

## Impact of Capital Structuring on the Financial Risk: A Study on the Listed Companies in Pakistan

Commerce

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### Abstract

*The purpose of this research is to empirically examine the impact which capital structure choice has on the financial risk of the Pakistani firms listed in Karachi stock exchange (KSE). It examines the relevant literature on capital structure and financial risk from different methodological strands and synthesis. This literature review shows the challenges that remain in the firms for quantifying and measuring the impact of capital structure and financial risk. The research Methodology adopted by the researchers is based on the ideology of objectivism. This study used descriptive statistics, Pearson correlation matrix and econometric model pooled OLS for analysis of the panel data was applied to 58 companies in Pakistani market listed on Karachi stock exchange (KSE) selected to estimates the effects of capital structure of firms financial risk for the period of 2004 to 2011. The results of the study show that capital structure measured by Long-term debt to total assets, Short term debt to total assets and Total debt to total assets have a significant positive effect on firm's financial risk measure (Beta and Total risk). Firms listed on KSE of Pakistan are largely dependent on equity and short-term debt but debts are attached with strong covenant which increase the financial risk of the firm. This study discloses a noticeable fact that Pakistani firms are either mostly financed by equity capital or a mixture of equity capital and short term financing. This is the first paper to study multiple sectors in Pakistan on the stated topic and contribute to the existing literature.*

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## **1. Introduction**

Different types of sources are needed by corporation to finance their operations and investments. It has been a main subject and of great interest for researchers in the literature of finance to decide the financing patterns of corporations. Firms which are in need of fund use mixture of financing options. There are three types of financing modes from which a firm can choose any option to finance their assets. Firms can use equity by issuing shares and can use internal funds in form of retained earnings and can also borrow from external parties (Hovakimian et al., 2001). Decisions about combinations of debt and equity are one of the critical decisions of any firm. In financial literature of corporate choice of capital structure has been a great issue of subject due to influence of structure of capital on cost and investment sources of firms and ultimately the firm's performance (Umar et al., 2012). In other words, it is association between capital of equity and capital of debt that are joined in order to achieve and accomplish the firm's goals (Frank and Goyal, 2009).

Firms try to find the appropriate combination of different funds that maximize the firms overall value and explore the effects of risk of combination of capital structure (Desai et al., 2007). An optimal capital structure minimizes the risk of the firm and reduces the cost of capital. In the developing economies like Pakistan the capital structure decisions are important and in time of stability of economic environment these decisions becomes more difficult for corporations.

## **1.2 Capital Structure Theories**

Proportion of each fund in capital structure is determined by the nature of the firm and this leads to different theories of capital structure. Capital structure differs from firm to firm in order to attempt to enhance the value of their respective firms. Every theory describes the optimal capital structure according to their point of view how it contributes towards the firm value (Harris and Raviv, 1991).

In 1963 Modigliani and Miller covered up the assumptions of company tax by publishing correction in their previous assumption and purposed that the firm value or capital cost varied with the variation in the employment of the debt because of tax benefit (Modigliani and Miller, 1963). When optimal capital structure established then it should provide more earnings to holders of stock than all equity firms (Muritala, 2012).

In trade-off theory firms follow a target debt to equity ratio and focus on the benefit and cost of issuing debt then works accordingly. Mayers and Majluf

(1984) concluded the requirement for balancing the cost and benefit of debt financing in a widely known theory as static trade-off theory. Therefore, according to the theory of trade-off firms which are more profitable have high earnings to shield and so that firms could take tax advantage by borrowing more and use high portion of debt in capital structure. Thus, the firms should balance the level of debt and risk that is associated with that (Desai et al., 2007). Pecking order theory (POT) initially was proposed by Donaldson in 1961 and later it was modified by (Mayers and Majluf, 1984) and they stated that firm pursues a hierarchy of financial decisions when established its capital structure. Firstly, a firm prefers to finance their assets or projects through internal financing i.e. retained earnings.

Signaling theory was originally developed by Ross (1977) and according to him debt is viewed as the way to show up investors trust in the company (Ross, 1977). It is one more approach to describe the capital structure of the company. It is different in the information level by which the outsiders have the opportunities of investments and firms income spreading. Agency theory is recognized by the Jensen and Meckling (1976) that only conflict exist between shareholders and a managers' interest because the managers' share is less than 100% in the firm (Jensen and Meckling, 1976).

### **1.3 Capital Structure and Financial Risk**

The association among capital structure and financial risk is one that has received substantial attention in the literature of finance. In decreasing the risk and increasing the value of the firm, the decisions about capital structure play a very essential and central role. Froot and Stein (1998) expressed that investigation of all relationships of capital structure choices with financial risk of the firm are very important for several reasons. Firms are keen to maximize their profits and value and minimize their cost of financing by maintaining optimal capital structure (Frank and Goyal, 2009). Organizations may face numerous issues by using 100 percent equity as higher taxes. In contrasts, if a firm uses hundred percent debts then it faces difficulties in which whole profits are dispersed among the debt providers (Hovakimian et al., 2001). Firms face problem of high risk by using high level of debt beyond the certain limit. Therefore, a capital structure should be an appropriate level of debt and equity. (Porteous and Tapadar 2008).

