CAPITAL STRUCTURE DECISION: WHICH FIRM LEVEL AND COUNTRY LEVEL FACTORS ARE RELIABLY IMPORTANT IN NON-FINANCIAL FIRMS IN PAKISTAN

Noor P. Khan[1]

ABSTRACT

An optimal capital structure is essential for wealth maximization and value creation of any firm. The current study is designed to evaluate the impact of financial and economic factors that influence financing behavior of non-financial firms in Pakistan. Moreover, the current study implies pooled regression and fixed effect models on the base of Hausman specification test and Chow test. The solvin's sampling technique has adopted, while financial data and economic data have been selected from the website of State Bank of Pakistan and world Bank, respectively. Findings of the study reveal that profitability is significant but inversely related to Capital structure across both regression models. Size and tangible are significantly and positively associated to debt ratio. Interest rate is significant but inversely associated to debt ratio in pooled model, while insignificant in fixed effect model. Additionally, business risk, economic growth and tax rate are insignificant factor of Capital Structure across both estimation techniques. It is implies that the findings and relationship of the study have supported the predication of pecking order, trade off and market timing theory. The management of non-financial Pakistani firms is recommend to make optimal decision by selecting internal and external factors such as profitability, tangibility, size and interest rate.

Keywords: Economic, Financial, financing behavior, non-financial etc.

INTRODUCTION

Managers need to make financing policy to prioritize sources of funding for new investments by using three main arrangements: employing internal financing, issuing debt securities and issues new shares. Moreover, retained earnings and issuing of shares reflect ownership structure and debt instruments represent bondholder's investment. The same practices and structure has been found in the developed and developing countries (La Porta, Lopez-de-Silanes and Shleifer, 1999). The corporate financing decision is one of core issue face by management to make decisions, which maximize the wealth of the shareholders and lower cost of capital (Shah and Khan, 2007). The optimal Capital Structure is the balanced combination of debt and equity, which reflect the positive value of the firm and decline the overall cost of the capital. The theory of Modigliani and Miller's (M&M) about Capital Structure in 1958 has provided foundation for Modern Corporate Finance Theory by providing relaxation on taxes, transaction costs, and other frictions. Many theories of Capital Structure have been proposed, whereas few appear advocate such as "trade off theory" pecking order theory of Myers (1984). However, agency theory of Jensen and Meckling (1976), lurks in the base of theoretical debate. Most of the studies have been conducted in developed nations, which focus on factors of Capital Structure (e.g., Rajan & Zingales, 1995; Booth *et al*. (2001); and De Jong, Kabir, Nguyen, (2008) and Sibilkov 2009). Moreover, number of studies like Hijazi and Tarique (2006), Shah and Khan (2007), Ahmad

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[1] Dean of the University of Agriculture, Peshawar.

and Wang (2011), Ali (2011) and Javid and Imad (2012) and Rahman and Kakakhel (2015), Rahman(2017) have been completed their studies on Capital Structure in various sector of Pakistan exclusively. However, the subject of firm financing policy in Pakistan is still open for further research. Aforementioned studies consider limited set of variables by leaving numbers of macroeconomic factors that influence Capital Structure Decision. The current study is endured to fill an important gap partially by investigating the impact of firm specific and macroeconomic determinants that effecting Capital Structure Decision and influential theories prevail in non-financial firms in Pakistan.

OBJECTIVE OF THE STUDY

1. To evaluate the financial factors (e.g.; profitability, size, tangibility, and business risk) on financing behaviours of non-financial firms in Pakistan.
2. To analyze the economic factors (e.g;. economic growth, interest rate and inflation rate) on Capital Structure Decision of non-financial Pakistani firms.
3. To check the prevailing theory of capital structure in non financial sector in Pakistan.

