Impact of credit rating on capital structure and earning management behavior

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ABSTRACT

Credit ratings have become a widely accepted measure of firms' creditworthiness in financial markets. Despite the significant growth of rating agencies, with a continuous reliance on credit ratings by regulators, investors and firms, prior academic literature generally tends to underestimate the relevance of credit ratings in firms' financial decision-making. This thesis, therefore, provides a comprehensive analysis, which aims to examine the impact of external credit ratings on the financial structure decision-making of Pakistani firms. The thesis has three empirical chapters. The first empirical chapter examines whether there are any systematic differences in firms' levels of leverage across the rating levels which would suggest that the cost and benefits of credit ratings are material for such firms. The study finds that credit ratings are an important determinant of the capital structures of firms and that there is a strong non-linear inverted U-shaped relationship between credit ratings and capital structures. It is noted that rated firms have higher leverage than non-rated firms, but within the rated firms, leverage varies across the rating levels. High and low rated firms are found to have low leverage in their capital structures, and mid rated firms have higher leverage. Low gearing ratios may suggest that such firms have higher incentive to maintain their current ratings or to achieve upgrades, given the cost and benefits offered by credit ratings, than firms with high gearing ratios.

While credit rating play a significant role in explaining why firm involve in managing their earning and it is found that rated firm manage their earning in a significantly different way as compared to the non-rated firms and it is also found that firm at the end of the rating spectrum manage their earning to the greater extent as compared to the mid rated firm.

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CHAPTER 1

INTRODUCTION

1.1BACKGROUND

During the last decade credit rating agencies has emerged as the super power that regulatory bodies, investors and firm depends upon their credit rating as it has major impact on the financial decision of the firms. Capital structure is few of the most researched topics in the field of the finance-after the Modiglani and miller (1958) seminal study of irrelevance of capital structure. Lot of literature has emerged in challenging the under lying proposition. Lot more work has done on the relevance of capital structure has been done in past like including tax related theories (Modigliani and Miller, 1963; Miller, 1977; DeAngelo and Masulis, 1980), agency cost theories (Jensen and Meckling, 1976; Jensen, 1986), pecking order theory (Myers, 1984; Myers and Majluf, 1984) static trade-off theories (Kraus and Litzenberger, 1973; Scott, 1976; Kim, 1978), all of which directly conflict with the underlying assumptions of Modigliani and Miller's irrelevance proposition.

In past few years these studies have failed to explain the latest emerging decision in the firms which question the validity of the previous capital structure theories. According to Graham (2000) firms with low risk uses less leverage despite having easy access to the debt market without increasing the bankruptcy risk. Firms do not use typical variables of capital structure (Profitability, tangibility, cost of financial distress, taxes) in their decision (Graham and Harvey, 2001). Credit rating is of the most important variable of concern while making the capital structure decisions (Bancel and Mittoo, 2004; and Brounen et al., 2004). Due to diversity of lenders and borrowers, complexities in the financial market credit rating have become the widely accepted tool for the creditworthiness of firms,

regulators and investors (Cantor and Packer, 1994). Firms undertake considerable cost in getting and sustaining the credit rating and most of them acquire rating from more than one rating agency. According to Cantor et al. (2007), 86% of funds managers consider credit ratings in their decisions.

Despite the continuous reliance by regulators, firm and investors on credit rating agencies academic research underestimates the importance of the credit rating in the financial decision of the firms. After the recent financial crises of 2008 it's very important to investigate the significance of these credit rating agencies and firm access to the financial market. Credit rating is not the outcome of the financial decision this study explore the importance of credit rating and financial structure decision making in Pakistani firms.

Past studies largely focus on the firm-level determinant of capital structure like size, profitability and growth opportunities with the assumption that capital structure is always the function of demand-side factors only (Faulkender and Petersen, 2006). Previous studies on capital structure assume the infinitely elastic supply of fund at the correct price and time when firm requires them. Trade-off theory suggests firm leverage depends upon the cost and benefits of the debts. However, supply of funds is also as important as other determinants of the leverage. This significance is also highlighted in the recent final crisis when financial institutions and banks cut their lending and refinancing cause severe problems for firms (Sakoui, 2010).

Credit rating is argued to represent the supply side factors for the determination of the firms' capital structure due to its nature structure (Faulkender and Petersen, 2006; Judge and Mateus, 2009; Mittoo and Zhang, 2010). Judge and Korzhenitskaya (2011) argue that other than supply side factor credit rating also helps in the correct pricing of the securities widening their investor base and flexibility which reduce the dependence on the typical sources of finances. Chave and Puranandam (2011) argue that rated firms suffer less in

raising the capital in adverse conditions such as recent financial crisis. Survey by Bacon *et al.* (2009) of 43 treasury professionals from UK firms finds that rating becomes more important in the recent crisis and firms try to get rated during the period. This indicated that credit rating is possibly an important supply side factor in the determination of capital structure of firms.

Literature on the relationship between the capital structure and credit rating reflects a restrictive view of this relationship. For example credit rating play a vital role for firms in accessing the capital debt market ultimately in determining the capital structure (Faulkender and Petersen, 2006; Judge and Mateus, 2009; Mittoo and Zhang, 2010; Judge and Korzhenitskaya, 2011). These studies also find that rated firms have high level of debt than non-rated firms and also reduce the information asymmetry. Other than Mittoo and Zhang (2010), all studies finds that rated firms' have high level of leverage irrespective of the rating level also known as *credit rating – market access hypothesis* (CR-MA).

Firms are likely to have different behavior towards leverage at each rating level if the cost and benefits associated with different levels are material for firms. To understand whether firms vary their capital structure at different levels of credit rating, this study include the implication of the credit ratings – capital structure hypothesis (CR-CS) developed and empirically tested by Kisgen (2006). The hypothesis that *'credit ratings are a material consideration in managers' capital structure decisions due to the discrete costs (benefits) associated with different rating levels'* (Kisgen, 2006) was initially tested to examine capital structure activities of US firms following potential credit rating changes (Kisgen, 2006) and actual rating changes (Kisgen, 2009). As it could be argued that this hypothesis also have implication for the relation between level of debt and their rating level. This study test the implication of credit rating-capital structure hypothesis for the different levels of debt and extending Kisgen's (2006, 2009) studies.

Firms at different level of credit rating have different concern for the cost and benefits offered by their credit rating if this hypothesis holds. Precisely, there would be higher incentives for high rated firms to maintaining their rating. High rated firms enjoy certain financial as well as non-financial benefits. Financial benefits include lower cost of capital, easier access to the debt market, financial flexibility and favorable terms in debt contracts while non-financial include good management reputation in the labor market, employees' loyalty and favorable terms in suppliers' contracts. If these benefits are material the high rated firms are likely to have a low level of leverage in order to maintain their current credit rating.

While firms with low ratings have constrained access to the debt market due to their high cost of capital (Mizruchi and Stearns, 1994; Diamond, 1991) and restrictive covenants in their debt securities (Billet *et al.*, 2007). Low rated firm could face the problem of early liquidation in case of credit rating deterioration because of the vicious cycle credit by the their rating. Although low rated firms can raise the debt because of being rated but the cost of being low rated is higher than the additional benefits of raising the debt while mid rated firms are likely to have higher level of leverage because of their better access to financial markets and being cushioned from any serious concerns of initial deterioration of their credit ratings. Therefore, this study adopts a different approach from previous studies (Faulkender and Petersen, 2006; Judge and Mateus, 2009; Judge and Korzhenitskaya, 2011) to understand the differences between rated and non-rated firms, by studying the differences in the leverage among the rated firms as well. It extends Mittoo and Zhang's (2010) study, by proposing that there are chances of exiting a non-linear relation between the credit ratings and the capital structure of the firms.

Credit Rating and Earning Management

Credit rating has significant impact on the firms' not only on the costs of borrowing, but studies find that rating change will immediately affect the stock and bond valuation. (Holthausen and Leftwich 1986; Ederington and Goh 1998; Dichev and Piotroski 2001). Dichev and Piotroski (2001) document three day market response to the rating downgrade of -1.97 % which suggests considerable economics cost is associated with the credit rating downgrade. This significant cost creates a strong incentive for firms to maintain or improve their credit rating. To do so managers have to change the rating agencies perception about the firm's credit risk. Recent studies empirically prove that managers consider the rating process in their investment and financing decisions. Kisgen (2006) and Shah (2007) find that concern for the rating influence the firms' financing and capital expenditure decision respectively.

Managers attempts to change the perception of risk through long term earning management activities. Moody's list the earning variations one as of the important rating factor in their rating methodology (Moody's Rating Methodology, June 2006). S&P also consider earning volatility while rating for Sony (Business Week, November 22, 2004) and Freddie Mac (Ratings Direct report, December 29, 2006). Trueman and Titman (1988) show that reducing earning volatility can affect the probability of bankruptcy. Graham et al. (2005) survey of 401 executives find that 97% indicate that they prefer a earning smoothing even when cash flow volatility is constant and about 42% of the participants believe that earning smoothing help them to maintain or achieving the better rating.

There are other factors that may impact the strength of incentives to earning smoothing, however. First, the can lose credibility among their stakeholder if there discretionary behavior is detected (Goel and Thakor 2003). Second, earning management through the financial reports is very costly and time consuming it diverts managers efforts from

improving the value of firm (LaFond and Watts 2008). Thus, earnings smoothing is not optimal all the time (Gonedes, 1972). On the other hand rating agencies have access to the broad set of information so they are in good position to detect the earning smoothing. Ability of rating agencies to detect the discretionary earning could discourage manager from doing so (Jorion et al. 2005). So this study tries to find that mangers involvement in earning management in order to maintain or improve their credit rating in case of Pakistan.

1.2 OBJECTIVE OF THE STUDY

The study is aimed with the following objectives

- To provide an insight about the impact of the credit rating on the capital structure of the rated firms.
- To find the earning smoothening behavior of the firm to manage the credit rating
- Explain the difference in capital structure and earning smoothing behavior of the firm between rated and non-rated firms.

1.3 SIGNIFICANCE OF THE STUDY

This study provide deep insight of the credit rating by suggesting that it help the firm to get easier access to the market and also work as the determinants of the capital structure. Further this study finds that firms are involved in the earning management to improve and maintain their credit rating to get the benefits of the different rating upgrade or the down grade. Then find the difference in the behavior for rated and non-rated firm in determining this study offers a comprehensive and in-depth analysis on the relevance of credit rating for the financial structure of the Pakistanis firms. This study provides evidence that leverage level of the firms varies across the firms due to their rating level offering unique benefits and cost for the firms, even controlling for the previous determinants of the capital structure. Study of the relationship between leverage and credit rating not only

confirms the previous literature (Judge and Mateus, 2009; Faulkender and Petersen, 2006; Mittoo and Zhang, 2010) by saying rated firms have higher leverage but also extends the analysis by examining that credit rating and capital structure have nonlinear relationship not studied before.

