

---

Research

---

## LIQUIDITY RISK VS. UNDERINVESTMENT PROBLEM : AN EMPIRICAL STUDY OF THE TEXTILE SECTOR OF PAKISTAN

Laila Taskeen Qazi<sup>1</sup>, Shahid Ali<sup>2</sup> & Atta Ur Rahman<sup>3</sup>

### Abstract

*This research study tests the underinvestment hypothesis and the liquidity risk hypothesis in the textile sector of Pakistan. A panel data set of 105 textile companies has been employed over eight years extending from 2004-2011. Using 2-Stage Least Square Estimation procedure (2SLS) and the Generalized Method of Moments (GMM), the empirical findings reveal that textile firms in Pakistan use high level of long term debt to shrink the liquidity risk which allows the firms to use more debt. Moreover growing firms use less leverage than the non growing firms when exposed to high growth opportunities. The growth opportunities exhibited a negative relationship with debt maturity but no significant economic relationship with leverage. In the textile sector of Pakistan leverage and short term debt maturity structure tends to complement each other to hedge the firms against the liquidity risk.*

**Keywords:** Underinvestment hypothesis, liquidity risk hypothesis

**JEL Classification:** G100

---

1,2&3- Institute of Management Sciences Peshawar, Pakistan

### Introduction

Myers (1977) asserted that growing firms maintaining high level of risky debt either do not invest at all or tend to forgo projects generating positive NPV believing that the return of these projects would materialize for only the lenders of the company in the form of fixed finance cost payments. Hence the firms end up with debt overhung or face a situation of underinvestment problem. This can be treated as the agency cost of debt overhung. The agency cost of debt overhung or underinvestment problem emerges from the attitude of the managers towards the creditors of the company. The tendency of the managers to limit company investments in order not to give benefit to the creditors refers to the agency cost of underinvestment problem. As a solution to the underinvestment problem Myers (1977) proposed two strategies, 1) overall reduced level of leverage or 2) using high level of short term loans. The motivation behind lowering the debt lies in the fact that it decreases the underinvestment cost and enables a company to take up positive NPV projects. On the other hand augmented utilization of short term borrowings allow the firm to take full benefit of the positive NPV projects as the short term debt would mature before the completion of the project. Furthermore the firm can also renegotiate the debt during the life of the project hence resolving the underinvestment problem.

On the contrary, resolving the underinvestment problem while using short term loans exposes the firms to increased liquidity risk as proposed by the liquidity risk hypothesis by Diamond (1991, 1993) and Sharpe (1991). Therefore incase of exposure to high liquidity risk, firms avoid using short term debt even during the high growth phases. This is indicative of a trade off relationship between the liquidity risk and underinvestment problem. If the underinvestment hypothesis treats debt maturity and leverage as strategic substitutes to resolve the problem then according to the liquidity risk hypothesis, debt maturity and leverage strive to complement each other in order to moderate the liquidity risk. When the firms use long term debt their

liquidity risk is low hence these firms can easily increase the level of debt.

On the basis of the contrasting views proposed by the liquidity risk and underinvestment hypotheses, the objective of this paper is to test both of these hypotheses in the textile sector of Pakistan. In pursuit of analyzing the intermingled connection between debt maturity and leverage in the presence of growth opportunities, this study strives to answer the following questions.

- How are the firm's financing decisions affected by the underinvestment problem? Are the firm's financing decisions constrained by the possible liquidity risk?
- Are leverage and short term debt maturity structures substitutes of each other for resolving the underinvestment problem?
- Do leverage and debt maturity complement each other in moderating liquidity risk?
- Does shortening the debt maturity help in attenuating the negative effect of growth opportunities on leverage?
- Does the initial decision to use low leverage help in attenuating effect of growth opportunities on debt maturity?

Using a panel data setting, empirical findings have been generated through the application of two estimation procedures including 2SLS and the GMM. This study has been further outlined as follows. In the section 2, past literature pertaining to the possible interaction between debt maturity and leverage in the presence of growth opportunities has been discussed. Section 3 elaborates the research hypotheses designed to test the interaction between leverage, debt maturity and growth opportunities. Section 4 provides details of the methodology adopted in this study. Section 5 provides a discussion on the empirical results of the study. Section 6 provides a conclusion.