LITERATURE REVIEW

The Capital Structure Decision and choice of financing-mix of various countries and industries have been varying phenomena (Zietlow, Hankin, & Seidner 2007). In addition, the study of Capital Structure has been selected to identify factors that could explain the preference and financing behavior of firms, whereas firm level characteristic may bring changes in Capital Structure in diverse industries (Baral's, 2006). Frank and Goyal (2009), examine reliable factors of Capital Structure in American traded firms from 1950 to 2003 by employing various statistical models. Moreover, the study identify the most prominent factors that is median industry leverage market, tangibility log of assets and expected inflation are positively and significantly associated to market leverage. However, market to book asset ratio and profit is negatively and significantly related to leverage. Similar effect of micro aforementioned factors are found for book leverage whereas, size of the firm, the market to book ratio and inflation rate are not reliable factors in the study. Thus, the findings of the study are consistent with the trade off theory of Capital Structure. Ali (2011), investigates micro and macroeconomic variables of financing behaviors in non financial firms in Pakistan during the study period of 2003- to 2008 by using fixed and constant coefficient model. The micro factors like size of the firm, tangibility, inflation rate, growth rate and dividend are positively and statistically significantly associated to Debt Ratio (Leverage). However, profitability is negatively, but significantly related with Capital Structure in non financial firm of Pakistan, the current finding of the study stand on line with pecking order, market timing theory and trade-off theory of Capital Structure. Shah and khan (2007), evaluate main factors of Capital Structure in listed non-financial firms in Pakistan by using fixed effect dummy variable regression, three variables (tangibility (+), Profitability (-) and growth (-)) are significantly associated to leverage, while three variables are insignificantly associated with leverage. Moreover, earning volatility, size and depreciation are insignificant factor of Capital Structure. The findings of the study support trade-off theory, agency cost theory and pecking order theory in case of tangibility, growth and profitability, respectively.

Saddam (2014), evaluates firm specific and country specific factors during the study period of 2007 to 2013 by choosing most prominent model of panel data analysis like error component model. In addition, business risk, inflation, age and size of the firm are positively and significantly affected the financing decision, while other factors like profitability, liquidity, growth, GDP and interest rate are not significantly Influence on Capital Structure Decision. Thus, results confirm pecking order and trade-off theory.

Rahman and Kakakhel (2016) have conducted study in insurance sector during the studies period of 1999-2013 by using two regression models i.e. fixed and pooled regression model with the most appropriate tests of Hausman's specification and Breusch and Pagan Lagrange Multiplier Test. Moreover, findings of the study reveal that business risk and profitability are significantly but inversely related to debt ratio, across both estimation technique, which is the arguments of pecking order theory of Capital Structure. Additionally, tangibility and inflation rate are positively and significantly influence finance behavior, which support trade off theory. At last, growth is insignificant factor of Capital Structure in both models.

Rahman (2017), analyze ingenious and exogenous variables of insurance sector of Pakistan by using most appropriate model of panel data analysis like fixed effect, random effect and pooled OLS model. The convenient sampling technique has been adopted, while data has been extracted from the state bank of Pakistan and World Bank. The findings of the study reveal that profitability, and business risk and liquidity are significant but negatively related to leverage in both estimation technique (fixed effect and random effect model). Moreover, the negative association of profitability and liquidity to capital structure depicts pecking order predication. However, the negative relationship of business risk and leverage shows pecking order and trade off theory of capital structure. In additions, tangibility is significant and positive in both models however, inflation rate is significant in pooled regression model but insignificant in fixed effect model. At last, GDP are insignificant factors of capital structure decision.

THEORIES, FACTORS OF CAPITAL STRUCTURE AND HYPOTHESIS

Pecking order theory prioritize internal fund instead of external financing. Moreover, profitability enhances the portion of retained earnings and thus, it declines the dependence of other sources (Myers and Majluf, 1984). Therefore, it clarifies the opposite association of debt ratio and profitability. Trade off theory advocates positive relationship of debt ratio and profitability. On the other side, Frank and Goyal (2003), llyas (2008), Shah and Khan (2007) and Rahman and Jan (2016) show negative relationship of debt and Capital Structure. Present study hypothesizes significant negative relationship of profitability and debt ratio.

