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Growth and Financing Behaviour of Firms of Textile Industry in Pakistan: A Panel Data Analysis

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INTRODUCTION

Companies finance their assets by using mix of debt and equity. Firms with relatively more extensive use of debt choice are said to be financially more leveraged. The firms with relatively more extensive use of interest bearing long term debt relative to equity choice are said to be financially more geared. Choice of long term interest bearing debt and equity has serious implications for the value of the firm as a whole and all stakeholders.

Significant variation in gearing ratio exists at aggregate level, across various sectors, firms and over time. We notice substantial variation in overall corporate gearing (GR) and debt-equity ratio (DER) of corporate sector from 2000 to 2009 (Figures 1 and 2). Interestingly overall economic conditions and equity market has also seen visible changes during the fore-mentioned periods (Figure 3). This implies that, in view of changing economic conditions, most of the firms or sectors placed great deal on their capital structure decisions. Real interest rate remained very low over this period and even negative in some years from 2005 to 2009 (Figure 3). Extremely low interest rates gave a boost to financial leverage (gearing ratio) to its peak in 2005 followed by sharp rise in non-performing loans starting from 2007 onwards (Figure 5) which now is likely to pose a big challenge for financial sector and push economy into another crisis.

Gearing ratio of the textile sector has shown its peak level during 2005 due to negative real rate interest followed by an explosion in its financing costs which along with removal of textile quota and acute energy crisis later on hampered their profitability (Figure 4) and ability to repay its debt. Quarterly Performance Review of the Banking System (December 2010) reports loans of Rs 705.2 billion of textile sector alone by the end of 2009 out of which non-performing loan is Rs 171.5 billion which constitutes 31.3 percent of the total non-performing loans. This motivates us to explore various aspects of gearing ratio of the firms of textile industry in Pakistan.

All studies on capital structure of Pakistani firms in past have focused on only firm-specific determinants of financial leverage and completely ignored the impact of macroeconomic and institutional changes. This study explores whether these changes in corporate gearing are a consequence of macroeconomic and institutional changes or changes in firm specific factors?

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Fig. 1. Debt-Equity Ratio (%)

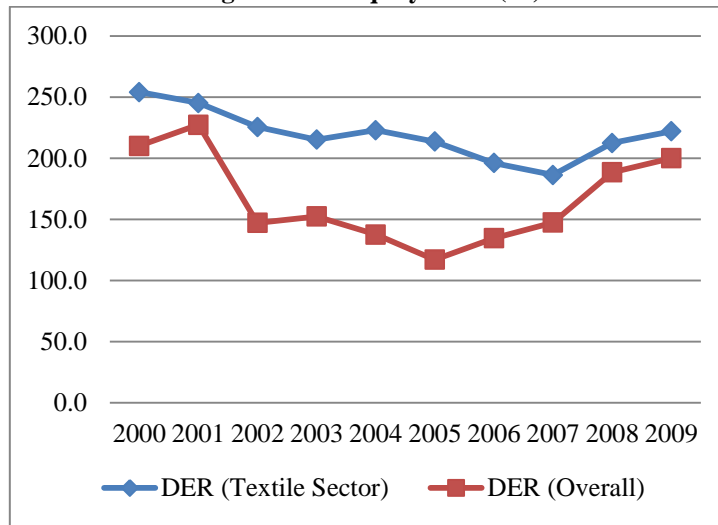


Fig. 2. Gearing Ratio (%)

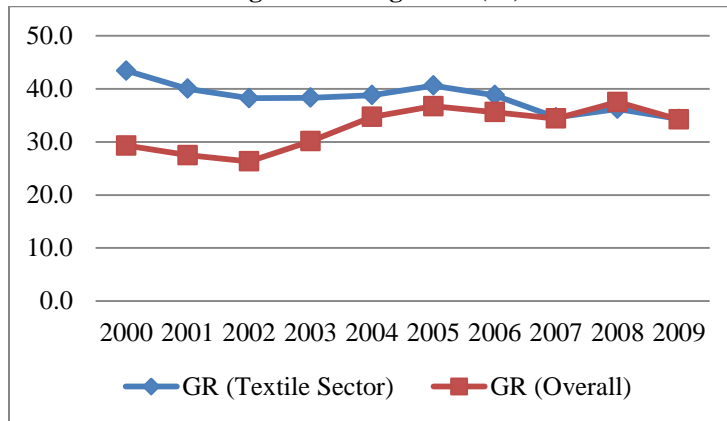
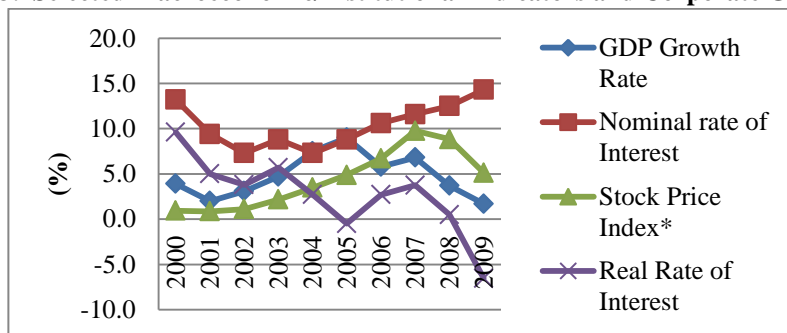
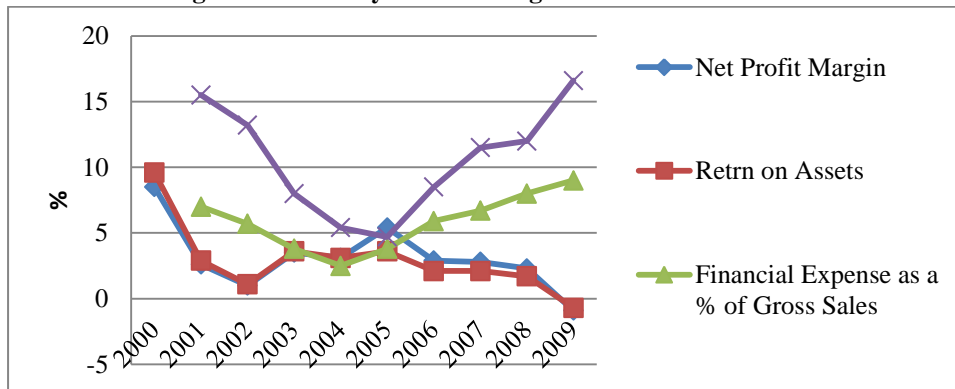