1.4 ORGANIZATION OF THE STUDY

After the first chapter of the introduction rest of the study is as is organized as follows. Relevant literature is reviewed in the chapter 2 and different theories of the capital structure and its limitation are discussed in this chapter. Chapter 3 provides the theoretical framework and the variables and explains how the hypothesis are developed. Chapter 4 discusses the data collection and the methodology of the study and also present the variable construction used in the study. Chapter 5 presents the results of the study and chapter 7 offers conclusion and policy implications.

CHAPTER 2

LITERATURE REVIEW

There is extensive research on impact of credit rating on capital structure and earning management for developed markets. For developing countries little work has been done. This chapter reviews the theoretical and empirical literature in this area.

2.1 THEORIES OF CAPITAL STRUCTURE

Even after the extensive research of decades question of capital structure and its determinants remains the most contentious in finance literature. Modigliani and Miller (1958) irrelevance preposition severs as the origin of the debate. In 1960 and 1970 criticism on Modigliani and Miller's preposition by proposing the imperfection make the capital structure relevant to the firm. Studies include (Modigliani and Miller, 1963), persona taxes (Miller, 1977), role of bankruptcy (Kim, 1978; Kraus and Litzenburg, 1973; scot 1976). The focus of the studies has shifted towards the signaling and information asymmetry (Myer's and Majluf, 1984; Myer, 1984; cracker, 1986) aspect of capital structure by the end of 1970.

Literature on the detailed aspect of the capital structure like type of the debt, e, private vs. public debt (Denis and Mihove, 2003), its components, like convertible debt and debenture (Myer, 1983) and maturity structure, e.g., long term vs. short term (Guedes and Opler, 1996; Stoh and Mauer, 1996; Barclay and Smith, 1995a, 1996; Guedes and Opler, 1996; Ozkan, 2000, 2002). Despite the intense literature question of how firm choose capital structure remains unsolved. Coming section provides a review of literature regarding the exiting theories of capital structure. Empirical evidence on the determinants of the capital structure is discussed in the later section.

Irrelevance of capital structure

Modigliani and Miller (1958) paper is regarded as the starting and focal point of theoretical and empirical research on capital structure. They suggest that debt has no advantage for firm and how assets are financed is irrelevant to firm's cost of capital and firm's total value (irrelevance preposition). Investors of firm create homemade leverage without any additional cost (arbitrage argument). Therefore, change in firm's capital structure is irrelevant to the investors.

Irrelevance preposition raises several question on the validity of the theory in real world because it hold under certain set of assumptions like no transaction cost, taxation, default risk, constraining regulation, perfect and frictionless markets and homogeneity among firms within a specific risk class. Theory is valid under these assumptions but it does not hold if any of these assumptions are relaxed. Despite the criticism this theory provides a conceptual framework for other theories of capital structure. Next section points out several other factors, which affects the capital structure in real world. These theories add imperfection to the irrelevance model there is no single theory that explains the capital structure. As Myer (2001) said.' There is no universal theory of the debt equity choice and no reason to expect one'.

2.2 CREDIT RATING AS A DETERMINANT OF CAPITAL STRUCTURE

Under the traditional trade-off theory, firms determine their capital structure by balancing the benefits of debt (e.g., tax shields) against the costs of debt (e.g., potential costs of bankruptcy). But there is theoretical and empirical evidence that mispricing due to information asymmetry and agency costs of equity and debt also affects the leverage selection of firms. So the generic version of the trade-off theory suggested that firms should weigh such cost and benefits while making firms' capital structure decisions. However studies assumes the infinite supply of funds with a correct price and it's the

discretion of firm how much debt they want to employ (Faulkender and Petersen, 2006). In frictionless markets, there can be countless funding opportunities available In frictionless markets and thus firms can secure funding for all positive NPV projects. But, due to information asymmetry investors cannot assess the quality of firm as it is opaque to outsiders. In such cases credit rationing by market does not allow firms to get funds to finance all positive NPV projects (Stiglitz and Weiss, 1981; Faulkender and Petersen, 2006). Due to lack of transparency outsiders will demand higher coupon rates due to moral hazards (Boots *et al.*, 2006). So, an optimal strategy would be to go for high-risk projects to generate high returns.

However, financial intermediaries, like credit rating agencies, can help to overcome such problems by reducing the information asymmetry (Boots *et al.*, 2006; Tang, 2009). Credit rating agencies are able to generate the superior information due to specialization and economies of scale and closer relations with the firms. Moreover, the continuous monitoring by rating agencies further lessen such information asymmetry and serve as a coordination mechanism in financial markets (Boot *et al.*, 2006). Faulkender and Petersen (2006) argue that if two identical firms have identical projects, one firm has no well-known track record, thus requiring evaluation and monitoring by lenders, then the firm will have higher costs of capital and limited access to sources of funds as compared to the other firm with a well-known track record. This implies credit ratings helps the firms to have better access to the capital markets with lower costs as compared to their counterpart firms with no credit ratings. This hypothesis is initially developed by Faulkender and Petersen (2006), for the sake of simplification, here it is called the *credit rating – market access hypothesis* (CR-MA).

Faulkender and Petersen (2006) empirically test the CR-MA hypothesis by investigating the differences in the capital structure of rated and non-rated US firms. They use all the

determinants suggested by the traditional theories of capital structure as control variable (e.g., size, profitability, tangibility and volatility) and also controlling for potential endogeneity, their results shows that rated firms have significant higher leverage than the non-rated firms and consistent with Boots *et al.* (2006), rated firms have lower interest coverage ratios than the non-rated firms, showing that firms with low information asymmetry have lower costs of capital. Mittoo and Zhang (2010) also find the similar relationship while investigating the Canadian firms for the period of 1993-2003. While studying the UK firms sample Judge and Mateus (2009) note that rated firms in UK have 5-12 percentage points' higher debt than non-rated firms while Faulkender and Petersen (2006) and Mittoo and Zhang (2010) report 5-8 and 6 percentage points for US and Canadian sample. Judge and Korzhenitskaya (2011) support the CR-MA hypothesis and also suggest that possession of credit ratings play a vital role during the period of financial crisis in which firms have constrained access to funding sources and specifically bank financing.

It should also be noted that studies generally neglect any differences in the levels of rating in explaining the capital structure of the firms. This means that rated firms, *ceteris paribus*, will have higher leverage, no matter which rating they possess. This means that firms at any rating level have equal access to the debt market. However the level of the leverage can vary across the level of ratings as low rated firms have constrained access to the financial debt market since low rated firms have higher cost of capital and higher covenants in the debt contract. Mizruchi and Stearns (1994), argue that low rated firms have higher cost of capital so it might be costly for them to have high level of leverage and they uses credit rating as an indirect proxy for the firms cost of capital. In the same way, Diamond (1991) suggests borrowers with lower ratings have higher capital costs as compared to higher rated firms. Billet *et al.*'s (2007) empirically find that low rated bonds

have higher number of restrictive covenants. Lemmon and Zender (2010) argue that the highly risky firms have debt capacity constraints which not allow them to issuing more debt although such firms may have a preference of debt over equity financing.

Another important reason for low rated firms to have low level of leverage is their concern for the costs imposed by the low ratings. Kisgen (2006) has highlighted that credit rating is of great concern while making the capital structure decisions due to their different discrete costs and benefits; it is also argued that low rated firms inclined to have lower leverage because their chances to get higher rating as compared to other firms are increased. Another important implication of the *credit rating – capital structure hypothesis* (CR-CS) is that for low rated firms, benefits of improved credit ratings or the cost of low rating outweighs the benefits of using additional leverage as suggested by the *credit rating – market access hypothesis* (CR-MA) hypothesis. As compared to other ratings levels downgrade for low rated firms have some serious consequences. Low rated firm have higher cost of capital which ultimately results in the higher probability of default which further increases the chances of the downgrade. Shivdasani and Zenner (2005) argue that further downgrades for low rated firms badly affect their access debt markets. To get an upgrade and avoid any further downgrade, low rated firms are expected to have a low level of leverage.

It is also argued that credit ratings have an association with credit spread, higher credit rating implying a lower spread (Cantor and Packer, 1995; Altman, 1989). Rating agencies have emerged as the powerful intermediaries with quasi – regulatory role to play in the financial market using credit ratings as a proxy for firms access to public debt market Faulkender and Petersen (2006) for a sample of US firms, Judge and Mateus (2009) and Judge and Korzhenitskaya (2011) for a sample of UK's firms, and Mittoo and Zhang

(2010) for a sample of Canadian firms find that firms with credit rating have significantly higher leverage compared to those who do not have a rating.

These studies provide empirical evidence for the relevance of credit ratings in firm's access to debt markets by arguing that credit ratings reduce information asymmetry. It leads to a lower cost of financing and a reduction in the timeframe and distance between the borrower and investor, which lead to higher levels of leverage for rated firms.

2.3 DETERMINANTS OF THE CAPITAL STRUCTURE

Size

Size of the firm mainly represents the trade-off theory and it is undoubtedly the important variables in making the financing choices of the firm because of various reasons. Literature reviews of size shows the contradicting result about the relation between size and capital structure. According to trade-off theory decrease in cost of leverage compels firms to increase debt in their capital structure and predicts and positive association between size and leverage as size of firm diminishes the cost of leverage. Kurshev and strebulaev (2006) find that the size may be the proxy of probability of default or volatility of firm. Marsh (1982) finds that larger the firms size longer the maturity of the debt and smaller the size of the firm smaller the maturity of the firm. On average large firms raises great amount of capital as compared to the smaller firms, because of the economies of scale, e.g., lower will be the fixed floatation cost (Kurshev and Strebulaev, 2007). Bankruptcy costs to firm value ratio are smaller for the larger firm as compared to smaller firms (Warner, 1977; Ang *et al.,* 1982). Likelihood of liquidation in case of financial distress is larger for small firm as compared to large firm they have less leverage (Ozkan, 1996). Because of the diversification larger firms have low cost of financial distress and default risk. Titman & Wessels (1988) show that the diversification of larger firms reduce their bankruptcy cost. Ferri & Jones (1979) and Kim & Sorensen (1986) suggest that large

firms have large debt capacity and they can get at favorable terms. Large firm have lower agency cost linked with underinvestment problem and asset substitution (Chung, 1993; Ozkan, 2001) therefore they have high leverage. Size of the firm also used as the proxy for information asymmetry which suggests an inverse relationship between size and leverage. For example, larger the firm size lower will be the information asymmetry (e.g., as more public information is available, more analysts following) which can in turn help firm with regard to equity issuances. Fama and Jensen (1983), Zingales (1995) say larger firms disclose greater amount of information to outsiders than smaller ones.

Above mentioned arguments suggest the size have a positive relationship with leverage however the empirical evidence of size and gearing relation is rather mixed. Many theoretical studies including Narayanan (1988), Noe (1988), Poitevin (1989), and Harris and Raviv (1990) propose the leverage increases with the worth of the company. Bennett and Donnelly (1993) and Bevan and Danbolt (2002) for UK firms, Fama and French (2002) for US firms and Deesomsak *et al.* (2004) for Asian Pacific firms find a positive relationship between the size of firma and firm leverage..