Trade- off theory reveals the direct association of firm size and with capital structure. As the size of the firm incline their portion of debt in the Capital Structure Decision is also enhanced because larger firms are more diversified (Titman and Wessels, 1988). On the other hand, Rajan and Zingales (1995), find negative association of debt and size of the firm because asymmetric information issues are less for diversified firms. Thus, positive relationship is reported between debt and size of the firm by various researchers like Antoniou *et al*. (2002) and Fama and French (2002) and Ali (2011), Rahman

(2017). The hypothesis for current study is significant positive between size and capital structure.

Trade-off theory has reported the direct association of tangibility with financing behavior, because greater tangible assets diminish risk for lenders and thus, more leverage could be used in the combination of debt and equity (Delcoure, 2007). In addition, Frank and Goyal (2009), in the context of developing world and Shah and Khan (2007), Ali (2007) and Rahman and Jan (2016), Rahman(2017) in Pakistani context, while Jong *et al*. (2008) also find positive relationship of debt and capital structure. The present study also hypothesis, significant positive association of tangibility and debt ratio.

Business risk enhances inclines chances of bankruptcy because of incapability to pay the agreed claims include interest and principal amount (Banerjee et al., 1999). Additionally, few studies find positive and significant relationship of earning volatility and debt ratio like Saddam (2014). However, insignificant result is found by Shah and Khan (2007) in non-financial firm. Whereas, Rahman and Kakakhel(2016) find significant but negative relationship of business risk Capital Structure in insurance industry of Pakistan. Thus, the significant negative association of volatility and debt ratio is also hypothesis in current study.

Economic growth rate is the symbol of economic condition; however De Jong *et al*. (2008) present that prosperity of the country lead to utilize high debt in Capital Structure Decision. Moreover, Kayo and Kimura(2011), find positive and significant relationship of GDP rate and capital structure, while Saddam (2014), examine insignificant result between debt and leverage. The present study hypothesizes significant positive linkage between economic growth and capital structure.

The proportion of tax shield could be enhanced due to the higher percentage of debt in Capital Structure and hence tax rate is positively related to debt ratio (Brigham & Ehrhardt, 2005). In addition, Delcoure (2007), De Jong *et al.* (2008) also find direct connection between tax rate and Capital Structure of the firms. On the other side, Antoniou *et al.* (2008), and Cho *et al.* (2014), report inverse relationship of tax rate and financing policy. Thus, it is hypothesized significant positive relationship of tax rate and capital structure.

High interest rate lower the use of debt instruments in Capital Structure Decision, however lower interest rate enhances the use of debt ratio. Antoniou *et al*. (2008), De Jong and Dijik (2007), and Dincergok & Yalciner (2011), find negative relationship of lending rate and debt ratio. On the other side, Deesomsak *et al.* (2004) exercise positive and significant association of interest rate and debt. The current study hypothesizes significant positive relationship of interest rate and debt ratio.

RESEARCH METHODOLOGY

The current study uses website of state bank of Pakistan (Balance sheet analysis) and annual reports of the sampled companies for financial data. The panel data is the combination of time series and cross-section data. The non financial data has been used by prior researchers such as Gaud et al. (2005), Shah and Khan (2007), Ali (2011) and Haron *et al.* (2013). However, for economic data website of the World Bank has used for data extraction. The random stratified sampling technique is employed on the population of 399 firms in various sectors by excluding financial sector like banks, mutual funds and contractual institutions, etc. The significant result of Hausman test select fixed effect model

between random effect and fixed effect model. While, the insignificant result of chow test choose pooled OLS model between random effect and pooled OLs model.

4.1 Slovin formula:

Solvin's sampling technique is employed to measure the sample size for the current study, which is also used by prior researches (e.g., Meyer, Mudambi, & Narula, (2011) and Yasa et al., (2013)). This formula is appropriate for the various firms of non financial sector. Thus, it is valuable to find out the sample size at a known error tolerance. The logic behind the selection of this sample technique is that most of the prior research has used current sampling technique. In additions, from number of various industries of non-financial sector required specific percentage from each industry so, aforementioned technique is appropriate for the selection of sample size.

n = N/(1+Ne2) Where n = Number of samples in the data, N = Total population, e = Error tolerance and I considered error tolerance 5%

$$n = \frac{399}{1+399(.05)2}$$

Approximately 200 firms

4.2 Regression Models

Following prior researcher which used most suitable models for the panel data analysis like Gaud et al. (2005), Shah and Khan (2007), Ali (2011) and Haron *et al.* (2013), Rahman and kakakhel(2016), Rahman(2017).