### Literature Review

Myers (1977) in his underinvestment hypothesis proposed that the growing firms strive to deal with the agency cost of underinvestment problem either through reducing leverage or using short term debt. Hence Myers (1977) regard short term debt and leverage as strategic substitutes to resolve the underinvestment issue. Under this substitution effect it is argued that when the growing firms use short term debt to resolve agency conflict of debt overhung or underinvestment issue, then these firms are less inclined towards minimizing the level of leverage. Alternatively when firms use less leverage to alleviate the agency problem related to debt overhung, then these firms are less inclined towards using short term debt (Jensen & Meckling, 1976).

In this setting of agency costs and conflicts, Myers (1977) contends that a solution to the debt overhung issue is lowering leverage and also argues for a negative relationship between growth opportunities and leverage. This argument of negative relationship is further supported and is in agreement with the results of Frank and Goyal (2007, 2009) and also with those of Rajan and Zingales (1995). The alternative means for controlling underinvestment problem proposed by Myers (1977) is shortening the debt maturity structure in the financing strategy of a firm. This argument is also supported in the literature by Barclay and Smith (1995) and Guedes and Opler (1996) through using single equation setting. Overall a conclusive view on underinvestment hypothesis reveals that the growing firms either use low leverage or short term debt in order to mitigate a situation of debt overhung (underinvestment problem).

However Diamond (1991, 1993) argued in his work that the increased use of short term debt exposes a firm to liquidity risk. He further argued that firms tend to employ long term debt which reduces its liquidity risk and allows a firm to use more debt. Hence according

to the liquidity risk proposition long term debt maturity and leverage tend to complement each other in moderating the liquidity risk of a firm. Here on the basis of a literature it can also be inferred that the use of short term debt has a dual effect, on the one hand it resolves the underinvestment problem and on the other hand it increases liquidity risk. Therefore a firm's financing decisions depends upon a tradeoff between underinvestment cost and liquidity risk proposition.

In this regard, Mauer and Otts (1998) indicated that firms can jointly treat underinvestment problem and liquidity risk through using short term debt with low leverage level simultaneously. Such a financing strategy is normally employed by those firms for which liquidity problem is quite aggravated in the form of reduced financial liquidity and difficulty in acquiring external debt. Moreover in an attempt to study, Myers's (1977) underinvestment proposition and Diamond's (1991, 1993) proposition simultaneously, Johnson (2003) provided an interesting set of arguments. Johnson (2003) argued that a firm's decision pertaining to the choice of capital structure and debt maturity structure is significantly affected by a tradeoff between agency costs and liquidity costs.

Single equation models have been frequently employed in the literature striving to explain a unidirectional relationship between debt maturity structure and leverage (Ozkan, 2001, 2002; Guedes&Opler, 1996). The literature suggests that firms either use short term debt or low leverage to resolve underinvestment problem (Rajan&Zingales, 1995; Barclay & Smith, 1995).

A discussion on the joint selection of short/long term debt and the level of debt has been initiated by Johnson (2003). According to Johnson (2003) if a firm chooses to mitigate the underinvestment problem using short term debt then there is very little motivation left for a firm to reduce leverage. Hence in such a situation, the proposed negative relationship between leverage and growth opportunities must vanish (Johnson, 2003). Here the question arises whether a low

leverage strategy attempts to moderate the negative relationship between debt maturity and growth opportunities. In this regard, Dang (2011) studied the interaction between debt maturity, leverage and growth opportunities. His findings support the liquidity risk proposition over the underinvestment problem through depicting a positive relationship between debt maturity and leverage.

On the basis of the literature reviewed, this study strives to determine a tradeoff between liquidity risk and agency cost of underinvestment problem or debt overhung in a developing market like Pakistan. The research hypothesis has been given in the next section.

### **Research Hypotheses**

According to Myers' (1977) underinvestment hypothesis,

*H1: Increase in Growth opportunities negatively affect the level of financial leverage employed by a firm.*

*H2: Increase in Growth opportunities negatively affect the level of long term debt employed by a firm.*

The two hypotheses given above describe the substitution effect of short term loans and reduced leverage as a solution to the underinvestment problem. Furthermore these hypotheses also strive to determine the liquidity risk exposure of the firms understudy.