As suggested by pecking order theory leverage and size are negatively related to each other's as large firms have longer history of reinvesting the retained earnings in the business/capital structure (Frank & Goyal, 2009). Therefore higher the retained earnings of the firm lower the leverage. There exit a non-monotonic relationship between leverage and size (Margaritis and Psillaki, 2007), size is inversely related to low debt ratios and positively associated with high and mid debt ratios. Large firm generate high profits as compared to smaller firms and according to pecking order theories firm earning profit prefers internal financing at first, so size is inversely related to debt. Barclay and Smith (1995) studied 6700 US firms from 1963 to 1993 find a significant negative relationship using OLS and positive relationship using fixed effect regression. Booth *et al.* (2001) and

Jong *et al.* (2008) study several international firms and they find mixed result for the relationship between size and gearing. Ozkan (2001) studies 390 non-financial UK firs for1984-1996 finds a positive association between gearing and size. (Toy *et al.,* 1974; Kim and Sorensen, 1986) finds a size is not of greater significance in describing the debt structure of US firms.

Theoretically size of the firm is positively related with gearing, which is supported to large extent by previous studies with some exceptions mentioned as above. Here size is used as a control variable so that we can isolate the impact of size from credit rating of firm in explaining the capital structure, as size is used as the proxy for bankruptcy or firm's access to the capital market. Based on the above mentioned theoretical reasoning size is expected to be positively related with the capital structure of the firm.

Profitability

Profitability is the main variable in determining the capital structure and spokes about trade off theories and pecking order theories quite clearly. According to trade-off theory firms target an optimal capital structure by comparing the cost and benefit of leverage. MM (1963) debt ratios are likely to be positively related with profitability. Profitable firms have larger income to shelter, higher marginal tax rates, and have low probability of bankruptcy. Any change in cost (benefit) allows the firm to regain target leverage by increasing debt. Cost of financial distress of Profitable firms is very low because they are less risky due to frequent cash flows. Capital structure of profit making firms will comprise of higher debt to get the added benefits of tax shield apart from other benefits of higher debt. Frank and Goyal (2009) find that profitable firms have lower expected cost of financial distress which makes tax shield more valuable. So there exists a positive association among leverage and profitability Same relationship is proposed by agency cost theory also as debt is regarded as a disciplinary measure and more useful for firm with

higher profit and greater free cash flow (Jensen, 1986).Harris and Raviv (1991) find that companies with strong financial outlook have easier access to less costly debt and hence invest more. Empirical studies like Jensen (1986) and Williamson (1988); Dammon and Senbet (1988); Givoly et al. (1992) finds a positive relationship between leverage and capital structure.

Contrary to trade-off theory, pecking order theory suggests an inverse relationship between leverage and capital structure. Myers and Majluf's (1984) pecking order theory rests on the signaling and Information asymmetry problems linked with the issue of external financing, and transaction costs of equity issuance. Pecking order theory explains that firms earning good profit preferred to use internal generated fund or retained earnings to finance their project. Myers (1984) observes firms not having the retained earnings prefers borrowing and then float new equity if there requirement of funds not satisfied by borrowing and firm will issue the equity at the last resort. It means that pecking order theory suggests a negative relationship between debt and capital structure. Verdicts of (Titman and Wessels, 1988; Rajan and Zingales, 1995; Frank and Goyal, 2000; Ozkan, 2001; Bevan and Danbolt, 2002, 2004; Barclay *et al.,* 2003; Tong & Green, 2005; Huang & Song, 2006; Frank & Goyal, 2009; Fan *et al.,* 2011) also validate the negative relationship of profitability and gearing.

Tangibility of Assets

Another variable in literature of capital structure is tangible assets in the firm's assets structure. Tangibility has been incorporated in many previous studies which depict the significance of collateralisable assets in capital structure related decision. Firms with higher amount of physical assets can borrow at lower cost of debt as compared to the firms with less physical assets. Tangibility of assets increases the negotiating power of the firm. Scott (1977) argues that issuance of debt backed by tangible assets will increase firms'

value thus optimal strategy for firm to issue secured debt. In case of bankruptcy amount of cash awarded to secured creditors will be smaller as market value of tangible assets will be used to compensate the lenders for the borrowing firm. Scott argues that if firm do have much tangible assets, they will bear high borrowing cost or issue equity instead of debt. Agent cost exit between shareholders and creditors because firm invest in the project that are too risky after borrowing and thus transfer wealth from creditors to shareholder (Jensen and Meckling, 1976). Ross et al (2008) show that companies with greater fixed assets can borrow greater debt by pledging their assets as collateral and minimizing lender's risk of such agency cost. Tangibility of assets may help firm in reducing the information asymmetries as earning from them are more easily observed (Almeida and Campello, 2007). Trade-off theory predicts positive relationship because firm can increase debt any time due to their low agency cost. Margaritis and Psillaki (2007) Jong, *et al*. (2008) Huang & Song (2006) Frank and Goyal (2009) find a positive relationship between tangibility and leverage. Shah and Khan (2007) find positive relationship between tangibility and capital structure for Pakistani firms.

Titman and Wessels (1988) argue that debt may have an inverse relationship with collateral assets. This is consistent with the prediction of market timing theory as firm with greater tangible assets and issue equity indicates the mispricing of the financial instrument. Higher cost of debt or lower cost of equity risk premium is the other reasons for this. According to Market timing theory firm will buy back their shares when they are undervalued and issue equity when they think it is overpriced in the market based on the information asymmetry. Pecking order theory suggests that firm with higher fixed assets have higher revenue so they use their internal generated funds at the first priority which ultimately decrease the reliance on external sources. Booth et al (2001) find inverse

association between tangibility and gearing in ten developing countries (including Pakistan).

Growth

Myers (1977) decomposes a firm's total value in two parts, present value of the investment opportunities firms have, and the value of assets in place. Myers call the present value of the future investment opportunities as '*call options',* and their value is determined by the likelihood of realizing the payoffs of these options. Myers argues that such option lead to the conflict of interest between debt holders and shareholder. For example, firm will not undertake project with positive NPV in the presence of risky debt as due to the riskiness of firm and the returns generated from investment goes to debt holders. The existing debt may change the management's behavior in favor of the equity holder, which causes *underinvestment* or *debt overhanging* problem. In such cases firm will not issue equity as returns from the investment used to compensate the risk borne by debt holders and they get most of the NPV of the project. Myers assumes that as managers will work in the best interest of equity holders so they will not issue equity to finance new projects or shareholders would be forced to bear the risks associated with the project, which would be tolerated by the new debt holders. To overcome the agency problem, firm with risky debt outstanding will not issue debt when they have new projects to invest. Jensen and Meckling (1976) finds that firms leverage increases as they have limited growth opportunities.

Jung, Kim and Stulz (1996) say that in the presence of strong investment opportunities management and shareholders interest will coincide. If there is limited investment opportunities for firms then use of debt limit the agency costs of managerial discretion Jensen (1986) and Stulz (1990). the revenues from these growth opportunities have not yet realized and firms are reluctant to take large amounts of debt at this stage or enter in a

contractual obligation against it (Bevan and Danbolt, 2002).investment opportunities can be seen as capital assets adding value to firms but they cannot be collateralized against debt (Scott, 1977; Titman and Wessels, 1988; Bevan and Danbolt, 2002).

In case of UK market growth opportunities are negatively related with the leverage (Rajan and Zingales, 1995; Ozkan, 2001; Deesomsak *et al.*, 2004; Frank and Goyal, 2009; Jong *et al.*, 2008). Fama and French (2002) find that leverage is inversely related to growth opportunities when they are measured by market to book ratio and book ratios shows positive relationship with investment opportunities. Booth *et al.* (2001) study international firms, find that market measures of total debt and long-term debt show a significant negative relationship. Conversely, Rajan and Zingales (1995) study capital structures of G-7 countries and find that both market and book debt ratios have a significant negative relationship with the M/B ratio.

Liquidity

Although it is not discussed much in the capital structure literature but the level of liquidity of firm's asset have an important part to play in making the capital structure decision. By liquidity we mean how easily the assets of firms can be sold at a price closer to their value. Studies show mixed result about the relationship between leverage and liquidity. Shleifer and Vishny (1992) have said that liquidity increases the debt capacity of the firm as liquid asset can serve as the collateral thus increases the liquidation value of the firm. Firms with better liquidity ratio are in the better position to pay their obligation when they come due, suggesting the positive relation between liquidity and leverage. This argument is contrary to the collateral argument given in case of fixed asset's role for debt capacity where it is said that fixed assets can be utilized as collateral for getting the external finance.

Morellec (2001) to some extent supports the positive relation to some extent and argues that liquidity may increase leverage capacity of the firm only when covenants in debt securities restrict the transformation of those assets. Contrary to this in case of unsecured debt higher liquidity increases credit spread of the debt which ultimately reduces the optimal leverage. Assets' liquidity can also have negative impact on leverage. Managers can take the advantage of higher liquidity in shareholders' favor and can manipulate the firm's liquid asset against the debt holders' interest. They may replace the safe assets with the risky assets. Due to which creditors requires higher yield, which decreases the optimal leverage (Myers and Rajan, 1998). According to the pecking order theory liquidity is inversely related to the leverage as liquid assets can serve as the source of internal financing, thus reduce the dependence on external sources of financing.

Few empirical studies are available on this subject. Ozkan (2001) finds a strong negative relationship between liquidity and leverage on the UK firms suggesting a potential conflict between debt holders and shareholders of the firm as discussed earlier. While studying the capital structure of firms in Malaysia, Thailand, Singapore and Australia Deesomsak *et al.* (2004) find that liquidity of firm has a significant negative relationship in most of the countries. In an international studies of the capital structure of 42 countries by Jong *et al* (2008) find a strong negative correlation between leverage and liquidity for most of the countries, although for UK firms liquidity have insignificant positive relationship.

CHAPTER 3

THEORATICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

This chapter provides the theoretical linkages of the variables used in the study how they are linked and what sort of relationship is expected by the theories

3.1 CREDIT RATING AND CAPITAL STRUCTURE

Standard and Poor's (2010b) defines a credit rating as '*a forward-looking opinion about the creditworthiness of an obligor with respect to a specific financial obligation, a specific class of financial obligations, or a specific financial program'* and from Moody's perspective, '*credit ratings are opinions of the credit quality of individual obligations or of an issuer's general creditworthiness'* (Moody's, 2009).

Specifically, when issuers have credit rating is solicited, rating agencies might have access to information that is strategically not disclosed by the firms to the market, and therefore the rating agencies serve as a channel to quantify the full information picture into understandable and meaningful codes to transfer to users. This function of credit ratings helps in the correct pricing of securities, quicker access to the debt markets and reduced transaction costs. This helps the rated firms to attract the large no of investors and give them better and easier access to the capital market (Faulkender and Petersen, 2006; Mittoo and Zhang, 2010), and make the financially flexible, increase their bargaining power with suppliers, banks and other non-financial parties (Langohr and Langohr, 2008).Reducing information asymmetry is argued to be the fundamental function of rating agencies. Perraudina and Taylor (2004) argued that unlike to the domestic market where reputation helps the firm to access the financial market international market require a measure which is easily understandable for the investors and comprehensive one.

