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Impact of Credit Rating, Profitability and Liquidity on Capital Structure and Information Asymmetry: Evidence from Pakistani Non-Financial Sector

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Abstract *This study conducted for the non-financial sector of Pakistan, Total number of observations for the study is 600 with a group of 120. The dependent variable for this study is Capital structure and discretionary accrual, while independent variables include credit rating, profitability, and liquidity. The study developed two models for answering the research questions and objectives. Model one is about the impact of credit rating, profitability and liquidity on the capital structure, while model two is to examine the impact of credit rating and profitability on discretionary accrual. The results of the study show that credit rating and profitability positively impact capital structure and liquidity has a negative impact on capital structure. Moreover, in the second model, credit rating and profitability positively impact discretionary accrual. Another interesting finding from this study is that high rated firms more actively involved in asymmetry information. Due to this, in the financial market, investors invest in firms that increase the profitability of the firm.*

Key Words:
Credit Rating, Profitability, Capital Structure, Pakistan, Non-Financial Sector

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Introduction

Credit rating agencies have come up with major power form the last decade that investors, corporation, firms, and regulatory bodies commit their rating because of its great effect on a firm financial decision. In finance, CS (Capital Structure) is one the important researched topic after the (MM Modiglani and Miller, 1958) the preposition of irrelevance capital structure. There are different theories that disagree with the assumption of Modigliani and Miller irrelevance proposition, such as those theories which argue on taxes (Modiglani and Millar (1963); DeAngilo and Masules (1980); Miller (1977), Pecking order theory (Mayer and Majlof,1984), Myers (1984)], Trade-off theories [Scott (1976), Kraus and Litzenbrger (1973)]. Besides these theories, there is a lot of literature that challenges the underlying proposition. Different studies in few years failed due to the latest and prominent decisions

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in firms that question the soundness and cogency of capital structure (Ali & Yasmin, 2015). According to Graham (2000), Firms do not use typical variable such as (profitability, financial distress cost, taxes, tangibility) when decided capital structure. Those firms which have low risk use less leverage, having an easy approach to the financial market with decreasing bankruptcy cost (Graham & Harvey, 2001). According to Bancel and Mittoo (2004), while making capital structure and financial decisions credit rating is one of the chiefs and main concern which cannot be ignored. Complexities arise due to a variety of debtors and creditors in the debt market, due to which CR (Credit Rating) is one of the important instrument for the credit worthiness of corporations and regulatory bodies (Cnater & Packir, 2002). To get and confirm, firms commit high cost for credit rating, and most of the firms acquire different rating agencies for creditworthiness. 86 % of financial managers looked attentively to credit rating when they decided (Cantor et al. 2007). Besides the supply side, factor credit rating is used to put the right prices for securities which increase the average of the investor's base. And it also helps to decrease the dependency on distinctive sources of finance (Judge & Korzentisky, 2011). Those firms which are rated more easily lift up their capital structure in unfavorable circumstances such as in recent financial crises as compared to those firms which are not rated (Chave & Puranandum, 2011). A survey was conducted in 2009 by Bacon et al. with a sample size of 43 treasury professional from UK firms. Form this survey finding support that rating is very important for a firm. Because of the financial crises in 2008, those firms have advantages that were rated. And those firms which were not rated want to get rated during the period of crises. All these points show that CR the supply is one of the elements in the measurement of capital structure.

Studies on credit rating show that in rated firms, the level of debt increases in contrast to non-rated firms and also a lower level of asymmetry information. Different literature shows the relationship between credit rating and capital structure from different aspects. For example, when firms approach different debt markets than credit rating play an important role eventually to decide capital structure [Faulkender & Peterson (2009), Mittoo & Zhang (2010). Credit rating- Market access hypothesis (CR-MA) show that rated firms elevated level of leverage as compared to non-rated firm's despite the rating level. As compared to high rated firms low, rated firms face many problems in order to approach the debt market because of their high cost of capital and limited deeds in financial securities (Billat et al., 2008). Beside this, low rated firms also face difficulty in premature devastation in case of any failure in CR. Low rated firms can raise their debt due to rating, but their cost is high in contrast to middle rated firms. Mid rated firms have an easy approach to the debt market and not easily liquidate in case of any deterioration as compared to low rated firms. According to Mittoo and Zhang (2010), there is a chance that the relationship between credit rating and capital structure is non-linear relation. Different studies in few years failed to latest and prominent decisions in firms that question the soundness and cogency of capital structure. Firms, regulators, and investors continuously rely on credit rating agencies, but in spite of this, academic research ignores the significance and value of credit rating in the financial decisions of the firm. Beside credit rating, profitability and liquidity of the firm also affect the capital structure of the firm. People take a financial decision for some benefits and incentives, and they invest in those firms which are good in their ratings and credible information. This study focusses on the capital structure of the firm and how the capital structure of the firm effected by credit

