A STUDY OF RISK MANAGEMENT IMPLICATIONS FOR CAPITAL STRUCTURE AND THE COST OF CAPITAL IN PAKISTANI LISTED COMPANIES

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DEDICATION

To my beloved and most respected Mother;
Late Ghulam Batool
For all my Successes and Achievements I am indebted to her, without her prayers and encouragement this thesis was a dream. It was her last wish that I complete my PhD.

To my loving and caring Husband;
Dr. Ali Raza Jaffar
His support, sacrifices and encouragement is a crutch to complete this thesis.

ABSTRACT

The present research explores the presence of a simultaneous relationship between the management of risk exposures, capital costs, and capital structures in Pakistan. It highlights the management of risk exposures and its effect on distinctive parts of an organization, for example, the cost of financing and its financial structure. MM's traditional theory have been tested in various locations worldwide, with a few studies focusing on risk management (RM). However, in Pakistan, lack of evidence is available for the management of risk exposures as a critical parameter in finding the optimal capital structure and reducing costs. Overall, the data of 117 companies (consisting of 92 nonfinancial and 25 financial companies) listed on the Karachi Stock Exchange (KSE) from year 2010 to 2014 were analyzed using statistical and econometrics methodologies such as the generalized method of moments (GMM). To test the validity of the GMM model, Hausman, Breusch-Pagan, and Durbin-Wu-Hausman diagnostic tests were applied. In the panel data model, the bivariate analysis results were found to be consistent with simultaneous equations. Using three linear regression equations, the research questions are addressed, yielding meaningful results. The research questions explored in this paper involved simultaneous decision settings, the effect of the management of risk exposures, the determinants and the impact of agency cost, the cost of capital and the optimal capital structure of the KSE-listed companies.

The results are as follows. The results of equation 1 show that the capital structure, size, costs of capital and liquidity have a significant positive influence on the management of

risk exposures in the selected firms. The results of equation 2 show that the cost and structure of the capital, tangibility, size, tax savings, and investment opportunities on the cost of capital are significantly positively impacted. The results of equation 3 demonstrate that the cost of capital has significant positive effects on capital structure, firm size, investment opportunity, tax savings, tangibility and profitability. Furthermore, other findings include the optimal level of an organization's capital structure (59% for nonfinancial firms as compared to 51% for financial firms) and agency costs resulting in a reduction in risk exposures. A financial and non-financial firm's agency cost have significantly positive influence on the management of risk exposures.

Keywords: Risk exposures, Capital structure, Capital cost, Generalized method of moments analysis, Pakistan.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

FIGURE NO.   **TITLE**   **............. PAGE**

LIST OF SYMBOLS

Rmx   -   Management of Risk Exposures

CC   -   Cost of Capital

CS   -   Capital Structure

InvOpp   -   Investment Opportunities

LQ   -   Liquidity

Tang   -   Tangibility

We   -   Weightage of Equity

Wd   -   Weightage of Debt

Ke   -   Cost of Equity

Kd   -   Cost of Debt

LIST OF APPENDICES

GLOSSARY OF THE TERMS

Capital Structure

Capital structure refers to a company's outstanding debt and equity. It allows a firm to understand what kind of funding the company uses to finance its overall activities and growth. In other words, it shows the proportions of senior debt, subordinated debt and equity (common or preferred) in the funding.

Cost of Capital

Cost of capital refers to the opportunity cost of making a specific investment. It is the rate of return that could have been earned by putting the same money into a different investment with equal risk. Thus, the cost of capital is the rate of return required to persuade the investor to make a given investment.

Debt

Debt is an amount of money borrowed by one party from another. Debt is used by many corporations and individuals as a method of making large purchases that they could not afford under normal circumstances.

Equity

Equity is typically referred to as shareholder equity (also known as shareholders' equity) which represents the amount of money that would be returned to a company's shareholders if all of the assets were liquidated and all of the company's debt was paid off.

Leverage

Leverage is an investment strategy of using borrowed money specifically, the use of various financial instruments or borrowed capital to increase the potential return of an investment. When one refers to a company, property or investment as "highly leveraged," it means that item has more debt than equity.

Risk Management

In business, risk management is defined as the forecasting and evaluation of financial risks together with the identification of procedures to avoid or minimize their impact.