Trade off theory

According to this theory firm can maximize its value by balancing the value of interest tax shield and other different benefits of debt against the bankruptcy cost and other costs related with debt to find the optimal interior leverage of the firm. Firm will tend to move back toward its interior optimal leverage to the extent that it deviates from its optimum level (Fama and French (2002), for example).

According to CR-CS credit rating change has a discrete set of cost/benefit. If cost of credit rating is material for the managers then they will balance that cost against the benefits and costs suggested by tradeoff theory. In the presence of the cost related to the change in the credit rating may result in the different capital structure which is different from the suggested trade off behavior. Tradeoff theory factors may be overshadowed by the credit rating considerations in some cases

Pecking Order Theory

According to this theory firms will normally prefer not to issue equity because of the asymmetric information cost (Myers (1984)). Firms will prefer to finance projects first with internal funds then with debt, and only when internal funds are not enough to fund their projects and debt capacity of the firm is fully utilized then firm will issue equity. The pecking order model implies debt for firms will increase when investment is higher than internally generated funds and debt will decrease when investment is lower than the internally generated funds.

Pecking order theory suggests a strong short term response of capital structure to short term changes in earnings and investment, in contrary to any concern for reverting to a specified target level. CR-CS implies that for change in leverage, a discrete cost/benefit associated with the credit rating change. Assuming that at some level of leverage both

pecking order and CR-CS effects are material, firm's will face a tradeoff between the discrete cost associated with a potential change in credit rating versus the costs of issuing equity. The likelihood of the existence of such conflict is higher for firms that are near a change in rating either near a downgrade or upgrade. In contrast to the implications of the pecking order, sometimes firms that are near an upgrade may go for issue equity in place of debt in order to get the benefits of higher ratings and firms which are near a downgrade may hesitate in issuing debt to prevent the extra cost which arises as the result of such downgrade.

From the above mentioned arguments and literature present in literature review section it is clear that firms capital structure depends upon the certain set of variable that have tested empirically before so we can say that

Capital structure = f (credit rating, size tangibility, growth, profitability, liquidity and non-debt tax shied)

3.2 CREDIT RATINGS AND EARNINGS MANAGEMENT

Financial performance is a critical determinant of credit ratings. Although industry risk, management efficiency and capital structure also affect the credit rating but these factors are less salient then the financial performance of the firm. Value of firm is highly affected by the credit rating change than by any other factor (Goh and Ederington, 1993). They also proved that returns reacts negatively to those firms which rating agencies claims that downgrade is linked with the deterioration in the firm's financial measure. Study focus on the earning smoothening behavior of the firm not only it is important variable in rating methodology but also Graham et al. (2005) find that manager prefer earning smoothening to maintain or upgrade their rating. Mangers claims that they will prefer earning smoothening if it means to sacrifice the long-term value of the firm, since earning volatility can lead to increased cost of debt and equity (Graham et al. 2005).

Managers can use earning smoothening to reduce the probability of default risk as perceived by both rating agencies and investors. Beaver et al. (1970) find that earnings smoothness can seriously effects perceived firm risk. Trueman and Titman (1988) in their analytical study suggests that by reducing the variation in the earnings process firms can manage their probability of bankruptcy while Francis et al. (2005) find that debt markets price information risk associated with Earnings volatility. Earnings volatility is also related to the cost of debts by the market. Collins et al. (1981) and Lys (1984) find negative stock returns for the firms which announces change in accounting rule which are predicted to increase earnings volatility and higher negative stock returns for the firms with stricter debt constraints.

So firms involve in the earning smoothening in order to improve or to maintain their credit rating which is of great concern for us.so,

Earning smoothening = f (total debt, size, tangibility, growth, profitability, liquidity, non-debt tax shield)

3.3 HYPOTHESIS DEVELOPMENT

Faulkender and Petersen (2006) empirically prove that if two firms have similar projects and identical in every respect, one has no established record thus requiring monitoring and evaluation by lenders then firm will have higher cost of capital and limited access to the source of funding compared to the other firm having an established record. This implies that firm with credit rating will have better access to the markets with lower cost of capital as compared to the other firms not having the credit rating. This hypothesis is developed Faulkender and Petersen (2006) is here called the *credit rating – market access hypothesis* (CR-MA).

Faulkender and Petersen (2006) empirically test the CR-MA hypothesis by examine the difference in the capital structures of the rated and non-rated US firms. They use the other traditional determinants of capital structure (e.g., size, profitability, growth and volatility) and also controlling for potential endogeneity, their results shows that rated firms have significant higher leverage as compared to the non-rated firms. Boots *et al.* (2006) say that rated firms have lower times interest earned ratios, showing that rated firms have low information asymmetry and lower cost of capital. Mittoo and Zhang (2010) while investigating the Canadian firms from 1993 to 2003, also find that rated firms have higher leverage in comparison to non-rated firms. Judge and Mateus (2009) also find the similar kind of result while studying the American sample.

H_{1a} = *other things being equal, rated firms are likely to have high levels of leverage in their capital structure as compared to the non-rated firms.*

According to *capital structure hypothesis* (CR-CS) and the *credit rating market access hypothesis* (CR-MA) rated firms have better access of the financial market but for low rated firms, cost of having high leverage or having the low level of rating are expected to be on the higher side. If the benefits of having the higher rating and cost of having the lower rating are materialized then low rated firms are expected to have low level of leverage. Therefore:

H_{1b} = *low rated firms are likely to have low levels of leverage in their capital structure holding all others things constant.*

High rated firms are also expected to have low level of leverage due to numerous reasons. High rating offers firm a competitive edge also including many financial and non-financial benefits. financial benefits like lower cost of financing, favorable terms and conditions in making debt contract, easier access to the commercial paper market, increased financial flexibility and availability of alternative sources (Diamond, 1991; Shivdasani and Zenner,

2005; Kisgen, 2006; Mittoo and Zhang, 2010). While non-financial benefits include managements' successful image in labor market, reputation of the safest firm in the market, employees' loyalty and favorable terms and conditions while making arrangement with suppliers (Shivdasani and Zenner, 2005; Kisgen, 2006).

Due to the different advantages of high credit ratings, the CR-CS hypothesis implies that high rated firms may have low level of leverage. This conservative behavior of high rated firms is different to that is predicted by other theories of capital structure (Kisgen, 2006). According to trade-off theory firms weigh cost of debt against it benefits to reach the optimal debt ratio. It also predicts lower the cost of bankruptcy higher will be the leverage and *vice versa*. If the cost and benefits of credit rating are materialized and considering the other cost and benefits of debt the capital structure thus achieved is lower than that of predicted by the traditional trade-off theory. This means that higher rated firms cost of high rating outweigh the benefits of high leverage irrespective of that how much debt they can safely employ. So it is expected that high rated firms have low level of leverage.

There are empirical evidences that high rated firms have low level of gearing. Large firms with higher liquidity, profitability and lower probability of distress surprisingly employ low level of leverage Graham (2000). Mittoo and Zhang (2010) find financial flexibility and credit rating concern lead high rated firms to have low level of gearing. Following above stated argument high rated firms are expected to have low level of leverage. Therefore:

H_{1c} = *other things being equal, high rated firms are likely to have low levels of leverage in their capital structures.*

Intermediate rated firms are expected to have high level of leverage in contrary to the high and low rated firms. *Credit rating – capital structure hypothesis* suggests that consideration for ratings must be observable at every rating level, mid rated firm are less

concerned about their ratings as compared to the high and low rated firms. It can be argued that through the possession of credit ratings mid rated firms can take greater advantage of being able to access the debt market. Mid rated firms are required to make large number of changes to get in the category where they can exploit the benefits of being the top rated firms. On the other side they have limited risk of being downgraded to that level where market imposes certain non-financial and financial costs. Thus, high leverage is due to the credit rating as suggested by *credit rating – market access hypothesis,* is driven by this level of rated firms. Therefore:

H_{1d} = *other things being equal, mid rated firms are expected to have high levels of leverage in their capital structures.*

From the above discussion access to the debt market does not means higher level of leverage and the firms having the credit rating likely to have nonlinear, inverted U-shaped relationship with capital structure of the firms. So, mid rated firms are expected to have high level of leverage as compared to low and high rated firms.

Faulkender and Petersen (2006) empirically proved that if two firms have similar projects and identical in every respect, one has no established record thus requiring monitoring and evaluation by lenders then firm will have higher cost of capital and limited access to the source of funding compared to the other firm having an established record. This hypothesis is developed Faulkender and Petersen (2006) is here called the *credit rating – market access hypothesis* (CR-MA). They also empirically test the CR-MA hypothesis by examine the difference in the capital structures of the rated and non-rated US firms. They uses the other traditional determinants of capital structure (e.g., size, profitability, growth and volatility) and also controlling for potential endogeneity, their results shows that rated firms have significant higher leverage as compared to the non-rated firms.

Credit Rating and Earning Management

As discussed in the introduction and strong evidences in the literature suggest that there is great incentive for the firms at the top or bottom of the certain rating category to involve in earnings smoothening activities. However, if the credit rating agencies have the ability and benefits to check and adjust the earning smoothening of the firms then it will minimize the value of earning management for the firm as well. Jorion et al. (2005) show that the rating agencies have the better access to the firm's information including the some private information as well and they are the sophisticated users of the financial data given by the firms. This will benefits in different way like reducing the managers' motivations involving in earning smoothening as the rating agencies have ability to see their earning smoothening activities. Rating agencies also have great incentives to adjust for bond issuers' opportunistic behaviors for the sake of their reputation. Reputation of the rating agency plays a vital role in determine the demand for the ratings by firms or bond issuers because it help them to convince the investor more easily (Smith and Walter 2001). If investor finds the rating of some rating agency inaccurate they will disregard them and make the rating of that particular firm valueless for the bond issuer. While rating agencies lack the incentives of uncovering the earning smoothening activities of the firm as majority of their revenue come the rating fee paid by the firms. (Economist 2005) rating agencies has also developed side business of consultancy which advices the firms on the issue related to the credit rating of the firm and this has creates the conflict of interest and can effect rating agencies objectives.

If the credit rating agencies find that firms at the top or bottom of the broad rating category have the significant benefits of involving in the earning management and they believe firm income is largely driven by the earning smoothening activities than firms can adjust it accordingly. Firms with the plus or minus notch involve in the earning smoothening will

not have any benefits of doing this and this will not have any significant impact on the subsequent credit rating. As mentioned earlier if agencies lack the benefits or ability to find the earning smoothening of the firms then they cannot completely adjust their rating accordingly. So it is suggested that their exit a significant relationship between smooth earning and the probability of rating changes for the firms at the top or bottom of the rating category.

It's very important to find that incentives for firms at the extremes of the broad rating category to improve or preserve their rating lead to involve in the earning smoothening activates to a greater extent.

H_{2a} = firms having plus or minus notch rating involve in discretionarily smooth earnings to a greater extent than the rest of the firms in the same broad rating category.

