

Capital Structure Decisions a Case of Pakistani Listed Textile Firms

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Abstract: The present study aims to explore the determinants of capital structure in the textile sector of Pakistan and to examine the effect of these determinants on the composition of capital structure. In this study we analyze the different theories related to capital structure i.e. Static Trade-off theory, pecking order theory, signaling theory and agency theory. The analysis is performed by panel data technique using sample of 100 firms listed on Karachi Stock Exchange for the period of 2002-2009. Stepwise regression analysis applied on available data, the results suggest that profitability, tangibility, liquidity and international diversification are negatively related with leverage and are strongly significant. Corporate size related positively with the leverage but fails to get enough statistical support. The results confirm the financing pattern of pecking order theory and static trade-off approach in textile sector of Pakistan during 2002-2009. The present study is expected to better contribute in the local literature of capital structure in emerging market of Pakistan.

Key words: Capital Structure • Karachi Stock Exchange • Textile Sector • Pakistan

INTRODUCTION

Capital structure of a firm consists of optimal combination of debt and equity. The debate on capital structure initiated when Modigliani and Miller [1] give their theorem. After MM theorem many researchers started to find the optimal composition of the capital structure in various corporate sectors. Different researchers tried to explain the determinants of capital structure. In this regard, they formulate many theories about the capital structure like static trade-off theory, pecking order theory, signaling theory and agency theory; however, there is no any consensus developed among these researchers for the optimal composition of capital structure because composition of capital structure may vary from market to market, time to time and firm to firm. The determinant of capital structure may also change due to developing condition of the economy.

The economy of Pakistan is in developing stage so the determinants of capital structure are different in Pakistan as compared to developed economies. A few studies on determinants of capital structure have been undertaken in Pakistan i.e. Shah [20], Tariq [26], Shah [22], Rafiq *et al.*, [16]. A Pakistani student also wrote a thesis on the determinants of capital structure [19] however

there is limited research which identifies the determinants of capital structure of textile sector of Pakistan. Textile sector is a major contributor to Pakistani exports and its development leads towards the economic development, so it is very important to find the determinants which affect the debt and equity choice of a textile firms and pattern of financing in textile firms.

The reminder of this paper is organized as follows. Section 1 provides the brief introduction of the study. Section 2 explains the Literature Review. Section 3 explains methodology, data, variables and Model. The analysis and discussion are presented in section 4 followed by conclusion.

Literature Review: The discussion on capital structure was initiated by the ground breaking research article of Miller and Modigliani in 1958. Miller and Modigliani proposed that in an efficient Market without taxes, bankruptcy cost and asymmetric information the value of firm does not effect how firms finance its operations either through debt or equity. MM gives the concept that the capital structure is irrelevant to the firm value. But due to some unrealistic assumptions in MM theorem, it gave birth to the research on the capital structure. After that, different researchers tried to explain the best composition

of the capital structure to increase the firm value. Static trade-off theory explains that the firm should follow the target debt and equity ratio and then behave accordingly. The target is set by looking at the cost and benefit associated with debt options. Benefits including the tax shields while cost includes cost of financial distress and agency cost of debt.

Myers [15] proposed pecking order theory. This theory explains that the firm should follow the hierarchy of financial decision during establishing the capital structure. Initially firm should prefer internal financing i.e. retained earnings. When a firm needs external financing then first, they apply for bank loan. Then they go for public debt and as a last resort, firm should issue equity to finance its operations. Pecking order approach offers the view which is contrary to the static trade-off model. Furthermore Myers [14] suggested that the firm acting to maximize the interest of share holders will be reluctant to issue equity because by issuing the equity the wealth can transfer to debt holders. Stultz [25] state that firms are reluctant to issue equity because of cost associated with being scrutinized. However, Tong and Green [27] provides empirical evidence for the support of pecking order theory.

Along with pecking order theory and static trade-off theory, another view regarding capital structure was developed by Ross [18] who proposes that the debt is considered a way which highlights the trust of investors on the company. This view is named as Signaling Theory. If a company issues debt it's giving the signals to the market that the firm is expecting positive results in the future. Thus, higher level of debt shows the strong confidence of managers on positive future cash inflows. Stultz [25] suggests that the agency problem can be reduced by increasing the debt in capital structure.

In Pakistan, only a few studies have been conducted regarding capital structure determinants. Shah [20] tried to find the determinants of capital structure on listed non-financial firms in Pakistan whether the determinants of capital structure in non-financial sector are different from those of financial sector. Tariq [26] considered the cement industry of Pakistan and found the effect of only four variables on capital structure. Rafiq et. al [16] conducted a research on the determinants of capital structure in the chemical sector of Pakistan. They include Non Debt Tax Shield (NDTS) as independent variable and also explain the effect of some more variables on composition of capital structure.

