

# IMPACT OF CAPITAL STRUCTURE ON THE FIRM PERFORMANCE: COMPREHENSIVE STUDY OF KARACHI STOCK EXCHANGE

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**ABSTRACT:** *Decisions taken by organization's top management against capital structure are of critical and fundamental nature as such decisions are capable of maximizing the profit of shareholders along with an increase in overall performance of the organization. The purpose of this study is to evaluate the impact of capital structure on the financial performance of Pakistani companies by using a sample of 100 non-financial firms listed on the Karachi Stock Exchange during the 2004 – 2012. Required data of the selected firms are gathered and analyzed using STATA version 14. The relationship between the total debt, short-term debt, long-term debt as capital structure variables and corporate performance indices such as return on equities, return on assets Tobin's Q and earning per share was explored using the regression models. It is founded that short term and long-term debts decreases corporate performance. Moreover, total debt to total assets has a significant relation with the company performance.*

**Keywords:** Capital structure, Karachi stock exchange, Firm performance

## INTRODUCTION

Either a business is new or its ongoing, it needs finance to carry out its daily operations. In the absence of the fund's resources, the success of any firm is under pressure and not achievable. Such fund's resources are typically referred as capital and it's like a company's financial liabilities. Companies can obtain this capital from internal or external sources to increase their activities. Its manager's duty to make a mix of equity and debt financing that will increase the value of the company. There is no precise method for making combination optimal capital structure. Therefore, mostly managers evaluated the cost of all sources of capital and finance through lowest cost source because it will increase the firmness profitability.

“The idea of shareholder value as a key indicator of a firm's financial performance is driven by investors. These investors are looking for greater returns to enlarge their wealth through the company's management. The longer a company can sustain and progress its competitive advantage, the more valuable its shares will be later. This will be reflected in the wealth of the firm's investors who are looking to invest in a strong future cash flow firm. These investors can convince or compel the firm's management to generate the shareholders' value” [1]

Generally, the capital structure is the blend of a firm's equity and level of debt [2]. Therefore, financial manager needs to take the best capital structure combination that lead to the improved organizational performance by minimizing cost of financing. Companies cannot finance its business either purely on equity or purely on debt due to its negative consequences. Hence, capital structure decisions are very crucial and fundamental decision taken by firm's top management because such decision maximize the shareholders profits as well as increases overall performance. Many theories given by different authors emphasize and discussed the effect of capital structure on the firm profitability. We can identify these theories as capital irrelevance theory (1958), Modigliani and Miller theory (1963), The agency theory (1976), The trade off theory (1977), Pecking order theory (1984) and the information asymmetry theory.

Capital structure irrelevance theory says that under specific assumptions in perfect market, company performance is not influenced by how it is financed to run business operations while it's depends on the value of company real assets [3]. In 1963, Miller & Modigliani made some changes in capital structure theory and explained that firm's value have a significant impact on the choice of capital structure. That's why, its firm's manager to make an optimal capital structure mix to maximize the company performance.

Usually, the agency problem exists in almost all the companies because of having different interests of shareholders and management. According to agency theory, managers do not choose an optimal capital structure while they chose such type of capital structure which given them maximum benefit's personality. Trade off theory explains that firms mostly take a balanced combination of debt and equity to increase their profitability level.

The pecking order theory argues that more profitable companies usually choose internal sources of financing to invest in newer projects which ultimately enhance shareholder value. Managers are more reluctant to obtain debt and if enough finance sources are not available internally, then they go for debt. The main point in information asymmetry theory is that managers have more accurate knowledge of their companies than outsiders. So, competent managers spread positive word of mouth about the company financial position.

“Capital structure is one of the key elements in examining firm solvency and it refers to the sources of the firm financing. It is known that financing range from relatively permanent equity capital to more risky financing sources” [4]. That's why, its crucial decision to choose that type of capital structure which gives the competitive advantage to the organizations. As previously, a plenty of research has been done in this topic, but mostly it is on the developed economy. So, this research is done to analyze the relation of a combination of capital structure and performance in the non-financial market.