Employed proportion of debt in capital structure indicates that management have better prospect about the risk that firm may face in future while equity send a negative signal to the market about the firm future financial risk. It has been discussed that more profit earning firms are compared to less profit earning firms and less likely rest on debt proportion in their capital structure. It has also been discussed that the firm which are in growth stage

have a greater ratio of debt to equity. It was also found that bankruptcy cost had a great impact on capital structure. In exercise, firm managers are compensated by minimizing the cost of debt of firm in so doing by maximizing the revenue of the firm who are capable to recognize the optimal capital structure.

Vaaler and James (2006) found a positive relationship between leverage level and the financial risk. Firms use internally generated funds when their profits are high and risks are less. The relationship between the debt ratio and financial risk is positive and significant, as firms increase their debt level at the same time financial risk will also increase. Besides that, higher cost of borrowing cost of increasing finance are also very high in Pakistan that also prohibits firms to depend largely on internal funds, the reason for that is the equity market in Pakistan are also limited or no worse level of trading.

## **2. Literature Review**

In past decades many researchers tried to find out the optimal CS. Many of them made theoretical assumption to evaluate the optimal capital structure (Michalek, 2013) suggested that there are many difficulties and problems that are associated with these theories. First and the most important problem are to evaluate the optimal CS. The relationship between the capital structure and risk have become the important and major issue of investigation specially in Asian countries like Pakistan while facing many crises that effect the decisions of the firms (Bas et al., 2009).

Hovakimian et al. (2001) focused on firm's decisions about capital structure. When firms want to change the composition of CS they proceed to select the debt ratio that is associated with the theories consisting on cost of debt and benefit earns from it. Firms may face problems while changing their debt ratio as the firm's profitability and growth change. Company move towards the repurchase of the equity instead to minimize the debt. Firm's financial decision also depends upon the stock prices and during high stock prices firms prefer to issue equity than debt. Leverage variables also have the close link either equity or debt ratio increase or decrease and the variables also predict the amount of repurchase (Leland and Toft, 1996). There are some factors of CS that are similar in many countries such as leverage (Wald, 1999) studied the factors that are associated with CS in UK, Germany, Japan, France factors are similar and different in cross countries. Institutional differences of different countries are also examined.

There are many factors that create difference in outcome of each country. There are also some factors that are consistent among all the countries like profitability, research and development moral obligations and tax deductions. Modigliani and Miller gave the theory of capital structure in 1958.

MM pointed out the factors under which the theories of CS are unrelated with each other. Later on Harris and Raviv, (1991) mainly focused on the conflict among the different groups of the firms. Results concluded that in few cases there were the two or more theories having the negative relationship and the increase in the leverage became the cause in decrease in profits (Luigi and Sorin). It totally depends upon the company to decide the percentage of debt and equity. Reduction in the debts may cause to increase in the transaction cost. This approach does not allow the managers to minimize the firm's debt (Ozkan, 2003).

Many micro factors affect the firm's choices of capital structure. Company size, earning, growth, non-tax shield and fluidity are the main factors. Liu and Ning, (2009) revealed these factors in Chinese electric power companies. Equity capital consists on nominal and actual cost. Firms earning high profit borrow less money have less debt will have more retained earnings. There is negative association among the growth and the debt ratio which means that increase in the sales of the firm will decrease the debt ratio. Profitability also has negative association because if profitability is high then debt ratio will be low. There is insignificant correlation between the fluidity and debt ratio. In order to analyze these factors different strategies are used like research and development strategies and market competition strategies (AL-Shubiri, 2012). Michealas et al. (1999) focused on the new upcoming small organizations' capital structure decisions. As small growing organization have major impact on economic decline and financial data of small and medium firms used. Modigliani and miller theories are used to determine the CS debt level, time and industry influence. Long term debt has the significant relationship with the changes in the growth of the economic conditions of the small business sector. It was concluded that time and the industry related factors influence the maturity of the debt used by the SMEs. In previous decades small firms did not use high amount of debt consequently SMEs are less profitable as these firms have less tax advantage (Forte et al., 2013).

Umar et al. (2012) Concentrated on the impact of capital structure by using the 3 variables, current liabilities to total assets, total liabilities to total assets, and long term liabilities. Under the perfect conditions CS does not affect the value of the firm. Results indicate that there is negative relationship between the return on equity and CTTA and TLTA. Robb and Robinson, (2010) undertook research to examine the CS choices of the firms in order to complete their start up activities and projects. In early years mostly firms relied on the high amount of external debt. Kauffman firm survey and novel data were used to study the pattern and choices of capital structure by the organizations.

