios when PLS finance substitute (100%) and complement (40:60) the debt.

In case PLS finance complements debt up to 40% only, the value of firm drops to 109.66\$ but still more than debt only scenario. The optimal valuation of the firm is at the 80% leverage level.

6.4.1.3 Scenario 3: Impact of PLS finance and changes in default cost ($\Delta \alpha$) on a firm value (v)

Scenarios 3 illustrates an interplay of PLS finance with default cost while other key parameters are kept constant ($t=15\%$, $r=9\%$, $\sigma=80\%$). The maximum value of a firm is 112.01\$ at 10%

default cost which is more than 111.67\$ in case of debt only. Here, the optimal point of valuation is at 99% leverage point in Fig. 6.8 against 90% in debt only scenario in Fig. 6.4.

PLS (substitute)		<<< Default Cost vs Leverage and Firm Value >>>									
Leverage →		10	20	30	40	50	60	70	80	90	99
Alpha ↓		10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
10.0%		101.50	103.00	104.50	105.99	107.47	108.89	110.20	111.29	111.97	112.01
20.0%		101.50	103.00	104.50	105.99	107.46	108.87	110.14	111.15	111.67	111.46
30.0%		101.50	103.00	104.50	105.99	107.45	108.85	110.09	111.01	111.38	110.91
40.0%		101.50	103.00	104.50	105.99	107.45	108.83	110.03	110.88	111.08	110.36
50.0%		101.50	103.00	104.50	105.99	107.44	108.81	109.97	110.74	110.79	109.81
60.0%		101.50	103.00	104.50	105.98	107.43	108.78	109.91	110.60	110.49	109.26
70.0%		101.50	103.00	104.50	105.98	107.43	108.76	109.85	110.46	110.19	108.71
80.0%		101.50	103.00	104.50	105.98	107.42	108.74	109.80	110.32	109.90	108.16
90.0%		101.50	103.00	104.50	105.98	107.41	108.72	109.74	110.19	109.60	107.61

PLS (complement)		<<< Default Cost vs Leverage and Firm Value >>>									
Leverage →		10	20	30	40	50	60	70	80	90	99
Alpha ↓		10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
10.0%		101.50	103.00	104.50	105.99	107.46	108.88	110.17	111.21	111.79	111.68
20.0%		101.50	103.00	104.50	105.99	107.45	108.84	110.07	110.99	111.32	110.80
30.0%		101.50	103.00	104.50	105.99	107.44	108.81	109.98	110.77	110.85	109.92
40.0%		101.50	103.00	104.50	105.98	107.43	108.78	109.89	110.55	110.37	109.04
50.0%		101.50	103.00	104.50	105.98	107.42	108.74	109.80	110.32	109.90	108.16
60.0%		101.50	103.00	104.50	105.98	107.41	108.71	109.70	110.10	109.42	107.28
70.0%		101.50	103.00	104.50	105.98	107.40	108.67	109.61	109.88	108.95	106.40
80.0%		101.50	103.00	104.50	105.97	107.39	108.64	109.52	109.66	108.48	105.52
90.0%		101.50	103.00	104.50	105.97	107.38	108.61	109.43	109.44	108.00	104.64

Figure 6.8: Matrix of PLS Finance and Default Cost for a Firm's Value

First matrix of firm's valuation for a full range of default cost against all leverage levels when PLS finance substitute the debt fully. Second matrix of firm's valuation for a range of default cost against all level of leverage ratios when PLS finance complement debt up to 40%.

In case of PLS as a complement option (PLS finance vs debt 40:60), the value of a firm drops to 111.79 but still more than debt only scenario.

6.4.1.4 Scenario 4: Impact of debt (protected & unprotected) and PLS finance (protected & unprotected) and leverage ratio on a firm value (v)