The underinvestment proposition also hypothesizes a negative relationship between debt maturity structure and leverage. However the liquidity risk hypothesis proposed by Diamond (1991, 1993) and Sharpe (1991) predicts the relationship to be positive. These conflicting expectations pertaining to the relationship between debt maturity and leverage indicate a tradeoff between liquidity risk and underinvestment problem by firms. The hypothesis is given as,

***H3: There is a significant relationship between debt maturity and leverage.***

Moreover those firms which employ short termed debt for acquiring underinvestment incentives tend to be less inclined towards decreasing leverage. Hence it can be hypothesized that,

***H4: The increased use of short term debt weakens the relationship between growth opportunities and leverage***

Similarly those firms that strive to resolve underinvestment problems using low leverage tend to have less incentive to use short term debt. Hence it can be hypothesized that,

***H5: The use of low leverage weakens the relationship between growth opportunities and short term debt maturity.***

For testing these research hypotheses, in the next section a detail description of data collected and methodology employed has been presented.

#### **Methodology**

This study employs a sample of 105 companies from the Textile sector of Pakistan over a sample time period extending from 2004 to 2011. The literature reports that the firms in the same industry follow similar financing patterns and demonstrate same financing needs (Bradley, Larrel & Kem, 1984; Almazan & Molina, 2005). Moreover every industry tends to have an optimal capital structure and debt maturity preferences depending upon the inherent business risk faced by firms in that industry.

#### *Simultaneous Equations Model*

On the basis of the past literature reviewed and the research hypotheses developed in section 3, the issue of simultaneity can be viewed in the interaction between debt maturity and leverage. Therefore in this study a system of simultaneous equations has been employed.

$$Lev_{i,t} = \alpha_0 + \delta_{lev} Lev_{i,t-1} + \alpha_1 Mat_{i,t} + \alpha_2 Growth_{i,t} + \alpha_3 Growth \times Mat_{i,t} + x_{i,t}^{lev} \beta^{lev} + u_{i,t}$$

### *Leverage Equation*

The hypothesized relationship developed on the basis of the literature reviewed has been tested in this section using the following leverage equation eq.1,

**Leverage ( $Lev_{i,t}$ ):** In relevance with Booth et al., (2001) and Shah & Hijazi, (2004), in this study Leverage has been measured through dividing total debt by market value of equity plus book value of debt. In this study total debt includes both short term debt as well as the long term debt due to the fact that in developing countries like Pakistan the use of short term is more prevalent as compared to long term financing (Booth et al., 2001). In addition Shah and Hijazi (2004) also indicated that in Pakistan firms are more inclined towards using short term financing due to small firm size and limited access to the capital markets.

**Lagged Leverage ( $Lev_{i,t-1}$ ):** To control the effect of dynamic adjustments towards a target leverage level as proposed by the trade off theory of capital structure a lagged value of leverage denoted as  $Lev_{i,t-1}$  has been included in the leverage equation above (Ozkan, 2001; Flannery & Rangan, 2006). The term lagged leverage refers to leverage values of the previous period (lagged t-1). The speed of adjustment coefficient ( $1 - \delta_{LEV}$ ) is expected to have a positive sign.

**Debt Maturity ( $Mat_{i,t}$ ):** Debt Maturity is a ratio of long term debt due in time more than one year to total debt. The coefficient of debt maturity is expected to have a negative sign according to the underinvestment hypothesis (Myers, 1977). However the liquidity risk hypothesis proposes a positive sign (Diamond, 1991, 1993; Sharpe, 1991).

**Growth Opportunities ( $Growth_{i,t}$ ):** New investment opportunities having potential to grow significantly are referred to as Growth Opportunities for the firms and are measured through dividing market value of equity plus the book value of debt by total assets. According to the Myers (1977) underinvestment hypothesis, the



coefficient of growth opportunities in the leverage equation is expected to have a negative sign. Here the negative sign of the coefficient indicates that as the growth opportunities increase the firms tend to reduce leverage.

**Interaction term between Growth Opportunities and Debt Maturity ( $Growth \times Mat_{i,t}$ ):** Following the work of Johnson (2003) this study has also incorporated an interaction term between growth opportunities and debt maturity in the leverage equation. On the basis of the underinvestment hypothesis, the coefficient of this interaction term is expected to have a negative sign believing that increased use of short term debt maturity strives to attenuate the inverse relationship between growth opportunities and leverage. The expectation of the negative coefficient can also be explained from a perspective that the growing firms use less leverage due to high cost of debt as compared to non growing firms (Titman & Wessels, 1988; Barclay & Smith, 1995; Rajan & Zingales, 1995).