Fig. 3. Selected Macroeconomic/Institutional Indicators and Corporate Gearing

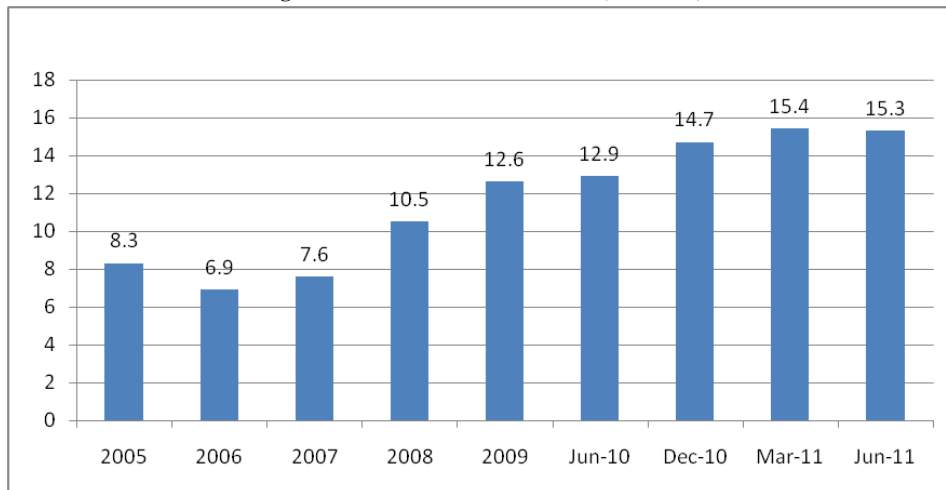


Source: Balance Sheet Analysis of Non-Financial Companies Listed in Karachi Stock exchange of Pakistan (Various Issues) *Hand Book on Statistics of Pakistan* (2010), State Bank of Pakistan.

*Karachi General Index divided by 1000.

Fig. 4. Profitability vs. Financing Costs of Textile Sector

Source: Balance Sheet Analysis of Non-Financial Companies Listed in Karachi Stock Exchange of Pakistan (Various Issues).

Fig. 5. Ratio of NPLs to Total Loans (All Banks)

Source: Financial Soundness Indicators (June, 2011), Banking Surveillance Department, State Bank of Pakistan.

Rest of the paper is organised as follows: Section I reviews literature. Section II identifies data sources, variables and methodology. Section III presents findings and Section IV presents conclusion and gives policy recommendations.

I. LITERATURE REVIEW

The debate of debt-equity choice is well documented in literature. Literature provides a range of theories (including MM theory, trade-off theory, signaling theory, pecking order theory and agency theory), academic researches and empirical evidence to address this issue. Capital structure debate started with the seminal paper of Modigliani and Miller (1958). They prove in this paper that under some restrictions (perfect market, absence of taxes, bankruptcy or financial distress costs), value of the firm is independent of the choice of debt or equity. This controversial proposition led to an unending debate on capital structure decisions.

A vast range of literature debates on the consequences of relaxing the assumptions of MM theory. This literature can be classified into two groups namely trade-off (target leverage) models and the models of signalling and pecking order (financing hierarchies) [Shuetrim, *et al.* (1993)]. Trade-off Target leverage models introduce debt tax shield, bankruptcy risk, financial distress costs and agency costs to MM theory while models of signalling and pecking order introduce information asymmetry, transaction costs, dilution of ownership and fund liquidity constraints [Shuetrim, *et al.* (1993)].

Modigliani and Miller (1958) received severe criticism to their controversial proposition. Modigliani and Miller (1963) extended their work by introducing corporate taxes in their model. This work suggests that deductibility of interest expense associated with debt reduces taxable income and tax liability. Therefore, choice of debt in capital structure provides tax shield (advantage) and motivates firms to rely entirely on debt. But firms, in practice, are never completely debt financed rather they use mix of debt and equity. Miller (1977) introduced the personal taxes on dividend income of shareholders and interest income of creditors in addition to corporate taxes and proved that incentive to use hundred percent debt fades away under various tax regimes. If earnings before interest and tax are low or negative, debt tax shield is low or completely disappears. This indicates that tax shield gains associated debt will diminish [Deangelo and Masulis (1980)].