This hypothesis examines the cross-sectional differences in the discretionary Earnings smoothening practices of the firms. Differential benefits for firms described in the Hypothesis 1 suggests that change in the extent of earning management when firm rating changes from(to) middle notch rating to(from) plus or minus notch rating with in the broad rating level. The credit rating for the firm and they have lower interest earned ratio (boots et al. 2006). Rating helps the firms to have easier and cheaper access to the financial market. So, it is argued that to get the benefits of the ratings firms having credit rating is more attracted toward the earning smoothening as compared to the non-rated firms.

H_{2b} =Rated firms are more actively involved in earning management as compared to the non-rated firms

CHAPTER 4

SAMPLE, DATA & METHODOLOGY

4.1 DATA

The study is conducted for the non-financial sector of the Pakistan. Data regarding credit rating is taken from Pakistan credit rating agency website (PACRA). This study has selected the firms whose entity rating available from PACRA for the analysis. Equal number of non-rated firms are selected basis on the size matching of the firms so the difference in the leverage is not due to size. The data for all firm specific variables is collected from Securities & Exchange Commission of Pakistan (SECP), Karachi Stock Exchange website, companies' annual reports, Balance Sheet Analysis covering the period of 2007-2012.

4.2 MODEL SPECIFICATION AND ESTIMATION TECHNIQUES

To examine the impact of credit rating on capital structure the following model is used the model are similar to previous studies along with control variables. To test the possible relationship of credit rating and capital structure Pooled Ordinary Least Square Regression (OLS) is applied.

The hypotheses to be tested were presented in earlier part. H1b, H1c and H1d jointly postulate a non-monotonous, inverted U-shaped relationship between capital structure and credit rating, restated here:

H_{1a} = ***other things being equal, rated firms are likely to have high levels of leverage in their capital structure as compared to the non-rated firms.***

$$\mathrm{TDTA}_{i,t} = \beta_{\circ} + \beta_1 \mathrm{Dummy}(\mathrm{CR}_i) + \sum_{i=1}^{n} \beta_i X_{i,t} + \varepsilon_{i,t} \quad \ldots (1)$$

H_{1b} = *other things being equal, low rated firms are likely to have low levels of leverage in their capital structure.*

H_{1c} = *other things being equal, high rated firms are likely to have low levels of leverage in their capital structures.*

H_{1d} = *other things being equal, mid rated firms are likely to have high levels of leverage in their capital structures.*

To empirically test the above hypotheses, debt ratio is estimated as a function of credit ratings and specified below:

$$TDTA_{i,t} = \beta_{\circ} + \beta_1 CR_{i,t} + \beta_2 CR_{i,t}^2 + \sum_{i=1}^{n} \beta_i X_{i,t} + \varepsilon_{i,t} \ \ldots(2)$$

Where:

$TDTA_{it}$ *is the debt ratio of a firm*

B_0 *is a constant term*

$CR_{i,t}$ *is the credit rating of the firm, with cardinalzed values of 1,2,3…16*

CR^2 *is the square of the credit rating*

$X_{i,t}$ *represents control variables: profitability (PROF), size (LOS), tangibility or fixed assets liquidity (LIQD), growth opportunities (MBR), and Rating dummy (RATdum)*

It's expected that $\beta 1 > 0$ and $\beta 2 < 0$ and that both the coefficients are significantly different from zero. For the above presented model, two samples are used: one sample of rated firms only and other one of both rated and non-rated firms. As pooled data is used in the study elements of time series and cross is combined together so pooled ordinary least squares (OLS) is used to analyze the models. Pooled OLS is widely used in capital

structure literature (e.g., Berger *et al.*, 1997; Shyam-Sunder and Myers, 1999; Booth *et al.*, 2001; Ozkan, 2001; Bevan and Danbolt, 2002; Deesomsak *et al.*, 2004; Jong *et al.*, 2008; Frank and Goyal, 2009). To be consistent with prior literature on the relationship between credit ratings and capital structures (see Faulkender and Petersen, 2006; Kisgen, 2006, 2009; Judge and Mateus, 2009; Tang, 2009, Hovakimian *et al.*, 2009; Mittoo and Zhang, 2010) and comparison purposes it is appropriate to use OLS as the estimation technique. Where the analysis is affected by the limitation of the OLS or its assumptions are not satisfied estimation technique like two-stage least square can also be used.

OLS have several underlying assumptions, one of them is the linearity of parameters. OLS assumes that model is linear in coefficients or parameters. Although linearity in parameters is important but it does not suggest that variables should also be linear (Studenmund, 2000). A model having non-linearity in the variables and can still be estimated through OLS. In this study credit rating is suggested to have a non-linear relationship with the leverage, and second degree polynomial form (also known as quadratic functional form) is applied to quantify the relationship. Thus, the model remains linear in parameters, regardless having non-linearity in variables; it does not, therefore, violating the assumption of 'linearity in parameters'. Other assumptions of OLS include no heteroskedasticity, multicollinearity or serial correlation and the normality of data. Before making the analysis, tests are conducted to determine whether the data satisfies the OLS assumptions. Diagnostic tests include the examination for the normality of data using descriptive statistics of variables, correlation analysis, Eigen values and VIF, amongst others, are used to find any problems with the data.

4.3 VARIABLE DEFINITION AND CONSTRUCTION

The hypotheses H_{1a}, H_{1b}, H_{1c} and H_{1d} jointly postulate a non-linear relationship between the firms' credit rating and their capital structures and high and low rated firms are

expected to have low level of leverage as compared to mid rated firms. To test such relationships empirically, *credit ratings* as a variable is integrated into models developed and tested by Rajan and Zingales (1995), Ozkan (2001) and Bevan and Danbolt (2002) for examination of firms' capital structures. The following section describes, discusses and justifies various elements of the models.

Dependent variable

Debt Ratios: In this study book debt ratio scaled by total assets is used as the measure of capital structure. Rajan and Zingales (1995) argue that selection of the measure of the capital structure depends upon the objective of the analysis. As credit ratings is already incorporated into the models of the capital structure, book debt ratio become more important when we are assessing the relevance of the credit rating to the factors suggested by the previous theories of the capital structure including pecking order and trade-off theories. For example, Banerjee *et al.* (2004) say that at the time of debt issuance any change in the market value of the debt does not affect the cash saving from the tax shield of the firm. In case of the bankruptcy book value of the firms' debt is used as the measure of the firm's outstanding liabilities. So implication of the credit ratings can be evaluated directly by using book debt ration rather than the market debt ratio. Kisgen (2006) points out that rating agencies uses book values of financial ratios to evaluate the firms' creditworthiness.

Book value of the debt is argued to be the realistic measure of the capital structure as it is composed of the assets value in place and not the capitalized future value of the asset (Myers, 1977). Taggart (1977) argues that market value of debt is the result of their action while firms book value is what firms own, control and use in the process of the financial decision making (also, Baskin, 1989; Marsh, 1982). Stonehill *et al.* (1975) in their survey of the financial executive of the French, Dutch, America, Japanese and Norwegian firms

confirms the use of the book debt ratio in their financial decision making process. Graham and Harvey (2001) find that market value of equity might not reflecting the Adjustment in the capital structure made by firms. They also note that firms does not rebalance their capital structure in response of the equity price movement which suggests that market leverage number are not very important in debt decision (Bessler *et al.*, 2011).

Four major proxies used to measure the capital structure: total book debt to total book assets (Rajan and Zingales, 1995; Ozkan, 2001; Baker and Wurgler, 2002; Deesomsak *et al.*, 2004), total book debt to total market value of assets (Rajan and Zingales, 1995; Bevan and Danbolt, 2002) and total book long-term debt to either book value or market value of total assets (Titman and Wessels, 1988; Jong *et al.*, 2008). Jong *et al.* (2008) find that change in the measurement of the debt does not have any significant impact on the results and maintain their consistency irrespective of definition used. Bevan and Danbolt (2002) find that both market and book measures of the debt ration results in the similar sign of coefficients, yet the fit of the model improves when market debt ratio is used. To be consistent with previous studies dependent variable is measured by book debt ratio (sum of short-term debt and long-term debt) scaled by total assets of a firm, expressed as:

$$TDTA_{it} = \frac{TD_{it}}{TA_{it}}$$

Where:

$TDTA_{it}$ denotes debt ratio of the firm i at time t

TD_{it} denotes *the total book debt of the firm i at time t*

TA_{it} *denotes total book value of the assets of the firm i at time t*

Explanatory Variable: Credit Rating

In the study long term rating is used because it tell us the current opinions of the credit rating agencies at the time of rating issuance about the firms' general ability to meets its financial obligation. Long term issuer rating has a strong relationship with short term credit rating (Standard and Poor's corporate rating criteria, 2008), which allow the use of long term rating even for the debt maturity analysis. Individual rating of the firm is matched with financial year end data to make sure that rating always proceeds accounting data at fiscal year-end. While entering data of credit rating several assumption are made. First, Kisgen (2006, 2009) and Hovakimian *et al.* (2009) say that difference between financial year end and date of rating is assumed to be constant. Rating can be change at any period of time in the year. Kisgen (2006, 2009) and Hovakimian *et al.* (2009) assume that time period between rating change and the capital structure measure is same for all firms. Second, if firms have more than one credit rating change within a year rating is selected which is closest to the financial year end. Third, rating changed at the last day of the period is assumed as the rating for that particular year.

Following Barclay and Smith (1995), Stohs and Mauer (1996) and Hovakimian *et al.* (2009) the main measure of the credit rating is constructed by assigning ordinal numerical codes to the alphabetical codes. As shown in the table below broad rating [AA+, AA, AA-], [A+, A, A] - to [B+, B, B-] are assigned codes from '1' to '5'. While non-rated firms are assigned '6', due to the certain assumption about their quality credit worthiness and its access to the market. Cardinalising the rating by the method discussed above might suffer from some instability within the scale like the distance between the rating '1' and '2' may not be same as the distance between '3' and '4'. This raises question in interpreting the results from the broad rating categories. To counter this problem another set of codes are allocated to the same data. Each and every single rating is assigned a separate numeric

code as shown in table below. Previous studies are not consistent with the use of both measures. Like Stohs and Mauer (1996) use codes for the broad credit categories while Hovakimian *et al.* (2009) use individual rating codes from 1-19 from highest to lowest rating. No superiority is given to the any coding method in the past studies. While studying the impact of credit rating change on firm characteristics (Kisgen, 2006 and 2009) or the movement of the security prices (Goh and Ederington, 1993; Barron *et al.*, 1997) use the second method of coding. If the results of second method is similar to that of the first one this shows that any method followed doesn't show any problem of stability or unequal distance within rating class.