Bhamra et al. (2008) studied the effects of microeconomics conditions on the evaluation of assets, policies and strategies of the organization and preferences of CS of the organization. For this study structure-equilibrium model was used. There is a link between the real risk and neutral default prospect. Study found that most favorable decision of the organization is much conventional when firms want to fulfill their financial responsibilities. Svendsen (2003) introduced the new and different objective named as "elimination of cost lower trail outcomes". According to this cost of project is reduced to use the firm's ability to bear risk in the projects. Some companies having the relative benefit as compared to other companies by reducing the anticipated cost of financial anxiety on the other hand others fail to manage. Kuhnan and Knutson (2005) studied the behaviors of investors that sometimes diverge from logical decisions about risk taking, although there are many factors that are the cause of this divergence and there is no method or technique to identify those factors. Diebold and Santomero (1999) studied about Asian financial crises and found that these crises affect the global market as well. Just as these effects were so, extreme that these crises brought the new message to the world to manage financial risk. And the situation suggested that this is the responsibility of the managers to handle and fix the financial risk. Fama and French (1993) examined the risk factor that related to the firm's stock and bonds. Three factors are related to the stocks and two related to the bonds of the firm. First stock factor is firm's size, second in book value of the equity in the market, third is whole market related to the stock, fourth is maturity of the bonds and the last one is original risk related to the bonds.

Risk management plays an important role in the long term development of the company. Small and medium size firms have a great influence on risk management and capital structure. Fu and May (2012) found that there is significant relationship between the capital structure and debt level of the firms. CS and managing financial risk is very important for the firm capital and financial decision. Amidu and Hinson (2006) investigated the CS and cost of holding risk of banking sector of china. Credit risk plays a vital role in banks capital decisions. Asian markets provide the better environment to analyze the risk associated with the capital structure. Vaaler et al. (2006) formulated a model to understand factors that are associated with the capital structure and financial risk. Different factors affect the CS and FR like syndicate level factors and project level factors.

Leland (1998) investigated the combination of CS and investment risk wherein agency cost minimized the leverage and maturity of the debt and became the cause of increase in yield spread, but the effect of this is not very considerable. Hyena found that if agency cost of the firm is low the then hedging benefits are high. Boehlje categorized the operating risk of the

organization in two types. Operating risk can be explained as the inherent variance with the firms operating profit. Operating risk can be related to the debt and equity from which business operation is financed. Froot and Stein (1998) analyzed the risk management, capital budgeting, capital structure in banking sector and they found there are two main points for analysis. Firstly value maximization for the banks and the risks that are related with this. Secondly, main point of the study is that all the frictions and fluctuations are not risks that related to the capital structure.

Hackbarth et al. (2006) build a framework to investigate the effects of microeconomics conditions on the firm's risk and capital structure decisions. Firms should be careful about the microeconomics conditions of the country when the conditions are favorable firms should adopt or formulate their policies accordingly. Allayannis et al. (2002) pointed out the company choices to select the debt type. There are 3 types of debts local currency debt, foreign currency debt and hedged foreign currency debt. The analyses based on firms specific, industry specific and country specific. They use some common as well as different set of factors to determine the types of debt by different Asian countries debt and capital polices.

Desai et al. (2007) studied about the business risks of the firms. Business risk has an ability to alleviate the effects of these risks by managing their dynamic capital structure. Furthermore, Racelis (2007) diagnosed that a conservative thinking exist in financial management that perfect capital structure subsist in the non-ideal capital market where lots of factors influence the dynamic capital structure such as business and individual tax. Buch and Lusine (2004) concentrated on maturity period of debt is the most important part to focus on CS. Generally short term debt used as strained and non-ability to set off the cash difficulties. Purpose to determine optimal level of STD there is many theories and evidences. Thus, firms need optimal CS to support their financial operations and also need to develop the combination of CS that is most suitable for the firm's financial activities.

## **2.1 Hypothesis Development**

Masud et al. (2013) conducted study and revealed that effective management of the firm plays vital role in increasing or decreasing risk. Higher the debt ratio of the firm higher will be the risk for the firm. Inefficiency of the management (when company having more loan) can cause unfavorable conditions. Porteous and Tapadar (2008) highlighted the impact of capital structure on the risk adjusted performance. Study also focused the capital structure allotment. Firm's real capital that is based on debt to equity ratio has a major impact on risk adjustment performance of the banks and insurance companies. Diamonds and He (2011) explained the short term debts are more

risky. Effects of STD can be stuck out as compared to long term debt. They formed an optimal ripeness structure that consist of two factors, first is based on tradeoff among that LTD can be extended in the best times and second tradeoff among that STD can be extended in bad times of the organization. Anecdotal to the previous studies we go for the following hypothesis:

***H0:*** There is insignificant relationship between long-term debt and non-financial firm's financial risk in Pakistan.