CHAPTER 1

INTRODUCTION

1.1 Preamble

Firm risk management (RM) has been a highly debated issue since the 2008 financial crisis. Corporations have become more concerned about their risk exposures and how to manage them (Campbell, 2018). Therefore, this study is conducted to explore the implications of RM and how it affects the cost and the capital structure of the firms. It is evident from past literature that there is inter-dependency between RM and capital structure (DeAnglo & Stulz, 2015; Ardalan, 2018).

Moreover, RM and the cost of financing are also interrelated. This issue has been discussed widely in developed countries, and research has been conducted to explore this phenomenon in detail (Campbell, 2018). However, in a country like Pakistan, there is a lack of research and implementation in this area. Hence, this research endeavors to examine the management of risk exposures and its impact on different aspects of an organization, such as its capital structures and the capital cost. The exploration of the capital structures and financing costs in association with risk is a major concern of corporate finance in organizations around the world.

RM can increase the value of the firms by reaping the advantages of leverage and lowering the cost of capital. This lowering of capital cost will result in achieving an optimal capital structure for the firm. The latest researches show that firms move to their optimal capital structure as the conditions therein are feasible (Buvanendra et al., 2017). Therefore, firms try

to achieve their optimal capital structure by maximizing the value of the firm (Getzman et al., 2014).

1.2 Background of the Study

The role of RM and its effect on capital structure and the cost of capital are widely discussed in recent literature (Abeywardhana, 2017; Al Zoubi et al., 2018; Ardalan, 2018). This phenomenon is gaining importance, especially in developing countries. It is believed that the effective management of risk exposures has the potential to maximize the value of a firm by attaining an optimal structure of capital financing and its cost (Smithson & Simkins, 2005). It can benefit the firm to minimize its cost of capital as suggested by Doherty's (2005) and Brien's (2006) models. There have been numerous studies in the field of inquiry, but still there remains a lack of empirical research in the discipline of RM and its interrelationship with capital structure and its cost.

The risk is usually related to the performance of a firm, as the risk encountered by a firm affects its capital structure decisions and capital cost. Integrated RM involves summing all the exposures faced by a firm into net exposure, and the use of coordinated RM techniques that require a change in the capital structure and operations (Meulbroek, 2002). There is a dire need to explore the field of RM in Pakistan. Further exploring RM within organizations helps to devise plans, policies, and procedures for its successful implementation (Marshall & Siegel, 1996).

The area of corporate risk exposures and its management opens new avenues for researchers. The interaction of RM with capital structure and capital costs has not been extensively explored. Identifying risk exposures is an essential part of an integrated RM process (Meulbroek, 2002). In Pakistan, it is in its preliminary stage and this study attempts to highlight the importance of the management of risk exposures. It also attempts to highlight its implications on the sources and cost of capital. The next section of this study provides the intellectual context of the research, which forms the basis of the phenomenon under investigation.

The present study is built on the traditional theory of Modigliani and Miller (MM theory) (1958), which was based on perfect market assumptions. MM theory implies that value of the firm is not affected by RM because firms are able to acquire financing from the market even after incurring extreme losses. The theory of capital structure (Sharpe, 1964; Litner, 1965) is in harmony with the traditional capital asset pricing model (CAPM), which assumes that the project's systematic risk is independent of the type of firm and the firm's RM strategies (Fama et al., 2004). Risk exposures might be diversified by creating portfolios; therefore, firms should not engage in RM strategies. However, according to Beuhler (2008), the perfect market assumptions are not true in the real world, and taxes, asymmetric information, and the cost of bankruptcy do not exist; therefore, an efficient capital structure and the management of risk exposures is necessary.

Similarly, Brien (2006) claims that both MM theory and the CAPM are based on unrealistic assumptions, but remain the most dominant approaches for appraising the cost of capital of the firms. Firms apply RM strategies to add value by decreasing their future liabilities of tax, lowering transaction costs, and controlling agency problems. These traditional models assume that the decision of debt and equity is not relevant since the cost of bankruptcy and tax benefits are ignored. In reality, these assumptions do not hold since companies incur tax savings due to debt financing (Stulz, 1996). These models also place less emphasis on underinvestment problems after distress, which lead to agency costs.

In the real world, companies should relate the cost of not managing risks with the cost of managing risks, which are called dead weight costs (Brien, 2006). Significant progress is being made to understand dead weight cost in the context of the management of risk exposures. This cost includes the cost of paid-in risk capital to avoid loss and obtain insurance or some other form of contingent financing (Brien, 2006). Thus, most of the research in finance is based on analyzing and testing the assumptions of MM theory. The present study also endeavors to relax the assumptions of MM theory and explore RM and the structure of capital financing and its cost.