**Control Variables  $x_{it}^{lev}$ :** In addition to the basic explanatory variables, this study also includes four control variables including Firm Size, Profitability, Tangibility and Non- debt Tax Shield.

**Firm Size:** Size is given as a natural log of total assets. According to Titman and Wessels (1988) the size coefficient must have a positive sign as the large firms are highly financially leveraged due to low bankruptcy, transaction and agency cost associated with maintaining high level of debt. On the contrary, it is also noted that the large firms are less vulnerable to asymmetric information which reduces the chance of undervaluation of the firm's new equity issues and hence makes it easy for the firm to access capital markets and raise equity capital. Therefore Rajan and Zingales (1995) proposed a negative sign for the size coefficient.

**Profitability:** Profitability is given as a ratio of Earnings before Interest and Tax to total assets. Therefore On the basis of the

pecking order proposition in this study the profitability coefficient is expected to have a negative sign (Myers and Majluf 1984). However on the basis of the tradeoff framework the profitability coefficient can also have a positive sign (Modigliani & Miller, 1963; Jensen & Meckling, 1986).

**Tangibility:** Tangibility is given as a ratio of fixed assets to total assets. The capital intensive nature of textile sector indicates high level of fixed assets and high tangibility (Frank & Goyal, 2007). Consequently a positive sign is expected on the coefficient of tangibility in the leverage equation.

**Non- debt Tax Shield (NDTS):** NDTS is given as a ratio of annual depreciation charges to total assets. Following the work of De Angelo and Masulis (1980), Bradley et al. (1984), this study also expects a negative sign on the coefficient of NDTS in the leverage equation.

#### *Debt Maturity Equation*

The hypothesized relationships pertaining to debt maturity are empirically tested using the equation given below in eq.2,

**Debt Maturity** (It serves as a dependent variable in the debt maturity eq.2.

**Lag of Debt Maturity** (First lag of debt maturity is included in order to account for the dynamics of the debt maturity (Barclay & Smith, 1995; Ozkan, 2000; Brick & Ravid, 1985; Kane et al., 1985; Jun & Jen, 2003; Antoniou et al., 2006).

**Leverage** (:Here in the debt maturity equation leverage enters as an explanatory variable and carry the same expectations pertaining to the sign of the coefficient as debt maturity in the leverage equation.

**Growth Opportunities** As mentioned earlier the underinvestment hypothesis proposes a negative coefficient on growth opportunities whereas the liquidity risk hypothesis proposes a positive sign.

**Interaction term between Growth Opportunities and Leverage** This interaction term strives to analyze the role of leverage in attenuating the negative relationship between growth opportunities and debt maturity. Its coefficient is expected to have a negative sign.

**Control Variables** (Six control variables have been introduced including firm size, Asset term structure, Tax, Term structure, Volatility and Firm Quality.

**Firm Size:** firm size is expected to have the same coefficients as in the leverage equation.

**Asset Maturity Structure (ASSETMS):** Asset Maturity Structure is given as a ratio of net property, plant and equipment to depreciation expense. Under the maturity matching proposition a positive sign is expected on the coefficient of the Asset Maturity Structure in the debt maturity equation (Hart & Moore, 1994; Stohs & Mauer, 1996).

**Tax:** Tax is given as a ratio of total tax charge to earnings before tax. Its coefficient is expected to have a positive sign.

**Term Structure of interest rates:** Term structure is measured as a difference between ten year government bonds and three months treasury bills expecting a positive sign on its coefficient.

**Volatility:** Volatility is given as an average of the annual % change in the operating profit (Earnings before Interest depreciation and tax). A positive coefficient is expected on the volatility in the debt maturity equation.

**Firm Quality:** Firm Quality is measured through the ability of the firm to make abnormal profits. Here the abnormal profits refer to those profits that exceed the normal profits a firm must make to sustain its normal operations. Quality is given as difference between EPS at time  $t$  and EPS at time  $t-1$  to share price at time  $t-1$ . The negative sign of the coefficient on firm quality is explained by the signaling hypothesis.

