

## Financing Pattern in Developing Nations Empirical Evidence from Pakistan

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### Abstract

Financing pattern of firms from developing nation always remains a mystifying area of finance. Present study aims to investigate the determinants of capital structure. Moreover, it is also tried to answer that how these potential determinants can affect financing pattern of developing nation firms. To achieve research objectives data for 323 Pakistani manufacturing firms have taken for the period of 1998-2009. Exploration is performed by using panel econometrics technique. Different theories regarding capital structure i.e. trade-off, pecking order, agency and signaling theories are reviewed. Most of the researchers focused on debt ratio as a measure of leverage. They circumvent the verity of profound dependence of Pakistani firms on short term debt. Present study surmounted this problem by taking three different measures of dependent variable Leverage. i.e. debt ratio, short term debt ratio and long term debt ratio. Explanatory variables are Profitability, Tangibility, Liquidity, Size and Growth Opportunities. Results of present study confirms that Pakistani manufacturing firms are following the financing pattern given by pecking order theory and trade-off theory and their financing models are adopted from western nations. Moreover, it also provides empirical evidence that heavy use of short term debt in capital structure by developing nations is the main difference of financing pattern of developing and developed nation firms.

**Keywords:** Corporate Finance, Capital Structure, KSE Pakistan

### 1. INTRODUCTION

Financing Pattern contributes a lot in determining the overall market value of firm. Generally, firms are financed either by equity or by debt but mostly firm's use a mixture of both these sources of finance in order to increase the value of firm and to increase the shareholders' wealth. By combining these two sources of finance the financial managers make the capital structure of firm. Decisions related to capital structure are imperative for any business organization but in corporate sector these financial decisions are of primary importance. A wrong decision about the financing pattern of firms may welcome the situation of financial distress which may result into bankruptcy. Moreover, financial managers always try to minimize the cost of capital, to maximize the profit and shareholders' wealth so that their targets can't be achieved without making the optimal composition of capital structure. So the correct decisions in respect of capital structure composition are mandatory for smooth and long run working of a firm.

Concept of capital structure was originated after Modigliani and Miller theorem about the irrelevancy of financing decision on the market value of firm. According to them the market value of firm is totally dependent upon its level of operation and risk involved provided that in perfect market conditions. Relationship between capital structure and value of firm has been investigated a lot in the last few decades. Over the years different theories regarding the capital structure composition were given but unfortunately no consensus developed for the optimal composition of capital structure. This is because of the fact that each theory of capital structure emphasizes on different aspects. For example static trade-off theory focuses on advantages of tax, pecking order theory is based on information asymmetry while free cash flow theory emphasizes on agency costs. So, still there is a lack of particular methodology for the optimal composition of capital structure. Capital structure composition may also vary from time to time, country to country and even for nature of the business.

A lot of research has been conducted on the capital structure especially in industrialized economies. Rajan and Zingales (1995) explained the impact of institutional factors on capital structure in G-7 countries. Most of the researchers conducted their research on western and American non-financial firms. Lind (1998) used Dutch data, Mazur (2007) used polish data and Viviani (2008) used French data. Booth *et al.* (2001) and De Jong (2008) used the data from the emerging market and included Pakistan in their analysis. However, with reference to

Pakistan only a few empirical studies have been conducted on capital structure. Shah and Hijazi (2005), Nadeem and Wang (2011) conducted their research on the manufacturing firms of Pakistan. Thus, lack of consensus among researchers about the use of financing choice for manufacturing firms of Pakistan, actual determining factors of capital structure and a little empirical evidence about the capital structure for Pakistani firms necessitated the need for this research. Most of the researchers in Pakistan focused on total debt while this empirical study is first study of its nature in Pakistan because in present study we have taken three different measures of leverage i.e. debt ratio, short term debt ratio and long term debt. We hope that the present study will fill the existing gaps and will also provide some detailed understanding of the capital structure choice of Pakistani manufacturing firms.

Reminder of this study includes in Section 2 prominent theories and empirical findings. Section 3 includes determinants of capital structure and empirical evidence about these determinants. Section 4 is devoted to data and methodology employed in this research. Section 5 describes empirical results and discussion while the section 6 includes the conclusions of present study.