### 1.1. Significance of study and Research gap

Although, a lot of research work was done in the Pakistani market on the relationship of capital structure decisions with

firm performance. But their sample size is mostly limited number of firms and takes few years data to generalize the result. So, this study will observe the top 100 companies of Karachi Stock exchange taken from all non-financial sectors to obtain more valid results.

The results of this study will be helpful to all shareholders (investors, creditors, employees, companies, government, suppliers and managers) and it can also be used by the Karachi Stock exchange to make effective allocation of resources and selecting an optimal capital structure in order to maximize performance and enhance the growth of Pakistani companies. The major research question of this study is that does capital structure has a significant effect on the company performance? Or does any change in capital structure decisions will change the firm performance or not?

The paper is structured in these different parts: first part is related to reviewing of the previous work on this topic and further part describes the research methodology along with the theoretical framework and research model. Section four is about results, discussion and final conclusion are given in section five.

## 2. LITERATURE REVIEW

Financing of the businesses is a very difficult task for a manager to handle because it includes selecting one source among different sources of finance like debt or equity. It's very critical decision taken by managers because it will affect the survival and performance of the companies [5]. Mostly, the company capital structure consists of mix % of equity or debt. "Capital structure is important because it affects the returns of the investors, and it is important to assess the firm's ability to deal with its competitive environment efficiently" [6].

Generally, larger companies are more profitable than small size firms due to easy access to more recent technology, having diversified businesses and acquire debt easily at lower interest costs. Different scholars confirmed that company performance is affected by company size. A significant & positive relation is found between firm performance and its size in Indian companies [7].

In [8], the authors discussed that organizational performance is based upon increasing return on assets & maximizing shareholder profits which ultimately enhances the company's effectiveness. There is an inverse association founded b/w firm's leverage level and its performance in the European countries [9].

Usually it's become risky for companies to get STD from local lenders, then LTD because of increasing the chances of insolvency. A study was conducted on the capital structure of the restaurant industry by others [10], which concludes that commonly companies choose both LTD & STD options to finance all its operations but they are more reliant on STD.

According to Holz [11], significant and positive association was found among firm's leverage level and its performance. Same relationship was also supported in another study of East Asia companies. The results of this study are positive relation exists among performance & Debt level of the companies [12].

Similarity, the author did a research on the companies listed on Ghana Stock Exchange and establish a direct relationship between STD and ROE while negative relation for LTD and

return on equity. While, a positive association was found between total debt level and company performance. He explained that approximately more than 80% financing is done by short term debt in Ghanaian organizations [13].

Similarly, [14] found a strong negative relationship among both variables. They measured firm performance by using both accounting based and marketing measures. On the other hand, the author evaluated a significant negative relation b/w the firm's leverage and company performance [15]. A research in the engineering sector of Pakistan was conducted by [16] covering the period from 2003-2009. The researcher finds out a negative relation among firm performance variables and STD ratio and TD ration. Therefore, the results cannot be generalized to other sectors of KSE. This paper tries to cover all sectors of Karachi Stock exchange to get more accurate results.

According to [17], capital structure of the firms has an impact on liquidity level. He examined the 707 Thai firms during 2002-08 to analyze this relationship. The findings of his research reveal that there is a negative relation of the firm's debt level and liquidity, which suggests that companies more prefer to finance through stocks rather than debt.

A significant negative relationship has been discussed by Sirikul [18] between performance measures, firm size and firm's leverage. Further, the significant and negative relationship between capital structure and firm performance were found by Berg, [19]. "The author evaluated the 76 Jordanian companies during 2001-06 by using multiple regression models. This study concludes that there is a negative relation of capital structure with firm performance variables. Moreover, high growth and low growth companies has the same effect on the financial leverage level [20].

Alternatively, some authors showed a no relationship among capital structure and firm profitability. This argument is supported by the research elsewhere that no significant relation exists between these variables for UK publicly traded companies [21].

The author investigated a relation of capital structure & firm's performance in Pakistan. This study concludes that firm performance is negatively affected by financial leverage by using correlation and regression analysis on the financial data [22]. In the same way, the researcher discussed an insignificant and negative relationship between TDTE and ROE ratios in Taiwan, Singapore and Australian companies. Further, he reports a significant positive relation between debt ratio and firm size except Singapore companies [23].