### **Method of estimating Simultaneous Equations**

In this study in the leverage equation, debt maturity is endogenous for which 8 instrumental variables have been incorporated in the analysis including profitability, NDTS, size, Asset maturity structure, term structure of interest rates, tangibility, growth opportunities and interaction term between grow dummy and debt maturity (Aivazian et al., 2005a,b). On the other hand, in the debt maturity equation instrumental variables for leverage include tangibility, profitability, NDTS, size, Asset maturity structure, term structure of interest rates, tax, growth opportunities, firm quality and interaction term between growth dummy and leverage. Furthermore in order to generate more efficient results a two-step GMM estimation procedure has also been employed in this study which works under the assumption of no serial correlation (Arellano & Bond, 1991).

### **Empirical Results**

In this section empirical results of the study have been discussed in detail.

The significant positive coefficient of the lagged leverage term indicates a support to the proposition of the trade off theory of capital structure and the dynamic specifications of leverage in the Textile sector of Pakistan. Almost 68% (1-0.32) of the deviation from the target leverage is closed in a year's time as demonstrated by the empirical results of both 2SLS and GMM procedure.

le 1 below, contains the summarized results of both 2SLS as well as GMM estimation procedure for leverage equation.

**Table 1:**  
*Leverage Equation*

Dependent Variable: Leverage			
Independent Variables	Expected sign	2SLS	GMM
$D(Lev_{t-1})$	+	0.328043***	0.328043***
$Mat_t$	+/-	0.673798***	0.673798***
$Growth_t$	-	-0.037676	-0.037676
$Growth * Maturity_t$	-	-0.315186***	-0.315186***
$Tangibility_t$	+	-0.259434***	-0.259434***
$Profitability_t$	+/-	-0.351812***	-0.351812***
$NDTS(t)$	-	0.095347	0.095347
$Size_t$	+/-	-0.033494***	-0.033494***
<b>R-squared</b>		0.048941	0.048941

\*\*\*Significant at 1%, \*\* 5%, \* 10%

The coefficient on the debt maturity is also reported to be positive and significant at 1% indicating a direct positive relationship between debt maturity and leverage and leads towards the acceptance of hypothesis 3 supporting the liquidity risk proposition. These empirical findings are coherent with the fact that the textile sector of Pakistan is capital intensive which allows the firms to acquire long term debt against its fixed assets and heavy machinery. Therefore increased use of long term debt reduces the liquidity risk of these firms and enabling them to acquire more debt. These findings are aligned with those of Johnson (2003), Barclay et al., (2003), Elyasiani et al, (2002), Diamond (1991, 1993) and Childs et al., (2005).

Moreover the coefficient of growth opportunities in the leverage equation is negative yet insignificant representing that the increase in growth opportunities for the textile firms in Pakistan does not force the firms to reduce the level of leverage. This can be attributable to the capital intensive nature of the textile sector as well as to the limited growth prospects in the turbulent markets of Pakistan. Hence the empirical findings do not support the underinvestment hypothesis.

The coefficient on the interaction term between growth and debt maturity in the leverage equation is negative and significant depicting a negative effect of interaction term on leverage. In non growing firms one unit increase in debt maturity brings 0.67 units increase in leverage however in case of growing firms leverage increase by only 0.36 units. This indicates that the overall positive relationship between debt maturity and leverage is weak for growing firms during high growth phases. During the high growth phases the growing firms tend avoid using high level of leverage in order as it can expose the growing firms to underinvestment problem or a situation of debt overhung.

On the contrary incase of non growing firms the positive relationship between debt maturity and leverage is strong due to the fact that for non growing firm liquidity risk takes preference over underinvestment hypothesis. Hence the non growing firms use long term debt which reduces the liquidity risk and allows these firms to use more leverage. Here it can also be concluded for growing textile firms in Pakistan the underinvestment problem outweighs liquidity risk but for non growing firms liquidity risk plays a pivotal role in determining the financing policy of a firm.

Among control variables the coefficient on size, tangibility and profitability are found to be significant at 1% whereas coefficient of NDTs is insignificant. The coefficient on tangibility is although significant yet it carries a negative sign which is against the expectations. The negative relationship between tangibility and leverage can be explained on the basis of the fact that most of the firms in the textile sector of Pakistan are family owned which indicates that most of the fixed assets are financed by internal equity rather than external financing.