## 2. REVIEW OF CAPITAL STRUCTURE THEORIES

Modigliani and Miller (1958) were the pioneers who discussed the issue of capital structure for the first time. They formulated the theorem which was later known as Modigliani and Miller (MM) Theorem. In this theorem they proved that the financing choice for a firm had no impact on the overall market value of firm therefore, management should stop thinking about the best composition of these two sources because any combination of debt and equity is as good as another but in perfect market condition. Moreover, Modigliani and Miller (1963) argue that firm value is an increasing function of debt. Thus, a firm should use much enough debt because interest payments are tax deductible source. So, the value of leveraged firms is more than the unleveraged firms and it will be equal to present value of tax savings that arise from the use of debt.

Later, several different theories tried to explain the capital structure of firms which include static trade-off theory, pecking order theory and free cash flow theory. Trade-off theory argues that there should be a target debt ratio selected by the firms and then behave accordingly. According to trade-off theory the firm should use debt at that level at which the tax savings from an extra dollar in debt are exactly equal to the cost that come from the increased chances of financial distress. Pecking order theory was proposed by Myers and Majluf (1984), Myers (1984). It is based on the notion of asymmetric information. Pecking order hypothesis gives us a hierarchy of financial decisions. It states that firm should use the retain earnings first and prefer debt over equity in case of external finance is needed. This pattern of financing will reduce the information disparity about the firm. Another view regarding capital structure was proposed by Ross (1977). He proposed that debt is a way which highlights the trust of investors on the company which is known as signaling theory. If a company issues debt, it's giving the signals to the outsider investors in market that management is expecting positive results in future. So, higher level of debt shows the strong belief of management on positive cash inflows. Jensen (1986) argued that debt can be used as a tool to force managers to payout the excessive instead of reinvesting it. Grossman and Hart (1982) proposed that use of debt in highly profitable firms can force managers to work harder, consume fewer perquisites and take better decision for investment. Above findings may suggest that the excessive debt may be dangerous but it can be used to take the managers on right path.

Several studies have analyzed the validity of these theories, but unfortunately no consensus developed among researchers regarding which theory best explains the composition of capital structure. This may be because of the fact that these theories differ in their emphasis. By looking at the above theories, Myers (2001) argued that there is no universal theory of debt-equity choice and no reason to expect one.

## 3. CAPITAL STRUCTURE DETERMINANTS

This part of the study discusses the determining factors of capital structure. These attributes are donated as profitability, tangibility, size, liquidity and growth opportunities. Detail regarding these determinants in existing literature is given below.

### 3.1. Profitability

Static trade-off theory suggests positive relationship between leverage and profitability. It indicates that more profitable firms use high debt because debt is a tax deductible source and debt can provide incentive to firms in the form of tax savings. On the other hand pecking order theory predicts negative relationship between these two. It postulates that highly profitable firms use internally generated funds and prefer debt over equity when external finance is required in order to reduce information asymmetry. Several empirical results reported negative results of profitability with leverage. Titman and Wessels (1988), Rajan and Zingales (1995), Booth *et al.* (2001), Tong and Green (2005), Huang and Song (2008), Viviani (2008), Jong *et al.* (2008), Nadeem and Wang (2011) and Sajid and Husnain *et.al* (2011) reported negative relationship of profitability with financial leverage.

### 3.2. Tangibility

The results regarding this variable are contrary in existing literature. Theoretically it looks like a firm with more fixed assets can issue more debt by giving them as collateral. Instead of positive relationship of tangibility with

leverage pecking order theory is reported a negative relationship. Pecking order theory is of the view, as argued by Harris and Raviv (1991), that the firms with less fixed assets always prefer debt because the issuance of equity will only possible by under pricing while on other hand larger firms have less chance of information asymmetry so they can issue equity at fair price. Booth *et al.* (2001) reported negative relationship between tangibility and leverage in developing country including Pakistan. Ferri and Jones (1979), Bauer (2004) and Mazur (2007) also reported significant negative results.