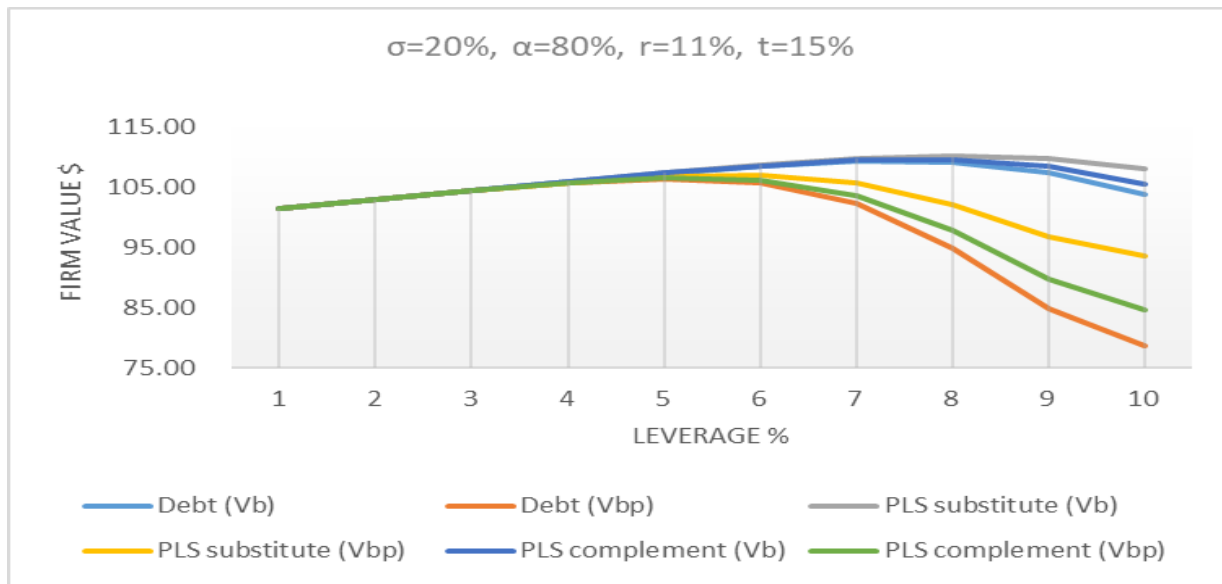
Assuming values of parameters (IR =11%, t=15%, σ =20%, α = 80%) are constant in the model, scenario 4 demonstrates how different types of six (6) financing structures impact a given firm's value. These structures include debt, PLS-substitute and PLS-complement with endogenous (Vb) and exogenous default (Vbp) options.

In case of endogenous defaults (Vb), which assumes debt is unprotected and firm value can drop below Vb, PLS substitute (Vb) option has highest value of 110.32\$ at 80% leverage ratio. For PLS complement (Vb) option, maximum value of a firm is 109.66\$ at 80% leverage level. However, in the case of Debt only option (Vb), maximum value of a firm is 109.33\$ at 70% leverage ratio.

In case of exogenous defaults (Vbp), which assumes debt is protected by a covenant and firm's

value cannot drop below V_b , PLS substitute (V_{bp}) option has a firm's maximum value of 109.66\$ at 80% leverage ratio, while PLS complement (V_{bp}) has maximum firm's value of 106.64\$ at 50% leverage point. The maximum value drops to 106.47\$ at 50% leverage ratio in case of Debt (V_{bp}) option.

Analyzing the behaviour of all six structures at a maximum leverage ratio of 99%, the model demonstrates a range of divergence from 108.16\$ in case of PLS substitute (V_b) to 78.60\$ in case of Debt (V_{bp}), while other four structures are in-between. This shows a differential of 37.6% in a firm's valuation only because of the different types of financing structures applied in its capital structures. This shows PLS substitute option brings maximum value for a firm and unprotected financing structure is always favourable by firms while un-favourable by lenders.



Leverage	10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
Debt (Vb)	101.50	103.00	104.50	105.97	107.37	108.57	109.33	109.22	107.53	103.76
Debt (Vbp)	101.50	103.00	104.46	105.76	106.47	105.75	102.25	94.91	84.93	78.60
PLS substitute (Vb)	101.50	103.00	104.50	105.98	107.42	108.74	109.80	110.32	109.90	108.16
PLS substitute (Vbp)	101.50	103.00	104.48	105.86	106.90	107.11	105.72	102.06	96.80	93.50
PLS complement (Vb)	101.50	103.00	104.50	105.97	107.39	108.64	109.52	109.66	108.48	105.52
PLS complement (Vbp)	101.50	103.00	104.47	105.80	106.64	106.29	103.64	97.77	89.67	84.56

Figure 6.9: Relationship of PLS Finance with a Firm's Value under Trade-off Theory

A full range of firm's values with 6 financing structures showing a difference in valuations at all leverage levels.

In conclusion, PLS finance has a positive impact over a firm's value compared to non-PLS (debt) options. This positive impact gets more significant in case of protected covenants in the financing structure and high volatility levels due to economic conditions. The parameters of coupon and default cost have a positive impact over the valuation of a firm.

6.4.2 Testing Pecking Order Theory for PLS Finance

Pecking order theory predicts that debt is preferred over equity by the firms for given external funding options. This is primarily because of information asymmetry between a firm's managers and external investors. Another reason given for preference of debt over equity is its low-cost component for WACC of the firm and no dilution of ownership for existing shareholders. In the context of the latter reason, a new financing option of PLS finance may have different preference by managers of a firm, which will be examined and tested in the following section for research proposition 2. The model is adequately flexible to accommodate the cost of debt and PLS finance demonstrating their impact over a firm's value for risk adjusted cost of financing.

