

The impact of financial structure on profitability: Study of Pakistan's Textile Sector

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Abstract

Despite of substantial theoretical developments in the field of corporate finance over the past several decades, the rift between theory and practice still needs to be reconciled. This paper empirically investigates the relationship between capital structure and the financial performance of textile sector of Pakistan, by using panel data extracted from the financial statements of the companies listed on the Karachi Stock Exchange. The rationale behind the industry specific analysis is the fact that exogenous variables appear to force firms in the same industry in similar fashion, thus leading to the existence of an industry specific capital structure. It is found that a significant positive relationship exists between the short term debt and profitability and statistically significant negative relationship between long term debt and profitability. The results are partially consistent with the previous studies as the negative relationship between long term debt and the firm performance tends to sport the dominant pecking order theory. The association of short term debt and the financial performance in contrast attests the static trade-off theory. Total debt as a whole has no association with the firm's performance because of the inherited different characteristics of short term debt and long term debt.

Key words: Capital Structure, profitability

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Introduction

The debate of optimal capital structure has been the focal point of the finance literature for previous several decades. According to finance theory, the capital structure do affects firm's cost of capital and consequently financial performance. Cost of capital serves as the benchmark for firm's capital budgeting decisions therefore the optimal mix of debt and equity is imperative to outperform. Shareholders' wealth maximization concept also dictates that firms choose the optimal mix of debt and equity financing that best serve the ultimate objective of the firm. Capital structure theory in response suggests that firms establish what is often referred to as a target debt ratio, which is based on various trades-offs between the costs and benefits of debt versus equity. Despite of the crucial nature of capital structure decisions the empirical studies have very little to say about the optimal level of debt financing. Therefore, logical parameters with empirical proves are still waited as the available literature is unable to evaporate the rift between practice and theory.

This paper, by using dynamic panel data techniques, investigates the relationship between capital structure and the profitability of the textile sector of Pakistan. Textile is the largest industry of Pakistan². The investigation is kept limited to textile industry since different industries have different financing requirements. Previous researchers, including Bradley, Larrel and kim (1984) and Almazan and Molina (2005), reported that firms in a given industry develop similar capital structures. Exogenous variables appear to force firms in the same industry in similar fashion, thus leading to the existence of an industry specific capital structure. According to Eli Schwartz (1959) optimum capital structure varies for firms in different industries because the typical asset structure and earning stability which determine inherent risk vary for different types of production and thus the borrowing powers of the firm. MacKay and Phillips (2002)³ provided evidence that industry factors help explain firm financial structure, the diversity of firms that populate industries, and the simultaneity of real and financial decision.

The rationale of this study is to provide insights into the relationship between capital structure and financial performance of Pakistan's textile industry. The pioneer work on capital structure by Modigliani and Miller (1958) despite of the unrealistic assumptions has been source of inspirations for scholars. Their propositions state that the market value of any firm and its cost of capital are independent of its capital structure in presence of perfect market conditions. In the real world, uncertainty and lack of knowledge as to the relevant variables may make this optimum solution a difficult achievement.

² See BALANCE SHEET ANALYSIS OF (Non- Financial) JOINT STOCK COMPANIES LISTED ON THE KARACHI STOCK EXCHANGE (1999-2004) issued by State Bank of Pakistan.

³ The latest version of this paper is available at:
<http://www.rhsmith.umd.edu/finance/gphillips/research.html> Dated: 12-09-2006

Literature Review

Over the past several decades' corporate finance researchers have devoted considerable efforts to transform rationalism of capital structure into empiricism. The problem of developing a definitive theory of capital structure and designing empirical tests those are powerful enough to provide a basis for choosing among the various theories is still unresolved.