### **3.3. Size**

Size of the firm also plays a vital role in deciding the financing decisions. According to Rajan and Zingales (1995) larger firms are more diversified and have less chances of bankruptcy so these firms can use more debt. Trade-off theory argued that larger firms borrow more because larger firms are more diversified and they have lower bankruptcy cost. So, all these findings show positive relationship of size with leverage. Pecking order theory shows a negative relationship between firm size and debt ratio. According to pecking order theory larger firms have less chance of information asymmetry so larger firms can issue equity instead of debt therefore a negative relationship exists between size and leverage. Chen (2004) shows negative relationship between size and long term debt. But in existing literature some studies show positive relationship. i.e. Bauer (2004), Deesomsak *et al.* (2004) and Jong *et al.* (2008).

### **3.4. Liquidity**

Trade-off theory suggests that firms with higher liquid assets should borrow more due to the ability of meeting their contractual obligations on time. Moreover these firms can get the tax advantages by using more debt in their capital structure. Contrary to trade-off theory the pecking order theory predicts negative relationship of liquidity with debt because according to pecking order theory high liquidity means the firms have more internally available funds which will reduce the issuance of debt. Hence, pecking order theory predicts that the relationship between liquidity and leverage is negative. Deesomsak *et al.* (2004), Mazur (2007), Viviani (2008) and Sajid and Husnain *et.al* (2012) results were consistent with pecking order theory.

### **3.5. Growth Opportunities**

Static trade-off theory predicts negative relationship of growth opportunities with debt ratio. It states that future growth opportunities are intangible form of assets which tend to borrow less than firms holding tangible assets. This negative relationship is because the growth opportunities are intangible assets and can't be collateralized for taking debt. Therefore by increasing growth opportunities the firm will borrow less and use equity to avail such opportunities. Agency theory is consistent with trader-off theory which predicts negative relationship between growth opportunities and debt ratio. Agency theory argued that firms having greater growth opportunities have more chances to invest sub optimally, thus expropriate wealth from debt holders to equity holders. In order to retain these agency conflicts, firms having greater growth opportunities should borrow less. Myers (1977) predicts that "ongoing growth opportunities imply a conflict between debt and equity interest. Deesomsak *et al.* (2004), Zou and Xiao (2006) and Eriotis *et al.* (2007) confirmed the predictions of static trade-off theory and agency theory.

## **4. DATA AND RESEARCH METHODOLOGY**

### **4.1 Data Collection**

This empirical study investigates the capital structure determinants for the manufacturing firms which are listed on Karachi Stock Exchange (KSE) Pakistan during the period of 1998-2009. In Present study we used the financial data of our sample firms published by the State Bank of Pakistan (SBP). Data published by the SBP provides detailed and useful information about the sample firms' financial statements. Initially we have taken 400 firms for our analysis but for selecting a balanced panel we eliminate the firms with incomplete data and firms which were declared bankrupt during that period and finally we select 323 firms over twelve years data for our sample firms is taken final analysis. Firms used in this analysis are from different manufacturing sectors. We have taken financial leverage as our dependent variable. Further we measure the leverage by three different methods. First by taking Total debt to total assets, second by taking short term debt to total assets and third by taking long term debt to total assets. By this way we have three different dependent variables i.e. Debt Ratio, Short Term Debt Ratio and Long Term Debt Ratio. The explanatory variables are profitability, tangibility, liquidity, size and growth opportunities. All these variables are measured by using book value because the data used in this study comes from financial statements.

Table 1- Measurements of Variables

Variables	Definitions
Debt Ratio ( <i>DRit</i> ) (Dependent Variable)	Total Debt / Total Assets
Short Term Debt Ratio ( <i>STDRit</i> ) (Dependent Variable)	Short Term Liabilities / Total Assets
Long Term Debt ratio ( <i>LTDRit</i> ) (Dependent Variable)	Long Term Liabilities / Total Assets
Profitability ( <i>PROFit</i> )	Earnings Before Tax / Total Assets
Tangibility ( <i>TANGit</i> )	Fixed Assets / Total Assets
Size ( <i>SIZEit</i> )	Natural Log of Sales
Liquidity ( <i>LIQit</i> )	Current Assets / Current Liabilities
Growth Opportunities ( <i>GROWit</i> )	Sales Growth / Total Assets Growth