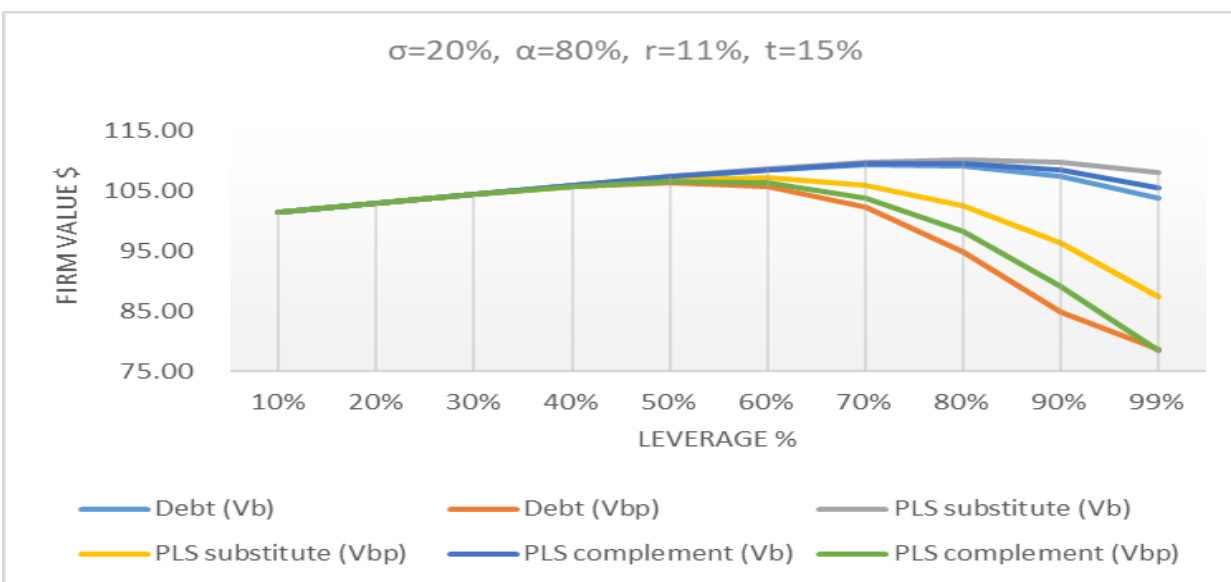
Various studies have shown that frictions in the credit markets can limit the credit supply despite given demand from a firm (Albul, Jaffee and Tchisty, 2015). One of the frictions is limiting the credit supply due to riskiness of a firm and higher capital charges imposed by the regulators⁶⁹, which discipline banks to dictate for risk-based pricing. This is equally applicable for PLS finance where most regulators treat it as a specialized lending and require a capital charge with a range of 100-400%. Such prudential policies limit the supply of PLS finance and prescribe a risk-based pricing higher than debt finance. To test hypothesis 2, IR parameter is adjusted in the model to accommodate higher risk of PLS finance compared to debt in line with risk-reward parity. In an economic state of equilibrium, banks should be neutral between PLS and debt offerings based on a standardized risk-based pricing mechanism. One option is to load IR parameter in the model based on credit calibration and notching methodology⁷⁰. Another option is to load IR parameters based on capital charge policy for PLS finance. Under this method, price of PLS finance is calculated in a way that banks are indifferent in terms of capital charge and risk adjusted return on capital (RAROC). For example, if risk weightage of debt finance is 100% while PLS finance is 200%, then pricing or credit spread of PLS should be set at a level where bank earns equal RAROC. Pricing option based on capital charge is more quantifiable into the subject model by loading a credit spread at a certain percentage, which makes banks indifferent between debt and PLS financing options. Theoretically, this also fits into the banking credit literature that firms are price takers from banks based on their credit conditions. For example, let us assume capital charge and

⁶⁹ Such as central banks, Basel III, IFSB etc.

⁷⁰ Price of PLS finance is estimated based on rating for debt of a firm. For example, PLS finance instrument is rated 3 notches lower than senior unsecured debt instrument and pricing can be charged higher by 20-30 bps per notch as per market convention. This is market practice for pricing of subordinated and perpetual bonds.

credit spread of a debt is 100% and 5% respectively while capital charge is 200% for PLS financing option for a given firm. If target RAROC for a bank is 12% for both financing options, then credit spread of PLS finance should be 8% for a bank to be in an indifferent state. This will result in pricing of 19% for PLS finance and 11% for debt option based on the risk-free rate of 11%. However, the Leland model assumes that an increase in risk-free rate increases both TB and BC for a firm. Both increase in TB and BC nullify each other but at different rates for given leverage level of a firm. At lower leverage, a rate increase will increase firm value because of more tax benefits while at high leverage points, rate increase will decrease firm value because of higher bankruptcy cost.