Modigliani and Miller (1958 and 1963) and Miller (1977) completely ignored bankruptcy or default risk. As discussed in Shuetrim, *et al.* (1993), bankruptcy or likely default with increasing debt burdens involves some direct and indirect costs. Direct costs include liquidation fees, legal charges and trustees' fees in case of default while indirect costs include losses of sales, purchase, market share, creditors and suppliers due to disruption by creditors either in case of default or likely default [Shuetrim, *et al.* (1993)]. This also suggests inverse relation between risk or financial distress costs and gearing. Fixed component of financial distress costs constitutes a significant fraction of the value of smaller firms [Ang, *et al.* (1982)]. This signifies a positive relation between size and financial leverage. However, bigger firms may have less chances and low costs of bankruptcy through diversification [Graham, *et al.* (1998) and Gaud, *et al.* (2005)] and stable cash flows [Rajan and Zingales (1995)] suggesting a positive relation between debt and size. Default risk can be reduced through guarantees by the firms in the form of collateral. This implies positive relation between collateral and debt burden [Gertler and Gilchrist (1993); Chaplinksy and Neihaus (1990); Bradely, *et al.* (1984)]. Relatively higher financial distress costs for larger firms depress financial leverage [Marsh (1982); Titman and Wessels (1988); Ooi (1999); Chen (2003)] but if the larger firms diversify and are able to reduce their bankruptcy costs then trade-off theory predicts a positive sign between size and gearing ratio.

Jensen and Meckling (1976) accept agency costs arising from asymmetry between expected returns on investments by creditors and stockholders. Creditors are entitled to fixed interest payments while shareholders have limited liability and claims on residual earnings. Therefore, corporate managers, being agents to shareholders, may undertake risky investments to appropriate funds from creditors because higher gains from risky investments will accrue more to shareholders relative to those of creditors. Creditors react by tightening credit terms i.e., they demand high interest rate and higher value of collateral as a real guarantee. Lowe and Rohling (1993) also point out conflict of interest between corporate managers and shareholders. Bankruptcy on account of excessive use

of debt puts jobs and reputation of the corporate managers at stake. Therefore, they feel reluctant to use excessive debt even for projects with positive net present value. But this type of agency cost is manageable through use of equity. Jensen (1986) points out another type of agency cost. In his view, corporate managers of larger firms with surplus cash flows may tend to invest in unprofitable projects because their remuneration depends on size of the firm. Moreover, higher debt will reduce this type of agency cost.

Myers and Majluf (1984) note that there exists an information asymmetry between corporate managers and investors and they also accept that being insiders corporate managers are relatively better informed about the actual worth of the firm and its equity. This asymmetric information argument led to the development of the signalling theory. If corporate managers choose debt as first choice of financing they signal to the market that firm expects stable cash flows in future. Pecking order theory suggests that if corporate managers choose equity as a first choice they send a signal to market to highlight that its equity is currently overvalued. This gives rise to negative stock price reaction from investors. Therefore, in order to avoid such negative price reaction, firms prioritise their financing choices from internal funds as first choice to debt and leaving equity as a financing means of last resort [Myers (1984)]. Such hierarchy of finances is known as pecking order theory in literature.

Capital structure of the firms of developed countries with similar institutional structures has been the subject of most of the researches [Tekar, *et al.* (2009); Chen (2003)]. However, a very few studies focus on the firms from emerging market with institutional differences [Sayilgan, *et al.* (2006)].

Pakistani firms' financial leverage has also received very limited attention. To my knowledge, debate on determinants of financial leverage or capital structure of Pakistani firms started with the work of Shah and Hijazi (2004) followed by Tariq and Hijazi (2006), Shah and Khan (2007) and Rafiq, *et al.* (2008).

Most of these studies including those a very few on capital structure of Pakistani firms focus on understanding the firm specific determinants of financial leverage and completely ignore macroeconomic or institutional factors likely to influence capital structure decisions of the firms. To my knowledge, Shuetrim, *et al.* (1993) is the only study that includes asset prices, inflation, potential debt tax shield and fund cost differential in addition to the firm specific determinants of capital structure of Australian firms and identifies that macroeconomic variables also influence financial leverage.

Our paper contributes to the literature by introducing macroeconomic or institutional factors in addition to firm specific determinants of corporate financial leverage of the firms in textile industry in Pakistan.

II. DATA AND RESEARCH METHODOLOGY

Sample Set

This paper uses secondary data from "Balance Sheet Analysis (2000–2009) of Joint Stock Companies Listed on the Karachi Stock Exchange published by Statistics Department of State Bank of Pakistan." The sample of this study covers all 75 firms of textile industry with complete and consistent 10 years data series. This paper excludes the firms with incomplete and inconsistent data series. The firms with negative equity are also excluded.