There is opposition against managing risk exposures; people believe that by managing risk, corporations cannot increase earnings or cash flows. This assumption is established on the perfect capital market hypothesis that the price of financial instruments reflects their risk

exposures. Therefore, these instruments cannot maximize a value of the firm. Advocates of a perfect capital market support the proposition that trading in derivatives incurs transaction costs (Crouhy et al., 2005). RM strategies require skills, knowledge, and infrastructure, especially in small and medium-sized organizations. These costs may induce small firms to ignore RM strategies that have practical implications. Usually, small firms engage less in the management of risk exposures than large corporations; therefore, if these strategies are not properly implemented and monitored, they can lead the firm to pitfalls rather than manage the underlying risk.

Managers attempt to optimize their wealth by involving RM strategies to protect against risks arising from variability in interest rate, foreign exchange, and commodity prices. They will pursue RM strategies aligned with shareholders' interests that will, based on the agency hypothesis, lead to the value maximization of the firm. In the real market, RM strategies will enhance firm value when managerial decisions are aligned with shareholder's interests (Fatemi & Luft, 2002). Thus, agency cost is also considered important in determining the RM strategies and the structure of capital financing. Managing risk exposures leads to stable cash flow streams, in turn increasing the debt capacity of the firms and changing the structure of capital financing by increasing the proportion of leverage (compared to expensive equity financing). RM activities act as a substitute for equity financing. RM activities explain RM interrelationships with capital structure and its cost. Therefore, decisions relating to the management of risk exposures should be made while considering the capital structure of firms (Stulz, 1996).

However, evidence that the management of risk exposures adds value to the firm is limited. It is dependent on the nature of risk exposures faced by firms. Financial price risk affects stock returns and their prices, and the returns of financial institutions are particularly affected by interest rate changes. Similarly, industrial companies' cash flows are more sensitive to foreign exchange fluctuations than those of local firms. Firms which diversify risk exposures through derivatives reduce the volatility of their stock returns. The volatility of cash flows is associated with lower investments and share prices (Smithson & Simkins, 2005). Integrated RM decisions are made while considering the structure of capital financing and its cost for firms. The theory of RM is still in the developmental stage, and researchers are exploring new

avenues. Therefore, the objective of this study is to explore the implications of the management of risk exposures to achieve an optimal capital structure and capital costs of the firms.

The relationship between RM, capital structure, and capital cost has been investigated by researchers and is one of the objectives of this study. RM and capital management are two sides of the same coin. Capital management refers to focusing on the optimal sources of financing on the balance sheet that minimize capital costs. The minimization of capital costs led to the notion that RM and capital management are related to each other (Shimpi, 2002). Capital structure decision is based on an assessment of the risk exposures of the firm. The conservative model of the cost of capital ignores the various sources of capital distortion and the weighted average capital cost and the total average capital cost are not minimized (Shimpi, 2002). Risk capital is a distinct means of capital, whereas conventional model is offered by the conventional sources of funds. The capital released by managing risk and the cost of free capital is matched with the cost of managing risk in making RM decisions. However, when the hedge decision is made and the capital is released, it is not pertinent to calculate the capital cost. Therefore, the entity is concerned with the risk capital required for making the RM decision (Doherty, 2005).

Regardless of the strategy of RM undertaken by the firm, the hurdle rate of the operating assets is considered the same if a firm is unable to manage its risk exposures (Brien, 2006). The strategy of RM has an impact on the overall capital cost of a firm, but it is not the appropriate hurdle rate for the firm. Furthermore, the rate of return for the operating assets should be similar, as if the firm is not managing its risk exposures. Assigning a cost to each of the different RM strategies is essential for the company. Firms manage their unsystematic risk and apply different RM strategies, but the overall cost of capital is not appropriate for gauging investments in operations (Brien, 2006).

Therefore, the present study emphasizes the management of risk exposures to minimize the capital costs of a firm and develops a model to integrate risky capital into the mean cost of capital. Similarly, a firm can achieve an optimal proportion of leverage and equity by reducing the cost of capital. The next section provides a brief summary of the empirical investigation of RM and attempts to identify an existing gap in the topic.