#### 4.2 Research Methodology

Present study employed panel data technique for the data analysis because we have taken cross sectional and time series data of our sample firms. Most of the empirical studies used debt ratio as measure of leverage but there are some constraints which can create biasness in our results. By using this measure of leverage we are unable to find the impact of dependent variables on short term debt ratio and long term debt ratio separately. Although the leverage in capital structure strictly means the long term debt but with relevant to Pakistani environment most of the financing is provided by commercial banks and is for short term so, there is a need to study the effect of these determinants of capital structure on debt ratio, short term debt ratio and long term debt ratio which will show the clear picture of the relationship between explanatory variable and dependent variables. In order to measure the effects of our independent variables exactly on leverage we formulate three different estimation models. We used pooled OLS estimation model for final data analysis. The description of our models is given below

$$DR_{it} = \beta_0 + \beta_1 PROFit + \beta_2 TANGit + \beta_3 SIZEit + \beta_4 LIQit + \beta_5 GROWit + \varepsilon_{it}$$

$$STDR_{it} = \beta_0 + \beta_1 PROFit + \beta_2 TANGit + \beta_3 SIZEit + \beta_4 LIQit + \beta_5 GROWit + \varepsilon_{it}$$

$$LTDR_{it} = \beta_0 + \beta_1 PROFit + \beta_2 TANGit + \beta_3 SIZEit + \beta_4 LIQit + \beta_5 GROWit + \varepsilon_{it}$$

Where:

*DRit* = Debt Ratio of Firm *i* at time *t*.

*STDRit* = Short Term Debt Ratio of Firm *i* at time *t*.

*LTDRit* = Long Term Debt Ratio of Firm *i* at time *t*.

*PROFit* = Profitability of Firm *i* at time *t*.

*TANGit* = Tangibility of Firm *i* at time *t*.

*SIZEit* = Corporate Size of Firm *i* at time *t*.

*LIQit* = Liquidity of Firm *i* at time *t*.

*GROWit* = Growth Opportunities of Firm *i* at time *t*.

$\beta_0$  = the intercept of the equation.

$\varepsilon$  = Stochastic Error term of Firm *i* at time *t*.

## 5. EMPIRICAL RESULTS AND DISCUSSIONS

### 5.1 Empirical Results

This chapter of the study presents the empirical results of the sample data. First we calculated descriptive statistics of data, Pearson correlation coefficient matrix employed to check the problem of multicollinearity in dependent variables then we measured the effects of independent variables on debt ratio, short term debt ratio and long term debt ratio. Descriptive statistics of our sample firms is given in Table 2. We have taken 323 manufacturing firms and 12 years data (1998-2009) of our sample firms was employed in this analysis. In descriptive statistics we calculate mean, standard deviation, minimum and maximum values of our variables. The mean value of debt ratio indicates that almost 61% of the assets of firms are financed by total debt but if we extend our analysis in more detail we find that short term debt is the major portion of the total debt which is almost 47% while Pakistani firms used only 14% of long term debt to finance their assets. On average short term debt represents 77% of the total debt employed by the Pakistani manufacturing firms. This dependence of Pakistani firms on short term financing confirms the findings of Demircuc-Kunt and Maksimovic (1999) that the main difference between developed and developing countries is that the developing countries have substantially more short term debt in its capital structure.

Table 2- Summary Statistics of Data

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum
DR <sub>it</sub>	3876	0.6106	0.2107	0.12	1.26 <sup>1</sup>
STDR <sub>it</sub>	3876	0.4691	0.1835	0.10	0.99
LTDR <sub>it</sub>	3876	0.1443	0.1729	0.00	1.77
PROF <sub>it</sub>	3876	0.0529	0.1404	-1.95	1.74
TANG <sub>it</sub>	3876	0.4906	0.2238	0.00	0.98
SIZE <sub>it</sub>	3876	7.1349	1.6375	-0.51	13.33
LIQ <sub>it</sub>	3876	1.4418	2.0237	0.04	38.43
GROW <sub>it</sub>	3876	0.8227	11.9346	-99.76	103.47

Before estimating the coefficients of the models, the sample tested for multicollinearity. Pearson's correlation coefficient test applied on the sample data. The results show that there is fairly small correlation exist between the variables, thus these small values can't create the problems of multicollinearity among our predictor variables. Results of correlation are given in Table 3.