Dependent Variable

Dependent variable for this study is financial leverage. Several measures of financial leverage including total debt divided by total assets [Rajan and Zingale (1995)], debt equity ratios based on book value or market values [Allen and Mizuno (1989); Gaud, *et al.* (2005); Ooi (1999)] exist in literature. Since this study intends to explore determinants of choice of long term debt and equity, therefore, this study uses gearing ratio i.e., long term debt divided by total assets as a proxy measure for financial leverage.

Explanatory Variables

Following Shuetrim, *et al.* (1993), identify two categories of explanatory variables:

- (1) Firm specific variables including Profitability, efficiency, size, growth, collateral and risk.
- (2) Macroeconomic or institutional variables including overall macroeconomic environment, equity market environment, potential debt tax shield, and real cost of debt (implicitly inflation).

Firm Specific Determinants of Corporate Financial Leverage: Profitability (NPM) and Efficiency (ATO)

Trade-off theory predicts that in view of high tax burden and low risk, profitable and efficient firms take high debt burdens. [Sayilgan, *et al.* (2006)]. As noted in Gaud, *et al.* (2005), past profitability predicts future profitability; therefore, in view of confidence in repaying their debt, profitable firms employ more debt. Consistent with the view of Myers and Majluf (1984) and Myers (1984) in pecking order theory, profitable and efficient firms prefer to use internal funds, therefore, employ less debt. Results of Gaud, *et al.* (2005), Rajan and Zingales (1995), Donaldson (1961), Chen (2003), Wiwattanakantang (1999) and Ozkan (2001) are consistent with pecking order theory.

This paper uses Return on Assets as a proxy for profitability and efficiency. Return on Assets (ROA) is a composite measure for profitability and efficiency. ROA indicates degree of effective use of assets of the firm to generate profits.

$$ROA = NPM * ATO = \frac{Net\ Profit\ after\ Tax}{Net\ Sales} * \frac{Net\ Sales}{Total\ Assets}$$

Where Net Profit Margin (NPM) is the measure of profitability and Asset Turn Over (ATO) is the measure of efficiency i.e. effective use of assets to generate sales.

Size (TA)

Larger firms have relatively better access to credit market [Ferri and Jones (1979); Wiwattanakantang (1999)], favourable credit terms and stable cash flows [Graham (2000); Gaud, *et al.* (2005)] to repay their debt. Therefore, trade-off theory predicts positive relation between size and gearing. Relatively higher financial distress costs for larger firms depress financial leverage [Marsh (1982); Titman and Wessels (1988); Ooi (1992); Chen (2003)] but if the larger firms diversify and are able to reduce their bankruptcy costs then Trade-off theory predicts a positive sign between size and gearing ratio. Relatively better access to equity

market motivates firms to rely on equity rather than debt [Chen (2003)]. Bigger firms have sufficient internal funds; therefore, Signalling and Pecking order theory also predicts a negative sign. This study uses total assets (TA) as a proxy variable for size.

Growth (LOG(GS))

Growing firms require more funds for their expansion. If firms deplete their internal funds during the growth process, the firms would prefer debt to equity. Therefore, signalling and pecking order theory suggests a positive impact of growth on corporate gearing [Drobetz and Fix (2003)]. If growing firms have limited access to equity market, they would tend to rely on debt choice for funding their growth process. This would be true for the countries where equity markets are underdeveloped. Growing firms are likely to be more liberal in their investments in risky projects, therefore, creating high agency costs for the bondholders. This will raise costs of debt for growing firms. Therefore, growing firms choose less debt. Therefore, trade-off theory suggests that corporate gearing is negatively related with growth. Results of Titman and Wessels (1988), Rajan and Zingales (1995) and Barclay, *et al.* (1995) are consistent with this view. This paper uses logarithm of gross sales (LOG(GS)) to measure firms' growth.

Collateral (PFA)

Larger value of collateral of a firm provides better access to credit market and favourable credit terms [Rafiq, *et al.* (2008); Shah and Khan (2007); Padron, *et al.* (2005); Rajan and Zingales (1995); Teker, Tasseven, and Tukel (2009)] therefore, trade off theory predicts a positive sign. In consistent with most of the studies, this paper uses proportion of tangible fixed assets (PFA) in total assets as an indicator for collateral.

Risk (EV)

Earning volatility whether on account of operational failure or inefficient management is considered as proxy for risk in literature. This study uses squared deviation of return on assets (EV) from mean as a measure of risk because this reflects earning volatility on account of both operational failure and management inefficiency.

Riskier firms with high risk of default and high bankruptcy costs [Padron, *et al.* (2005)] face poor access to credit market and also poor terms of credit. This discourages firms to choose debt financing. Therefore, trade off theory predicts negative relations of risk and debt financing. Riskier firms already faced with volatile earnings, low equity prices and in view of negative stock price reactions from market these firms will not use the choice of floating more equity. Thus signalling and pecking order theory predicts a positive relation between risk and debt financing. Faced with poor access to credit market, ultimately firms will have to rely on the choice of equity.

Macroeconomic Determinants of Corporate Financial Leverage:

Overall Macroeconomic Environment (GDPG)

Overall macroeconomic environment is also likely to affect gearing. We expect a positive relation between overall macroeconomic environment and gearing because corporate managers with positive expectations plan to enhance their production capacities

by increasing their investment in tangible fixed assets for which they need internal or external financing. Therefore, positive expectations provide ground for debt financing [Sayilgan, Haraback, and Küçükkocaoğlu (2006)]. This paper uses growth rate of GDP (GDPG) as a proxy for overall macroeconomic environment.