Issuer's Long-term Ratings and Assigned Numerical Code

Credit rating	Broad rating code	Individual rating code
AA+		1
AA	1	2
AA-		3
A+		4
A	2	5
A-		6
BBB+		7
BBB	3	8
BBB-		9
BB+	4	10

BB		11
BB-		12
B+		13
B	5	14
B-		15
C/D	6	16

Control variables

These are the firm's specific variable which previously has found to be helpful in explaining the capital structure of the firms in general and of the Pakistan firms particularly. Frank and Goyal (2003) said that it is the conventional set of factors that explain the capital structure choices of the firm and have sustained many test and have orthodox interpretation. There are some omitted variables that are not used as the control variables in the model. Rajan and Zingales (1995) argue that country specific variables and firm specific variables are significant in explaining the capital structure of the firm. In the same way Demirguc-Kunt and Maksimovic (1999), Jong *et al.* (2008) and Fan *et al.* (2011) find that country specific variables are important while determining the capital structure of the firm in the world. Country specific variables and firm-level variables might have impact on the relationship proposed. However these are not included in the model due to the lack of theoretical link and as the sample consists of the Pakistanis firms so country specific variables have similar impact on all firms.

Control variables used in this study include profitability (PRO), size (SZ), tangibility or fixed assets ratio (Tang), liquidity (LIQ) and growth opportunities (MBR). Rating dummy (RAT_{dum}) is included in the model to find that whether non-linear relationship depends on

the inclusion of the non-rated firms. Following section discuss the definition of the control variables and weakness, if any, linked with the use of the variables.

Profitability (PRO)

Studying the implication of the pecking order theory according to which it has an inverse relation with the firms' capital structure. Proxy used in this study for profitability is identical to the measures used in previous studies which help in maintaining the consistency in the model. Following these studies (Titman and Wessels, 1988; Baskin, 1989; Rajan and Zingales, 1995; Bevan and Danbolt, 2002 and 2004; Frank and Goyal, 2003; Barclay *et al.*, 2003; Jong *et al.*, 2008; and Fan *et al.*, 2011), it is measured as earnings before interest, taxes, depreciation and amortization divided by total assets of the firms *i* in time *t*, it is represented as:

$$PROF_{it} = \frac{EBITDA_{it}}{TA_{it}}$$

Where:

$EBITDA_{it}$ *denotes the earnings before interest, taxes and depreciation*

TA_{it} *is the total assets of the firm i at time t*

Size (SZ)

Size of the firm is anticipated to have a positive relationship with the debt of the firm. In the previous studies on capital structure, majorly three proxies are used to capture the effect of size: log of assets, log of sales, and log of market capitalization. Specifically, for defining the capital structure of the firms, log of sales or log of assets are widely used in prior studies. Previous studies did not find any significant difference in the results by interchanging the proxies (Titman and Wessels (1988). Frank and Goyal (2009) and Titman and Wessels (1988) find a correlation between log of assets and log of sales of

0.98 and 0.92 respectively. Rajan and Zingales (1995), Booth *et al.* (2001), Bevan and Danbolt (2002, 2004), Barclay and Smith (2005) and Hovakimian *et al.* (2009) uses log of sales while Fama and French (2002), Deesomsak *et al.* (2004) and Fan *et al.* (2011) use log of assets to measure the size of the firms. There is no consistency in the use of any measure or any reason of the preference. Following (Rajan and Zingales, 1995; Ozkan, 2001; Booth *et al.*, 2001; Danbolt, 2002, 2004) this study use *log of sale* to measure the size effect of the firm in the model. Symbolically it is represented as the natural logarithm of the revenue or sales.

Tangibility/ Fixed Assets Ratio (TANG)

Tangibility of assets is viewed as the level of collateral that firms have when they are seeking external financing. Therefore, it is expected to have a positive association with debt of the firms. There is consensus in the usage of tangibility measures in previous studies (Titman and Wessels, 1988; Booth *et al.*, 2001; Bevan and Danbolt, 2002; Deesomsak *et al.*, 2004; and Jong *et al.*, 2008). Following the above mentioned studies, tangibility is measured as the ratio between the net value of property, plant & equipment and the total assets of the firm, symbolically represented as:

$$TANG_{it} = \frac{PPE_{it}}{TA_{it}}$$

Where:

PPE_{it} *is the net value of property, plant and equipment of firm i at time t*

TA_{it} *is the total assets of firm i at time t*

Liquidity (LIQ)

Current ratio is the most common proxy used to measure liquidity, current ratio is defined as current assets divided by current liabilities (Ozkan, 2001; Deesomsak *et al.*, 2004; Jong

et al., 2008). It measures the ability of a firm to meet its obligations when they come due. Following the prior studies, liquidity of the firms is measured by the ratio of current asset to current liabilities. Symbolically, it is represented as:

$$LIQD_{it} = \frac{CA_{it}}{CL_{it}}$$

Where:

CA_{it} *is the total current assets of the firm*

$CL_{it\ is}$ *the total current liabilities of the firm*

Growth Opportunities (GRO)

Market to book value of assets is the widely used measure in the literature to capture the investment opportunities of the firm (Rajan and Zingales, 1995; Booth *et al.,* 2001; Bevan and Danbolt, 2002, 2004; Fama and French, 2002; Jong *et al.*, 2008 and Frank and Goyal, 2009). This proxy effectively measure the set of investment opportunities a firm has, in an efficient market share price reflect all the information available and they capture capitalized value of the growth opportunities. Book value of the asset do not capture the intangibles, like option of the expansion, acquisition of firms, new product investment, Research and Development spending and advertising cost. These kinds of options increase the market value of the assets in comparison to the book value of the assets (Barclay and Smith, 1995).

Adam and Goyal (2008) while comparing different kinds of proxies of investment opportunities and they find that market to book value of assets is the most appropriate one as it contain '*the highest information content with respect to investment opportunities'* (p.41). Following the literature investment opportunity is measured by the ratio of market value of assets divided by book value of assets. Market to book value is expressed as:

$$MBR_{it} = \frac{BVA_{it} - BVE_{it} + MVE_{it}}{BVA_{it}}$$

Where:

BVA_{it} *is the book value of the assets*

BVE_{it} *is the book value of the equity*

MVE_{it} *is the market value of equity*

Rating Dummy (RATdum)

As non-rated firms are assumed to have restricted access to the capital market as compared to the rated firms. With or without the inclusion of the non-rated firms it is hypothesized that firms rating have non-linear relationship with firms' capital structure. Introduction of rating dummy in the model isolated the impact of actual rating on leverage and note that non-monotonous relationship (if proven) is drive by the large sample inclusion of the non-rated firms. Symbolically it is represented by RAT_{dum} it equals to '1' if it is rated firm and '0' otherwise.

Credit rating and earning management

To test Hypothesis 2a, the basic element of the study is that part of the earning which is manipulated by the firms which is in this case is the discretionary accruals. As discussed earlier that it is measured by Jones model in which non-discretionary accruals are measured and then it is subtracted from the total accruals to get the discretionary part of the earning which the variable of the interest for this study. Equation (3) is used to test the hypothesis of the difference in the efforts of managing their earnings by the firms which are at the top or bottom of the broad rating category.

$$DA_{it} = \beta_0 + \beta_1 CR(Dummy)_i + \sum \beta_i CONTROLS_i + \varepsilon \quad \ldots (3)$$

$$DA_{it} = \beta_0 + \beta_1 D_{PLUSRt-1} + \beta_2 D_{MINUSTRt-1} + \sum \beta_i CONTROLS_i + \varepsilon \ldots (4)$$

Where

DA — Difference between total accruals and the estimated nondiscretionary accruals.

Total Accruals — Difference between the earnings before interest and taxes and the cash flow from the operation.

$DPLUSR_{t-1}$ — 1 for the firms if their rating are at the top of the broad rating category in the previous year and 0 otherwise

$DMINUSR_{t-1}$ — 1 for the firms if their rating are at the bottom of the broad rating category in the previous year and 0 otherwise

CONTROLS — All the controls variables are mentioned above

$$Total\ Accruals_{i,t} = \alpha_0 + \alpha_1 + \alpha_2 \Delta Sales_{i,t} + \alpha_3 PropertyPlant\ and\ equipment_{i,t} + \varepsilon \ldots (5)$$

$$Nondiscretionary\ Accurals_{i,t} = \gamma_0 + \gamma_1 + \gamma_2 (\Delta Sales_{i,t} - \Delta Account\ Receivables_{i,t}) + \gamma_3 Property\ Plant\ and\ Equipment_{i,t} + \varepsilon \ldots (6)$$

As study is conducted to examine the impact of earning smoothening behior of firm having plus of minus notch rating within the broad rating category so we also include the dummy for the broad rating catogry so that we control the differences in smoothing activity acros the broad rating catogries. Industry dummy is also included in the model to control the variation in earning smoothing activity across the firms.

CHAPTER 5

EMPIRICAL RESULTS

In this chapter empirical results and their interpretation are discussed.

5.1 TESTING THE OLS ASSUMPTIONS

Ordinary least square (OLS) is used as the core estimation technique for the study, specifically for the analysis of the variables affecting the capital structure. Using OLS as an estimation technique, it need all the assumptions regarding the data are met, failing which the results may be misleading. Therefore, OLS assumptions are tested before running the model. The following is the discussion on some of the diagnostics of the assumptions, which need special consideration and discussion before proceeding any further with the analysis of the proposed models.

Unit root:

One of the basic assumption is the stationarity of the data if the variables are not stationary then the results could be misleading. Following table shows the unit root test for all the variables use in all the model this study uses Levin, Lin & Chu t test for checking the stationarity and it has the greater test power as compared to the other tests.

Table 5.1: Unit Root Test

Variable	Method	Statistic	Prob.**
DEP	Levin, Lin & Chu t*	-22.0281	0.0000
LIQ	Levin, Lin & Chu t*	-35.856	0.0000
PRO	Levin, Lin & Chu t*	-9.33533	0.0000
SIZE	Levin, Lin & Chu t*	-10.8348	0.0000
TANG	Levin, Lin & Chu t*	-11.2356	0.0000
DEBT	Levin, Lin & Chu t*	-13.0425	0.0000

** Probabilities are computed assuming asymptotic normality

Note: The * indicates significance at 1 %

Results from the tables shows that all the variables are level stationary so OLS can be applied to the data. As in all cases null hypothesis of non-stationary is rejected at 1%.

Correlation

Another important assumption of the OLS is 'no multicollinearity' which requires explanatory variables and control variables are not highly or perfectly inter correlated with each other (Gujarati, 2004, p.342). Correlation matrixes of dependent, interest and control variables for the whole sample (rated and non-rated firms) are displayed in Table drawn below As can be seen in both the tables, none of the variables indicates any serious collinearity issues other than the polynomials and rating dummy (RAT*dum*). Most of the variables are correlated at the 1% or 5% level, but the coefficients mostly lie close to or below 0.30, which seems tolerable for the OLS. A correlation coefficient closer to +1 and -1 suggests high collinearity or in some cases perfect multicollinearity among the variables.

Table 5.2: Correlation Matrix.