Therefore, assuming other parameters constant ($IR=11\%$, $\sigma=20\%$, $\alpha=80\%$, $t=15\%$) in the model, if credit spread (8% for PLS and 5% for debt options) is loaded into the pricing for calculation of tax benefits and bankruptcy cost, the impact of firm's value will vary for all six financing structures. These structures include debt, PLS-substitute and PLS-complement with endogenous (V_b) and exogenous default (V_{bp}) options. A simulation in fig. 6.10 demonstrates the changes in a firm's value as and when leverage % increases. The major impact is for financing structures of PLS substitute (V_{bp}) and PLS complement (V_{bp}). Loss of value at extreme leverage (99%) is increases for PLS complement (V_{bp}) reduces from 84.56 to 78.35 and for PLS substitute (V_{bp}) from 93.50 to 87.44 respectively. For all other four financing structures, the impact of risk-based pricing is very nominal.



Leverage	10%	20%	30%	40%	50%	60%	70%	80%	90%	99%
Debt (Vb)	101.50	103.00	104.50	105.97	107.37	108.57	109.33	109.22	107.53	103.76
Debt (Vbp)	101.50	103.00	104.46	105.76	106.47	105.75	102.25	94.91	84.93	78.60
PLS substitute (Vb)	101.50	103.00	104.50	105.98	107.42	108.76	109.87	110.60	110.68	109.80
PLS substitute (Vbp)	101.50	103.00	104.48	105.86	106.92	107.20	106.02	102.63	96.37	87.44
PLS complement (Vb)	101.50	103.00	104.50	105.97	107.39	108.66	109.59	109.94	109.27	107.17
PLS complement (Vbp)	101.50	103.00	104.47	105.80	106.66	106.38	103.94	98.33	89.13	78.35

Figure 6.10: Relationship of PLS Finance and Firm's Value under Pecking Order Theory

A full range of firm's values with 6 financing structures showing a difference in valuations at all leverage levels when IR is adjusted for PLS-substitute and PLS-complement for risk-weighted charge on capital.

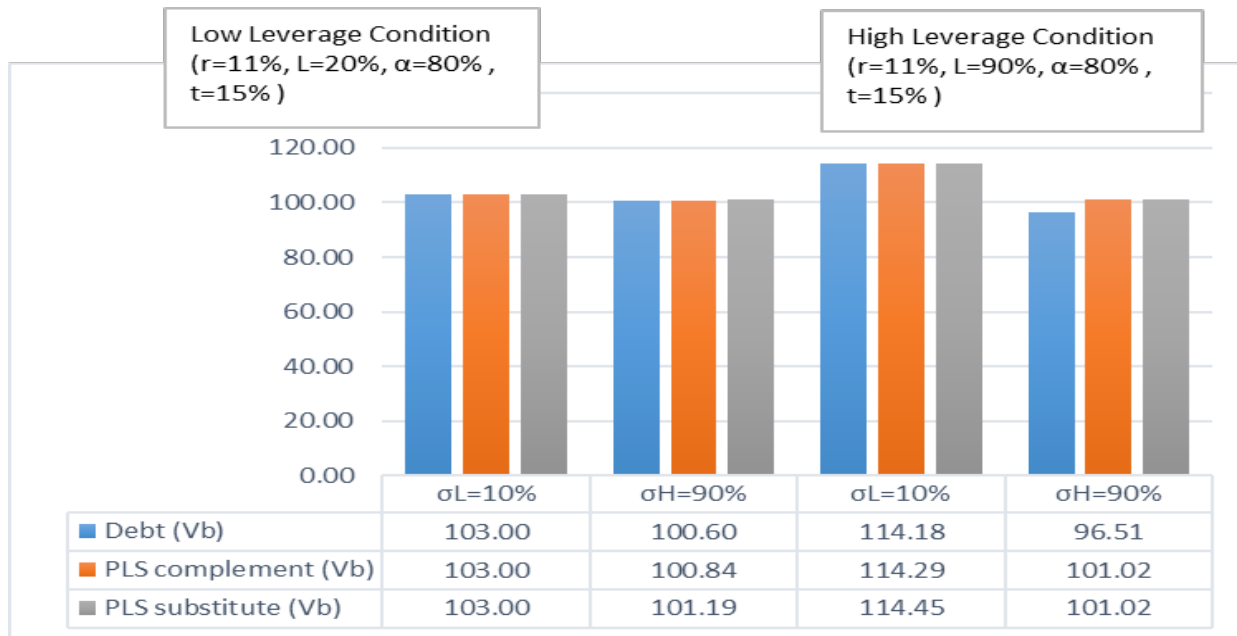
Having options of PLS and non-PLS (debt) financings under the pecking order theory, managers will opt for low risk, low premium option which is non-PLS or debt finance at low levels of leverage. However, considering asymmetric information and specific condition of the firm, managers will opt for PLS finance as value of firms funded by PLS substitute (Vb) and PLS substitute (Vbp) is highest. The possible explanation for PLS finance despite having higher pricing because more value is transferred from lenders to firms at high state of leverage. Here, funding cost per unit of risk (or risk adjusted pricing) assumed is lower for PLS finance than debt finance because of asymmetric information managers hold in high volatile states. Hence, this resulted in higher valuation of a firm at high leverage and volatility state.