***H1:*** There is significant relationship between long-term debt and non-financial firm's financial risk in Pakistan.

***H0:*** There is insignificant relationship between short-term debt and non-financial firm's financial risk in Pakistan

***H2:*** There is significant relationship between short-term debt and non-financial firm's financial risk in Pakistan

***H0:*** There is insignificant relationship between total debt and non-financial firm's financial risk in Pakistan.

***H3:*** There is significant relationship between total debt and non-financial firm's financial risk in Pakistan

### **3. Research Methodology**

Research methodology is used to help to understand that what the methodology is. It refers to the philosophy of research, research approach, methodological choice, research strategy and research design. It tells about the population and sampling technique of the study, variables description and hypothesis of the research, model specification and statistics tools of data analysis.

#### **3.1 Research Philosophy**

In this study quantitative approach is applied for data collection method based on the financial statements of companies listed in KSE (Karachi Stock Exchange) to achieve the mentioned three research objectives and in order to test the hypothesis. Research strategy based on the plan how the researchers answer the research questions and concerns about the overall strategy adopted by the researchers. Research strategy allows the third parties to evaluate that how carefully the researchers formulated the strategy to test the proposed investigation (Saunders et al., 2009). This study has developed a number of hypothesis and these will be tested and analyzed by the empirical data collected from the financial statements of non-financial firms listed on KSE (Karachi Stock Exchange) in order to investigate the relationship between the

Capital structure and financial risk. There are three types of research: Exploratory, Descriptive and Explanatory (Beissel-Durrant, 2004).

The present study is based on the descriptive and exploratory nature. So far, no study has been conducted in Pakistan that investigate the relationship between the capital structure and financial risk of non-financial companies in Pakistan during the time period of 2004-2011 as it is the first of its type in the Pakistan KSE listed non-financial companies. Researcher should concentrate that sample is appropriate to draw the conclusion about the population (Saunders et al., 2009). This study covered the non-financial firms which are listed in Karachi Stock Exchange (KSE) and include the period of eight year from 2004-2011. Initially 100 firm were selected as these firms have complete data for the selected time period of the study. Later on firms were excluded from the sample of the study due to a negative profit and equity and absence of data of study finally after the screening process 58 firms were selected, non-financial firms having 472 firms years data and observations from 14 different non-financial industrial sector.

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**Table 1. Construction of final sample:**

<b>Year 2004-2011</b>	
<b>KSE 100 index companies</b>	<b>100</b>
<b>Less : financial firms</b>	<b>28</b>
<b>Less : Firms with missing data</b>	<b>14</b>
<b>Final Sample</b>	<b>58</b>

Data collection method plays an important role in research design. Primary source and secondary source are two types of data collection method. Secondary data is that when researchers use the data that already exist in the public domain collected by the others. Primary data is that which is collected by the first hand by the researchers (Hox and Boeije, 2005).

In order to examine the above stated research objective research data is collected from the secondary source from the financial statements of the non-financial firms listed on the Karachi Stock Exchange. These financial statements of non-financial firms issued by the State bank of Pakistan. In the annexure number one whole list of sample companies together with the corresponding industries sectors also have been included the final part of the report. KSE 100 index values are collected form vital information service (VIS) database. This study used descriptive statistics to define and to comprehend the elementary features of the data that are used in this study.

Correlation analysis is a statistical technique that was used in present study to define the extent and degree to which one variable is linearly associated to other variable. Ordinary least Square (OLS) was used alternatively to measure the relationship between the dependent and various numbers of independent variables as multiple regression models do. These three quantitative analysis earlier performed by (Harris and Raviv, 1991; Wald, 1999; Svendsen, 2003; Amidu and Hinson, 2006; Racelis, 2007).

### **3.1 Variables Description of Research**

There are number of independent variables that are used in the previous researches. Independent variables are used that are short term debt, long term debt and total debt to total assets. Previously these three measures were used by (Buch and Lusine, 2004; Allayannis and Klapper, 2002; Liu and Ning, 2009; Diamonds and He, 2011).

We take two dimensions of risk in order to access the possible sensitivity of the results that is total risk and systematic risk. Total risk is measured by annual standard deviation of daily stock returns with maximum 248 days and minimum 30 days in a year following the formula by Pathan (2009). Systematic risk is measured by beta by using single index market model by using KSE 100 index daily returns and daily stock returns of particular company. Erb et al. (2014) used many risk indicators in their study. (Racelis, 2007) selected systematic risk as a variable to measure capital structure. Chamber et al. (2013) measured the effects of capital structure by using the beta coefficient as a dependent variables.

There are number of control variables are used in this study after configuration of dependent and independent variables. Control variables are size, firm age, growth, assets turnover and liquidity that was previously used by the (Kurshev and Strebulaev, 2005; Kumar et al., 2001; Becker et al., 2010).