The available literature on leverage and profitability depicts a great deal of theoretical controversies. The pecking order theorists Myers (1984), Myers and Majluf (1984), and Shyam-Sunder and Myers (1999) states that firms have a preference of using internal sources of financing first, then debt and finally external equity obtained by stock issues. The preferences are attributed to the cost gap between internal and external funds due to asymmetric information and agency problems. Holding it true profitable firms prefer capitalization of earnings over debt and new equity issues respectively. This tendency portrays negative association between leverage and profitability of the firm. This association is one of the most systematic findings in the empirical literature (Kester, 1986; Harris and Raviv, 1991; Rajan and Zingales, 1995; Hung Albert and Addie, 2002). Their findings suggest that firms follow a pecking order. Whenever possible firms raise finance preferably from their internal sources, rather than bank loans and debt issue. The external equity financing is there last resort. A study of Saudi Arabia by Sulaiman A. Al-Sakran (2001) where debt do not offer any tax-shield, also reported a negative relationship between profitability and leverage. It is pertinent to elaborate that in Saudi Arabia tax is calculated on the net worth rather than on profits (Zakat and Usher) therefore the tax advantage of the debt is out of question. Well known agency cost theory (Jensen and Meckling, 1976) also tends to support this relationship. Booth, Aivaizian, Kunt and Maksimovik, (2001) documented that more profitable is firm, the lower the debt ratio' regardless of how debt ratio is defined.

On the other hand in accordance with trade-off theory an opposite relationship may also be envisaged. Various researchers have analyzed different types of trade-offs between capital structure and corporate taxes (Modigliani and Miller 1963), personal taxes (DeAngelo and Masulis 1980) and transaction cost of bankruptcy (Kraus and Litzenberger 1973). The stated rationale is when firms are profitable they prefer debt to benefit from the tax shield. Other way round profitability is a good proxy for low default risk in consequence profitable firms can borrow more funds at cheaper rates as the likelihood of paying back the debt is greater. Firms use debt financing to dilute their cost of capital due to low Weighted Average Cost of Capital (WACC) firms have wider spans of acceptance for capital budgeting choices. Employment of low cost capital in productive investment avenues enables firms to magnify their profits. It is also consistent with the objective of financial management *i.e.* maximization of present shareholders' wealth⁴. The underlying supposition dictates

⁴ See Fundamentals of Financial Management by James C Van Horne, John M. Wachowicz, JR, International edition 10th

positive relationship between leverage and profitability. S. Klien, O'Brien and Peters (2002) also argued that firms with lower expected cash flows find it more difficult to incur higher level of debt (because bankruptcy is more likely) than do firms with higher level of expected cash flows. Companies with large and stable profits should, all else equal, make greater use of debt to take advantage of interest tax shields Anil and Marc Zenner (2005). Jensen (1986) reported that profitable firms might signal quality by leveraging up, resulting in a positive relation between leverage and profitability. Joshua Arbor (2005) reported significantly positive relationship between short term debt and profitability and negative association between long term debt and profitability. This implies that an increase in the long-term debt position is associated with a decrease in profitability.

Long and Malitz (1986); found no relationship between capital structure and profitability. Using a US sample Fama and French (1998) also concluded that the relationship between capital structure and firm value was unreliable. They compared the two competing models, with mixed results. However, they also find that among growth firms, the least levered firms make the largest new equity issues, which is inconsistent with the pecking order model. Lemmon and Zender (2001) separated firms into two groups based on the foregone tax benefits associated with debt financing. They document that a large fraction of firms are conservatively financed, and that neither the pecking order nor the tradeoff theory of capital structure adequately explain this result. Minton and Wruck (2002) found little evidence that the tradeoff theory explains the capital structure choices of low debt firms. Rather, they find that low debt firms appear to follow a financing hierarchy. Brealey and Myers⁵ (2003) contend that the choice of capital structure is fundamentally a marketing problem. Dynamic capital structure models take into consideration the costs of adjusting toward the target debt-to-equity ratio (Maris and Alayan (1990); Leland, 1998); Aydin Ozkan, (2001).