Author conducted a research to uncover the association of capital structure (LTDTA, TDE, and STDTA) with firm performance (ROA, PM) on the firms listed on an Amman Stock exchange during 2005-2009. By using multiple regression analysis, insignificant relation was found b/w STDTA & LTDTA and performance, whereas total debt to equity (TDE) has positive relation with performance [24].

The research scholar conducted a study on TSE companies in Tehran to analyze the effect of debt level on the performance (Tobin's Q). They found a significant direct association b/w the level of debt in the capital structure and company performance [25].

Others worked on the 42 non-financial companies of Kenya during the 2006-12. The study takes secondary data and

applied random effects model. These findings suggest that managers should not finance through debt instead of issuing new stocks. There is a negative impact of LTD & STD on firm performance [26].

In the emerging economy of Egypt, the author analyzed a weak & insignificant association between capital structure choice and its effect on the performance [27]. It can be suggested that the manager should take right decisions while choosing the amount of debt to finance its operation. Another study was conducted on the emerging economy of India during 2002-2012 to analyze the effect of leverage on the company performance and firm size, age growth is used as a control variable. The finding of fixed effects panel regression model showed that there is an insignificant negative relation among performance and firm’s leverage [28].

In Nigeria the research on the companies of ASE was done by [29]. The author used pooled OLS regression model to identify the impact of the Capital structure on the Nigerian firms. The results given by this study are that there is an indirect significant relationship b/w performance measures and SDTA, LTDA & TDTA ratios. It can be predicted that mostly Nigerian companies’ managers rely on its internal sources of financing instead of taking debt.

Muritala conducted a study of the capital structure (debt ratio) and firm performance (ROA, ROE) [30]. Panel least squares (PLS) were used to analyze the relationship by choosing the 10 listed Nigerian firms during 2009-10. This research discussed that a negative relation exists between performance and capital structure and firm size and age have a positive relation with the company performance.

On the other hand above relationship was examined by [31] on the listed non-financial sector of the Tehran Stock exchange during 2006-11. The study by multiple regression analysis indicate that capital structure has a positive association with ROE and Tobin’s Q while it has insignificant and negative relation with ROA, EPS.

Another study on the Nigerian manufacturing companies was taken by [32], to “evaluate the impact of capital structure on the profitability of the firms. Company profitability and firm’s capital structure has an inverse relationship with each other. This study explained that Nigerian companies must try to obtain the lowest cost of financing to achieve competitive advantage in the market”.

The author evaluated the impact of capital structure on the company performance and shareholders’ wealth in Pakistan market during 2006 to 2011. Their results explained that there is a significant and direct relationship between capital structure and performance variables [33]. Most recently [34] analyzed the effect of capital structure variables on company profitability (ROA, ROI, and DPS) by taking samples of 150 firms listed on Tehran Stock Exchange. The findings of multivariate regression analysis showed that ST and LT debt has negative relation with the firm profitability. This relationship is found positive in case of total debt and profitability level.

Firm size has been proven one of the most important elements of company capital structure. Empirically, in [35, 36, 37], authors report a significant and positive relationship between capital structure and firm size.

The author examined that smaller firms mostly use the equity to finance their operation while larger companies used both debt and equity. Large companies have easy access of credit from banks than small firms [38]. Therefore the relationship between firm size and long term debt ratio is found to positive while negative relation exists among short term debt and company size [39].

In summary, it can be concluded that relationship of capital structure with firm performance is negative and insignificant, mostly shown by previous studies while some studies also demonstrate that there is a positive relation among capital structure and company performance proxies. In this study, we try to show that choice of firm capital structure is a critical determinant of performance and has a significant effect on their performance.

### 3. RESEARCH METHODOLOGY

#### 3.1. Research design & data collection methods

Following the paper of [40], panel data approach will be used to measure the relation between capital structure of the firm and firm performance. Data to analyze this relationship is collected from secondary sources like Karachi stock exchange. The sample size consists of top 100 companies of Karachi stock exchange and data is analyzed from 2004 to 2012. But due to unavailability of data for consecutive 9 years, 69 companies selected for analysis. The data is evaluated through by measuring descriptive statistics, correlation matrix, and panel regression analysis.