Moreover the coefficient on profitability is also found out to be significant with a negative sign supporting the pecking order proposition. The negative sign predicts that the profitable textile firms prefer using internally generated funds over acquiring more leverage. These results are also aligned with those of Myers and Majluf (1984).

The coefficient on size is also significant with a negative sign. This negative sign on the size coefficient is aligned with the study of Rajan and Zingales (1995). This negative relationship is attributable to the fact that most of the large textile companies are fairly owned which indicates an easy access to equity capital rather than debt financing. Moreover according to Rajan and Zingales (1995) new equity issue is also not a big problem for large firms which also support the negative sign on the size coefficient in the leverage equation.

The R-square value for both the GMM and 2SLS estimation procedures is reported to be 0.048 which indicates that only 4 percent change in the firm's leverage level is explained by the specified independent variables in the model. The R-square value is although quite low however it is aligned with the results reported by Datta et al., (2005).

The next subsection aims at elaborating the results of debt maturity equation.

Table 2 below contains the empirical findings of debt maturity equation.

**Table 2:**  
*Debt Maturity Equation*

Dependent variable: Debt Maturity			
Independent variable	Expected sign	2SLS	GMM
$Mat_{t-1}$	+	0.562853***	0.562853***
$Lev_t$	+/-	0.71084***	0.71084***
$Growth_t$	-	0.123972***	0.123972***
$Growth * Lev_t$	-	-0.019051	-0.019051
$Asset MS_t$	+	2.31E-05	0.8156
$Term Structure_t$	+	-3.004612***	-3.004612***
$Firm Quality_t$	-	0.000474	0.000474
$Tax$	+/-	0.001355	0.001355
$Volatility_t$	+	0.000195	0.000195
$Size_t$	+/-	0.011198*	0.011198*
R-squared		0.286508	0.286508

\*\*\*Significant at 1%, \*\* 5%, \* 10%

The coefficient on the lagged debt maturity is reported to be significant and positive. These findings are consistent with the literature (Jun & Jen, 2003; Ozkan, 2000; Antoniou et al., 2006). This indicates that the debt maturity structure in textile sector of Pakistan has an optimal value towards which the firms strive to adjust their current debt maturity structure in the long run.

The coefficient on leverage in the debt maturity equation is positive and significant at 1%. This indicates a direct positive relationship between debt maturity and leverage. These results are also consistent with the positive relationship reported in the leverage equation. This positive sign on the leverage coefficient declares the supremacy of liquidity risk over the underinvestment problem in the textile sector of Pakistan. Here it can be inferred that in the textile sector of Pakistan, firms use long term debt as a tool to avoid a chance of bankruptcy due to high leverage. These findings are consistent with the previous literature (Stohs & Mauer, 1996; Antoniou et al., 2006; Elyasiani, et al., 2002).

Furthermore in the debt maturity equation the coefficient on growth opportunities is significant at 1% with a negative sign as proposed by the underinvestment hypothesis. These empirical results prove the hypothesis 2 true. The negative relationship between growth opportunities and debt maturity implies that the textile firms in Pakistan prefer to resolve the underinvestment problem during the era of high growth through shortening the debt maturity structure. This finding is aligned with Myers (1977) underinvestment proposition. Additionally the significant negative relationship between debt maturity and growth opportunities also strives to provide a logical explanation of the insignificant relationship between growth opportunities and leverage in eq.1. Linking the empirical findings of eq.1 and eq.2, it can be inferred that the textile firms in Pakistan when exposed to high growth opportunities prefer resolving the underinvestment problem through shortening the debt maturity rather than reducing leverage.



The coefficient on the interaction term between leverage and growth opportunities is although negative as expected yet it is insignificant. Here it can be inferred that the textile firms in Pakistan do not opt for resolving the underinvestment problem through reducing the level of leverage.

Looking at the control variables, it is reported that only term structure of interest rates and size is significant. The coefficient of term structure of interest rates is significant at 1% with a negative sign. The coefficient on size is significant at 10% with a negative sign indicating that the large textile firms use more equity financing rather than external financing.

### **Conclusion**

This study strives to test the interacting relationship between debt maturity structure and the level of leverage employed by the textile firms in Pakistan in the presence of growth opportunities.