Data and Methodology

Data consist of hundred textile firms listed on the Karachi Stock Exchange for the period 1999-2004. Annual data extracted from the financial statements of these companies over six year's period has been used for analysis. The entire set of variables used in this study is based on book values. Myers (1984) advocated that the book values are proxies for the values in place. Panel data analysis allows studying the dynamic nature of the capital structure decisions at the firm level of textile industry. Companies with negative equities and having DA (Debt to Asset) ratio greater than one have been excluded due to deceptive results. Variable used for the analysis include profitability and leverage ratios. Profitability is measured by commonly used ratio by many researchers i.e. Return on Equity (ROE). It is worked out by dividing the net profit before interest and taxes by the shareholders' equity, expressing the result in percentage. Return on equity demonstrates the percentage earnings of the shareholders' funds. Leverage ratios include:

⁵ See "Principles of Corporate Finance" by Brealey and Myers (2003), Third edition McGraw Hill. New York

1. Short-term debt (current liabilities) to the total assets
2. Long-term debt (fixed liabilities) to total assets
3. Total debt (total liabilities) to total assets

Short term debt include all liabilities, which are required to be discharge within one year, Alternatively, these cover those obligations whose liquidation is expected to be made out of current assets. They are usually incurred in the normal course of business and are required to be paid at fairly definite dates. Long term debt includes all liabilities other than the short term debt and Shareholders' equity. Total debt pertains to sum of total fixed liabilities and current liabilities except shareholder's equity. Assets include all assets at their book value.

Firm size and sales growth are also included as control variables. Natural logarithm of sales has been taken as proxy for size (SIZE). This measure is the most common proxy for size (Titman and Wessels, 1988; Rajan and Zingales, 1995; Ozkan, 2001). Sales growth is the percentage increase or decrease in sales between two time periods. Linear regression model is used to investigate the nature of relationship between Capital Structure and profitability. The motive of studying short term, long term and total debt separately is to investigate the impact of different type of financing options minutely. Since the cost / benefits of short term debt and long term debt differs to a great extant. Therefore, separate analysis can better explain the relationship.

The following regression equations are used in the analysis.

$$\begin{aligned}
 1. \text{ROE}_{i,t} &= \alpha + \beta \text{SDA}_{i,t} + \beta \text{SIZE}_{i,t} + \beta \text{SG}_{i,t} + e \\
 2. \text{ROE}_{i,t} &= \alpha + \beta \text{LDA}_{i,t} + \beta \text{SIZE}_{i,t} + \beta \text{SG}_{i,t} + e \\
 3. \text{ROE}_{i,t} &= \alpha + \beta \text{DA}_{i,t} + \beta \text{SIZE}_{i,t} + \beta \text{SG}_{i,t} + e
 \end{aligned}$$

where:

$\text{ROE}_{i,t}$ is EBIT divided by equity of firm i in time t ;
 $\text{SDA}_{i,t}$ is short-term debt divided by the total assets of firm i in time t ;
 $\text{LDA}_{i,t}$ is long-term debt divided by the total assets of firm i in time t ;
 $\text{DA}_{i,t}$ is total debt divided by the total assets of firm i in time t ;
 $\text{SIZE}_{i,t}$ is the log of sales for firm i in time t ;
 $\text{SG}_{i,t}$ is sales growth of firm i in time t ; and
 e is the error term.

The return on equity is kept dependent variable and the leverage ratios and control variables as the independent variables. In most of the studies of capital structure Return on Equity is considered independent variable. Because we are primarily interested in the nature of relationship between capital structure and profitability keeping other things constant therefore, the rearrangement of the variables provide the same results. Our area of concern is the magnitude as well as nature of relationship. The signs and values of coefficient along with measures of significance are pertinent to our intention.