Moreover; Saeed [19] wrote a thesis on the capital structure determinants in the energy sector of Pakistan.

He used Collateralizable value of assets (CVA) as an independent variable in his thesis. Nadeem Sheikh [23] studied the financing behavior of textile firms of Pakistan. He used six years data in its study. After reviewing the available literature on the capital structure determinants, we found some gaps. First, there is no any research conducted on the textile sector of Pakistan using the latest data. Second, the determinants can be changed with situation to situation and time to time, so in this research the researchers used latest data available about the textile sector. Third, we tried to find the effect of, international diversification on leverage which was not been explored in any previous research conducted in Pakistan.

Data and Methodology: The study is based on the data which is taken from the audited financial statements which are given on the web site of the State Bank of Pakistan, 8 years data (2002-2009) is used in this research. This research paper focused on the textile sector of Pakistan. Initially 140 firms have been taken which were listed on Karachi Stock Exchange. First we excluded the firms with incomplete data for the given period then we omit the defaulted firms from the sample. After screening 100 firms have been taken for the final analysis. We have taken the data of 100 firms for 8 years in this way we have 800 firm-years for final analysis. This study uses the stepwise regression in a panel data analysis. Five independent variables i.e. Profitability, Tangibility, Liquidity, International Diversification and Corporate Size employed to examine the effect on the financial leverage of the textile sector of Pakistan.

Measurements: This research used Profitability (PF), Tangibility (TG), Liquidity (LQ), International Diversification (ID) and Corporate Size (CS) as independent variables while Financial Leverage (LG) taken as a dependent variable.

Dependent Variable (Leverage): Financial leverage or simply leverage means the percentage of debt in capital structure which is used to finance the overall operation of a firm. Different researches have taken different measures of Leverage. Capital structure theories consider long term debt as a measure of leverage but in developing countries like Pakistan most of the advances are given for the short term. Therefore, for Pakistan only long term debt is not the proper measure of leverage. So after a brief study of existing measures of leverage, it is cleared that the ratio of total debt to total assets is the suitable measure for Pakistan because most of the loans are given by the commercial banks and are for short term.

Independent Variables

Liquidity: The pecking order theory suggests liquidity effect negatively on the leverage due to more internally generated funds available with the firm while trade-off theory predict positive relationship between liquidity and leverage due to the ability of meeting contractual obligation on time. Deesomsak [4], Mazur [12], Viviani [28], Sheikh [24], support pecking order hypothesis. A total current asset to total current liabilities is taken as the proxy for liquidity.

Our first hypothesis “There is an inverse relationship between Liquidity and financial leverage”.

Tangibility: It seems to be the positive relationships of tangibility with leverage because of more assets are available for giving securities against loans. Instead of positive relationship of tangibility, the pecking order theory suggests the negative relationship due to less asymmetric information about the firm due to larger size. Here the measure of tangibility is ratio of fixed assets to total assets.

Our second hypothesis “There is a direct relationship between tangibility and financial leverage”.

International Diversification: International diversification is also an important determinant for deciding the capital structure in corporate sector. Kwok [10] suggest negative relationship of international diversification with leverage. Lowe [11] examines the effect of international and product diversification on the capital structure. They also found the negative relation of international diversification with leverage but the results are significant only for American firms. Contrary to Kwok [10] there are some studies which shown positive relation of international diversification with debt level, because highly diversified firms have low risk which encourages the firm to issue debt Barton [1], Barton [2], Lowe [11], Errunza [5].

Different researchers used different measures of leverage most prominently there are four measures of international diversification (a) foreign sale percentage (b) number of foreign subsidiaries (c) absolute foreign sale dollars (d) entropy measure of firm’s geographical diversification. In this study the ratio of foreign sale to total sale is taken as the measure of international diversification.

Our third hypothesis “There is a negative relationship between international diversification and financial leverage”.

Profitability: Pecking order theory proposed that there is negative relation between the profitability and leverage while static trade-off theory suggests that the relation between profitability and leverage is positive. Different researchers use different measures for calculating the profitability of a firm. However, the most suitable measure for the profitability is the ratio of earning before tax divided by total assets. This measure of profitability has been taken because the stock exchange does not allow calculating the EBIT which is a measure of profitability Shah [21].

Our fourth hypothesis “There is a negative relationship between profitability and leverage”.

Corporate Size: Static trade-off theory states that the relation between leverage and corporate size is positive because of less chance of bankruptcy. Moreover, Pecking order theory proposed that the relationship between leverage and corporate size is negative because of less asymmetric information about the larger firms. Shah [20] also proposed the result which is consistent with the pecking order theory. Natural log of sales is used as the measure of the corporate size.

Our fifth hypothesis “There is a negative relationship between size and leverage of the firms”.