Equity Market Environment (SPI)

We take first difference of Karachi general index (SPI) for stock prices as a proxy variable for equity market environment. Improvement in equity market environment provides better opportunities for issuing equity. We expect negative relation between gearing and equity market environment.

Cost of Debt

Nominal rate of interest is cost of using debt which is sum of real cost of debt and rate of inflation. Higher cost of debt discourages use of debt while higher rate of inflation encourages financial leverage. Therefore, we expect a negative relation between rate of interest and corporate gearing.

Table 1 below presents the proxies for dependent and explanatory variables:

Table 1

List, Definitions and Symbols of Proxy Variables

| Variable | Definition and Symbol |
|--------------------------------------|---|
| Dependent Variable | |
| 1. Corporate Gearing | GR: Gearing Ratio=book value of long term liabilities divided by book value of total assets. |
| Explanatory Variables | |
| 2. Profitability and Efficiency | ROA: Return on Assets=Net Profit Margin x Asset Turn Over =Net profit after tax divided by net sales x Sales divided by Total Assets |
| 3. Growth | LOG(GS); Logarithm of Gross Sales=Logarithm of gross sales |
| 4. Size | TA: Book value of Total Assets |
| 5. Collateral | PFA: Proportion of Fixed Assets=ratio between book value of fixed and total assets |
| 6. Risk | EV=Earnings Volatility=Squared deviation of Net Profit Margin from mean of 10 years Net Profit Margin |
| 7. Cost of Debt | I=Nominal Rate of Interest |
| 8. Equity Market Environment Overall | SPI=Stock Price Index: Karachi General Index) |
| 9. Macroeconomic Environment | GDPG: GDP Growth Rate |

Annexure 1-A shows the summary statistics of the data set. Annexure 2-A shows the coefficients of correlation to rule out mutli-colinearity between the regressor variables. There is some evidence of co-Linearity between firms' growth and its size, cost of debt and equity market environment, cost of debt and GDP growth.

General functional form of the model used in this paper is as follows:

$$GR = f(ROA, GR(-1), LOG(GS), TA, PFA, EV, GDPG, D(KGI), I)$$

This study uses highly popular statistical model of panel data analysis that combines cross section and time series data and estimates pooled regression of a standard model in the following form:

$$GR_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_t + \varepsilon_{it}$$

Where GR denotes corporate gearing ratio and subscript i specifies cross section dimension (firms) and t specifies time dimension of the data set. β_0 , β_1 and β_2 are unknown constants. X_{it} represents the set of firm-specific explanatory variables for firms which vary across firms as well as over time. Z_t is the set of macroeconomic or institutional explanatory variables that vary over time only. ε_{it} is composite error term comprising of firm-specific component μ_i , time-specific component α_t and a component varying over time and across firms w_{it} .

Depending on the structure of the error term and nature of its correlation with explanatory variables, there are several ways to estimate our gearing model. Ordinary Least Squares is appropriate choice if there exist no unobservable firm- and time-specific factors. But in fact, both firm- and time-specific unobservable effects may exist in practice. Choice of random effect model is appropriate when unobservable effects are included in error term and variance-covariance matrix of non-spherical errors is transformed to have consistent estimates of the standard errors. But random effect estimator becomes inconsistent when unobservable effects included in the error term are correlated with some or all regressors. Though relatively inefficient, an alternative choice is fixed effect model which provides consistent estimates regardless of the fore mentioned correlation.

III. FINDINGS

First we test the evidence of cross section and period effects and then we identify whether they are correlated with the regressors. Our tests show that there is strong evidence of period and cross-section random and fixed effects. We use fixed effect specification which includes the variables that vary across firms and over time, cross-section and period dummy variables. We test joint significance of the cross-section and period dummy variables. Our results reveal that both cross-section and period fixed effects are significant at 5 percent level (Annexure 3-A). We also estimate random effect model and Hausman (1978) test rejects the exogeneity in the random effects model and the variance between the coefficients of random and fixed effect model is non-zero which restricts us to rely on fixed effect model. Cross-section fixed effects are reported in Annexure 4-A. We present results of cross-section fixed effects model in Table 2.

Negative sign with the composite measure of profitability and efficiency² indicates that banks fund inefficient and unprofitable firms. This also implies that profitable and efficient firms relatively borrow less. Past profits and efficiency predict future profitability³ therefore profitable and efficient firms prefer use of internal funds.⁴ This

²Most of the previous studies use return on asset as measure of profitability though it is composite measure of profitability and efficiency.

³See Gaud, *et al.* (2005).

⁴See Myers and Majluf (1984) and Myers (1984).