Empirical results

Descriptive statistics

In this section descriptive statistics of the variables used in analysis are presented to look at the nature and validity of the data. All variables are based upon accounting values and are thus determined simultaneously. Average value of return on equity (ROE) over six year period is 22.1% that demonstrate a good performance of the industry in the period under study. Overall the annual sales growth of 16.35% encourages stating that textile industry of Pakistan is observing a remarkable growth. Average of short term debt to total assets is 45% that depicts a noteworthy portion of assets is financed with the short term debt. This suggests that short-term debt tends to be easily available therefore companies use short term debt as their major source of financing. Long term debt to total assets as compared to the short term debt to assets is low i.e. 17%. The under developed nature of the long term debt market might be one of the possible reasons. Overall 61.8% assets are financed with the debt that depicts textile is moderately leveraged industry. However, the debt ratio variation across the firms is large, ranging from a maximum debt ratio of 98% and a minimum of 11.6%.

Table 1: Descriptive Statistics

	Mean	SD	Minimum	Median	Maximum
<i>ROE</i> i,t	0.2208	0.3638	-2.5183	0.2098	3.3172
<i>SIZE</i> i,t	2.9609	0.4549	0.6232	2.9597	4.3247
<i>SG</i> i,t	16.3537	60.1230	-98.7105	8.4122	981.3232
<i>SDA</i> i,t	0.4485	0.1506	0.0695	0.4519	0.7907
<i>LDA</i> i,t	0.1699	0.1403	0.0000	0.1437	0.7183
<i>DA</i> i,t	0.6185	0.1572	0.1158	0.6460	0.9794

Regression statistics

Results of the Regression Equations used in the analysis are exhibited in this section. The results are discussed separately that enable us to make comparison of the different debt financing options. The separation of results also permits us to observe inherited almost opposite characteristics of short term debt and the long term debt in association with control variable.

Equation 1

In the first equation the relationship of short term debt with the profitability is studied keeping size and sales growth controlling variables. It is found that the significant positive relationship between short term debt and profitability exists. The positive value of coefficient of beta (0.4128) is empirically significant (t-value 4.3114) at 99% confidence level. This suggests that short-term debt tends to be less expensive; therefore increasing short-term debt with a

relatively low cost will lead to an increase in profit levels. The results also dictate that profitable firms use short term debt as their paramount choice of financing. They exploit their position to generate short term debt at low costs as the profitability adds to their creditworthiness. The results are consistent with the static trade off theory but with the exclusion of tax shield assumption. On the basis of results it is recognized that short term debt being a cheaper source of financing contributes significantly towards the profitability of the firms.

$$ROE_{i,t} = \alpha + \beta SDA_{i,t} + \beta SIZE_{i,t} + \beta SG_{i,t} + e$$

Table 2: Profitability (EBIT/equity) Ordinary least squares

<i>Variables</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-0.4297	0.0979	-4.3899	0.0000
SIZE $_{i,t}$	0.1534	0.0317	4.8314	0.0000
SG $_{i,t}$	0.0007	0.0002	2.9180	0.0037
SDA $_{i,t}$	0.4124	0.0957	4.3114	0.0000

<i>Regression Statistics</i>	
Multiple R	0.3009
R Square	0.0906
Adjusted R Square	0.0860
Standard Error	0.3478

Equation 2

The results given in the table below depict that empirically significant negative relationship exist between the long term debt and the profitability. The results are consistent with the pecking order theory the negative value of beta (-0.3407) is significant at 99.91% confidence level further t value of (-3.3430) exhibit that the relationship is empirically reliable. It dictates that higher level of long term debt in the capital structure of the firm lower the profitability. In other words profitable firms prefer capitalization of earnings for their financing needs and than short term debt. The results tend to refute the trade-off theory rather support the pecking order theory. Profitable firms internal funds over the outside financing options.