6.4.3 Testing Agency Theory for PLS Finance

The model can also factor-in some types of agency risk especially morale hazard and asset substitution risk. It can measure the impact on a firm's value if the riskiness of a firm's assets increases over a period due to agency problems. Because, over a period, managers having moral hazards can invest in riskier assets or shift towards riskier operating activities after entering into a PLS finance arrangement with the lenders. This becomes more critical for PLS finance as its repayment performance is linked to the future cash flows of the underlying firm's assets as emphasized by Mayers (2001)s. Similarly, managers can substitute high quality earning assets of their firms with low quality assets or opt for strategic default if the value of firm's assets is below the obligations.

In the model, volatility (σ) can be assumed as a proxy for riskiness of assets of the firm. For example, if, for a time period (Δt) from t_0 to t_1 , asset volatility is increased by managers from low volatility (σ_L) to high volatility (σ_H) state, the model can estimate asset substitution effect on a firm value (v) in case of both debt and PLS finance. The change in firm value (Δv) is a transfer of wealth from lenders to equity-holders of the firm over the period (Δt). Let us assume a firm is fully

unlevered having value 100 at a time (t_0) and at low risk having low volatility (σ_L) state. After initial borrowing, if managers increase a firm's volatility to a high state (σ_H) during time-period (t_0, t_1), it should impact adversely the value of a firm. However, the magnitude of impact would vary for debt and PLS finance. In this scenario, lower volatility at t_0 is ($\sigma_L = 10\%$) and high volatility at t_1 is ($\sigma_H = 90\%$). All other parameters (α, t, r) are kept constants in both time scenarios. Now, if managers increase riskiness of the firm from low volatility (σ_L) to high volatility (σ_H), the graph below predicts firm's value at low leverage state (20%) and high leverage state (90%) for all six types of financing structures.



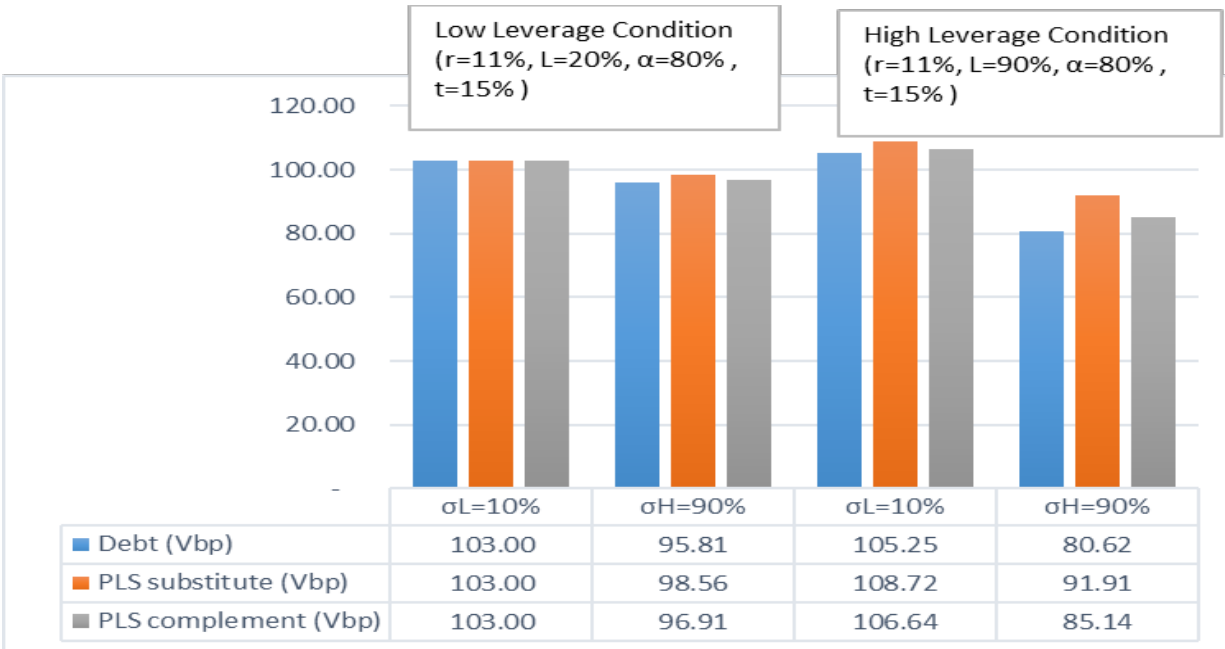


Figure 6.11: Relationship of PLS Finance and a Firm's Value under Agency Theory

A bar chart showing differences in a firm's valuation due to high and low states of leverage and volatility.