4.2.1 Fixed effect Model

LVit = β0i + β1Prof it+βSizit + β3Tangit + β4B.rit + β5E.G+ β6 Tax.rit + β7Int.rit + εit

4.2.2 Pooled Model

LVit = β0i + β1Prof it+βSizit + β3Tangit + β4B.rit + β5E.G+ β6 Tax.rit + β7Int.rit + εit

Table: 1 Proxies for Dependent and Explanatory Variables

Leverage	Total debt/Total assets (DTL)	Expected
Profitability	EBIT/Total Assets (Prof)	Significant Negative
Size	Log (total assets) SIZ	Significant Positive
Tangibility	Fixed Assets/Total Assets(Tang)	Significant Positive
Business Risk	The absolute % change in EBIT and average of this change	Significant Negative
Economic Growth	Annual rate(EG)	Significant Positive
Tax Rate	Corporate tax rate(TR)	Significant Positive
Interest Rate	Maximum interest rate of World bank(WDI) I.R	Significant Positive

Table: 2 various test for normality and selection of the appropriate model.

Normality	Shapiro wilk test	The p value is higher than 0.05.Thus, the data is normally distributed
Multi colinearity	VIF value is less than 10	There is no problem of multicollinearity
Heteroscedasticity	Heteroskedasticity Test: White	
Auto correlation	Durbin-Watson	Durban Watson value was 2..0232 which is greater than 2, which means there is no problem of auto correlation in model

Panel Diagnostics Tests

Fixed Effect Test	**Chow Test**	The P -value is 0.45 which means H0 (pooled) will accept
Fixed and random effect	**Hausman test -**	The p-value is 0.03 which means H0 (random) will reject. So, for the model estimation fixed is better than random

Source: Stata and Eview out put

Table- 3depicts the Pearson's correlation coefficient between variables therefore, Asterious and Hall (2007) advocate that numbers of researchers are agreed that correlation between variables are more that 0.09 create multicollinearity problems. Moreover, this estimation is the yardstick that shows that the correlations among independent variables are fairly small and hence there could not be the issue of multi-collinearity.

Table: 3 Pearson Correlation Matrix

	Lev	Prof	Size	Tang	BR	EG	Tax.r		VIF
Lev	1.0000								1.23
Prof	-0.0173	1.0000							1.43
Size	0. 0345	-0.0045	1.0000						1.56
Tang	0.06134	-0.0258	-0.00023	1.0000					1.67
B.R	0.0459	-0.0543	-0.0123	0.0474	1.0000				1.42 1.51
EG	-0.073	0.04234	-0.06573	0.0027	-0.04354	1.0000			1.65
Tax.r	0.0484	0.0247	0.02324	0.08442	0.07448	0.0748	1.000		1.23
Int. r	0.063	-0.0147	0.01843	0.0283	0.03487	0.0445	0.0783	1.000	1.53

Sources: Eview Out Put of Pakistani Non Financial Firms and Macroeconomic data from World Bank from (2009-2015)

Table: 4 Determinants of Capital Structure by using Pooled Regression and Fixed Effects Models.

Variables	Pooled Model	t. Value	Fixed effects	t. Value
Prof	-0.68443	-11.45	-0.393484	-8.14
Size	0.04235	7.54	0.02231	2.45
Tang	0.08434	3.04	0.06435	2.98
B.R	0.000412	-1.34	0.000346	-0.15
EG	0.003544	1.354	0.00746	0.039
Tax. R	0.00414	1.231	0.0000445	0.14
Int. R	-0.3302	-2.24	-0.000345	-0.48
Constant	-0.13945	-0.294	0.12844	0.56
R-Squared	0.3543		0.7274	
Adjusted R	0.3453		0.6947	

Source: Eview software outcomes of non financial firms and macroeconomic data from World Bank (2009-2015).