$$ROE_{i,t} = \alpha + \beta LDA_{i,t} + \beta SIZE_{i,t} + \beta SG_{i,t} + e$$

Table 3: Profitability (EBIT/equity) Ordinary least squares

<i>Variables</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>T Stat</i>	<i>P-value</i>
Intercept	-0.2483	0.0959	-2.5898	0.0098
SIZE $_{i,t}$	0.1746	0.0315	5.5372	0.0000
SG $_{I,t}$	0.0006	0.0002	2.5211	0.0120
LDA $_{i,t}$	-0.3407	0.1019	-3.3430	0.0009

<i>Regression Statistics</i>	
Multiple R	0.2819
R Square	0.0795
Adjusted R Square	0.0748
Standard Error	0.3499

Equation 3

No significant relationship could be found between total debt and the profitability. The positive relationship (beta 0.0998) is not significant (t- Stat 1.0728) enough to justify any proposition. The reason traced out is the opposite relationship that exists between individual elements of this variable with the dependent variable (ROE). The P-value of (0.2838) also reveals that the relationship is not statistical significant. Therefore the impact of total debt on profitability as a whole contains no any significant value as the short term debt has positive relationship and long term debt has negative relationship therefore the net impact is cancelled out.

$$ROE_{i,t} = \alpha + \beta DAI_{i,t} + \beta SIZE_{i,t} + \beta SG_{i,t} + e$$

Table 4: Profitability (EBIT/equity) Ordinary least squares

<i>Variables</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-0.3541	0.1046	-3.3855	0.0008
SIZE_{i,t}	0.1697	0.0322	5.2776	0.0000
SG_{i,t}	0.0006	0.0002	2.6760	0.0077
DA_{i,t}	0.0998	0.0930	1.0728	0.2838

<i>Regression Statistics</i>	
Multiple R	0.2530
R Square	0.0640
Adjusted R Square	0.0593
Standard Error	0.3528

The values of Coefficient of Determination i.e. R Square and Adjusted R square are considerably low in all three equations. The ultimate cause is there are numerous factors that determine the profitability. In this study we are barely interested in studying the relationship of leverage and profitability therefore, values of individual variables' statistics are relevant with propositions of the study. Results are significant enough to serve our purpose best. Overall the results are consistent

with the existing research but with little variation. The reason of this disagreement might be the fact that most of the researchers used total debt as variable to study the relationship between capital structure and the firm's performance. The inverse nature of relationship can be the reason of inconsistent results of previous studies.

Conclusion:

On the basis of findings, it is documented that short term debt has significant positive relationship with the profitability. This suggests that short-term debt tends to be less expensive, and therefore incremental short-term debt in capital structure will lead to an increase in profit levels. Therefore short term debt is the preferable source of financing for the profitable firms. Whereas long term debt has significant negative relationship with the profitability that envisage long-term debts are relatively more expensive due to certain direct and indirect costs, therefore employing high proportions of long term debt in financial structure results in low profitability. Empirical results indicate no significant association between total debt and profitability the inclination of individual results provide the logical justification for surprising result. On the basis of these findings it is concluded that the relationship between short term debt and the profitability is consistent with the static trade-off theory not because of the tax shield rather some other unexplored factor. The underlying rationality is, interest on long term debt is also tax deductible expense like short term debt but the results are quite opposite in direction. Pecking order theory is true but with the addition of short term debt on top of the hierarchy of preference. Implicit in such testing is that both theories have certain elements that are mutually exclusive. Both the theories as a whole can hold true but with the suggested accompaniments.

In the light of whole debate it is suggested that existing theories of capital structure contribute to some extent in decision-making process though certain aspects of the theories are partially refuted. The definite reason is the fact that the capital structure decision is a complex, multi-dimensional problem; thus capital structure decisions are likely to be the product of multifarious group processes. Simply it is difficult if not impossible to mull over all relevant factors with bounded rationality, at least in the current scenario. In-depth case study observations of individual firms' financing decisions over time would be especially valuable in exploring this diversity.