rating. Impact of asymmetry information on credit rating and earning smoothing behavior of managers in the firm to manage their rating. Thus, based on the previous discussion, the study has its impotency to be conducted for a contribution towards the academia, industry and government agencies. Keeping in view and in line with the previous literature and discussion, this study will answer the following question based on the preceding objectives.

Research Questions

- What is the impact of a credit rating on the capital structure?
- What is the impact of profitability on the capital structure?
- What is the impact of liquidity on the capital structure?
- What is the impact of a credit rating on discretionary accrual?
- What is the impact of profitability on discretionary accrual?

Research Objectives

- To examine the impact of a credit rating on capital structure
- To examine the impact of profitability on capital structure
- To examine the impact of liquidity on capital structure
- To examine the impact of a credit rating on discretionary accrual
- To examine the impact of profitability on discretionary accrual

Literature Review

Capital Structure

For decades too many studies conducted on capital structure and its determinants in the research field of finance, but this topic remains the most important in the literature of finance. Debate on capital structure started after the Modiglianni and Millar (1958) study on irrelevance. In this regard, studies also incorporate (Modiglianni and Millar, 1963) and Personna tax (Millar, 1977) for the proper guidance about capital structure guidance and practices. At the end of 1970, the focus of the studies goes toward aspects of capital structure signalling and earning management which is also known as information asymmetry (Cracker, 1986). Despite the extensive literature like types of debt, private versus public finance (Denis & Mihove, 2007), parts of debt like debenture and convertible debt (Myer, 1983), Maturity structure like short vs long term (Opler, 1996) question of how firm select CS remain unattainable. Next portion highlight the literature review regarding existing theories of capital structure and its determinants.

Irrelevance Preposition of Capital Structure

The irrelevance proposition of Modiglianni and Millar is the beginning point for empirical and theoretical research on capital structure in the field of finance. They argue that debt has no benefit assets are financed either through equity or debt is irrelevant to the cost of capital of the firm. According to the arbitrage argument, investors of firms create their own debt without any cost beard by the firm. Because of this, if any change occurs in the capital structure of a firm would be irrelevant to investors. Irrelevance theory based on many assumptions such as no taxes reneges risk, prefect market same nature of firms with a specified risk class. This theory is authentic when all these suppositions are applied, but

when any of the assumptions is relax, then the theory is not valid. Due to which many questions arise on the validity of the irrelevance proposition. The next portion of the literature review focuses on different other factors of capital structure. According to Mayer (2001), there are several theories for equity debt choice, and there is no reason to reject or accept one.

Credit Rating as a Determinant of Capital Structure

According to Trade-off theory, firms count their benefits of debt in the form of tax shield and debt cost in the form of the potential cost of bankruptcy. But there are different problems in firms like earning management and agency cost related to debt and equity, due to which leverage selection is difficult in firms. So, Trade-off theory proposes that the firm should also consider all these cost and benefits while deciding capital structure. Due to information asymmetry, a firm's quality effect and investor believe that information is non-transparent. If the information is transparent, then there would be a lot of funding opportunities in the market without friction, and firms can go easily to fund their projects. Due to asymmetry information and moral hazards, investor demand a high coupon rate to secure their investment as the strategy is if the risk is high, then return would also high. A debt of firms depends upon the infinite flow of funds in a friction less market with true and right prices (Faulkender & Peterson, 2016). It should be in consideration the following 2.4 Factors affecting capital structure:

Credit Rating

Credit rating is one of the important factors for the determination of capital structure. Different studies show the relationship between capital structure and the credit rating of firms. High rated firms have a high level of leverage as compared to non-rated firm. And the level of leverage in rated firms depends upon the rating level (Ali & Yasmeen, 2015). Rating agencies work for the purpose to reduce asymmetry information in financial reports. Rating agencies use various models and methods to calculate the creditworthiness of a firm. This rating is free of cost available to the public for the purpose to make correct decision during investment (Alkatn & Abdullah, 2019).

