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FINANCING BEHAVIOR OF TEXTILE FIRMS OF PAKISTAN

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 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 means of panel data technique using sample of 102 firms listed on KSE for the period of 2002-2009. Stepwise regression analysis applied on the data available, the results suggest that profitability, tangibility, liquidity and international diversification are negatively related with leverage and are strongly significant. Market share and corporate size are negatively related while inflation related positively with leverage, but are insignificant. The results confirm the pecking order theory and static trade-off approach.

Keywords: capital structure; KSE; textile sector; Pakistan.

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ФІНАНСОВА ПОВЕДІНКА ТЕКСТИЛЬНИХ ПІДПРИЄМСТВ ПАКИСТАНУ

У статті розглянуто фактори, які визначають структуру капіталу в текстильній промисловості Пакистану, оцінено вплив даних факторів на структуру капіталу. Проаналізовано різні теорії структури капіталу: теорія статичного компромісу, теорія ієрархії, теорія сигналів та агентська теорія. Аналіз панельних даних було проведено на вибірці з 102 фірм, що котирувались на KSE протягом 2002-2009 років. Дані проаналізовано методом покрокової регресії. За результатами аналізу, прибутковість, відчутність активів, ліквідність та міжнародна диверсифікація суттєво і негативно корелюються з левериджем. Частка ринку та розмір фірми корелюються з левериджем негативно, а інфляція — позитивно, однак обидві кореляції є незначними. Результати аналізу підтверджують теорію ієрархії та теорію статистичного компромісу.

Ключові слова: структура капіталу; KSE; текстильна промисловість; Пакистан.
Табл. 5. Літ. 27.

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ФИНАНСОВОЕ ПОВЕДЕНИЕ ТЕКСТИЛЬНЫХ ПРЕДПРИЯТИЙ ПАКИСТАНА

В статье рассмотрены факторы, определяющие структуру капитала в текстильной промышленности Пакистана, дана оценка влиянию данных факторов на структуру капитала. Проанализированы разные теории структуры капитала: теория статического компромисса, теория иерархии, теория сигналов и агентская теория. Анализ панельных данных был проведен на выборке из 102 фирм с котировками на KSE в 2002-2009 годах. Данные проанализированы методом пошаговой регрессии. По результатам анализа, прибыльность, осязаемость активов, ликвидность и международная диверсификация существенно и негативно коррелируются с левериджем. Доля на рынке и размер фирмы коррелируются с левериджем негативно, а инфляция —

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позитивно, однако обе корреляции являются незначительными. Результаты анализа подтверждают теорию иерархии и теорию статистического компромисса.

Ключевые слова: *структура капитала; KSE; текстильная промышленность; Пакистан.*

1. Introduction. Capital structure of a firm consists of optimal combination of debt and equity. The debate on capital structure was initiated when Modigliani and Miller (1958) gave their theorem in 1958. After MM theorem many researchers started to find the optimal composition of capital structure in various corporate sectors. Different researchers tried to explain the determinants of capital structure. In this regard, they gave many theories about capital structure like static trade-off theory, packing order theory, signaling theory, and agency theory; however, there is no consensus among these researchers on 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 determinants of capital structure may also change due to development of an economy.

The economy of Pakistan is at the developing stage so the determinants of its capital structure are different as compared to developed economies. A few studies on determinants of capital structure have been undertaken in Pakistan, i.e. Shah (2004), Tariq (2006), Shah (2007), Rafiq et. al (2008). A Pakistani student from Sweden also wrote a thesis on the determinants of capital structure (2007), 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 to economic development, so it is very important to find the determinants which affect the debt and equity choice of a textile firm.

The remainder of this paper is organized as follows. Section 1 provides the brief introduction followed by the literature review. Section 2 explains the theoretical framework. Section 3 explains methodology, data, variables and the model. The analysis and discussion are presented in section 4 followed by the conclusion.

2. Literature review. The discussion on capital structure was initiated by the ground-breaking research by Miller and Modigliani in 1958. They proposed that at an efficient market without taxes, bankruptcy cost and asymmetric information on the value of a firm does not effect how firm finances its operations either through debt or equity. MM gave the concept that capital structure is irrelevant to a firm's value. But due to some unrealistic assumptions in MM theorem, it gave birth to the research on capital structure. After that, different researchers tried to explain the best composition of capital structure to increase firm value. Static trade-off theory explains that a firm should follow the target debt and equity ratio and then behave accordingly.