At low leverage (20%) state of a firm, when a firm's riskiness ($\sigma_L=10\%$ to $\sigma_H=90\%$) increases by its managers for a period (t_0 to t_1), there is a nominal negative impact on the firm's value under all six structures. These structures include debt, PLS-substitute and PLS-complement with endogenous (V_b) and exogenous default (V_{bp}) options. However, at high leverage (90%) conditions of a firm, when a firm's riskiness ($\sigma_L=10\%$ to $\sigma_H=90\%$) increases by its managers for a period (t_0 to t_1), impact of unprotected financing structures on a firm's value is more than financing structures with protected covenants. Furthermore, the impact of PLS-substitute structure on a firm's value is less than debt option by 8.5% (-7% vs -15.5%) for unprotected covenants. While effects on a firm's value are lower by 3.4% (-20% vs -23.4%) in case of protective covenants. The results of PLS-complement are in-between both debt and PLS-substitute. These results are intuitive as collaterals and securities under protective covenants safeguard lenders to a certain extent from moral hazard problems of managers. This characteristic is discussed in detail in chapter 2. Analyzing individual financing structures, debt structure is more susceptible to increase in volatility over PLS finance structures for a firm and there is transfer of wealth from lenders to shareholders in case of PLS finance (under both substitute and complement options). This relevance and severity of agency problems for PLS finance resulted in higher valuations for

firms (and vice versa is true for lenders). The similar effects of agency problems were evident for lenders from the results of chapter 5.

6.4.4 Summary Table for Research Propositions

Here is a summary of Relationship between PLS finance and Capital structure theories:

<i>Trade-off theory (Proposition 1)</i>	PLS finance plays a stronger role in the value of a firm's assets especially under high leverage and high assets volatility conditions.
<i>Pecking order theory (Proposition 2)</i>	PLS finance holds a priority over debt (non-PLS) finance in a pecking order even when pricings are adjusted for risk-reward parity, especially at high leverage levels.
<i>Agency Theory (Proposition 3)</i>	There is also support for agency theory in favour of firms as agency problem of moral hazard and asset substitution is less severe in PLS finance compared to debt (non-PLS) finance under conditions of high leverage and high volatility of assets.
<p>Table 6.4: A Summary of Research Findings (Study 3) A capital structure theory or concept is listed in the first column, followed by evidence relating to PLS finance role in optimal capital structure at firms in the current study in right column.</p>	

6.5 Conclusion and Recommendations

The objective of this study was to find out an impact on a firm's value under tradeoff, pecking order and agency theory. The results are both informative and intuitive, which may advance a rigorous understanding of PLS finance for capital structure decisions at firms. The study has multiple implications for policy and academic purpose.

Under static trade-off theory, PLS finance is a better financing option as firm's value is much higher than debt or non-PLS finance option. Under low conditions of leverage and volatility, the performance between debt and PLS finance was almost alike. However, under high conditions of leverage and volatility, PLS finance performs better with a significant high valuation for a firm. Similar results were found for the given financing cost of PLS and debt options, the former performed better with high valuations for the firm. Comparable results were found in support of

PLS finance for a given default or bankruptcy cost. The difference in valuations of a firm is higher for PLS finance compared to debt finance in case of endogenous default but it is significantly higher in case of exogenous default.

Under pecking order theory, the results are counter intuitive. Normally, managers should prefer debt finance over PLS because of the high funding cost of later one because cost of capital will be lower under the debt finance. However, when a risk-based pricing component is loaded into the model that was calculated based on a risk-reward parity, there is no significant difference in valuations at low leverage condition, but PLS finance performed better under high leverage conditions. This shows the manager's preference for PLS finance even though its nominal coupon is higher than debt finance. Having asymmetric information by managers, they know risk-based pricing of PLS finance is lower than debt finance and will result in higher value for the firm. Similarly, PLS financing with protective covenants has better performance on a firm's value than non-protective ones.

Under agency theory, PLS finance has better performance than non-PLS (debt) financing option. At low leverage conditions when firm have better credit quality, managers should be indifferent between debt finance and PLS finance in terms of maximum value of a firm. At high leverage conditions of firms when credit quality is deteriorating over the period, results are totally different for PLS finance than debt finance. The impact of PLS finance over a firm's value is far less than debt finance because asset substitution risks under agency problems is very high for it. This is especially evident in the case of a high state of volatility for a firm's assets. Higher valuations of a firm under PLS option reflect the potential of wealth transfer from lenders to shareholders.

Going forward, there is a need for a better model parametrization for priority debt structures as PLS finance may not have pari-passu ranking. An enhancement in the model is also needed to accommodate lower bankruptcy cost in a systemic way to understand role of PLS finance in overall capital structure debate. There is also a need for an empirical investigation of capital structure behaviour for firms using actively PLS finance, if such data is available publicly.