Profitability

Profitability is one of the main factors which affect the capital structure of the firm, which is studied in different theories like Trade theory and pecking theory. The trade-off theory suggests that firms and corporations look at the cost and benefits of debt to increase their profitability. When firms measure their debt ratio, their value directly related to the profitability of the firm (MM, 1963). Firms with high profitability have a low level of bankruptcy because they have a high marginal tax rate.

Opposite to Trade-off theory, pecking order theory suggest a negative relationship between leverage and CS as pecking order theory argue that there is the problem of signalling and information asymmetry. If asymmetry information is detected, then it will affect the credit rating of firms. And which affect capital structure. Some studies show results that there is a direct relationship between short term debt and profitability and an inverse relationship between long term debt and profitability (Sohail, 2006). According to Rafique (2011), profitability has a slight effect on capital structure.

Liquidity

Firms must look at this point of liquidation when deciding their capital structure. In literature, few studies are present on the relationship between leverage and liquidity; these few studies suggest that there is an inverse relationship between leverage and liquidity [Ozkan, (2001), Deesomak, (2004), Jhong et al. (2008)]. On the other hand, there are any studies that show a direct relationship between liquidity and firm capital structure [Mayer & Rajan (1995), Morellec (2001), Sibiklove (2009), & Ankilio (2011)]. Liquidity is also one of the important factors during the financing decision of a firm. According to Trade-off theory, companies and firms select their capital structure by comparing the values of cost and benefits of equity and debt. For example, a tax shield is the main benefit of debt financing. On the other hand, debt overhang and agency problems between debtor and equity holders are the main cost of debt financing. However, according to the Pecking order theory (Mayer and Majluf, 1984), firms focus on internally generated funds after internal funds go for debt financing and then go for equity financing (Rashid, 2017).

The Hypothesis of the Study

Credit Rating and Capital Structure

Credit rating capital structure (CR-CS) is another hypothesis according to the approach to debt market depend upon the level of rating. High rated firms have more access to the financial market as compared to low rated firms. And the low rated firm has more approach to the debt market as compared to non-rated firms. Therefore,

H_0 = other factors constant non rated firms have low leverage as compared to rated firms.

H_1 = other factors being constant credit rating firms have high leverage as compared to non-rated firms.

H_0 = other factors being constant, there is an inverse relationship between the profitability of the firm and capital structure.

H_1 = other factors being constant, there is a direct relationship between the profitability of the firm and the capital structure of the firm.

H_0 = other factors are constant; there is an inverse relationship between liquidity and capital structure of the firm.

H_1 = other factors constant there is a direct relationship between the liquidity of firm and capital structure.

Credit Rating and Information Asymmetry

As discussed in the introduction and literature that firms have benefits and incentives according to their rating category to involve in their earning management activities. To minimize asymmetry information, credit rating agencies have the ability to check and adjust the earning smoothing of the firm.

According to Moody (1982), credit rating format refinement as a direct instrument for a reduction in the level of information asymmetry.

H0 = Rated firm is not actively involved in asymmetry information as compared to non-rated firms.

H1= Rated firms are more actively involved in asymmetry information as compared to non-rated firms.

H0 = other factors are constant; there is an inverse relationship between asymmetry

information and profitability of the firm.

H1 = other factors are constant. There is a direct relationship between asymmetry information and the profitability of the firm.

Moreover, all the assumption are based on multiple theoretical concepts that are trade-off theory and pecking order theory for the relationship between dependent and independent variables.