The target is set by looking at costs and benefits associated with debt options. Benefits include tax shields while cost includes cost of financial distress and agency cost of debt. Myers (1984) proposed the pecking order theory. It explains that a firm should follow the hierarchy of financial decisions white establishing its capital structure. Initially, a firm should prefer internal financing, i.e. retained earnings. When a firm needs external financing then first it goes for a bank loan. Then it goes for public debt and as the last resort, a firm should issue equity to finance its operations.

Pecking order approach offers a view which is contrary to the static trade-off model. Furthermore, Myers (1977) suggested that the firm acting to maximize the

interest of shareholders will be reluctant to issue equity because by issuing the equity the wealth can transfer to debt holders. Stultz (1990) stated that the firms are reluctant to issue equity because of cost associated with being scrutinized. However, Tong & Green (2005) provided empirical evidence to support the pecking order theory. Along with pecking order theory and static trade-off theory, another view regarding capital structure was developed by Ross (1977) who proposed that debt is considered to highlight the trust of investors to a company. This view was named "signaling theory". If a company issues debt it's giving signals to a market that it is expecting positive results in future. Thus, higher level of debt shows the strong confidence of managers in positive future cash inflows. Stultz (1990) suggested that the agency problem can be reduced by increasing the debt in capital structure.

In Pakistan, few studies have been conducted on the capital structure determinants. Shah (2004) tried to find the determinants of capital structure for the listed non-financial firms in Pakistan whether the determinants of capital structure in non-financial sector are different from those in financial sector. Tariq (2006) considered the cement industry of Pakistan and found the effect of only 4 variables on capital structure. Rafiq et. al (2008) conducted a research on the determinants of capital structure in the chemical sector of Pakistan. They included non-debt tax shield (NDTS) as independent variable to explain the effect of some variables on composition of capital structure.

Saeed (2007) 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. After reviewing the available literature on the capital structure determinants, we found some gaps. First, there is no research conducted for the textile sector of Pakistan. Second, the determinants can be changed from situation to situation and time to time, so we the used latest data available on the textile sector. Third, we tried to find the effect of inflation, international diversification and market share on leverage which was not included in any previous research conducted in Pakistan.

3. Data and methdology. The study is based on the data taken from the audited financial statements given on the website of the State Bank of Pakistan, 8 years data (2002-2009) is used in this research. This research paper is focused on the textile sector of Pakistan. Initially 150 firms have been taken all listed on Karachi Stock Exchange. First we exclude the firms with incomplete data for the given period, then we omit the defaulted firms from the sample. After screening 102 firms have been taken for the final analysis. This study uses the stepwise regression in the panel data analysis. 7 regressors (profitability, tangibility, liquidity, international diversification, corporate size, market share and inflation) were employed to examine the effect on financial leverage of the textile sector of Pakistan.

Measurements. This research used profitability (PF), tangibility (TG), liquidity (LQ), international diversification (ID), corporate size (CS), market share (MS) and inflation (IN) as independent variables while financial leverage (LG) was taken as a dependent variable.

Dependent Variable (Leverage). Financial leverage or simply leverage means the percentage of debt in capital structure 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 a proper measure of leverage. 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 commercial banks and for a short term.

Independent Variables. The pecking order theory proposes a negative relation between profitability and leverage while static trade-off theory suggests that the relation between profitability and leverage is positive. Different researchers use different measures to calculate the profitability of a firm. However, the most suitable measure for 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, 2005). There is a positive relationship of tangibility with leverage because more assets are available for 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. Static trade-off theory states that the relation between leverage and corporate size is positive because of less chance of bankruptcy. Moreover, the pecking order theory proposed that the relationship between leverage and corporate size is negative because of less asymmetric information about the larger firms.