Table 3 - Pearson Correlation Coefficient Matrix

Variables	DR <sub>it</sub>	STDR <sub>it</sub>	LTDR <sub>it</sub>	PROF <sub>it</sub>	TANG <sub>it</sub>	SIZE <sub>it</sub>	LIQ <sub>it</sub>	GROW <sub>it</sub>
DR <sub>it</sub> (DV)	1.000							
STDR <sub>it</sub> (DV)	0.711 <sup>2</sup>	1.000						
LTDR <sub>it</sub> (DV)	0.486	-0.145	1.000					
PROF <sub>it</sub>	-0.41	-0.22	-0.307	1.000				
TANG <sub>it</sub>	0.17	-0.22	0.479	-0.289	1.000			
SIZE <sub>it</sub>	0.032	0.079	-0.045	0.264	-0.109	1.000		
LIQ <sub>it</sub>	-0.58	-0.51	-0.178	0.151	-0.347	-0.189	1.000	
GROW <sub>it</sub>	-0.001	0.007	-0.030	-0.014	-0.023	-0.073	0.046	1.000

We used pooled OLS technique to examine the effect of predictor variables on dependent variables. In first model we used debt ratio than short term debt ratio and finally long term debt ratio as our dependent variables. Estimated results of debt ratio, short term debt ratio and long term debt ratio with explanatory variables are given in Table 4 which indicates that profitability, tangibility and liquidity are negatively related and strongly significant. Size of the firms related positively and significant too but the variable growth opportunity is highly insignificant with debt ratio.

Like the results of our first estimation model here profitability, tangibility and liquidity are negatively related and are strongly significant in one percent significance level. Size of firms is positively related but enables to get enough statistical support in second model. Results of Growth opportunity again remain insignificant in this model with short term debt. Results of third model are quite different as compare to relationship of predictor variable with debt ratio and short term debt ratio. Here with long term debt ratio only profitability is negatively related while tangibility and size of firms are positively related and all these three variables are significant in confidence level of one percent. Liquidity is related positively but fails to get enough statistical support while growth opportunity again remains insignificant in our third regression model.

Table 4 - The Effect of Explanatory Variables on Debt Ratio (DR<sub>it</sub>), Short Term Debt Ratio (STDR<sub>it</sub>), Long Term Debt Ratio (LTDR<sub>it</sub>)

Models	Debt Ratio (DR <sub>it</sub> )			Short Term Debt Ratio (STDR <sub>it</sub> )			Long Term Debt Ratio (LTDR <sub>it</sub> )		
		t-Statistics	Sig.		t-Statistics	Sig.		t-Statistics	Sig.
Constant	0.805	42.810	0.000	0.986	72.516	0.000	-0.056	-3.484	0.001
PROF <sub>it</sub>	-0.324	-21.263	0.000	-0.170	-13.866	0.000	-0.204	-12.195	0.000
TANG <sub>it</sub>	-0.201	-12.520	0.000	-0.716	-53.863	0.000	0.427	24.870	0.000
SIZE <sub>it</sub>	0.082	5.678	0.000	0.003	0.231	0.817	0.064	3.882	0.000
LIQ <sub>it</sub>	-0.572	-35.630	0.000	-0.845	-63.118	0.000	0.014	0.813	0.416
GROW <sub>it</sub>	0.004	0.291	0.771	0.009	0.857	0.391	-0.018	-1.195	0.232
F-Statistics	0.000			0.000			0.000		
Adjusted R <sup>2</sup>	43.4%			63.6%			26.2%		

<sup>1</sup> Theoretically, total debt/total assets ratio should be less than one or one at maximum. However, we find many firms especially with negative equity that explains why this ratio is above one.

<sup>2</sup> This is the value of correlation between two dependent variable which can't disturb results of our study.