There is strong support globally for the practices of derivative instruments to decrease the total and systematic risk of a firm. Firms using derivatives showed higher values, abnormal returns, and larger profits, showing that the derivatives were used by the firms to hedge downside risk (Batram et al., 2011). Firms use hedging to reduce their stock price sensitivity and their risk exposures. A firm's decision to initiate RM programs usually varies across firms and their expected benefits (Jin & Jorion, 2006). Accordingly, studies show innumerable benefits for managing risk exposures and its link with other favorable outcomes.

Various approaches have been used in the literature to provide an empirical examination of studies on the management of risk exposures by financial and nonfinancial institutions. Similarly, many studies also specify empirical support of the management of risk exposures, the structure of capital financing, and its cost. A survey found that 50% of US non-financial firms practice derivatives as a RM instrument. This usage was highest among large firms with market values greater than $250 million, comprising 83% of the respondent companies. Non-financial firms used financial instruments to cope with the risks resulting from foreign exchange (83%), interest rates (76%), commodities (56%), and equity (34%) (Bodnar et al.,1998).

Firms are more prone to practice derivatives such as foreign exchange, interest rate, and commodity risk derivatives as RM instruments. The purpose of using derivatives differs across countries. German firms usually use RM instruments to manage accounting results while US firms are concerned with managing cash flows. This instrument usage emphasizes the significance of accounting statements in Germany as compared to the US (Bodnar & Gebhardt, 1999).

Firms indulge in RM activities to minimize their expected tax obligations, lower their transaction costs, and control agency costs. Moreover, large firms engage in RM to manage their risk exposures. Firms that use RM strategies have higher research and development expenditure, more investment opportunities, lower leverage, fewer liquid assets, and higher dividends (Nance et al., 1993).

The above discussion on the methodological assumptions helps to identify the gap in the existing body of knowledge for the rational of the present study. Numerous studies provide insights on how the phenomenon of RM, capital structure, and capital cost have been

approached in the field of inquiry which forms the basis for the present study (Batram et al., 2011; Bodnar & Gebhardt, 1999; Dionne & Triki, 2004; Nance et al., 1993).

The next section offers a summary of the present study in the context of Pakistan and how this phenomenon has been approached in studies conducted in Pakistan.

1.3. Contextual Overview

In Pakistan, the area of RM needs to be explored further. This section specifies a short summary of the limited research conducted in Pakistan on the topic. There is generally a low level of interest and activity in Pakistani derivatives market. There is a need for policy recommendations to the regulators and the stock exchange to increase awareness among investors (Naz, 2011). The RM practices in the Pakistani Islamic banks have a substantial association with financial risk and a negative relationship with operational risk. It was found that the debt and non-performing loan ratios are negatively related with operational and liquidity risks. The Pakistani futures market has increased fluctuations in the spot market. The three indexes of Pakistan are spot, futures, and the Karachi Stock Exchange (KSE) 100 index returns, which are volatile.

MM theory has also been tested in Pakistan, explaining the association between RM and the cost of capital. According to MM theory, there is linearity in the firm's cost of equity (k_e) and the cost of debt (k_d). The source of financing is irrelevant in the valuation of the entity and capital costs remain constant. In reality, however, the cost of equity k_e is independent of the cost of debt k_d and there is no linearity between k_e and k_d (Hanif, 2010). Although MM (1958) proposed that the use of leverage adds to the risk for the shareholders, therefore increasing the cost of using equity financing. Hence, the firm's capital cost remains unchanged and it was irrelevant whether a company used debt or equity financing (Hanif, 2010).

It was thus determined that there has been limited research on RM in Pakistan. Listed companies in Pakistan were also identified as potentially being motivated to manage their risk exposures to enhance their capital structure and reduce the capital cost. The KSE is the unified stock exchange of Pakistan, comprising the Islamabad, Lahore, and Karachi stock exchanges as of January 11, 2016 (Pakistan Stock Exchange, 2016). Before the integration of the three exchanges in 2016, the KSE was named the Karachi Stock Exchange. This study focuses on

the KSE 100 companies with a combined market value of Rs 5.95 billion and a trading volume of 268 million shares, over the period of 2010 to 2014 (Karachi Stock Exchange, 2012). By engaging in RM activities, these firms may attract foreign investment in Pakistan. Therefore, this study explores the interrelationship of the management of risk exposures and the structure and cost of capital financing.