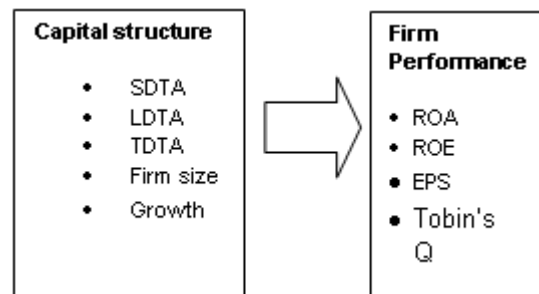


Figure 1: Conceptual framework

#### 3.2. Variables measurements

The purpose of this paper is to examine the relationship between capital structure choices and firm performance. The independent variables consist of long-term debt, short-term debt, total debt, firm size, firm’s growth and dependent variables are Return on Equity (ROE), Return on Asset (ROA) Tobin’s Q and earnings per share (EPS). Return on assets and return on equity are accounting measures while earning per share and Tobin’s Q are market measures of performance. Formulas for measuring all variables are given below in table 1.

**Table 1: Variables Description**

<b>Total Debt to assets Ratio</b>	= total debt/total assets
<b>Long term Debt to assets</b>	= long term debt/ total assets
<b>Short term Debt to assets Ratio</b>	=short term debt/ total assets
<b>Firm Size</b>	= natural log of total book value of assets
<b>Firm's Growth</b>	= (assets of current year-assets of previous year)/assets of current year.
<b>Return on Assets</b>	=operating income/total assets
<b>Return on Equity</b>	=net profit attributed to shareholders/total shareholders' equity
<b>Earnings per Share</b>	=net earnings/number of shares
<b>Tobin's Q</b>	= (Market value of equity+ book value of debt)/ book value of assets

### 3.3. Hypothesis testing

Following hypothesis is formulated for this study to analyze the association between capital structure and company performance of non-financial sector of KSE.

#### 3.3.1. Capital structure and firm performance

In order to deal with this study main research question, the below hypothesis is developed to test the argument either capital structure directly or indirectly influence on the company performance.

*H1: Significant relationship between capital structure and performance exist.*

*H2: Total debt to total assets has a significant and negative relation to company performance.*

Above hypothesis are also considered by these authors in their studies: [14], [28] and [29].

#### 3.3.2. SDTA and Firm performance

After reviewing the relevant literature, it can be argued that the short term debt ratio has an inverse relationship with company performance. STD enhances the cost of financing and exposes the companies with risk of refinancing. Thus, hypothesis 3 is written as:

*H3: Short term debt has a significant relationship with firm performance.*

This hypothesis has also been used by [14], [30] and [41].

#### 3.3.3. LDTA and Firm performance

Similar as SDTA, LDTA also has a negative relation with the company profitability level. So, hypothesis 4 is developed as:

*H4: Long term debt has a significant relationship with firm performance.*

This hypothesis is also taken by [30].

#### 3.3.4. Firm size, growth and Performance

It is generally accepted that companies with maximum growth opportunities shows a better performance as compared to companies with lesser growth level. Moreover, the larger firm size also increases the company profitability by minimizing bankruptcy cost. So, hypothesis 5 is written as:

*H5: Firm size and firm growth has a significant relation with the performance.*

This hypothesis is also considered by [30]

### 3.4 Research Model

Multiple regression models are used to find out the association between capital structure characteristics and performance in the context of Pakistan. Our base models take the following from [41]:

$$YROE = \beta_0 + \beta_1 SDTA_{it} + \beta_2 LDTA_{it} + \beta_3 TDTA_{it} + \beta_4 Size + \beta_6 Growth + \mu_{it} \quad (\text{Model 1})$$

$$YROA = \beta_0 + \beta_1 SDTA_{it} + \beta_2 LDTA_{it} + \beta_3 TDTA_{it} + \beta_4 Size + \beta_6 Growth + \mu_{it} \quad (\text{Model 2})$$

$$YEPS = \beta_0 + \beta_1 SDTA_{it} + \beta_2 LDTA_{it} + \beta_3 TDTA_{it} + \beta_4 Size + \beta_6 Growth + \mu_{it} \quad (\text{Model 3})$$

$$YTobin's Q = \beta_0 + \beta_1 SDTA_{it} + \beta_2 LDTA_{it} + \beta_3 TDTA_{it} + \beta_4 Size + \beta_6 Growth + \mu_{it} \quad (\text{Model 4})$$

Where,

$SDTA_{it}$  = short term debt to total assets for firm  $i$  in year  $t$

$LDTA_{it}$  = long term debt to total assets for firm  $i$  in year  $t$

$TDTA_{it}$  = total debt to total asset for firm  $i$  in year  $t$

$\mu_{it}$  = the error term.