Table 2

Regression Results

| Dependent Variable: GR | | | | |
|--|-------------|------------|-------------|--------|
| Method: Panel EGLS (Cross-section weights) | | | | |
| Total panel (balanced) observations: 675 | | | | |
| Linear estimation after one-step weighting matrix | | | | |
| White diagonal standard errors and covariance (no d.f. correction) | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C: Constant | -2.2507 | 6.6063 | -0.3407 | 0.7335 |
| ROA: Profitability and Efficiency | -0.1883 | 0.0603 | -3.1220 | 0.0019 |
| GR(-1): Lag of Gearing Ratio | 0.5266 | 0.0333 | 15.8114 | 0.0000 |
| TA: Size | -0.0002 | 0.0002 | -1.2502 | 0.2117 |
| LOG(GS): Firms' Growth | 1.9150 | 0.9087 | 2.1074 | 0.0355 |
| PFA: Collateral | 0.0875 | 0.0307 | 2.8473 | 0.0046 |
| EV: Risk | -0.0001 | 0.0000 | -3.2320 | 0.0013 |
| D(KGI): Equity Market Environment | -0.0006 | 0.0003 | -2.0847 | 0.0375 |
| I: Cost of Debt | -0.3504 | 0.2125 | -1.6491 | 0.0997 |
| GDPG: Overall Macroeconomic Environment | 0.8715 | 0.2121 | 4.1095 | 0.0000 |
| Effects Specification | | | | |
| Cross-section Fixed (dummy variables) | | | | |
| Weighted Statistics | | | | |
| R-squared | 0.775247 | | | |
| Adjusted R-squared | 0.743683 | | | |
| Durbin-Watson stat | 1.978962 | | | |
| Un-weighted Statistics | | | | |
| R-squared | 0.621221 | | | |
| Durbin-Watson stat | 1.967496 | | | |

conforms to signalling and pecking order theory. This is also consistent with the findings of Shah and Hijazi (2004), Tariq and Hijazi (2006), Rafiq, *et al.* (2008). This contradicts the trade-off model which predicts that profitable firms with high tax burden and low probability and costs of bankruptcy employ more debt.⁵

Consistent with pecking order theory, positive sign with growth reflects growing firms when deplete their internal funds during growth process ultimately satisfy their funds need from debt.⁶ This is consistent with the findings of Rafiq, *et al.* (2008) and Tariq and Khan (2006) and contradicts with those of Shah and Hijazi (2004). Positive sign with growth also implies that banks prefer to lend to growing firms because growing firms have relatively stable cash flows to repay their debt. If growing firms have limited access to equity market, they would tend to rely on debt choice for funding their growth process. This would be true for the countries where equity markets are underdeveloped or there are legal complications in floating equity. This may also apply in case of Pakistan.

Sufficient internal funds on account of large scale economies and relatively better access to equity market motivates firms to rely on equity rather than debt.⁷ This explains the negative sign with size.

⁵See Sayilgan, *et al.* (2006).

⁶See Shuetrim, Lowe, and Morling (1993); Drobetz and Fix (2003).

⁷See Chen (2003).

Consistent with trade-off model, positive sign with collateral also represents higher debt capacity of the firms and better access to credit market by providing real guarantees to creditors⁸ and firms will find more willing lenders to supply loans.⁹ This motivates the firms to use more long term debt in their capital structure. This is also consistent with the findings of Shah and Hijazi (2004), Tariq and Hijazi (2006), Rafiq, *et al.* (2008).

Negative sign with risk shows that riskier firms borrow less because corporate managers are not confident about repayment of debt due to volatility of operating cash flows in particular. In addition to this, riskier firms have relatively high probability and cost of bankruptcy,¹⁰ therefore, will have poor access to credit market and face unfavourable credit terms which discourage use of debt. Negative sign with risk in our finding contradicts the findings in Rafiq, *et al.* (2008) and Shah and Khan (2007). Rafiq, *et al.* (2008) show positive sign with risk while Shah and Khan (2007) show no impact of risk on debt choice and find it highly insignificant.

Higher interest rates discourage use of debt finance therefore, consistent with the trade-off theory, our results show negative sign with cost of det. Overall macroeconomic environment points towards future prospects for the firms' business. Higher GDP growth represents relatively better prospects for business which become a basis for positive expectations and future expansion plans for corporate managers. To realise these plans firms need initially internal and then external sources of finance if their internal funds are depleted. Negative sign with equity market environment indicates that improvement in stock market index reflects relatively easy and better access and opportunities for firms to raise long term finances by issuing new equity because current situation in equity market signals future prospects for investors.

IV. CONCLUSION AND POLICY IMPLICATIONS

Given the low reliance of firms on equity finance in Pakistan and low bankruptcy costs due to long court procedures, easy credit policy of Shoukat Aziz's government to encourage gearing was quite unwise and inappropriate. High economic growth, extremely low nominal interest rate and negative real interest rate gave a boost to financial leverage (gearing ratio) of the textile sector to its peak in 2005. Firms are now facing the consequence of high gearing. An explosion in their financing costs along with removal of textile quota from 2005 onwards and later on acute energy crisis hampered their profitability and ability to repay their debt. This in turn contributed to non-performing loans which is now likely to pose a big challenge for financial sector and push economy into another crisis.

Therefore, we recommend that debt should be immediately rescheduled to take textile sector out of debt trap and energy crisis should be resolved on urgent basis to remove operational constraint of the industry. There is also strong need for extensive efforts to explore access to foreign markets.

Findings of this paper prove that all firm specific determinants including profitability and efficiency, growth, risk and collateral, excluding size and all macroeconomic and institutional variables including overall macroeconomic

⁸See Padron, *et al.* (2005).