Regression Model: This study use panel data technique. Stepwise regression analysis is applied on the available data. We pooled the cross sectional and time series data of company along a single column. Generalized regression model of our study is as following

$$LEV_{it} = \alpha + \sum_{I=1}^n \beta_i X_{it}$$

LEV_{it} is the debt ratio of the firm I at time t . α is the intercept of our regression model. β_i is the slope coefficient of X_{it} which is our independent variable. In our study X_{it} denote five different independent variables.

Table 1: Potential Determinants and Their Measures (Proxies)

Variables Taken	Measure (Proxy)
Leverage	Total Debt / Total Assets
Profitability	Earning Before Tax / Total Assets
Tangibility	Fixed assets / Total Assets
Corporate Size	Natural Log of Sales
Liquidity	Current Assets / Current Liabilities
International Diversification	Exports / Gross Sale

Equation for our regression model is:

$$\text{Leverage Measure}_{it} = \alpha + \beta_1 (LQ_{it}) + \beta_2 (TG_{it}) + \beta_3 (ID_{it}) + \beta_4 (PF_{it}) + \beta_5 (CS_{it}) + \epsilon$$

Where:

- LEV_{it} = debt ratio of firm i for the period of 2002-2009.
- Lq_{it} = liquidity for firm i for the period of 2002-2009.
- TG_{it} = tangibility for firm i for the period of 2002-2009.
- ID_{it} = International diversification for firm i for the period of 2002-2009.
- PF_{it} = profitability for firm i for the period of 2002-2009.
- CS_{it} = corporate size for firm i for the period of 2002-2009.
- α = the intercept of the equation.
- ϵ = stochastic error.

RESULTS AND DISCUSSION

Table 2 contains the detail of descriptive statistics of the data. We calculate the mean, standard deviation, minimum and maximum values of our sample. We can see from the table the average debt ratio of textile firms is 69%. It means the textile firms of Pakistan are highly leveraged. Theoretically, the ratio of total debt to total assets should be less than one or may not exceed the maximum value which is one. In our study, the maximum value of debt is 2.12 which is because of many firms in our sample have negative equity that's why the maximum value of debt is too high. From descriptive statistics, we confirmed the normality of our data.

To test either the multicollinearity is not present in our predictors we check the Pearson's correlation coefficient. Multicollinearity means the dependence of predictor variables on each other a value higher than 0.70 is the sign of presence of multicollinearity in the predictors. We can see from table 3, the maximum value of correlation between two variables is -0.540 which is a sign of absence of multicollinearity problem in our predictors.

Table 2: Descriptive Statistics of 100 Firms (8 years Summary)

Variables	N	Minimum	Maximum	Mean	Standard Deviation
LEVERAGE	800	0.11	2.12 ¹	0.688	0.200
Profitability	800	-1.81	1.77	0.057	0.121
Tangibility	800	0.04	0.93	0.557	0.156
Liquidity	800	0.07	8.70	0.998	0.781
Int. Diversification	800	0.00	1.00	0.350	0.317
Corporate Size	800	1.53	4.61	3.112	0.504

Table 3: Correlation Coefficients (check for multicollinearity)

Variables	Profitability	Tangibility	Liquidity	Diversification	Corporate Size
Profitability	1				
Tangibility	-0.135**	1			
Liquidity	0.048	-0.540**	1		
Diversification	0.148**	-0.201**	0.064	1	
Corporate Size	0.068	-0.336**	0.209**	0.411**	1

** Correlation is significant at 1% significance level

Table 4: Regression Models Summary

Models	R	R Square	Adjusted R ²	Std. Error
Model 1	0.497	0.247	0.246	0.17107
Model 2	0.532	0.283	0.281	0.16700
Model 3	0.545	0.297	0.295	0.16544
Model 4	0.552	0.304	0.301	0.16471

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

Table 5: ANOVA Table

Model	Sum of Squares	DF	Mean Square	F	Sig.
Regression	7.595	1	7.595	259.527	0.000
Residual	23.179	792	0.029		
Total	30.774	793			
Regression	8.714	2	4.357	156.233	0.000
Residual	22.060	791	0.028		
Total	30.774	793			
Regression	9.152	3	3.051	111.456	0.000
Residual	21.623	790	0.027		
Total	30.774	793			
Regression	9.369	4	2.342	86.333	0.000
Residual	21.406	789	0.027		
Total	30.774	793			

Table 6: Results of Regression Analysis

	Model	Coefficients	Std. Error	t-statistics	Sig.
Step 1	Constant	0.812	0.010	81.933	0.000
	Liquidity	-0.125	0.008	-16.110	0.000
Step 2	Constant	1.003	0.032	31.666	0.000
	Liquidity	-0.156	0.009	-17.322	0.000
	Tangibility	-0.288	0.046	-6.334	0.000
Step 3	Constant	1.051	0.034	31.251	0.000
	Liquidity	-0.158	0.009	-17.672	0.000
	Tangibility	-0.325	0.046	-7.057	0.000
	Int. Diversification	-0.076	0.019	-3.998	0.000
Step 4	Constant	1.065	0.034	31.470	0.000
	Liquidity	-0.159	0.009	-17.813	0.000
	Tangibility	-0.338	0.046	-7.340	0.000
	Int. Diversification	-0.069	0.019	-3.635	0.000
	Profitability	-0.139	0.049	-2.829	0.005