Correlation t-Statistic	TD	PRO	SIZE	TANG	LIQ	GRO	RDUM	DEP
TD	1							

PRO	-0.362	1.000						
	-6.595*	-----						
SIZE	0.236	0.059	1.000					
	4.132*	0.998	-----					
TANG	-0.068	-0.242	-0.15*	1.000				
	-1.165	-4.24*	-2.594	-----				
LIQ	-0.567	0.302	-0.187	-0.342	1.000			
	-11.70*	5.387*	-3.230	-6.189	-----			
GRO	0.112*	0.169	-0.057	-0.35*	0.039	1.000		

	1.919	2.920*	-0.971	-6.463	0.661	-----		
RDUM	0.167*	-0.058	0.321	0.097	-0.157	-0.042	1.000	
	2.874	-0.985	5.763	1.656	-2.696	-0.714	-----	
DEP	0.008	0.189*	0.059	0.379*	-0.103	-0.048	-0.025	1.000
	0.140	3.277	1.000	6.971	-1.767	-0.815	-0.429	-----

Note: The * indicates significance at 1 %

Descriptive Statistics

Another important assumption of OLS requires that the residual terms follow a normal distribution, *ui* ~ N (0*, σ2*). To test this assumption of normality, histogram of residuals, Skewness, Kurtosis statistics and Jarque-Bera are conducted which is shown in the appendix. And the literature did not suggest any sort of the endogeneity between the variable so it is not tested here.

5.2 TESTING THE IMPACT OF CREDIT RATING ON THE CAPITAL STRUCTURE

In this section, the four main hypotheses specified earlier are tested using Model (1) and Model 2. The results of Table 5.3 reports the results of testing hypothesis that rated firms are likely to have high levels of leverage in their capital structure as compared to the non-rated firms.

$$\mathrm{TDTA}_{i,t} = \beta_{\circ} + \beta_1 \mathrm{Dummy}(\mathrm{CR}_i) + \sum_{i=1}^{n} \beta_i \mathrm{X}_{i,t} + \varepsilon_{i,t} \ \ldots (1)$$

Table 5.3: Results of Determinants of capital structure

Variable	Model 1	
C	0.842*	0.1486***
	(6.6376)	(10.9980)
LIQ	-0.1597*	-0.1866***
	(-11.4533)	(-11.4336)
TANG	-0.3566*	-0.4699***
	(-6.5184)	(-7.9093)
PRO	-0.7111*	-0.8680***
	(-6.7901)	(-7.2041)
GROWTH	0.0247	
	(1.5503)	
DEP	1.8242*	2.8277***
	(3.1293)	(4.1370)
SIZE	0.0205	-0.0331**
	(1.3302)	(-1.9662)
RDUMMY	0.0413**	0.0404*
	(1.9816)	(1.7604)
R-squared	0.4964	0.4666
F-statistic	39.843	42.4290
Prob(F-statistic)	0.0000	0.0000

Note: the *, ** and *** shows the significance at 10%, 5% and 1% respectively.

The results reported in Table suggest that credit rating play a positive role in determining the capital structure of the firms. As it is very much clear from the analysis that rated firms have significantly higher leverage as compared to the non-rated firms which suggest that credit rating has material consideration for the firms and the result of the study confirm the developed hypothesis and also in line with the Graham and Harvey (2001) surveys finding that manger consider the credit rating while making the decision regarding the capital structure. So in case of Pakistan rating does play an important role in determining the capital structure of the Pakistanis firms as the empirical results suggests. Rating dummy is 1 for the rated firms and 0 for the non-rated firms so positive and significance of this variables shows that rating does play an important part.

Tangibility has significant negative relationship with the leverage as suggested by both pecking order and static trade-off theory of capital structure. Attiya and Qaiser (2012) also find the negative relationship between tangibility and the leverage of the firm. While profitability is also negatively and significantly related with the capital structure of the firm as profitable firms don't want to increase the debt in their capital structure as it come with different restriction and condition so in case of Pakistan profitable firms have low level of leverage. But we can't ignore the benefits of employing higher leverage in the capital structure and non-debt tax shield have a significant positive relationship with the leverage.

The results reported in Table 5.4 test hypotheses that the low rated firms are likely to have low levels of leverage in their capital structure; high rated firms are likely to low levels of leverage in their capital structures and mid rated firms is likely to have high levels of leverage in their capital structures. There are 15 categories of the rating so top 5 are top rated next 5 are mid rated and bottom 5 are low rated firms as all categories are mentioned above.

Table 5.4: Results with Non-Linear Credit rating

Variables	Model 2		
C	0.100***	0.379**	-0.0127**
	(2.699)	(-2.156)	(-0.056)
RATING	0.026**	0.027**	0.028**
	(2.098)	(-2.153)	(1.97)
RATING2	-0.001*	-0.001**	-0.001*
	(-1.665)	(-2.021)	(-1.66)
LIQ		-0.096*	-0.101***
		(-5.955)	(-6.603)
TANG		-0.242***	-0.155***
		(-3.913)	(-2.907)
PRO		-0.317*	
		(-1.942)	
GROWTH		0.011	
		(-0.534)	
SIZE		0.059***	0.1049***
		(-2.975)	(4.320)
R-squared	0.048	0.441	0.466
F-statistic	3.2701	12.327	22.024
Prob(F-statistic)	0.0411	0.0000	0.0000

Note: the *, ** and *** shows the significance at 10%, 5% and 1% respectively.

The coefficients of CR and CR2 are highly significant and are of expected signs. The positive coefficient on CR and the negative coefficient on CR^2 show that the leverage increases with 1.2 percentage points but the rate of increase simultaneously decreases by 0.3 percentage points with each consecutive squared rating. After it attained its peak, leverage then diminishes with the increase in CR (i.e., with a decrease in the credit quality of the firm) which would imply a non-linear relationship. This suggests that firms with high and low credit ratings have lower leverage in their capital structures compared to their counterpart mid rated firms. This provides stronger evidence for the credit rating – capital structure hypothesis (CR-CS) in explaining the concerns for the costs and benefits of credit ratings drive firms to follow conservative debt policies in spite of having better access to debt markets, as is proposed by the credit rating – market access hypothesis (CR-MA).

The non-linear relationship between credit ratings and capital structures of firms proposes that previous studies such as that by Mittoo and Zhang (2010) have not fully capture the complex relationship of capital structures and credit ratings of firms. According to them there exists a negative relationship between the credit rating and leverage. Mittoo and Zhang claim that before gaining credit ratings, firms in speculative grade were constrained by debt capacity and their rating status facilitated them in gaining access to public debt markets, resulting in higher levels of gearing Low rated firms face supply-side constraints due to their credit ratings comparative to medium rated and high rated firms. It is also expected that they have higher concerns for the costs imposed by their credit ratings, as downgrades would have relatively more serious consequences than their counterpart high rated and mid rated firms. In line with the CR-CS hypothesis, the results indicate that they prefer to have low level of leverage. For low rated firms as predicted by the CR-CS

hypothesis, costs of low ratings and any following downgrades are far higher than the benefits of employing more debt.

Consistent with the hypothesis and prior study by Mittoo and Zhang (2010), high rated firms appear to have relatively low gearing ratios. This suggests that in spite of having better access to debt markets, as is proposed by the CR-MA hypothesis, high rated firms will have a preference for low gearing ratios, which appears to be due to the higher incentive to sustain their credit ratings. The CR-CS hypothesis suggests that for high rated firms, the benefits of high ratings overshadow the benefits of high leverage. High rated firms have low cost of capital, relatively easier access to the debt market, favorable terms in debt contracts, better access to alternative sources of fund and they can also get benefit from their higher financial flexibility due to their high credit ratings. Aside from these financial benefits, high rated firms also enjoy the non-financial benefits of higher ratings, such as a good managerial reputation in the labor market, employee loyalty and favorable suppliers' terms. As high rated firms, with period of time, have gained a market reputation for being successful and highly creditworthy firms, they should therefore have higher incentive to maintain their credit ratings than any other rated firms. As predicted by the CR-CS hypothesis, these benefits of high credit ratings tempt high rated firms to choose low gearing ratios.

It should also be noted that the consequences of the CR-CS hypothesis differ from that of traditional trade-off theory. The trade-off theory predicts a negative relationship between risk and leverage implying that high rated firms arguably have low chances of bankruptcy thus have high level of leverage. However, the implications of the CR-CS hypothesis are different from the trade-off theory as it suggests that the benefits of higher ratings are material for high rated firms, which lead high rated firms to have low levels of gearing.

Mid rated firms seem to have inclination towards having high gearing ratios. Knowing that these firms have better credit ratings than low rated firms, so they have less constrained access to the capital market than low rated firms. Although CR-CS hypothesis predicts that considerations for ratings in capital structure decision making should be somewhat similar across different rating levels but mid-rated firms arguably have less consideration for their credit ratings. Mid-rated firms require large changes in their capital structures to get into a position where they would benefit from being top rated. Furthermore, the high debt ratios of mid rated firms suggest that they are stable firms with a limited risk of being downgraded. As Mid rated firms are far from low and high ratings groups, their good credit ratings help them in getting more debt. This infer that the results of prior empirical studies (Faulkender and Petersen, 2006; Judge and Mateus, 2009; Mittoo and Zhang, 2010) are shadowed by mid-rated firms. Overall, the results of the present study propose that credit ratings have a non-linear relationship with the capital structures of firms.

Overall, the results of the section provide support to accept hypotheses H_{1a}, H_{1b}, H_{1c} and H_{1d} that the implications of the CR-CS hypothesis suggesting a non-linear relationship between the credit ratings and capital structures of Pakistanis firms. It can also be noted that relative to the other factors proposed by traditional theories of capital structure, credit ratings appear to have a higher contribution in determining the capital structure decisions of the firms. The results of the control variables indicate that rated firms have a different capital structure and are affected by the same firm characteristics in different ways as well. Caution has to be applied when trying to understand the capital structure of such rated firms, as this group has unique characteristics which may not be detected collectively with other firms and may demand a separate analysis.

5.3 TESTING THE ROLE OF DISCRETIONARY ACCRUALS IN MANAGING THE CREDIT RATING

The results of testing hypothesis that rated firms are more actively involved in earning management as compared to the non-rated firms are reported in Table 5.5.

Table 5.5: Results of Impact of Credit Rating on Earning Management

$$DA_{it} = \beta_0 + \beta_1 CR(Dummy)_i + \sum \beta_i CONTROLS_i + \varepsilon \ldots (3)$$

Variable	Coefficient	t-Statistic
C	20.108	8.037
TD	-3.208***	-3.413
SIZE	-2.286***	-7.119
DEP	-45.379***	-3.740
PRO	-9.500***	-3.852
RDUMMY	2.185***	4.161
LIQ	-0.477	-1.403
GROWTH	0.213	0.604
R-squared	0.275	
F-statistic	15.464	
Prob(F-statistic)	0.0000	

Note: the *, ** and *** shows the significance at 10%, 5% and 1% respectively.

Rating dummy is used to find out the significance of the credit rating for the discretionary accruals which is positively and significant means that firms manage their earning to get the benefits of the credit rating as it has severe consequences for the firms. Rating help those to attract the investors and to get the debt at their terms and conditions.so

significance of this variable highlight some serious question on the capability of the rating agencies to detect the earning smoothing in case of Pakistan. As all other control variable like leverage, size profitability and non-debt tax shield are appear with the negative sign and significantly affect the earning smoothing of the firms.

The results of hypothesis that firms having plus or minus notch rating involve in discretionarily smooth earnings to a greater extent than the rest of the firms in the same broad rating category are presented in Table 5.6.