### 4. ANALYSIS, FINDING AND DISCUSSION

To find out the impact of capital structure on the firm performance, STATA version 14 is used. Firstly, statistics summary of the variables and correlation matrix is given. Then regression analysis is run and results are explained and discussed.

#### 4.1. Descriptive statistics

The table 1 gives the results of descriptive statistics of all the variables used in the study. The total number of observations for this study is 621 which consists of 9 variables and have data of 70 companies for nine years. According to which, LDTA and SDTA have mean value of 0.18 & 0.497 with std. deviation of 0.24 and 0.42 respectively. The mean value of total debt to total assets is 0.68 which explains that among total assets, 68% assets are financed by debt. It also implies that most KSE listed firms are financed by short term debt rather long term debt. Return on assets has a mean value of 6.8 with std. deviation of 15.9. Similarly, return on equity has maximum mean value of 7.29 with std. deviation of 141.57. Company size has a mean value of 6.8 with std. deviation of 0.75

#### 4.2. Correlation Matrix

To evaluate either dependent or independent variables are significantly correlated or not, correlation analysis is undertaken. The table 2 shows the correlation matrix among explanatory and dependent variables. Results of correlation analysis indicate that there is no issue of multicollinearity because the maximum value of the coefficient is 0.90[42]. The results of table 2 suggests that the correlation among all performance proxies (ROA, ROE, EPS, Tobin's Q) and TDTA, LDTA, SDTA is a strong negative during 2004 to 2012. Only the firm's growth and firm's size has positive correlation with ROA, ROE and EPS. Tobin's Q has a positive relation with firm's size while it has negative with firm's growth.

**Table 2: Summary of descriptive statistics of the Variables during 2004-2012**

Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	621	6.817092	15.97192	-123.2	109
ROE	621	7.292544	141.576	-3264.57	413.35
TQ	621	5.962459	7.007563	0.3988026	44.55552
EPS	621	5.499678	18.23016	-174.39	127.88
TDTA	621	0.6784499	0.554778	0.0250609	5.476903
SDTA	621	0.4969703	0.4283058	0.0166058	4.053358
LDTA	621	0.1815565	0.2487801	0	2.350437
FS	621	6.839463	0.7591922	4.530366	8.540864
FG	621	0.0915582	0.293481	-3.288362	0.9977365

**Table 3: Correlation Matrix of the Variables during 2004-2012**

	ROA	ROE	TQ	EPS	TDTA	STDA	LDTA	FS	FG
ROA	1.0000								
ROE	0.2393	1.0000							
TQ	0.3887	0.1091	1.0000						
EPS	0.4948	0.1834	0.1604	1.0000					
TDTA	-0.2150	-0.0655	-0.1414	-0.1437	1.0000				
SDTA	-0.2052	-0.0545	-0.1100	-0.1136	0.9017	1.0000			
LDTA	-0.1273	-0.0526	-0.1256	-0.1279	0.6695	0.2835	1.0000		
FS	0.1385	0.0182	0.1203	0.1881	-0.3103	-0.3006	-0.1728	1.0000	
FG	0.1363	0.0579	-0.0474	0.1397	-0.2937	-0.2052	-0.3024	0.1848	1.0000

**4.3. Regression analysis:**

Regression analysis is a statistical technique to determine the effect of one variable on another variable. In table 4, the capital structure measured by SDTA has a negative and significant impact on ROA and EPS is found to be significant at the 0.001 level of significance. However, SDTA has a positive, but insignificant impact on ROE and TQ. Firm growth has a positive and direct impact on firm performance at 0.01 and 0.001 level of significance. Firm size has positive and a significant association with ROE while positive and insignificant relation with ROE, EPS and TQ.