Chapter 7: Conclusions and Recommendations

7.1 Study Findings and Conclusions

PLS finance has its own importance in Sharia and Economic perspectives. The importance of equity structures like PLS finance has grown increasingly after the global financial crisis and other such events that are creating unwanted cyclical, instability and inequity in the world economy. This study is an attempt to go beyond the debt-like structures and explore the feasibility of PLS finance as its substitute or complement. PLS finance is rooted in the principles of true risk sharing and equity, which are central to Islamic finance. By aligning financial interests of all parties involved, the PLS mechanism offers a more stable and just alternative to debt, potentially mitigating the adverse effects of financial instability and fostering a more resilient economic environment.

The objective of study 1 was to find out the impact of market forces and market participants over the importance, constraints and applicability of PLS finance. The survey results validate tremendously the Sharia and economic importance hypothesis of PLS finance across market forces and market participants. However, a further analysis into underlying reasons of its importance is not reassuring somewhat to main results because Sharia perception of PLS finance is considered more critical than its Sharia compliance when compared to non-PLS modes. This better perception is because of superior ability of PLS finance to distinguish Islamic finance and being helpful in avoiding the criticism of replicating conventional products. Similarly, underlying reasons for economic importance of PLS finance is not somehow supported extensively in PLS finance literature. The most of debate on its economic merits in the literature is financial stability and resilience, counter-cyclical, fairness and access of credit allocation to the lower segments and lessening the effects of excessive debt leverage behaviour in an economy. Instead, the topmost reason considered by market participants is financial innovation and economic growth.

Although constraints are discussed extensively in the literature, but key contribution of the study is to order empirically the top-most constraints for PLS finance. This investigation is performed across four (4) perspectives of demand, supply, regulatory interventions and operating model. Overall, the riskiness of PLS finance is identified as a core constraint across all four perspectives. On the supply side, the utmost constraint is the unique risks of PLS finance while on demand side,

lack of willingness from firms to pay higher price compared to non-PLS choices. Lack of incentives, governance structures and capital charge treatments are equally ordered constraints from the regulatory perspective although these priorities differ slightly within each market participant category. A mismatch between riskiness of PLS finance and profile of depositors is identified as top-most constraint for the operating model of Islamic banks.

Finally, study 1 attempts to investigate the applicability of PLS finance across the important dimension of debt substitutability especially if debt limit policy is introduced as an intervention. This intervention policy confines the strategic consideration for a firm in deciding its optimal capital structuring. There are mix of results for this substitutability dimension. For the inherent potential of PLS to substitute debt, most of respondents do not believe in this hypothesis and consider marginal PLS role as complement of non-PLS only. However, they believe that it is easier to substitute the first working capital requirements with PLS structure rather than long-term or hybrid capital needs. For phenomenon of ceiling the debt or non-PLS for the wider application of PLS, majority of the respondents believe it is workable though they prefer regulatory intervention are more effective for it rather than a bank's credit policy. However, for risk-based pricing of PLS, an anomaly is identified in the market practices that it is not being priced properly despite its high riskiness.

Risk management is extremely critical for a wider adoption of PLS arrangements in the credit market because lack of risks understanding may expose lenders toward unexpected catastrophic losses. Study 2 analyses about unique risk-type and role of creditworthiness in risk management of PLS finance. The survey results identify a gap between the literature that claims PLS structure as an equity investment risk and market participants who perceive it as a hybrid risk. Respondents believe creditworthiness of the counterparty should play a bigger role for the financing appraisal of PLS deals and 'integrity & willingness to pay' and 'adequate collaterals & securities' is incredibly important for this purpose. This is further validated from a case study of Dana Gas Sukuk where lenders weigh-in the creditworthiness of the firm over PLS structure. The study also finds out a partial confirmatory response that Islamic banks apply similar risk management techniques for PLS finance as non-PLS. This phenomenon is further validated from risk analysis of Dana Gas Sukuk that there was not a single tailor-made risk mitigating technique used specific

for PLS structure. This behavioral insight of the market participants can help the regulators and practitioners to develop a better policy for its risk management.

The study further investigates about perception of profit rate risk and expected credit losses for PLS finance compared to non-PLS. Profit rate risk is considered relevant only if returns on a PLS finance deal is lower than the average financing yield of a given firm. The study also finds a mild support for higher expected credit losses for PLS finance transactions, which is equally true for probability of default and loss given default. This complacent attitude towards unique risks of PLS finance is also further evident from Dana Gas Sukuk where controversial purchase undertaking was used as a sole risk mitigating tool. Lastly, the study finds a strong support for relevance and severity of agency problems in case of PLS finance. As evident in the case study, strategic default was more probable due to poor business performance and inherent moral hazard issues of PLS finance. This phenomenon is further validated from the strategic default analysis of Dana Gas Sukuk, which was due to unique nature of PLS. The research findings provide a ground level understanding for development of effective risk management framework for PLS finance.