Table 5.6: Results of discretionarily smooth earnings

$$DA_{i,t} = \beta_0 + \beta_1 D_{PLUSRt-1} + \beta_2 D_{MINUSTRt-1} + \sum \beta_i CONTROLS_i + \varepsilon \ldots (4)$$

Variable	Coefficient	t-Statistic
C	11.414***	8.517
DPLUS(-1)	-0.389**	-2.060
DMINUS(-1)	-0.099	-0.432
SIZE(-1)	0.318*	1.886
GROWTH(-1)	-0.561***	-3.090
TANG(-1)	0.955**	2.309
PRO	0.732	0.606
DEBT RATIO	1.155*	1.956
R-squared	0.223	
F-statistic	4.147	
Prob(F-statistic)	0.000	

Note: the *, ** and *** shows the significance at 10%, 5% and 1% respectively.

The coefficient of the dummy variable for firms having a plus notch rating, $DPLUS_{t-1}$, is 0.389 and significantly positive (p-value = 0.042), and the coefficient on $DMINUS_{t-1}$ is not significant. So it can be concluded that firms with a plus notch smooth earnings to a significantly larger extent than the middle notch firms. While the firms with negative notch rating do not involve in earning smoothing to a significant extent. While the size and tangible assets of firm are significantly affect the earning smoothing behavior of the firm while growth in the previous year is negatively rated with the discretionary accruals. On the whole the model is significant in identifying the earning smoothing of the firm.

Size is positively related with the discretionary accruals as it provides room for the firm to manage their earning to a greater extent. As predicted by the literature profitability of the firm is positively associated with the accruals higher the earning higher the chances of managing the earning. While tangibility of the firms is also positively associated with the accruals of the firms as tangible assets help the firms to get the higher profit which lead to the higher earning management.

CHAPTER 6

CONCLUSION AND IMPICATIONS

6.1 Credit Ratings and Capital Structure

This study has empirically evaluated the impact of credit ratings on the capital structures of Pakistanis firms. Question of whether the different levels of credit ratings influence the capital structures of Pakistanis firms is empirically examined. More specifically, the implications of the *credit rating – capital structure hypothesis* (CR-CS) are tested, according to which a non-linear relationship between credit ratings and capital structure exits. The results indicate that High and low rated firms are likely to have low levels of leverage, while mid rated firms are likely to have high levels of leverage. Second, the impact of changes in credit rating changes is also examined with regard to firms' financial decisions. Following the *credit rating – capital structure hypothesis*, it's tested whether the considerations for upgrades and downgrades are material, and will lead firms to follow a conservative debt policy when firms faced potential and actual rating changes.

The first empirical analysis is carried out to test the relationship between different levels of credit ratings and the capital structures of Pakistanis firms. By specifically testing the CR-CS hypothesis developed by Kisgen (2006), postulated that credit ratings have non-linear relationship with levels of debt in their capital structure, where high and low rated firms are likely to have low levels of debt as compared to mid rated firms. Rated firms have unrestricted access to the markets so they are likely to have a higher debt ratio as compared to the non-rated firms of the same class (H_{1a}). High rated firms enjoy certain financial and non-financial benefits of being highly rated, providing those with an even larger incentive to maintain their credit ratings as compared to other rated firms in the market might have. Therefore, high rated firms are likely to have a high anxiety for

benefits enjoyed by their credit ratings thus have low levels of gearing (H_{1b}). It is expected that low rated firms also have high concern for the costs linked with low credit ratings as low ratings directly affect the cost of borrowing and may results in restrictive covenants in their debt securities, subsequently leading to more constrained access to debt markets. Low rated firms may be more susceptible to the rating downgrades, which can have more serious consequences for them than for other rated firms. If costs of low credit ratings are material for low rated firms, then they would likely to employ low levels of gearing (H_{1c}). Mid rated firms have fewer concerns about their credit ratings than the firms at each end of the ratings grades. However, mid rated firms are perhaps so far away to enjoy the benefits of being top rated but they are also less exposed to bankruptcy risk and serious deterioration of their credit ratings. Therefore, mid rated firms are likely to get advantage of being rated and are expected to have high levels of gearing (H_{1d}).

The finding of this study is that credit ratings are an important determinant of capital structure and that there are systematic differences in the levels of leverage across rating scales depending on the level of concerns which different firms have for their credit ratings. Findings of the present study seconds the developed hypotheses of the study and finds that credit ratings have a strong non-linear relationship with the capital structures of Pakistanis firms.

This research finds that high rated firms have low gearing ratios, which is consistent with the CR-CS hypothesis developed that managers have high concerns to maintain their credit ratings or to avoid downgrades. The findings suggest that high rated firms consider the costs and benefits of credit ratings while making their capital structure decisions. Although high rated firms have unrestricted access to debt markets, it appears that the benefits of having high credit ratings (i.e., the financial and non-financial benefits of high ratings) outweigh the benefits of high gearing ratios as proposed by the traditional trade-

off theory. Low leverage ratios of high rated firms shows that the benefits of high credit ratings are material for such firms to trade-off the benefits of high debt ratios.

It is found in the study that low rated firms have also low level of leverage. These findings point towards the possibility that similar to high rated firms low rated firms may also be concerned about their credit ratings. Though, such concerns are expected to be driven by the costs associated with low ratings, like, higher costs of borrowing, limited access to debt markets, greater probability of downgrades, and some serious consequences of these factors. Even though low rated firms can still expected to have high level of leverage, as they are rated thus have better access to debt markets as compared to non-rated firms, so it can be inferred that for low rated firms, the costs of low ratings offset the benefits of employing higher leverage. The results offer strong evidence that low rated firms lower leverage, possibly hoping to get higher ratings or to avoid themselves from downgrades.

Contrary to high and low rated firms, and in line with the theoretical predictions, mid rated firms have higher leverage. High debt ratios proposes that these firms are quite stable and creditworthy, with relatively better access to debt markets. Although far from the level where they can enjoy the benefits of being top rated or from the level where there may have some serious concerns for bankruptcy, mid rated firms take advantage of being rated and have high debt ratios. It can also be inferred from the financing patterns of mid rated firms that mid rated firms have fewer concerns over rating changes as compared to high and low rated firms.

The results also point out that non-rated firms, which are expected to have inferior credit quality and constrained access to the debt markets as compared to rated firms, have low gearing ratios when compared to rated firms. These firms have lower debt ratios as compared to the lowest rated firms. Finding of the thesis is consistent with the *credit rating – market access hypothesis* (CR-MA) proposed by Faulkender and Petersen (2006),

and with the empirical results of Judge and Mateus (2009) and Mittoo and Zhang (2010). The results are also in line with the argument given by Lemmon and Zender (2010), rated firms whether have investment or speculative grade have better access to the debt market than the non-rated firms.

6.2 CREDIT RATING AND EARNING MANAGEMENT

Credit ratings have significant cost for companies, including the future borrowing cost and stock and bond valuations, managers have great incentives to improve or maintain their credit ratings. Earning smoothening is a long term strategy available for the firm to improve or maintain their credit rating and the result shows that in case of Pakistan firms manage their earning to maintain or improve their rating (H_{2a}). while firms at the end of the rating spectrum are more inclined towards the earning smoothening and any change in them led to a significant cost for the firms (H_{2b}) Results of the study shows that firms at the top of their rating category as more sensitive to the rating change as compared to the firms at the bottom of the firm. So it is concluded that firms manage their earning to maintain as well as improve their rating.

6.3 IMPLICATIONS AND RECOMMENDATIONS

The study provides implications for the two most widely used theories of capital structure: the trade-off and the pecking order theory. It shows that credit ratings are of important considerations in managerial capital structure decisions. As suggested by the trade-off theory Firms appear to weigh the costs and benefits of credit ratings when they weigh other costs and benefits of debt. The study finds that despite having better access to debt markets, not all rated firms behave according to the trade-off theory. The implications of the *credit ratings – capital structure hypothesis* (CR-CS) tested in the present study are not according to the trade-off theory. The trade-off theory proposes that high risk firms

(low rated) have low leverage while low risk firms (high rated) have high leverage. Contrary to this results of the present study show that high and low rated firms prefer lower leverage which highlight the concerns for the costs and benefits associated with different rating levels.

Similarly. Checking for the implication of the pecking-order theory by suggesting that as credit rating have certain benefits and cost associated with then firm may have high level of equity as compared to debt of issue equity instead of debt. After controlling for profitability of the firm low and high rated firm have low level of leverage suggesting that credit rating implication are material for the firms and can alter their choices of financing. Firm also violate the traditional hierarchy of financing as suggested by pecking-order theory and firm may issue equity instead of debt or vice versa.

6.3.1 Recommendations for Firms

The results of present study suggest that possession of credit rating help the firms to get the unrestricted access to the debt market. If that is the case, then firm tries to get rating and shift their dependence from the traditional sources of finances (bank and equity issuance). Firms that are less transparent have greater chances to be hit by the shock in the supply side of the funds. Possession of credit rating does not guarantee higher level of leverage by itself firm have to maintain or keep improving in order to get the benefits of being rated. High and mid rated firm have greater access to the debt market as compared to the low rated firms but still high rated firms have low level of leverage so that they can maintain their financial flexibility.

6.3.2 Implications/Recommendations for Policymakers

Regulators and policymakers should put their best effort to ensure the rating agencies objective are fair and their rating depicts the true credit worthiness of the firm. Rating

agencies must ensure that they have a look on the earning smoothing of the firms as they manage their earning to get the higher rating. Policy makers must stress upon the rating agencies to keep improving themselves as their rating severs as the measure to judge the credit worthiness of the firm by both the investors and management as well.

6.3.3 Limitations of the Study

This study is for the non-financial sector of the Pakistan. Data which is available for the analysis is limited and only small no of firm get themselves rated and data is available for the period of 2007-2012.

6.3.4 Direction for further studies

Further studies can be done in the relevant field like does firm time their issuance of debt/equity to adjust their rating. What others non-financial benefits firms have in violating the traditional theories of the capital structure. Does agencies lack the incentive to detect the earning smoothening behavior of the firms?

APPENDIX

Summary statistics of whole sample

	TD	PRO	SIZE	TANG	LIQ	GROWTH	DEP
Mean	0.603	0.135	7.057	0.511	1.296	1.100	0.030
Median	0.626	0.118	6.959	0.511	1.082	0.932	0.028
Maximum	2.268	0.570	9.010	0.959	5.221	6.685	0.116
Minimum	0.097	-0.352	4.324	0.001	0.100	0.274	0.000
Std. Dev.	0.248	0.113	0.776	0.256	0.867	0.724	0.021
Jarque-Bera	636.317	70.439	1.155	9.671	393.821	9070.517	77.962
Probability	0.000	0.000	0.561	0.008	0.000	0.000	0.000
Sum	175.445	39.418	2053.627	148.643	377.199	319.983	8.847
Sum Sq. Dev.	17.887	3.680	174.412	19.063	218.144	152.024	0.126
Observations	291.000	291.000	291.000	291.000	291.000	291.000	291.000

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