### **3.2 CONCEPTUAL FRAMEWORK**

The relationship of capital structure with financial risk and control variables illustrated

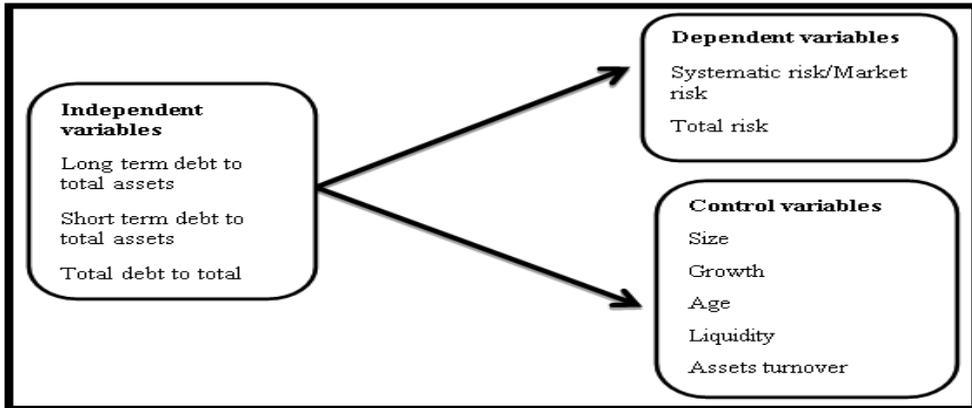
By the diagram below:

**Figure 3-10 conceptual frame work**

## **4. ANALYSIS, RESULTS AND DISCUSSION**

### **4.1 Descriptive Statistics**

Table 4-1: Summary statistics of all variables, 2004-2011



variable	Mean	SD	Min.	1st Quartil e	Media n	2nd Quartil e	Max :	Skew :	Kurt: :
<b>Independent Variables</b>									
LTD	.139	1.03	0	.000	.132	.167	22.1	21.0	449.8
STD	.105	.158	0	.001	.055	.159	1.54	4.71	36.10
TD	.245	1.04	0	.003	.136	.323	22.2	20.1	423.6
<b>Dependent Variables</b>									
SYSR	.796	.503	-.16	.440	.806	1.10	2.82	.637	1.197
TR	.042	.072	.00	.019	.024	.030	.76	5.34	35.45 2
<b>Control variables</b>									
Size	7.604	.001	7.60	7.603	7.604	7.605	7.61	-.001	-.238
Growth	-.790	9.92	-	.041	.129	.284	105.	-	72.01
		9	98.1				9	2.796	
Age	51.29	1.18	2.00	17.00	33.00	52.00	932.	7.008	49.27
	3	6					0		
Liquidity	2.011	1.82	.07	1.018	1.402	2.313	13.9	3.132	13.19
		0					7		
Turnover	.217	.247	-.17	.117	.188	.292	4.57	12.07	206.5
N Valid	464								

Note: LTD/TA = Long term debt to total assets, STD/TA = Short term debt to total assets, TD/ TA = Total debt to total assets, SYSR are calculated by the Beta of the firms, TR is the total risk measure by the annualized standard deviation of daily stock returns with minimum 30 days and maximum 248 days in a year, SIZE =Natural logarithm of assets, GROWTH = Annual changes in sales, AGE = age( log of number of years since the company is incorporated),LIQUIDITY = ( Current assets/ Current liabilities), TURNOVER = Assets turnover (sales/total assets)

Descriptive statistics for all variables used in this study including independent, dependent, and control variable consisted on 58 non-financial firms listed in (KSE) for time period 2004 to 2011 are reported in table 4.1.

The mean of total debt ratio is 45% it indicates that most of the top 100 index companies of KSE in Pakistan are partially levered while minimum value is zero and maximum is 22.2 reflecting that some company's equity proportion have been completely damaged and changed into negative values. The results indicated that there is high variation in using debt.

The mean value of long term debt is 13% while there is high standard deviation and high dispersion in the minimum and maximum values. Mean value of the of short term debt is 10% and 15% standard deviation which is low as compared to the total debt and long term debt which means firms in Pakistan overall finance their projects and operations by equity and in long run operate in low risk and take more short term loans as compare to the long term loans. The mean value of SYSR is almost 80% and standard deviation is 50% which means that volatility of the firm's stock market is high and the expected rate of return of the stocks are risky. While the minimum values of the SYSR indicate that firms also operate with negative volatility with the 282 percent of maximum values which means that there is high dispersion between the minimum and maximum values.

The mean value of the total risk is 4% and standard deviation is 7% which indicates that Pakistani firm operates in daily stock returns with low level of risk. Skewness figures shows that risk measures are rightly skewed distribution with most values concentrated on the left of the mean while extreme values on the right side of the mean. Kurtosis indicates flatness and peakness of the distribution.

201 percent mean of the liquidity and 182 percent standard deviation indicate that mostly firms operate with liquid assets there is high extent of deviation in the liquid ratio of the firm. Mean value of size 7.60 and standard deviation is .001 it means that size of the firm increase the firms value. Growth mean value is -.790 and standard deviation is 9.92 which indicates that firms in Pakistan having negative growth rate and have high volatility in sales returns. The mean value of age is 51.2 and standard deviation is 1.18. Low standard deviation indicates that mean of the age is close to the actual mean of the overall sample firms. Turnover has a mean value 21% and standard deviation is 24%. In order to accomplish the purpose of determine efficiency of management assets turnover ratio is a significant financial ratio.