Shah (2004) also proposed the result which is consistent with the pecking order theory. Natural log of sales is used as the measure of corporate size. The pecking order theory suggests liquidity effects negatively on a leverage due to more internally generated funds available with a firm while trade-off theory predict positive relationship between liquidity and leverage due to the ability to meet contractual obligations on time. Deesomsak (2004), Mazur (2007), Viviani (2008), Sheikh (2011) supported the pecking order hypothesis. A total current asset to total current liabilities is taken as the proxy for liquidity. International diversification is also an important determinant for deciding the capital structure in the corporate sector. Kwok (2000) suggested negative relationship of international diversification with leverage.

Lowe (1994) examined the effect of international and product diversification on capital structure. They also found the negative relation of international diversification with leverage but the results are significant only for the American firms. There are some studies which show the positive relation of international diversification with debt level because highly diversified firms have low risk which encourages a firm to issue debt (Barton, 1987; Barton, 1988; Lowe, 1994; Errunza, 1984). They used 4 measures of international diversification: (a) foreign sale percentage, (b) number of foreign subsidiaries, (c) absolute foreign sale dollars, (d) entropy measure of a firm's geographical diversification. In this study the ratio of foreign sale to total sale is taken as the measure of international diversification. Inflation is a macroeconomic determinant of capital structure which effects the composition of capital structure. Jensen (1976) shows that the impact of inflation on leverage is negative due to high interest rates. In this research, inflation for the years 2002-2009 has been used, calculated by Bureau of Statistics of Pakistan. Market share is also an important determinant of capital structure. Existing literature shows its positive relation with leverage. In this study, the ratio of gross sale divided by industry sale is the measure of market share.

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
Liquidity	Current Assets / Current Liabilities
Int. Diversification	Exports / Gross Sale
Corporate Size	Natural Log of Sales
Market Share	Gross Sale / Industry Sale
Inflation	CPI (2002-2009)

This study uses the panel data technique. Stepwise regression analysis is applied on the available data. We pooled the cross-sectional and time series data of a company along a single column.

Equation for our regression model is:

$$LG_{it} = \beta_0 + \beta_1\,(PF_{it}) + \beta_2\,(TG_{it}) + \beta_3\,(LQ_{it}) + \beta_4\,(ID_{it}) + \beta_5\,(CS_{it}) + \beta_6\,(MS_{it}) + \beta_7\,(IN_{it}) + \varepsilon.$$

In it:

LG_{it} = debt ratio of firm *i* for the period of 2002-2009.

PF_{it} = profitability for firm *i* for the period of 2002-2009.

TG_{it} = tangibility for firm *i* for the period of 2002-2009.

LQ_{it} = liquidity for firm *i* for the period of 2002-2009.

ID_{it} = international diversification for firm *i* for the period of 2002-2009.

CS_{it} = corporate size for firm *i* for the period of 2002-2009.

MS_{it} = market share for the period 2002-2009.

IN_{it} = inflation for the period 2002-2009.

ε = stochastic error term of firm *i* at time *t*.

4. Results and discussion

Table 2. **Descriptive Statistics**

Variables	Mean	SD	Minimum	Maximum
Leverage	0.691	0.201	0.11	2.12♦
Profitability	0.009	0.128	-1.87	1.74
Tangibility	0.559	0.158	0.02	0.93
Liquidity	0.993	0.777	0.07	8.70
Int. Diversification	0.349	0.317	0.00	1.00
Corporate Size	7.108	1.074	1.10	10.0
Market Share	0.008	0.009	0.00	0.07
Inflation	7.646	5.295	2.90	20.3

* Theoretically, 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.

First, we calculate the descriptive statistics of the data and calculate the mean, standard deviation, minimum and maximum values of our sample. In existing literature, 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 confirm the normality of our data. Table I shows the calculations related to the descriptive statistics.

Table 3. **Correlation Coefficients (check for multicollinearity)**

Variables	Leverage	Profitability	Tangibility	Liquidity	Int. Diversification
Leverage	1				
Profitability	-0.167	1			
Tangibility	0.152	-0.132	1		
Liquidity	-0.506	0.096	-0.547	1	
Int. Diversification	-0.122	0.124	-0.195	0.068	1

To test whether 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 II, the maximum value of correlation between two variables is -0.547 which is a sign of absence of multicollinearity problem in our predictors.

Table 4 shows the results after applying the stepwise regression analysis. The value of R2 is 0.315. The value of adjusted R2 is slightly lower than R2 which in 0.311 which shows that these 4 variables (profitability, tangibility, liquidity and international diversification) explain about 31% of variation in the leverage of textile firms in Pakistan. It means in the textile sector of Pakistan about 31% choice of capital structure is defined by these 4 variables.