1.4. Objectives of the Study

The principal objective of the present research is to examine the association among the management of risk exposures, capital structure, capital costs, and the moderating effect of agency costs to achieve an optimal level of capital structure. For this purpose, the following study objectives are formulated:

- To ascertain the effect of the management of risk exposures on the capital structure and capital costs of the KSE-listed companies.

- To analyze the factors of the management of risk exposures and capital structure when these decisions are made simultaneously and affect the firm's capital cost.

- To ascertain the optimal capital structure by minimizing the cost of using capital with the help of the RM.

- To explore the moderating effect of agency costs on capital structure and the RM.

1.5. Research Questions

The research questions of this study have originated from the above objectives and help with finding answers to the various issues highlighted in the present study. The present study addresses the following research questions:

i) Evaluate the effect of the management of risk exposures on the capital structure, cost of capital, and the capital structure optimality of the KSE-listed companies in simultaneous decision settings.

ii) How does the management of risk exposures affect the cost of capital of the KSE-listed companies?

iii) What are the determinants of the management of risk exposures and capital structure, when these decisions are set simultaneously and affect the cost of capital?

iv) Does agency cost have a moderating effect on the management of risk exposures and under what capital structure does agency cost reduce risk exposures and the cost of capital?

v) What is the optimal capital structure that makes the management of risk exposures effective by minimizing the firm's capital cost?

1.6. Problem Statement

Numerous studies have been conducted in the field of inquiry, but there remains a lack of empirical research in the discipline of RM and its interrelationship with capital structure and the cost of capital. In Pakistan, it is in its preliminary stage and this study attempts to highlight the importance of the management of risk exposures. It also attempts to highlight its implications on the sources and costs of financing. There is limited research on this topic both locally and internationally. Thus this area of corporate finance in Pakistan needs further investigation. The association between the management of risk exposures and the structure and cost of capital financing is analyzed. Further, the determinants of RM, capital structure and capital cost and the moderating effect of agency cost are explored. The problem statement is as follows:

"To examine the association between the determinants of the management of risk exposures, capital structure and capital cost and the moderating effect of agency cost to determine the optimal capital structure for the minimization of capital cost for the KSE-listed firms in Pakistan."

1.7. Contributions of the Study

It is believed that RM plays an important role worldwide; therefore, this study on RM and the structure and capital financing not only benefits the policymakers of the corporate sector but can attract foreign investors to Pakistan. Similarly, practitioners will be able to develop RM strategies from a well-developed body of knowledge. The present study will not only add to the theoretical literature but also help with the practical implementation of RM

around the world, especially in developing countries. Numerous studies have been conducted in the field of inquiry, but there remains a lack of empirical research in the discipline of RM and its interrelationship with capital structure and the cost of capital. In Pakistan, it is in its preliminary stage and this study attempts to highlight the importance of the management of risk exposures. It also attempts to highlight its implications on the sources and costs of financing.

The contributions of this investigation are to the advancement of knowledge in the field of corporate RM. This study attempts to contribute to three general aspects in the areas of knowledge, research, and policy considerations for practitioners. Another significance of this research is the use of generalized method of moments (GMM)—an advanced econometric technique—for the analysis of the data. This analytical technique is unique in providing accurate and unbiased results. Risk management and its interaction with capital structure and capital cost is of long standing interest in the field of inquiry. The present study not only adds to the existing body of knowledge but will benefit the practitioners and academicians in understanding the importance of corporate risk exposures and its implications to enhance the value of the firm. It may also be observed that few attempts have been made in the field of inquiry particularly in the context of Pakistani listed companies to use advanced econometric estimation for the analysis of data to develop logical perspective in this area of investigation.

The primary aim of this research as discussed is to explore the management of risk exposures and its implications to optimize financial structures and minimize capital costs of firms. This argument has been supported in the literature. Past studies also argue that RM has two opposing effects on a firm's debt level; it will encourage managers to add to the level of debt in the firm (Dionne & Triki, 2004).

It is evident from the analysis of this research that the management of risk exposure enables firms to increase leverage in the financial structure thus reducing capital costs, which ultimately enhances the value of the firm. The above statement is usually true for both financial and nonfinancial firms. This study also highlights the essential determinants of RM and the structure and cost of financing capital which should be considered by decision makers. It aims to explore the optimal capital structure and capital cost of financial and nonfinancial

firms. Similarly, the impact of agency cost as a moderating factor on the management of risk.