**Table 4.2 : Correlation Matrix of Explanatory variables' 2004-2011**  
Pearson correlation:

Variables	LTD	STD	TD	size	Growth	Age	Liquidity	Turnover
LTD	1							
STD	.032	1						
TD	.988**	.183*	1					
Size	-.081	-.026	-.084	1				
Growth	.024	.026	.033	.159**	1			
Age	-.027	-.102*	-.042	.019	.030	1		
Liquidity	-.083	-.306**	-.128**	-.024	-.198**	-.056	1	
Turnover	-.059	-.091	-.072	-.019	-.012	-.050	.087	1

Note: \*\* significant at 1% level (2-tailed) and \* significant at 5% level( 2- tailed) LTD/TA = Long term debt to total assets, STD/TA = Short term debt to total assets, TD/ TA = Total debt to total assets , SIZE =Natural logarithm of assets, GROWTH = Annual changes in sales, AGE = age( log of number of years since the company is incorporated),LIQUIDITY = ( Current assets/ Current liabilities), TURNOVER = Assets turnover (sales/total assets).

From the results it is indicated that there is negative relationship among the firm size and long term debt but no statistical significant. Leading reason of this relationship may possibly be due to the larger firms require more long term debt than they have to pay more interest on it which is normally met by obtaining debt financing while there is negative relationship between the short term debt and size. There is insignificant negative relationship among the total debt and size of the firm.

There is positive relationship between the growth and the long term debt of the firm and this indicates that large firms have a tendency of higher ratio of debt with lower opportunities of the growth while the growth also have a positive relationship with the short term debt and long term debt it means that by having the more debts large firms have more opportunities to grow. It also implies that there is there is significant positive association among the growth and the size of the firm it means that large firms have opportunities to grow according to (Wald, 1999)

Firm age and long term debt have negative but insignificant relationship it may be due to firms with more age less prefer to take more loans, and there is significant negative relationship between the short term debt and the age of the firm while there is also insignificant association among the total debt and age. Meanwhile age have a positive relationship with the size and growth which indicate that firms with more years since incorporation have more volume of sales and having opportunities to grow according to (Amit and Thornhill, 2003).

There is insignificant correlation between the liquidity and long term debt, and there is significant relationship among the liquidity and the leverage of the firm which means that high liquidity endorses the availability of inner fund of firms

which cause reduction in external funds (Anderson and Carvehill, 2010). It shows that debt level decrease with the increase in the level of current assets. There is negative association among the firm size and liquidity of the firm. Firm's growth and liquidity having strong relationship which indicates which firms use more current assets have fewer opportunities to grow.

Assets turnover which measures the efficiency of management have an insignificant negative relationship with the debt (including long term debt, short term debt and total debt). Turnover also has negative association with the size, growth and age. Liquidity and turnover have the positive relation with each other.

### 4.3 Regression Results

The results of pooled regression models are presented in table 3 and table 4. As financial risk is measured by SYSR and TOTAL RISK which are presented in separate tables 3 and 4 respectively. Both measures of financial risk are shown separately with long term debt, short term debt and total debt. Under each leverage ratio, model 1 run without control variable and model 2 run with control variables in order to check the influence of control variables on firm's financial risk.

In the following results adjusted R square value is low as the capital structure measured by three variables LTD, STD and TD are used as a single independent variable in checking the relationship. There are two regressions for each of the dependent variable (Beta, Total Risk) reflecting the three capital structure measures (LTDTA, STDTA, TDDTA)

#### 4.3.1 Empirical model

To examine the impact of capital structure on the financial risk following regression equation were run.

$$\text{SYSR}_{i,t} = \alpha + \beta_1 \text{LTDTA}_{i,t} + \beta_2 \text{TURN}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{GROW}_{i,t} + \beta_6 \text{LIQ}_{i,t} + \epsilon_{i,t} \dots\dots\dots 1$$

$$\text{SYSR}_{i,t} = \alpha + \beta_1 \text{STD}_{i,t} + \beta_2 \text{TURN}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{GROW}_{i,t} + \beta_6 \text{LIQ}_{i,t} + \epsilon_{i,t} \dots\dots\dots 2$$

$$\text{SYSR}_{i,t} = \alpha + \beta_1 \text{TDDTA}_{i,t} + \beta_2 \text{TURN}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{GROW}_{i,t} + \beta_6 \text{LIQ}_{i,t} + \epsilon_{i,t} \dots\dots\dots 3$$

$$\text{TRI}_{i,t} = \alpha + \beta_1 \text{LTDTA}_{i,t} + \beta_2 \text{TURN}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{GROW}_{i,t} + \beta_6 \text{LIQ}_{i,t} + \epsilon_{i,t} \dots\dots\dots 4$$

$$\text{TRI}_{i,t} = \alpha + \beta_1 \text{STD}_{i,t} + \beta_2 \text{TURN}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{GROW}_{i,t} + \beta_6 \text{LIQ}_{i,t} + \epsilon_{i,t} \dots\dots\dots 5$$

$$\text{TRI}_{i,t} = \alpha + \beta_1 \text{TDDTA}_{i,t} + \beta_2 \text{TURN}_{i,t} + \beta_3 \text{SIZE}_{i,t} + \beta_4 \text{AGE}_{i,t} + \beta_5 \text{GROW}_{i,t} + \beta_6 \text{LIQ}_{i,t} + \epsilon_{i,t} \dots\dots\dots 6$$