References:

- Anil and Marc Zenner, 2005, "How To Choose a Capital Structure: Navigating the Debt-Equity Decision" *Journal of Applied Corporate Finance*. VOL. 17.
- Almazan and Molina, 2005, "Intra-Industry Capital Structure Dispersion" *Journal of Economics and Management Strategy*. VOL.14.
- Aydin Ozkan, 2001, "Determinants of Capital Structure and Adjustment to Long Run Targets" *Journal of Business Finance and Accounting*. Vol.28.
- Booth, Aivaizian, Kunt and Maksimovik, 2001, "Capital Structure in Developing Countries" *Journal of Finance*. Vol. LVI, No.1
- Bradley, Larrel and kim, 1984, "On the Existence of Optimal capital Structure: Theory and Evidence", *Journal of Finance*. Vol. 39.
- Chiang Hung, Albert and Addie, 2002, "Capital Structure and Profitability of the Property and Construction Sectors in Hong Kong" *Journal of Property Investment and Finance*. Vol.20.
- DeAngelo and Masulis, 1980, "Optimal Capital Structure under Corporate and Personal Taxation" *Journal of Financial Economics*. Vol.8
- Eli Schwartz, 1959, "Theory of Capital structure of the firm" *The Journal of Finance* Vol.14, No.1
- Fama, E. and K. French, 1998, "Taxes, Financing Decisions, and Firm Value", *Journal of Finance*, Vol. 53.
- Harris and Raviv, 1991, "The theory of capital structure", *Journal of Finance* Vol. 46
- Joshua Abor, 2005, "The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana" *The Journal of Risk Finance*, Vol. 6 No. 5,
- Jensen, M. and W. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, "*Journal of Financial Economics*" Vol 3
- Jensen, M., 1986, Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*, 76,
- Kester, 1986, "Capital and Ownership Structure A comparison of United states and Japanies Manufacturing Corporations" *Financial Management*, Vol.15.
- Kraus and Litzenberger, 1973, "A State Preference Model of Optimal Financial Structure" *Journal of Finance*, Vol.28.
- Lemmon and Zender, 2001, "Looking under the lamp post: An empirical examination of the determinants of capital structure", Working paper, University of Utah.
- Long and Malitz, 1986, " The Investment Financing Nexus: Some Empirical Evidence" *Midland Corporate Finance Journal*, Vol.3
- Maris and Alayan, 1990, " Capital Structure in the Cost of Capital for Untaxed Firms: The case of REITs" , *AREUAE Journal*, Vol.18.

- Minton and Wruck, 2001, "Financial conservatism: Evidence on capital structure from low leverage firms" Working paper, Ohio State University.
- Modingling and Miller, 1963, " Taxes and the Cost of Capital: A Correction" *American Economic Review*. Vol. 53.
- Myers ,1984, "The capital structure puzzle" *Journal of Financial Economics* Vol. 39
- Myers, S. C. and N. Majluf, 1984, "Corporate financing and investment decisions when firms have information that investors do not", *Journal of Financial Economics* Vol. 13.
- Rajan and Zingales, 1995, "What do we know about Capital structure?" *Journal of Finance*, Vol. 50.
- Scott, J.H, 1976, " A theory of Optimal capital Structure" *Bell Journal of Economics*, Vol.7.
- S. Klien, O'Brien and Peters, 2002, " Debt Vs Equity and Asymmetric Information: A Review" *The Financial Review*, Vol.37.
- Shyam-Sunder and Myers, 1999, "Testing static tradeoff against pecking order models of capital structure, *Journal of Financial Economics*, Vol. 51.
- Sulaiman A. Al-Sakran, 2001, "Leverage Determinants in the Absence of Corporate Tax System: The Case of Non-Financial Publicly Traded Corporations in Saudi Arabia" *Managerial Finance* Vol. 27
- Titman and Wessels, 1988, "The Determinants of Capital Structure Choice" *Journal of Finance*, Vol. 43.

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