The findings reveal that the non growing firms in the textile sector of Pakistan are more concerned over liquidity risk than the underinvestment problem. Therefore firms strive to use long term debt which reduces liquidity risk and allows these non growing textile firms to increase leverage. However in case of growing firms during the times of high growth, reduce the leverage in order to avoid the underinvestment problem. Furthermore it is also reported that these textile firms survive the high growth phase through shortening the debt maturity. Hence a possibly preferred tool for resolving the underinvestment problem is short term debt maturity rather than reducing leverage in the textile sector of Pakistan.

This study also provides a strong evidence of the positive relationship between debt maturity and leverage, indicating that these components of a financial strategy tend to complement each other in moderating the liquidation risk rather than acting as substitutes to

resolve the underinvestment problem. On the basis of the empirical findings of the study it can be inferred that for textile firms in Pakistan financial flexibility along with a low liquidity risk is more important than the agency cost of underinvestment hypothesis. Hence companies are reported to adopt a conservative financing policy.

In terms of future research implications of this study, it is recommended that a similar study must also be conducted in sectors other than the textile sector of Pakistan in order to understand the debt structure of other sectors as well. This will also help in creating a comparison of the debt structure prevailing in different industries in Pakistan.

### References

- Aivazian, V.A., Ge, Y. and Qiu, J. (2005a). The Impact of Leverage on Firm Investment: Canadian Evidence, *Journal of Corporate Finance*, Vol. 11, pp. 277-91.
- Aivazian, V.A., Ge, Y. and Qiu, J. (2005b). Debt Maturity Structure and Firm Investment, *Financial Management*, Vol. 34, pp. 107-19.
- Antoniou, A., Guney, Y. and Paudyal, K. (2006). The Determinants of Corporate Debt Maturity Structure: Evidence from France, Germany and the UK, *European Financial Management*, Vol. 12, pp. 161-94.
- Almazan, A. and Molina, C.A., (2005). Intra Industry Capital Structure Dispersion. *Journal of Economics & Management Strategy*, 14(2), pp.263-297.
- Arellano, M. and Bond, S. R. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, *Review of Economic Studies*, Vol. 58, pp. 227-97.
- Booth, L., Aivazian, V., Demircuc-Kunt, A. and Maksimovic, V. (2001). Capital structures in developing countries, *Journal of Finance*, Vol. 56, pp. 87-130.
- Bradley, M., Jarrell, G.A. and Kim, E., (1984). On the Existence of Optimal capital Structure: Theory and Evidence, *Journal of Finance*. Vol. 39(3), pp.857-878
- Barclay, M.J. and Smith Jr. C. W. (1995). The Maturity Structure of Corporate Debt, *Journal of Finance*, Vol. 50, pp. 609-31.

- Barclay, M.J., Marx, L. M. and Smith Jr. C. W. (2003). The Joint Determination of Leverage and Maturity, *Journal of Corporate Finance*, Vol. 9, pp. 149-67.
- Billett M.T., King, TH. D. and Mauer, D. C. (2007). Growth Opportunities and the Choice of Leverage, Debt Maturity, and Covenants, *Journal of Finance*, Vol. 62, pp. 697-730.
- Brick, I.E. and Ravid, S. A. (1985). On the Relevance of Debt Maturity Structure, *Journal of Finance*, Vol. 40, pp. 1423-37.
- Childs, P.D., Mauer, D. C. and Ott, S. H. (2005). Interactions of Corporate Financing and Investment Decisions: The Effects of Agency Conflicts, *Journal of Financial Economics*, Vol. 76, pp. 667-90.
- Dang, V.A., (2011). Leverage, debt maturity and firm investment: An empirical Analysis. *Journal of Business Finance and Accounting*, Vol. 38 (1) & (2), pp. 225-258.
- Datta, S., ISKANDAR DATTA, M. A. I., & Raman, K. (2005). Managerial stock ownership and the maturity structure of corporate debt. *The Journal of Finance*, Vol. 60(5), pp.2333-2350.
- DeAngelo, H. and Masulis, R. (1980). Optimal Capital Structure under Corporate and Personal Taxation, *Journal of Financial Economics*, Vol. 8, pp. 3-29.
- Diamond, D.W. (1991). Debt Maturity Structure and Liquidity Risk, *Quarterly Journal of Economics*, Vol. 106, pp. 709-37.
- Diamond, D.W. (1993). Seniority and Maturity of Debt Contracts, *Journal of Financial Economics*, Vol. 33, pp. 341-68.