RESULTS

Table-3 reports the empirical results of pooled OLS model and constant coefficient model. The two most reliable models are selected by hausman specification test and chow test among fixed effect random effect and pooled regression model. The t value shows the statistical value, the p- value shows the probability value, value equal or less to 0.05 is significant, while high value to aforementioned value show insignificant value. R-square value is 35 for pooled ols model, while for fixed effect model it is 72. Thus, the 72 percent change occurs due to selected variables in the dependent variable i.e. leverage. The pooled model shows that profitability, size, tangibility and macroeconomic variable interest rate is statistically significantly related to Leverage. Moreover, profitability is significantly but negatively associated to debt ratio across both models. However, size of the firm and tangibility of assets is positively and statistically related to financing behavior of non financial firms of Pakistan. On the other hand, business risk, economic growth and tax rate are insignificantly influence on leverage of the non financial firms. The constant coefficient model depicts that profitability; size and tangibility are significantly related to Capital Structure. The exogenous fact like interest rate is significant in pooled model but insignificant in fixed effect model. Furthermore, profitability is significant but negatively associated to leverage, whereas size and tangibility are significant and positively associated with debt ratio of the non financial firm of Pakistan. In addition, others micro and macroeconomic factors like earning volatility (business risk), economic growth and tax rate are insignificantly associated to Debt Ratio.

DISCUSSIONS

Profitability

The most essential independent variable i.e. profitability has high t-statistics of -11, and -8.14, respectively across both regression models such as pooled and fixed effect model. Moreover, profitability indicates performance of non financial firm. The coefficient value of aforementioned variable is -0.68443, while the negative sign shows the inverse relationship of profitability and leverage. As the profitability of the non financial firm of Pakistan is increasing the percentage of debt is decreasing. Moreover, the board of directors finds other sources for financing need like they issue stocks in place of bonds or using retained earnings as a source of financings. The findings suggest the negative predication of Myers and Majluf (1984). In addition, pecking ordered theory also supports negative association of debt and profitability, which give high priority to retained earnings and then issuing of external instruments. The same result in Pakistani firms is also founded by Shah and Khan (2007) and Rahman and Jan (2016) and Rahaman(2017). The hypothesis is supported by the current result.

Size of the firm

The size of the firm is positively and significantly associated to financing policy with second highest t-statistic i.e., 7.54 and 2.45 across both the regression models. The current findings support Titman and wessels'(1988) arguments that larger firms are more diversified and cope less probability of bankruptcy. Thus, such firms are more likely to use debt finance as compared to smaller firms. The financial stability ensures as the size of the firm enlarged due to the consistent cash flows and lower risk. On the other hand, larger firms can get easily acess to the financial market than the smaller firms. Furthermore, credit worthiness of the large firms are more stronger and these firms can easily raise loans from various sources. The positive relationship of debt and size is the arguments of Trade-off predication, while findings do not consistent with (Rajan & Zingales, 1995) results, which argue those larger firms are strong enough which diminish the chances of undervaluation of new equity. The finding of current study is congruent with the findings of prior studies such as Ali (2011), Antoniou *et al*. (2002) and Fama and French (2002). Current result is same as hypothesized.

Tangibility

The results of Pooled OLS and fixed effects models show positive and significant relationship of tangibility and leverage with t-values of 3.04 and 1.98, respectively. The significant and strong association of tangibility and leverage confirms the predication of trade off theory and Jensen and Meckling's (1976). Those firms which having high fixed assets means to say tangibility is high, such firms can easily raise debt from any source, because creditors are secure to release credits to such institutions. Moreover, firms could be capable to give fixed assets like property, buildings and machinery as collateral to draw debt from the creditors. The results of the tangibility and Debt Ratio are on line with the previous studies of Frank and Goyal (2009), in the context of developing world and Shah and Khan(2007), Ali(2007) and Jong *et al*.(2008), Rahman and Jan(2016)and Rahaman(2017), but inconsistent with the study of Boot *el al*. (2001). Current study is consistent with the hypothesis.