Table 4-3 Estimation Result for pooled data Beta model using LTD, STD and TD

Variables	SYSR(LTD)		SYSR(STD)		SYSR(TD)	
	Model 1	Model 2	Model 1	Model 2	Model 3	Model 3
Constant)	1.1 .789 (33.50)***	1.2 -184.1 (-1.160)***	2.1 .801 (28.40)***	2.2 -137.4 (-863)	3.1 .785 (32.72)***	3.2 -153.7 (961)
Debt	.050 (2.20)**	.532 (2.74)***	-.047 (-.316)**	-.217 (-1.39)	.047 (2.123)*	.070 (-.593)
Size		24.31 (1.16)**		18.2 (.869)		20.32 (.967)**
Growth		.000 (.113)		.000 (-.108)		.000 (-.046)
Age		.000 (-.920)**		.000 (-1.418)		.000 (-1.128)**
Liquidity		-.022 (-.560)*		-.040 (-.740)***		-.030 (-1.99)***
Turnover		-.080 (-.840)		-.120 (-1.26)		-.103 (-1.07)**
Adjusted r square	.008	.025	-.002	.013	.008	.010
F statistics	4.877***	2.979***	.100***	2.028*	4.509***	1.758*
Durban - Watson	.677	.699	.689	.694	.676	.686

Note:- Numbers in parentheses are asymptotic t- values.= Long term debt to total assets, , STD/TA = Short term debt to total assets, TD/ TA = Total debt to total assets, SYSR are calculated by the Beta of the firms, SIZE =Natural logarithm of assets, GROWTH = Annual changes in sales, AGE = age( log of number of years since the company is incorporated),LIQUIDITY = ( Current assets/ Current liabilities), TURNOVER = Assets turnover (sales/total assets). T values are reported in parentheses. \*\*\* significant at 1 % level. \*\* significant at 5% level . \* significant at 10% level

**Table 4-4 Estimation Result for pooled data Total Risk model using LTD, STD and TD**

Variables	Total risk (LTD)		Total risk (STD)		Total risk(TD)	
	Model 4	Model 5	Model 5	Model 6	Model 6	Model 6
Constant)	4.1 .043 (12.62)***	4.2 82.75 (3.63)***	5.1 .042 (10.37)***	5.2 84.73 (3.73)***	6.1 .043 (12.38)***	6.2 83.70 (3.68)***
Debt	.009 (.091)***	.023 (.841)**	.009 (.423)	.009 (-.019)*	.000 (.154)	.008 (.494)*
Size		-10.87 (-3.63)***		-11.13 (-3.73)**		-11.00 (-3.67)***
Growth		.009 (1.036)**		.009 (1.022)**		.009 (1.038)**
Age		-1.689 (-.502)		-4.69 (-1.65)		-2.21 (-.077)
Liquidity		-.001 (-.502)*		-.002 (-.732)*		-.001 (-.511)
Turnover		-.009 (-.671)**		-.011 (-.779)*		-.010 (-.710)
Adjusted r square	-.002	.022	-.002	.020	-.002	.021
F statistics	.008***	2.69***	.179	2.57***	.024	2.618*
Durban - Watson	2.099	2.205	2.100	2.201	2.099	2.203

Note: Numbers in parentheses are asymptotic t- values.LTD/TA = Long term debt to total assets, STD/TA = Short term debt to total assets, TD/ TA = Total debt to total assets, TR is the total risk measure by the annualized standard deviation of daily stock returns with minimum 30 days and maximum 248 days in a year, SIZE =Natural logarithm of assets, GROWTH = Annual changes in sales, AGE = age( log of number of years since the company

is incorporated), LIQUIDITY = ( Current assets/ Current liabilities), TURNOVER = Assets turnover (sales/total assets). T values are reported in parentheses. \*\*\* significant at 1 % level. \*\* significant at 5% level . \* Significant at 10% level.

## **4.5 Testing of Hypothesis**

The above values of descriptive test, Pearson Correlation Matrix and Pooled Ordinary Least Squared (OLS) of Panel Data give detail view of regarding T-values are used to test the study hypothesis. These results are generated by the equation structural model in order to test the hypothesis are explained in the following subsections.

### **4.5.1 LTDTA and FR**

Regarding SYSR in the OLS results F statistics is significant at 1% level it shows that LTDTA has a negative significant relationship with non-financial firm's financial risk in Pakistan without control variables. With control variables it is also significant at 1% level but it has a positive significant relationship with non-financial firm's financial risk in Pakistan.