- Elyasiani, E., Guo, L., & Tang, L. (2002). The Determinants of Debt Maturity at Issuance: A System-Based Model, *Review of Quantitative Finance and Accounting*, Vol. 19, pp. 351-77.
- Flannery, M. and Rangan, K., (2006). Partial adjustment towards target capital structures, *Journal of Financial Economics*, Vol. 79, pp. 469-506.
- Frank, M.Z. and V.K. Goyal, (2007). Trade-off and Pecking Order Theories of Debt', in Eckbo, B.E. (ed). *Handbook of Corporate Finance: Empirical Corporate Finance*. North Holland, Handbooks of Finance, Elsevier Science.
- Frank, M.Z. and V.K. Goyal, (2009). Capital Structure Decisions: Which Factors are Reliably Important, *Financial Management*, Vol. 38, pp. 1-37.
- Guedes, J. and Opler, T., (1996). The determinants of the maturity of corporate debt issues, *Journal of Finance*, Vol. 51, pp. 1809-1833.
- Hart, O. and Moore, H. (1994). A Theory of Debt Based on the Inalienability of Human Capital, *Quarterly Journal of Economics*, Vol. 109, pp. 841-79.
- Jensen, M. and Meckling, W. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure', *Journal of Financial Economics*, Vol. 3, pp. 305-60.
- Jensen, M. and Meckling, W. (1986). Agency Costs of Free Cash Flow, Corporate Finance and Takeovers, *American Economic Review*, Vol. 76, pp. 323-39.
- Johnson, S.A. (2003). Debt Maturity and the Effects of Growth Opportunities and Liquidity Risk on Leverage', *Review of Financial Studies*, Vol. 16, pp. 209-36.

- Jun, S.G. and Jen, F. C. (2003). Trade-off Model of Debt Maturity Structure', *Review of Quantitative Finance and Accounting*, Vol. 20, pp. 5-34.
- Kane, A., Marcus, A. J. and McDonald, R. L. (1985). Debt Policy and the Rate of Return Premium to Leverage, *Journal of Financial and Quantitative Analysis*, Vol. 20, pp. 479-99.
- Mauer, D. C. and Ott, S.H., (1998). Agency costs, investment policy and optimal capital structure: The effect of growth options, in *Project flexibility, agency, and competition: New developments in the theory and application of real options*, pp.151-179. Oxford University Press, London
- Myers, S.C. (1977). Determinants of Corporate Borrowing, *Journal of Financial Economics*, Vol. 5, pp. 145-75.
- Myers, S.C. and Majluf, N. S. (1984). Corporate Financing and Investments Decisions When Firms have Information That Investors Do Not Have, *Journal of Financial Economics*, Vol. 13(2), pp. 187-221.
- Modigliani, F. and Miller, H. H. (1958), 'The Cost of Capital, Corporate Finance and the Theory of Investment', *American Economic Review*, Vol. 49, pp. 261-97.
- Modigliani, F. and Miller, H. H. (1963), 'Taxes and the Cost of Capital: A Correction', *American Economic Review*, Vol. 53, pp. 433-43.
- Ozkan, A., (2000). An empirical analysis of corporate debt maturity structure. *European Financial Management*, Vol. 6, pp. 197-212.
- Ozkan, A., (2001). Determinants of capital structure and adjustment to long run target:

Evidence from UK company panel data. *Journal of Business Finance and Accounting*, Vol. 28, pp. 175-198.

Ozkan, A., (2002). The determinants of corporate debt maturity: evidence from UK firms.

*Applied Financial Economics*, Vol. 12, pp. 19-24.

Sharpe, S.A. (1991). Credit Rationing, Concessionary Lending, and Debt Maturity, *Journal of Banking and Finance*, Vol. 15, pp. 581-604.

Shah, A. and Hijazi, T. (2004). The determinants of capital structure of stock exchange-listed non-financial firms in Pakistan, *Pakistan Development Review*, Vol. 43, pp. 605-618

Stohs, M.H. and Mauer, D.C., (1996). The determinants of corporate debt maturity Structure. *Journal of Business*, Vol. 69, pp. 279-312.

Titman, S., and Wessels, R., (1988). The determinants of capital structure choice. *Journal of Finance*, Vol. 43(1), pp. 1-21.

Rajan, R., and Zingales, L., (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, Vol. 50(5), pp. 1421-1460