Table 4. **Stepwise Regression Coefficients and Significance**

	Model	Coefficients	SE	t-statistics	Sig.
Step 1	Constant	0.815	0.010	83.050	0.000
	Liquidity	-0.127	0.008	-16.413	0.000
Step 2	Constant	0.992	0.031	31.620	0.000
	Liquidity	-0.156	0.009	-17.306	0.000
	Tangibility	-0.266	0.045	-5.931	0.000
Step 3	Constant	1.004	0.031	32.333	0.000
	Liquidity	-0.155	0.009	-17.398	0.000
	Tangibility	-0.286	0.044	-6.431	0.000
	Profitability	-0.219	0.046	-4.809	0.000
Step 4	Constant	1.048	0.033	31.891	0.000
	Liquidity	-0.157	0.009	-17.715	0.000
	Tangibility	-0.318	0.045	-7.076	0.000
	Profitability	-0.201	0.045	-4.427	0.000
	Int. Diversification	-0.072	0.019	-3.832	0.000
$R^2 = 0.315$ Adjusted $R^2 = 0.311$					

Table 5 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, 4 out of 7 regressors (profitability, tangibility, liquidity and international diversification) show significant results while remaining 3 independent variables (corporate size, market share and inflation) are not statistically significant. In the textile sector of Pakistan profitability is negatively related supporting the pecking order theory. It means the textile firms in Pakistan prefer internal financing than debt by increasing the profitability.

Tangibility shows negative results. In textile sector of Pakistan, the results are consistent with the pecking order theory & Harris (1990) which suggested that rela-

tionship of tangibility is negative because larger firms have less chance of asymmetric information resulting in the issuance of equity rather than debt. So in the textile sector of Pakistan the results are consistent with the pecking order approach & Harris (1990): the firms with more tangible assets prefer issuance of equity rather than debt. Liquidity is found to be negatively correlated with leverage. This negative relationship of liquidity is consistent with De Jong (2008). High liquidity confirms the availability of internally generated funds which reduce the issuance of debt. In Pakistani textile sector, liquidity is negatively related and strongly significant. So, when current assets increase, debt will decrease. International diversification also shows negative relation with leverage. These results are consistent with Kwok (2000) and Lowe (1994). Both studies show negative relation of international diversification with leverage. Textile firms are the major source of foreign earnings for Pakistan so with an increase in foreign sales, textile firms issue equity rather than debt.

Table 5. **Expected and Observed Relationships**

Determinants	Expected Relationship	Observed Relationship
Profitability	Negative	Negative
Tangibility	Positive	Negative
Liquidity	Negative	Negative
Int. Diversification	Negative	Negative
Corporate Size	Negative	Negative
Market Share	Negative	Negative
Inflation	Negative	Positive

CS, MS and IN are not significant. The results for corporate size confirm the pecking order approach (Frank, 2003; Rajang, 1995). Larger firms have less information asymmetry so textile firms in Pakistan prefer equity instead of debt with increase in size but the results are not significant. Market share is also negatively related with leverage. Increase in market share reduces the debt burden from firms. Larger firms have less asymmetric information which encourages management of a firm to issue equity but the results of market share are not statistically significant for the textile sector of Pakistan. Inflation affects positively on leverage. The results of inflation are not consistent with the existing literature and are also insignificant.

Conclusion. In this study, we tried to explore the determinants of capital structure in the textile sector of Pakistan. For this purpose, we analyze 102 textile firms listed on KSE. Stepwise regression is used for the panel data analysis. 7 different determinants of leverage are taken (profitability, tangibility, liquidity, international diversification, corporate size, market share and inflation) while financial leverage is taken as a dependent variable. 4 out of 7 are showing significant results. R^2 shows that these 4 variables are responsible for the 31% variation in the leverage of the textile sector of Pakistan. In textile firms of Pakistan profitability, tangibility, liquidity and international diversification are negatively related and are strongly significant. Corporate size, market share are negatively related thus confirming previous results like the pecking order theory and Harris (1990). Inflation is positively related but the results for inflation are also insignificant. 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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