**Table 4: Regression estimation results using SDTA**

	ROA	ROE	EPS	TQ
SDTA	-7.035***	0.0578	-2.582***	0.131
	(0.000)	(0.980)	(0.001)	(0.674)
FS	0.516	4.753***	0.353	0.0515
	(0.413)	(0.000)	(0.398)	(0.769)
FG	6.311***	15.87***	2.916**	1.209**
	(0.000)	(0.000)	(0.006)	(0.006)
_Cons	4.334	-22.06*	1.768	3.167*
	(0.336)	(0.019)	(0.554)	(0.012)
N	621	621	621	621
R-Sq	0.112	0.069	0.046	0.013

P-values in parenthesis  
\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

From the regression results in Table 5, the capital structure measured by LDTA has a negative and significant impact on ROA, ROE and EPS is found to be significant at the 0.001

level of significance. Growth has a positive and significant impact on ROA, ROE, EPS and TQ at 0.001 and 0.05 levels of significance. FS has a positive and significant impact on ROA and ROE at 0.05 and 0.001 significance levels respectively. FS has a positive but insignificant impact on EPS & TQ.

**Table 5: Regression estimation results using LDTA**

	ROA	ROE	EPS	TQ
LDTA	-16.23***	-22.46***	-4.726***	-0.887
	(0.000)	(0.000)	(0.000)	(0.095)
FS	1.133*	4.214***	0.743	0.00256
	(0.049)	(0.001)	(0.058)	(0.988)
FG	3.616*	11.56***	2.173*	1.164*
	(0.019)	(0.000)	(0.038)	(0.010)
_Cons	-0.347	-13.90	-1.252	3.727*
	(0.931)	(0.104)	(0.645)	(0.002)
N	621	621	621	621
R-Sq.	0.167	0.127	0.053	0.021

P-values in parenthesis  
\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

From the regression results in Table 6, the capital structure measured by TDTA has a negative and significant impact on ROA, ROE and EPS is found to be significant at the 0.05 and 0.001 levels of significance. The capital structure measured by TDTA has a negative and insignificant impact on TQ. Size has a positive and significant impact on ROE while insignificant impact on ROA, EPS and TQ. Firm growth has a positive and significant relationship with all performance measures is found to be significant at 0.05 and 0.001.

**Table 6: Regression results using TDTA**

	ROA	ROE	EPS	TQ
TDTA	-11.00***	-4.173***	-2.556***	-0.142
	(0.000)	(0.024)	(0.000)	(0.571)
FS	0.268	3.827**	0.298	0.0244
	(0.643)	(0.004)	(0.464)	(0.891)
FG	3.485*	14.28***	2.219*	1.062*
	(0.019)	(0.000)	(0.034)	(0.021)
_Cons	9.686*	-12.79	2.625	3.579**
	(0.020)	(0.173)	(0.370)	(0.005)
N	621	621	621	621
R-Sq.	0.287	0.078	0.058	0.012

P-values in parenthesis \*p<0.05, \*\*p<0.01, \*\*\*p<0.001

## 5. CONCLUSION AND RECOMMENDATIONS

This study aims to examine the relationship of capital structure variables with firm's performance using a sample of 69 Pakistani firms for the period 2004–2012. This study finds statistically significant relationship between SDTA, LDTA & TDTA and all performance measures. Therefore, H1 and H2 hypothesis are accepted.

It is also observed that the other variables; firm size and firm growth have a positive impact on ROE, TQ, EPS and ROA which is consistent with [37]. Thus, H4 is also accepted. Another important observation is that LTDTA and SDTA has negative impact on all the measures almost (EPS, ROE, ROA and Tobin's Q) of firm's performance. Therefore, it can be concluded that higher level of capital structure decreases the firm's performance. Total debt to total assets ratio has a negative relation to all four performance measures so H3 is accepted under the results of this study. The results of our study are consistent with the [13, 14, 43, 28,34]. The finding of research suggests that company's finance manager should consider debt as a last alternative to finance their operation as it has a negative impact on the company performance. Future research on this topic can be extended by taking data from different sample size or taking financial sector or small & medium scale firms of Pakistan. A study may be undertaken to compare the relation of these variables across countries.

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