⁹See Rajan and Zingales (1995) and Harris and Raviv (1991).

¹⁰See Lima (2009).

environment, equity market environment and cost of debt also significantly influence corporate financial leverage of textile industry in Pakistan.

Negative sign with the composite measure of profitability and efficiency implies that banks fund inefficient and unprofitable firms because demand for loans comes from inefficient and unprofitable firms. Positive sign with growth and negative sign with risk is indicative of the fact that banks prefer to lend to growing firms rather than riskier firms.

Findings of this paper have serious implications for the firms, banks, investors, creditors and policy makers. This model can help the individual firms to identify whether their current financial leverage is in line with the benchmark of textile sector. In view of macroeconomic and institutional changes, this paper provides a basis for the firms to adjust their financial leverage ratio.

ANNEXURE

1-A. Summary Statistics

| | GR | ROA | GR(-1) | TA | LOG(GS) | PFA | B | D(KGI) | I | GDPG |
|--------------|--------|---------|--------|----------|---------|--------|-----------|----------|-------|------|
| Mean | 32.99 | 2.03 | 32.45 | 2852.96 | 7.26 | 54.95 | 740.03 | 464.33 | 10.07 | 4.92 |
| Median | 32.60 | 1.90 | 31.80 | 1392.80 | 7.16 | 53.80 | 5.90 | 1049.71 | 9.40 | 4.70 |
| Maximum | 122.80 | 77.60 | 122.80 | 40277.30 | 10.08 | 221.50 | 415586.50 | 3050.45 | 14.30 | 9.00 |
| Minimum | 0.00 | -187.70 | 0.00 | 42.30 | 1.44 | 3.90 | 0.00 | -3712.51 | 7.30 | 1.70 |
| Std. Dev. | 21.28 | 11.37 | 21.00 | 4450.24 | 1.01 | 22.38 | 16004.08 | 1833.08 | 2.25 | 2.39 |
| Observations | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 | 675 |

2-A. Correlation Coefficients

| | GR | ROA | GR(-1) | TA | LOG(GS) | PFA | B | D(KGI) | I | GDPG |
|---------|---------------|---------|---------|---------------|---------|---------|---------|---------|---------|---------------|
| GR | 1 | -0.1205 | 0.7283 | 0.0603 | 0.2107 | 0.1312 | -0.0389 | 0.0100 | 0.0836 | 0.0956 |
| ROA | -0.1205 | 1 | -0.0735 | 0.0520 | 0.1120 | -0.0891 | -0.6407 | 0.1087 | -0.1708 | 0.0597 |
| GR(-1) | 0.7283 | -0.0735 | 1 | 0.0811 | 0.1893 | 0.1361 | -0.0248 | -0.0309 | 0.1416 | 0.0301 |
| TA | 0.0603 | 0.0520 | 0.0811 | 1 | 0.6700 | -0.2140 | -0.0128 | -0.0574 | 0.2177 | 0.0195 |
| LOG(GS) | 0.2107 | 0.1120 | 0.1893 | 0.6700 | 1 | -0.3546 | -0.0489 | -0.0504 | 0.1845 | -0.0028 |
| PFA | 0.1312 | -0.0891 | 0.1361 | -0.2140 | -0.3546 | 1 | -0.0064 | 0.0370 | 0.0234 | 0.0593 |
| B | -0.0389 | -0.6407 | -0.0248 | -0.0128 | -0.0489 | -0.0064 | 1 | -0.0056 | -0.0461 | -0.0297 |
| D(KGI) | 0.0100 | 0.1087 | -0.0309 | -0.0574 | -0.0504 | 0.0370 | -0.0056 | 1 | -0.5313 | 0.7372 |
| I | 0.0836 | -0.1708 | 0.1416 | 0.2177 | 0.1845 | 0.0234 | -0.0461 | -0.5313 | 1 | -0.3787 |
| GDPG | 0.0956 | 0.0597 | 0.0301 | 0.0195 | -0.0028 | 0.0593 | -0.0297 | 0.7372 | -0.3787 | 1 |

3-A. Redundant Fixed Effects Tests

Test Cross-section and Period Fixed Effects

| Effects Test | Statistic | d.f. | Prob. |
|---------------------------------|-----------|---------|--------|
| Cross-section F | 5.582 | -74,661 | 0.0000 |
| Cross-section Chi-square | 364.077 | 74 | 0.0000 |
| Period F | 1.946 | -9,661 | 0.0432 |
| Period Chi-square | 19.611 | 9 | 0.0205 |
| Cross-Section/Period F | 5.213 | -83,661 | 0.0000 |
| Cross-Section/Period Chi-square | 377.662 | 83 | 0.0000 |