Table 7: Expected and Observed Relationships

Determinants	Expected Relationship	Observed Relationship
Liquidity	Negative	Negative
Tangibility	Positive	Negative
Int. Diversification	Negative	Negative
Profitability	Negative	Negative
Corporate Size ²	Negative	Positive

In our stepwise regression analysis there are four variables with significant results. Therefore, in our analysis there are 4 values of Adjusted R Square but value of model four is included in our article. The value of R² is 0.315. The value of adjusted R² is slightly lower than the R² which is 0.311 which shows that these four variables i.e. profitability, tangibility, liquidity and international diversification explain about 31 % of variation in the leverage of textile firms in Pakistan. It means in textile sector of Pakistan about 31% choice of capital structure is defined by these four variables.

Table 4 shows the results after applying the stepwise regression analysis. In our study liquidity, tangibility, profitability and international diversification are inversely related with financial leverage and significant at 1% significance level while corporate size is related positively but fails to get enough statistical support. Sign of relationship of the independent variables are consistent with the Sheikh [23].

Liquidity found to be negatively correlated with the leverage ($\beta_1 = -0.159$; Table 6). This negative relationship of liquidity is consistent with the Jong [9].

²Corporate Size In Insignificant

High liquidity confirms the availability of internally generated funds which reduce the issuance of debt. In Pakistan textile sector, liquidity is negatively related and strongly significant. So, when the current assets increase, the debt will decrease. Result is strongly significant so we will accept of first hypothesis.

Tangibility shows negative results ($\beta_2 = -0.338$; Table 6). In textile sector of Pakistan, the results are consistent with the pecking order theory and Harris [7] which suggest that relationship of tangibility is negative because larger firms have less chance of asymmetric information which resulting in the issuance of equity rather than debt. So in textile sector of Pakistan firms with more tangible assets prefer issuance of equity than debt. Result is negative and significant at 1% level of significance. Therefore, our second hypothesis is rejected because we were expecting positive relationship of tangibility with leverage.

International diversification also shows negative relation with the leverage ($\beta_3 = -0.069$; Table 6). These results are consistent with Kwok [10] and Lowe [11]. Both these studies show negative relation of international diversification with leverage. Textile firms are the major source of foreign earnings for Pakistan so with increase in foreign sale, textile firms issue equity rather debt. So, we will accept our third hypothesis.

In the textile sector of Pakistan, profitability is negatively related ($\beta_4 = -0.139$; Table 6) which supporting the pecking order theory. It means the textile firms in Pakistan prefer internal financing than debt with the increase in profitability. The result of profitability is significant negative so we accept our first hypothesis. Result is significant at 1% significance level. Same results of profitability were observed by Nadeem and Wang [23]. As the sign of relationship is same as we expect therefore, we will accept our fourth hypothesis.

Results of corporate size confirm pecking order approach, Frank and Goyal [6], Rajang [17]. Larger firms have less information asymmetry so textile firms of Pakistan are preferring equity instead of debt with increase in size but the results are not significant. The sign of our result is negative and result is not significant therefore we reject our fifth hypothesis.

Table 7 explains the expected and observed effects of potential determinants of capital structure taken in this study. It also mentions the determinants which are not significant in our analysis. After applying test on the available data, the four out of five regressors i.e. profitability, tangibility, liquidity and international diversification show significant results while corporate size is not statistically significant.

CONCLUSION

In this study, we tried to explore the determinants of capital structure in the textile sector of Pakistan and their financing pattern. For this purpose, we analyze the 100 textile firms listed on the Karachi Stock Exchange (KSE). Stepwise regression is used by panel data analysis. Five different determinants of leverage are taken i.e. profitability, tangibility, liquidity, international diversification and corporate size while financial leverage is taken as dependent variable. Four out of five are showing significant results. R^2 shows that these four variables are responsible for the 31% variation in the leverage of the textile sector of Pakistan. In textile sector of Pakistan, profitability, tangibility, liquidity and international diversification are negatively related and are strongly significant. Corporate size is negatively related which confirms the previous results like pecking order theory and Harris [7] but is insignificant. In short textile firms of Pakistan followed the financing pattern given by the pecking order theory and trade-off theory like developed economy. We didn't study the effects of ownership structure on leverage. In future ownership structure and Non-debt tax shields can also be used as determinants of leverage in textile sector of Pakistan. Some industry specific and non-financial variables can also be used in future research.

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