Study 3 has multiple implications for better understanding of PLS finance in context of capital structure choices at firms. At low leverage conditions when volatility is also low, managers should be indifferent between debt finance and PLS finance in terms of maximum value of a firm under tradeoff, pecking order and agency theories. They may opt for either funding choice for other reasons. This is equally true at high volatility state, but leverage is low although value of a firm is modestly higher for PLS choice. However, managers may prefer debt choice because the cost of debt is lower than PLS in nominal value. This is another reason for lack of demand for PLS financing at firms having good credit quality.

At high leverage conditions of firms when credit quality is deteriorating, results are entirely different for PLS finance. This is especially true for high state of volatility. Under static trade-off theory, PLS finance is a better financing choice as a firm's value is much higher than debt finance especially in case of protective covenants. In a pecking order between debt finance and PLS finance, there is a higher value of firms for PLS finance at higher leverage state. This shows the manager's preference for PLS finance even though its nominal coupon is higher than debt finance. Having asymmetric information phenomenon, managers are in a better position to estimate risk-based pricing of PLS finance is lower, which results in higher value of the firm. Asset substitution

risks under agency problems are remarkably high for PLS finance and managers with moral hazard will opt for PLS choice to seek higher valuations for their firms.

7.2 Study Contributions: Theoretical and Practical

The research findings advance a number of interesting policy and academic implications.

First, the study attempts to bridge the gap between theory and beliefs for both sharia and economic importance of PLS finance. Although study verifies the importance of PLS finance but also highlight a bigger role for public perception management in Islamic banking. The study also highlights a policy response to redesign the Islamic banking operating model to address top constraints, among others, risk, pricing and mismatch with depositor's profile that requires some specific change in the regulations as well. There is also a need to introduce a debt limit policy, which will help in controlling the excessive leverage behaviour of firms while improving PLS share in the capital structuring decisions.

Second, the study highlights poor risk management practices for PLS finance in both banking and debt capital markets. These include risk type, risk-mitigating tools and expected credit losses of PLS arrangements. This requires a comprehensive response in the form of risk management framework from lenders and regulators to manage PLS risks prudently. The study also attempts to understand the relevance and severity of agency problems for PLS finance, which provides a novel empirical contribution to the literature and helps researchers to understand its implications from theory and practical aspects.

Third, the study examines the fitment of PLS finance into theories of capital structures at firms. This has a theoretical implication in better understanding of PLS finance in optimal debt equity mix in corporate finance literature. The research findings provide a conceptual framework for further research work on market volatility, expected losses, capital charge and pricing for PLS finance.

7.3 Research Limitations

First two studies are performed based on a survey research method that has its own various limitations given in the literature. The participants in the survey are classified into six working categories across the globe. Although this represents a rich diversification of opinions in the sampling but also shows a broadening base of diverse cultures, background, geography,

experience, education, Islamic finance knowledge etc. Furthermore, an online questionnaire was sent to the target audience through a mix of random and purposive sampling techniques, which has its own limitations as well. Lastly, there are 257 respondents who completed the questionnaire. Certainly, this is a good representative sample of the population for assessing the research propositions but may not be adequate for deeper analysis on the five explanatory variables discussed in the thesis.

The third study is testing the theories of capital structure at firms for PLS finance. The optimal mix of debt with equity and role of heterogeneity of debt in this debate is widely discussed in the literature but still is an unfinished agenda. These theories, along with the model used in the study, have their own limitations in explaining real-world phenomenon. There are various assumptions considered under the model, which may not properly fit into the unique nature of PLS finance.

7.4 Recommendations and Future Research

The research findings hold a substantial significance for researchers and academics, highlighting areas of further research in PLS finance. The following are key recommendations for advancing the wider application of PLS finance including prudent risk management practices:

- a) There are significant and convincing variations in results of geographic variables especially between neighboring countries such as Malaysia and Indonesia, Oman and UAE, Pakistan and Bangladesh. This suggests a need for further research using specific jurisdictions or regions or countries as units of analysis.
- b) The results are not considerably warranting for demographic, functional, policy and developmental variables. Perhaps, future researchers can categorize the respondents for these variables in a different way to achieve some significant results.
- c) Systematic research is needed to investigate the economic benefits of PLS finance for both theoretical and practical implications. There could be further empirical research to evaluate and rank the benefits of PLS for economic significance and criticality.
- d) Further research is needed on explanatory variables, especially demographic and geographical ones to develop a better risk management framework within a societal context.
- e) A systemic approach is required to gauge capital charge, PD and LGD of PLS finance compared to non-PLS, which can help the industry to adopt it in a prudent way.

- f) Further research is required to address agency problems, especially adverse selection and moral hazard issues for efficient and prudent origination of PLS business.
- g) Theoretical debate of PLS finance should include its subordination and priority within the overall context of capital structure debate. For this purpose, parametrization of the model needs to accommodate special characteristics of PLS finance such as lower business volatility, lower bankruptcy cost, higher agency problems etc.

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Appendices

Appendix 1: PLS Finance Survey

Attached in a separate pdf file of PLS finance survey (published version).

Appendix 2: Researcher's LinkedIn Profile

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