Business Risk

The coefficient of business risk is 0.000412, and t-value is -1.34 in pooled regression model, while, in fixed effect model coefficient is 0.000346 and t-statistics is -0.15, respectively. Result depicts that business risk has no influence on the combination of debt and equity. The degree of business risk is the symbol of bankruptcy. Those firm which having high business risk consider as more volatile in income therefore, such firms can easily go to bankruptcy due to inability of the firm to pay interest and principal amount (Banerjee et al., 1999). The court process is very slow and limited cases of bankruptcy could be handled, this might be the possible explanation for the insignificant outcome. Literature of the Capital Structure Decision explores that Saddam (2014), find significant positive influence of business risk on debt ratio from 2007 to 2013 in Ethiopian insurance industry. However, Antoniou *et al.* (2008) report insignificant relationship of Debt Ratio and business risk. Moreover, Shah and Khan (2007), argues insignificant effect of earning volatility on Debt Ratio during the study period of 1994-2002 in non-financial Pakistani firms. The current result is not supporting the hypothesis because business risk is insignificantly related to Debt ratio.

Economic Growth

Economic growth reflects prosperity of the country therefore, variation in economic position can influence the percentage of debt selected in Capital Structure Decision. Moreover, change in economic growth is directly related with variation in firm's debt level. Firms may enhance the utilization of Leverage in good economic condition of the country. The current study gives positive and insignificant effect of GDP on Debt Ratio. Thus, similar findings are also found by Saddam (2014). The current result is inconsistent with hypothesis.

Tax Rate

In Capital Structure Decision firm use less percentage of Debt, when tax rate is high. Moreover, such institution can get high tax benefit in the form of tax shield (Brigham & Ehrhardt, 2005). The greater portion of debt financing policy provides benefit to firms because the financial manager is interested to decline cost and enhance value of the firm. De Jong and Dijik (2007), and Fan, Titman and twite (2012), find positive and significant association of tax rate with Capital Structure of non-financial firm. In contract, current result is insignificant relationship of tax rate and leverage. It means that tax rate have no impact on the financing decision of firms in Pakistan. The present result is not supported the hypothesized relationship.

Interest Rate

Interest rate is determined with lending rate of the commercial banks, thus the fixed rate is attributed as cost of debt(kd) that have to pay by the borrowers on the use of money. According to the pecking order and Market timing theory of Capital Structure, there is inverse relationship of debt and interest rate which is consisted with the findings of Dincergok & Yalciner (2011). On the other hand, trade off theory report positive relationship of interest rate and Capital Structure. Low interest rate encourage borrower to withdraw greater however, high interest rate compel financial mangers to withdraw

less amount because of high cost of capital. The current result is consistent with the hypothesis result.

CONCLUSIONS

The current study aims to evaluate the endogenous and exogenous reliable factors that influence Capital Structure Decision in non financial firms in Pakistan. Moreover, the study has used panel data of sampled 200 firms selected by Slovin formula from the study period of 2009-2015. The financial data has been extracted from the website of the State Bank of Pakistan. On the other hand, economic data has been obtained from the web site of World Bank. Findings of the study reveal that profitability is significant but negatively related to financing behavior across both models (i.e., fixed effect and pooled OLS model). Size of the firm and tangibility are significant and positively associated to Capital Structure Decision. Interest rate is negative and significant in pooled regression model but insignificant in constant coefficient model. In addition, business risk, economic growth and tax rate are insignificant factors of non financial firm in Pakistan. The findings of the study suggest that managers of non-financial firms consider micro and macroeconomic factors to make optimal decision like profitability, tangibility, size, and interest rate. The findings of the study consistent with predications of pecking ordered trade off and market timing theory. Future study should be focused on optimal debt level of financing police by using generalized method of moments (GMM) estimation technique.

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