Methodology

Research Design

The research design refers to the whole process of research, which start from the theoretical concepts of the study to the data collection and analysis (Collin & Hassy, 2013). Simply, research design describes the philosophy, techniques, duration, choices, and strategies of the whole study (Saunders & Mark, 2012). Research approach and strategy are two important parts of research design. Regarding approach, there are two concepts, one is inductive, and the other id deductive. The inductive approach moves from specific to general, whereas the deductive approach moves from general to specific (Saunders, Mark Nk & Lewis, 2012; Deci & Ryan, 2002). During the research study philosophy of the study cannot be ignored because it provides background to the approach. This study investigated the direct and indirect impact of credit rating, profitability, and liquidity on capital structure. Another portion of the study investigated the direct and indirect impact of credit rating and profitability on discretionary accrual. Data collection is one of the main attributes of a research study because inappropriate data will lead to deceptive and confusing results. According to Dekimpe et al. (2002), data can be defined as "the quantities, characters, or symbols on which operations are performed by a computer through specific software such as "SPSS, STATA etc. Data selection and data collection both depend upon the nature of the data. According to the nature of data and study, it is decided how to select and collect data for the study. As discussed earlier, the purpose of the study is to find out the impact of credit rating, profitability, and liquidity on capital structure and the impact of credit rating and profitability on discretionary accrual. For all of the above variables, the data required is secondary in nature. Data for some variables like capital structure, profitability, and liquidity get from the Datastream database and annual reports of firms. While data for credit rating obtained from the PACRA website and VIS credit rating website. For this study, data were examined through descriptive statistics, correlation, and regression for interpretation and results. For analysis of data STATA used by this study. Thus, keeping in view following two econometric models based on multiple theoretical concepts have been developed as under;

$$TDTA = \beta_0 + \beta_1 CR + \beta_2 PROF + \beta_3 LIQD + \varepsilon \quad \text{..... (1)}$$

Where TDTA is the debt ratio of a firm, β_0 is a constant term, CR is the credit rating of the firm, PROF is the profitability of the firm, and LIQD is the liquidity of the firm is in the form of abbreviation.

$$DA = \beta_0 + \beta_1 CR + \beta_2 PROF + \varepsilon \text{ ……. (2)}$$

Descriptive Statistics of the Study

Summarize statistics of determinants of capital structure and discretionary accrual include

mean, minimum value, maximum value, and standard deviation. Table 4.1 show that each variable has 600 observation, the first column shows variables, the second column show no, of observation, third column show means, fourth standard deviation, the fifth column shows minimum values, and the last column shows maximum values of data.

Table 1. Descriptive Data for the Study

Variable	Obs	Mean	Std. Dev.	Min	Max
capstru	600	3098265	6198959	2523	5.69E+07
da	600	1.93E+07	3.68E+07	11013	2.57E+08
cr	600	4.061667	0.7994346	1	5
prof	600	12.17297	186.1779	-1411.3	3958.8
liqui	600	2.889383	12.84061	0.11	200.42

According to the table, 1 average share of capital structure which is the dependent variable, is 3098265. While the average of the second dependent variable, discretionary accrual, is 1930007. The mean or average of independent variables credit rating, profitability, and liquidity are 4.0, 12.1, and 2.88, respectively. The standard deviation shows how the data is scattered from the mean. So, in the above table, the 1 standard deviation of capital structure from the mean is 6198959, while the standard deviation of discretionary accrual from the mean is 3680007. The sacredness of independent variable from mean, credit rating disperses from mean with 0.7. While profitability and liquidity disperse from the mean with values of 186.1 and 12.1, respectively. Now to explain the minimum and maximum values of data of dependent and independent variables. So, the minimum value of the capital structure is 2523, and the maximum value is 5690007, while the discretionary accrual minimum value is 11013, and the maximum value is 2570008. The minimum values of independent variables such as credit rating, profitability, and liquidity are 1, -114.1, and 0.11. While the maximum values of these independent variables are 5, 3958.8, and 200.4, respectively.

Correlation of Study

This section of the analysis chapter provides Pearson's correlation between dependent and independent variables. Correlation between dependent and independent variables shows that either their variables are positively correlated or negatively correlated. These statistics of the study also show multicollinearity among independent variables. Multicollinearity issue exists if the value increases from 0.80 (Hoper et al., 2008).

Table 2. Correlation of study

	capture	Da	cr	prof	liqui
Capstru	1				
da	0.5261	1			
cr	0.1081	0.1921	1		
prof	-0.0089	0.0373	0.022	1	
liqui	-0.0494	-0.0439	0.0434	0.5434	1

Interpretation

Above table 2 (Model 1 to 2) explain the correlation between dependent and independent variables. So, according to the table for Model 1capital structure has a positive correlation with credit rating 'cr' (r = 0.1081). While the capital structure has a negative correlation with profitability 'prof" (r= -0.0089), and liquidity "liqui" (r = -0.0494). For model 2 dependent variable is discretionary accrual, which shows that discretionary accrual is positively correlated with credit rating "cr" (r= 0.1921) and profitability "prof" (r= 0.0373). Matrix for correlation also shows the correlation among independent variables. So, credit rating is positively correlated with profitability "prof" (r= 0.022) and liquidity "liqui" (r= 0.0434). profitability is also positively correlated with liquidity "liqui" (r= 0.5434). Matrix for correlation also describes that there is no multicollinearity among independent variables. In the above table 2, the lowest value for the independent variable is -0.0494 for liquidity, and the highest value is 0.5434 for profitability, so there is no problem of multicollinearity between independent variables.