By another measure of financial risk TR in the OLS results F statistics is significant at 1% level it shows that LTDA has positive significant relation with non-financial firms' financial risk in Pakistan with control variables and without control variables. Finally, these findings empirically support the H1, that there is a significant relationship between the long-term debt and non-financial firm's financial risk in Pakistan.

### **4.5.2 STDTA and FR**

By using SYSR in the OLS results F statistics is significant at 1 % level it shows that STDTA has a positive significant relationship with non-financial firms financial risk in Pakistan without control variables. With control variables it also has positive relationship at 10% level with non-financial firm financial risk in Pakistan.

Regarding financial risk measure TR in the OLS results F statistics is not significant it shows that STDTA has insignificant relationship with non-financial firm's financial risk in Pakistan. With control variables it has significant positive relation at 5% level. Finally, these findings empirically support the H2, that there is significant relationship between short-term debt and non-financial firm's financial risk in Pakistan.

### **4.5.3 TDTA and FR**

The OLS results of TDTA regarding SYSR have positive significant F statistics at 1% level without control variables. It means that LTDTA has a positive significant relationship with non-financial firms' financial risk in Pakistan. With control variables it has significant at 10 % level. By using risk

measure TR F statistics is significant at 10% with control variables and without control variables it has insignificant F statistics it shows that TDTA has insignificant relationship with non-financial firms financial risk in Pakistan. Overall, these-results supports the H3 that there is a significant relationship between the long-term debt and non-financial firms' financial risk in Pakistan.

### Summary of Hypothesis Testing

Hypothesis	Result
<i>H1: There is a significant relationship between long term debt to total assets and no-financial firms financial risk in Pakistan.</i>	<i>Supported</i>
<i>H2 : There is a significant relationship between short term debt to total assets and non- financial firms financial risk in Pakistan.</i>	<i>Supported</i>
<i>H3: There is a significant relationship between total debt to total assets and non- financial firms financial risk in Pakistan.</i>	<i>Supported</i>

### 5. Conclusion

The study examines the impact of capital structure on firms' financial risk of Pakistan. This study pools business research in two elements: One is from the international field of business on financial risk and second is from the field of corporate finance on capital structure. This study employed analytical tools of descriptive econometric in studying 58 Pakistani quoted companies with 464 observations for the period 2004 to 2011. The analysis was performed using both pooled OLS regression and panel data. A capital structure of firms was found to have a significant positive effect on the firms accounting and market measures of financial risk. These findings are in accordance with the findings of (Kumar et al., 2001; Racelis, 2007; Muritala, 2012; Donker et al., 2013).

This study attempt to fill the gaps which are left by other studies by examining the influence of capital structure on financial risk of Pakistan firms by way of extending measures of financial risk and adding many control variables that has not been previously employed in Pakistan studies. In order to examine the fluctuating impact of capital structure on financial risk the present study used different measures of capital structure such as long term debt to total assets, short term debt to total assets and total debt to total assets. Moreover, two financial risk measures used that are the Beta and total risk as market performance. Moreover, could be valuable to investigate the impact of capital structure on financial risk by both accounting and market measures as it provide indication about whether the firm's stock market is efficient or not.

There are several issues related to this topic of study, but not all the issues are mentioned. This study only focuses on the issues that are raised in the research objectives. The limitations are such as; this study does not take into the consideration other risk measures like business risk, systematic risk, idiosyncratic risk etc. The analysis is restricted only to the accounting and market measures such as such as Beta and Total Risk. This study does not hold the immediate effects on the financial risk of any changes in structure of corporate governance, this study only focus on the impact of capital structure on financial risk. Time period of the study and quantity of the data also limited this study to create more consistent results. It study only one emerging market which can not signify the emerging market as a whole, it does not cover all the emerging markets.

Further research should be directed on finance and the other sector of the economy in the market of Pakistan to check the reliability of the results across the several industries. New variables additions and other measures of risk in order to investigate the impact of capital structure on financial risk and it can reveal some new perceptions from the Pakistani markets. Furthermore, the addition of industry specific variables and some macroeconomic factors in examining the impact can be significant, such as emphasized in some of the developing countries.

However, capital structure issues relating still remain touchy and puzzle specially in transition markets like Pakistan. Further research could inspect the determinants of capital structure of Pakistani firms such as last year performance, effect of borrowing etc, and compare results with developed markets. Further research could examine the relationship between the structure of maturity of debt of firm and its assessments and performance. Finally, further research could examine the combined impact of both ownership structure and capital structure on firm's financial risk.

In conclusion, present study provides the evidence of an association among the capital structure and firms financial risk. Independent variable capital structure (long term debt, short term debt and total debt) have positive impact on the dependent variable financial risk measured by systematic risk and total risk. In Pakistan capital structure is selected on the basis of the packing order theory. Firms in Pakistan 14% financed by the long term debt 17% financed by the short term debt and 32% financed by the total debt. This study contributes in more effective management of the capital structure that plays a role in order to reduce the risk. This study also have some limitations such as present study does not have immediate effects on the financial risk of any changes in structure of corporate governance and it does not cover all the emerging markets.

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