## 5.2 Discussion

According to empirical findings of present study profitability and tangibility are negatively related with debt ratio, short term debt ratio and long term debt ratio except tangibility which is inversely related with long term debt ratio. Results of profitability and tangibility in all three models are consistent with pecking order theory except the result of tangibility with long term debt ratio which is consistent with static trade-off theory. Result of profitability shows that highly profitable KSE listed firms prefer internally generated funds to finance their operations in order to avoid the asymmetric information about the firm. Theoretically it looks like there should be positive relationship of tangibility with leverage but in present study tangibility also shows negative relationship with debt ratio and short term debt ratio which confirms the pattern of financing given by pecking order theory and agency theory. This negative relationship consistent with some empirical studies conducted on developing countries like Booth *et al.* (2001) and Mazur (2004). Karadeniz *et al.* (2009) also predict inverse relationship between tangibility and short term debt ratio.

In our sample firm's short term debt is almost 77% of the total debt. Inverse relationship of tangibility with debt ratio is due to the dependency of Pakistani firms on short term debt because Pakistan has less developed capital market, Moreover most of the debt financing is provided by the commercial banks and is for short term only. This negative relationship may also be because in Pakistan firms with less collateralizable assets may choose higher debt levels to limit their managers' consumption of perquisites. Tangibility shows direct relation with long term debt. This positive relation of tangibility with long term debt set well with trade-off theory and different studies conducted on developed nation's i.e. Titman and Wessels (1988), Rajan and Zingales (1995) and Wald (1999). This positive relationship confirms that in Pakistan firms with more fixed assets can use more long term debt in its capital structure due to the less chances of bankruptcy to avoid extra costs associated with issuance of new securities.

Explanatory variable size shows direct relationship with all three measures of leverage which confirms the implication of trade-off theory which suggests that larger firms use more debt in their capital structure due to the ability of diversifying the risk attached with higher debt and to gain tax advantages. This variable shows insignificant result with short term debt ratio. Result of liquidity shows inverse relationship with debt ratio and short term debt ratio, these results set well with pecking order hypothesis. It means highly liquid firms in Pakistan use internally generated funds to finance their operations. This negative relationship may be due to high cost of borrowing in Pakistan. But liquidity shows positive insignificant relationship with long term debt. Results of growth opportunities remain highly insignificant in all estimation models of this study.

In summary the major difference between developed countries financing pattern and Pakistani firms' financial decisions is the heavy reliance of Pakistani firms on short term debt. This study confirms that most of the financing pattern adopted by Pakistani manufacturing firms is consistent with the financial theories about capital structure and with the western corporate sectors.

## 6. CONCLUSIONS

This empirical study tried to explore the capital structure determinants of 323 manufacturing firms listed on Karachi Stock Exchange (KSE) in Pakistan during the period of 1998-2009 and aims to examine the effect of these determinants on financing pattern of these manufacturing firms during that period. The detailed analysis is performed by using panel econometric technique named Pooled OLS. Financial leverage is taken as dependent variable in this study. This study tried to conduct the detailed analysis regarding the effects of explanatory variables on leverage therefore we employed three measures of leverage separately in this study i.e. debt ratio, short term debt ratio and long term debt ratio. We tried to study the effects of profitability, tangibility, liquidity, size and growth opportunities on total debt, short term debt ratio and long term debt ratio separately.

According to results of this empirical study profitability and tangibility are significant and inversely related with all measures of leverage except tangibility which is positively related with long term debt ratio. These results are consistent with pecking order hypothesis and agency theory. Inverse relation of tangibility is because of heavy reliance of Pakistani firms on short term debt which is almost 77% of total debt of the sample firms in this study. Size of the firms is positively correlated with the all three measures of leverage and significant except with short term debt. The results of size are set well with the trade-off theory and provide evidence that size of the firm is an inverse proxy for the probability of risk. Liquidity is negatively related and significant with debt ratio and short term debt ratio. This negative relationship may be due to high cost of borrowing in Pakistan. But liquidity shows positive insignificant relationship with long term debt ratio. Results of growth opportunities remain highly insignificant in all estimation models of this study.

Finally in this study we tried to explain the effects of explanatory variables on debt ratio, short term debt ratio and long term debt ratio. Moreover, findings of this study confirm that the financing pattern of Pakistani manufacturing firms is derived from the western, countries the only difference is of heavy reliance of Pakistani firms on short term debt due to less developed capital market and high interest rates on long term debt.

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