4-A. Cross-Section Fixed Effects

| Firms | Effect |
|---|-----------|
| 1 Ahmed Hassan Textile Mills Ltd. | 6.886 |
| 2 Allawasaya Textile and Finishing Mills Ltd. | -5.958441 |
| 3 Apollo Textile Mills Ltd. | 6.699526 |
| 4 Artistic Denim Mills Ltd. | -7.716303 |
| 5 Aruj Garment Accessories Ltd. | -11.30891 |
| 6 Ayesha Textile Mills Ltd. | -4.178894 |
| 7 Azam Textile Mills Ltd. | -0.88299 |
| 8 Azgard Nine Ltd. (Legler-Nafees Denim Mills Ltd.) | 5.592547 |
| 9 Bhanero Textile Mills Ltd. | 1.143532 |
| 10 Bilal Fibres Ltd. | 4.826812 |
| 11 Blessed Textiles Ltd. | 4.003951 |
| 12 Chakwal Spinning Mills Ltd. | 9.07585 |
| 13 Colony Mills Ltd. (Colony Textile Mills Ltd.) | 10.22614 |
| 14 D.M. Textile Mills Ltd. | -3.770705 |
| 15 Dar Es Salaam Textile Mills Ltd. | 5.698793 |
| 16 Dawood Lawrencepur Ltd. (Dawood Cotton Mills) | -10.03409 |
| 17 Dewan Khalid Textile Mills Ltd. | -7.22722 |
| 18 Dewan Mushtaq Textile Mills Ltd. | 1.358755 |
| 19 Dewan Textile Mills Ltd. | 4.967196 |
| 20 Din Textile Mills Ltd. | -3.503656 |
| 21 Ellcot Spinning Mills Ltd. | 8.222868 |
| 22 Faisal Spinning Mills Ltd. | 3.740499 |
| 23 Fateh Textile Mills Ltd. | 5.513969 |
| 24 Fawad Textile Mills Ltd. | -2.875707 |
| 25 Fazal Cloth Mills Ltd. | 5.04144 |
| 26 Gadoon Textile Mills Ltd. | -7.882432 |
| 27 Ghazi Fabrics International Ltd. | 7.654191 |
| 28 Gul Ahmed Textile Mills Ltd. | 3.701456 |
| 29 Gulistan Spinning Mills Ltd. | -1.581796 |
| 30 Gulistan Textile Mills Ltd. | -1.315367 |
| 31 Gulshan Spinning Mills Ltd. | -0.118932 |
| 32 Haji Mohammad Ismail Mills Ltd. | -6.099639 |
| 33 Husein Industries Ltd. | -4.176179 |
| 34 ICC Textiles Ltd. | -1.298544 |
| 35 Ideal Spinning Mills Ltd. | 10.55645 |
| 36 Idrees Textile Mills Ltd. | -3.965902 |
| 37 Indus Dyeing and Manufacturing Co. Ltd. | 1.084043 |
| 38 Ishaq Textile Mills Ltd. | 1.994372 |
| 39 Island Textile Mills Ltd. | 3.997519 |
| 40 J.K. Spinning Mills Ltd. | -7.265255 |
| 41 Janana De Malucho Textile Mills Ltd | -6.02521 |
| 42 Khalid Siraj Textile Mills Ltd. | -18.34995 |

Continued—

A 4—(Continued)

| | | |
|----|---|-----------|
| 43 | Kohinoor Mills Ltd. | 0.821704 |
| 44 | Kohinoor Spinning Mills Ltd. | 2.356124 |
| 45 | Kohinoor Textile Mills Ltd. | 0.238897 |
| 46 | Mahmood Textile Mills Ltd. | -5.806772 |
| 47 | Maqbool Textile Mills Ltd. | 0.009652 |
| 48 | Masood Textile Mills Ltd. | 7.279389 |
| 49 | Mian Textile Industries Ltd. | 13.1299 |
| 50 | Mohammad Farooq Textile Mills Ltd. | -4.629541 |
| 51 | N.P. Spinning Mills Ltd. | -10.03802 |
| 52 | Nadeem Textile Mills Ltd. | -6.51514 |
| 53 | Nakshbandi Industries Ltd. | 6.154592 |
| 54 | Nina Industries Ltd. | 2.552844 |
| 55 | Nishat (Chunian) Ltd. | 4.816083 |
| 56 | Nishat Mills Ltd. | -5.153247 |
| 57 | Olympia Spinning and Weaving Mills Ltd. | 0.208376 |
| 58 | Paramount Spinning Mills Ltd. | 0.322807 |
| 59 | Premium Textile Mills Ltd. | 6.603837 |
| 60 | Prosperity Weaving Mills Ltd. | 9.325779 |
| 61 | Quality Textile Mills Ltd. | -6.746521 |
| 62 | Quetta Textile Mills Ltd. | 16.71987 |
| 63 | Ravi Textile Mills Ltd. | 3.616668 |
| 64 | Reliance Cotton Spinning Mills Ltd. | -8.02911 |
| 65 | Reliance Weaving Mills Ltd. | 4.651127 |
| 66 | Saif Textile Mills Ltd. | 6.165284 |
| 67 | Sajjad Textile Mills Ltd. | -2.215353 |
| 68 | Salfi Textile Mills Ltd. | -2.943558 |
| 69 | Salman Noman Enterprises Ltd. | -3.105576 |
| 70 | Samin Textiles Ltd. | -2.683712 |
| 71 | Sana Industries Ltd. | -9.300274 |
| 72 | Sapphire Fibres Ltd. | -8.95482 |
| 73 | Sapphire Textile Mills Ltd. | -8.112624 |
| 74 | Sargodha Spinning Mills Ltd. | -2.579557 |
| 75 | Saritow Spinning Mills Ltd. | 5.391103 |

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