Analysis for Model 1

Regression Analysis for model 1

The linear regression model is used for the purpose to check the relationship between dependent variables and independent variables. The least-square is one of the common methods for a line of regression. Now in the case of this study, the dependent variable for model 1 is capital structure, and the independent variables are credit rating, profitability, and liquidity. The results of the regression analysis for model 1 is shown in table 3.

Table 3. Regression for Model 1

Variables	Coef.	Std. Err.	T	P>t
Cr	856433.3	315518.3	2.71	0.007
Prof	858.0496	1612.391	2.60	0.045
Liqui	-32937.7	23394.72	-1.41	0.06

No, of observation	600
R-Square	0.0151
Adjusted R-Square	0.0101
F (3, 596)	3.04
Prob > F	0.0005

Interpretation

Table 3 show the positive and negative impact of independent variables on the dependent variable. So, the value shows that credit rating has a positive impact on capital structure—and an increase in one unit of rating increase capital structure with 856433.3 units. The relation between credit rating and capital structure is positive and significant as t- value is 2.71. The relationship between profitability and capital structure is also positive, and the impact is significant as the t- statistics is 2.60. Coefficient of profitability 858.0496, which demonstrate that increase in one unit of profitability increase the capital structure by 858.0496 units. The third independent variable is liquidity, whose coefficient is negative, which is -32937.7; this indicates that liquidity has a negative impact on capital structure,

and this impact is insignificant. An increase in one unit of liquidity will lead to a decline in the capital structure with 3293.7 units.

Analysis for Model 2

Linear Regression Analysis for Model 2:

Like model 1 now analyze model 2 by linear regression model, so in the second model, the dependent variable is discretionary accrual, and the predictors are credit rating and profitability. The statistics of linear regression analysis for model 2 shown in table 4.

Table 4. Regression for model 2

Variables	Coef.	Std. Err.	t	P>t
cr	880.9923	1848.883	4.76	4.76
prof	6539.829	7938.97	0.82	0.82

No, of observation	600
R-Square	0.0380
Adjusted R-Square	0.0348
F (2, 597)	11.78
Prob > F	0.000

Interpretation

Table 4 show the positive and negative impact of credit rating and profitability on discretionary accrual. The coefficient of credit rating is 880.9923, which indicate that it has a positive impact on discretionary accrual, and the t-statistics for credit rating is 4.76, which show that there is a significant impact of a credit rating on discretionary accrual. The overall result is that credit rating has a significant positive impact on discretionary accrual. The coefficient of profitability is 6539.8, which show that profitability also has a positive impact on discretionary accrual. But the t-statistics for profitability is 0.82, which indicate that profitability has an insignificant impact on discretionary accrual. For profitability and discretionary accrual, the impact is an insignificant positive impact.

Conclusion

This study has empirically evaluated to investigate the impact of credit rating, profitability, and liquidity on capital structure. Firms with a high rating have more capital structure as the capital structure has three indicators like Total assets, long term debt, and short-term debt. When the rating of the firm increases, then the leverage ratio of the firm also increase. This is due to the credit worthiness of firms, and when the firm is creditworthy, then investors also invest in that firm and purchase shares of the firm. So, the overall structure of the firm is positively increasing due to the high rating. The capital structure of a firm also increases due to high profitability. If the firm profitability is high, then investors invest in those firms, which leads to an increase in the total equity or total assets of the firm. Capital structures decrease with an increase in liquidity, as those firms mainly depend upon current assets and current liability. If a firm has a high liquidity ratio, then liquidation of firm occurs more easily in case of any mishap in the market. The second model discussed the discretionary accrual of fir, which show the asymmetry of information in the financial

report and market information. Credit rating and asymmetry information are directly related, which show that high rated firms are actively involved in asymmetry information. And when the rating of the firm is high, then investors trust in that information and invest in the financial market. Due to wrong information, investors invest in firms which leads to increase firm profitability.

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