The Impact of Capital Structure on Firm Performance: Evidence from Pakistan*

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Abstract

Purpose – The purpose of this study is to empirically investigate the impact of capital structure on firm performance.

Research design, data, and methodology – This study examined the impact of capital structure on the performance of cement companies listed on the Karachi Stock Exchange during the period 2009-2013. The authors hypothesize that there is a negative relationship between capital structure and firm performance. To examine the association, the authors run a Pearson correlation and multiple regression analysis.

Results – Results reveal a strong negative relationship between debt to asset and firm performance variables (GPM, NPM, ROA, and ROE). Further, there is a positive relationship between debt to equity and firm performance variables (GPM and NPM), anda negative relationship between debt to equity and firm performance variables (ROA and ROE). Moreover, capital structure variables significantly impact firm performance.

Conclusions – This study concluded that financial analysts and managers should emphasize on the optimal level of capital structure and efficient utilization and allocation of resources to achieve the targeted level of productive efficiency in business.

Keywords: Capital Structure, Firm Performance, Cement Industry, Pakistan.

JEL Classifications: G1, G3.

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1. Introduction:

Capital structure plays a vital role in financial decision making process, maximizing the firm's performance and its value. The term capital structure is the mix of different securities issued by firm to finance its operations. These mixes of different financing methods issued by firm are called firm's capital structure. Saad (2010) argue that in financial term capital structure means the way a firm finance their assets through the mix of equity, debt or hybrid securities. Similarly, capital structure is used to signify the proportionate relationship between debt and equity.

The origin of capital structure theory begins from Modigliani & Miller (1958), capital structure theories operates under perfect market. They argue that under various assumptions of perfect capital market, such as investors, homogenous expectations, no taxes, no transaction costs, and efficient market, capital structure is irrelevant in determining firm's value. Therefore, Modigliani & Miller (MM) theorem is famous for "Theory of irrelevance" of capital structure and reveals that capital structure is independent of firm performance.

The expansions of capital structure theory relax some assumptions of the original MM theory of irrelevance. MM (1963) 1 & Miller (1977) 2 publish articles relax the assumptions that there is no personal and corporate taxes. They conclude that firms are encouraged to use debt in their capital structure, because tax regulation allows firms to deduct debt interest payments as an expense. Similarly, tax deductibility of interest payment protects the pre-tax income of the firm and eventually lowers the weighted average cost of capital. However, the extent literature is full of theories on capital structure since the seminal work of MM.

The main focus of this study is that no prior research work was done in Pakistani market on the impact of capital structure decisions on firm performance in the Cement Industry, which is considered capital intensive industry where optimal capital structure decisions are primary to the firm performance. The current study uses two measures of capital structure including debt to assets and debt to equity.

1.1. Debt to Assets

The debt to assets ratio measures the percentage of funds

provided by creditors (Brigham & Houston, 2011). It also refers to the percentage of all assets that are financed by debt (Fraser & Ormiston, 1998).

Debt to Assets = Total Liabilities / Total Assets

1.2. Debt to Equity

The debt to equity ratio measures the riskiness of the company's capital structure in terms of the relationship between the funds supplied by creditors (Fraser & Ormiston, 1998).

Debt to Equity = Total Liabilities / Total Shareholder's Equity

2. Firm Performance:

Performance concept is a contentious matter in finance mostly due to its multidimensional meanings. Murphy, Trailer, & Hill, (1996) argue that research on firm performance originates from strategic management and organization theory. Chakravarthy (1986) demonstrates that performance is measures either organizational or financial. The core of the firm's effectiveness is financial performance such as profit maximization, maximizing profit on assets, and maximizing shareholder's benefits. Sandberg & Hoffer (1987) evaluate that operational performance measures, such as growth in market share and sales give a broad meaning of performance that focus on the factors that finally direct to financial performance. Therefore, financial performance is considered a major standard to measure a company operational and financial efficiency. The current study uses four measures of performance including gross profit margin, net profit margin, return on assets and return on equity.

2.1. Gross Profit Margin

Gross Profit Margin shows the total increase between cost of goods sold and sales revenue. It also reflects the efficiency with which management produces each unit of product (Stapleton et al., 1981).

Gross Profit Margin = Sales – Cost of Goods Sold / Sales

2.2. Net Profit Margin

Net Profit Margin signifies the overall measure of a company's ability to turn each rupee/dollar sales into net profit. It also establishes relationship between sales and net profit. Further it indicates management's efficiency in administering, manufacturing and selling the products (Stapleton et al., 1981).

Net Profit Margin = Net Income / Sales

2.3. Return on Assets

Return on Assets or Investment is the estimated raise in the cash flows produced by the operating cycle as a result of asset or investment outlays. It is the return for forsaking immediate spending (Vernimmen et al., 2005).

Return on Assets = Net Income / Total Assets

2.4. Return on Equity

Return on Equity is an accounting indicator of value creation and measures the profitability of equity invested in the business. It is equal to net income dividing by shareholders equity (Vernimmen et al., 2005).

Return on Equity = Net Income / Shareholder's Equity

3. Literature Review:

Based on literature review there is an abundance of research which intends to enlighten the relationship between capital structure and firm performance, empirical evidence yields contradictory and inconsistent findings. Empirical results and arguments have gone both ways. Some researchers document that there is positive relationship between capital structure and firm performance, whereas others oppose by arguing that there is a negative effect on firm performance. For instance, Gleason et al. (2000) reveal that firm's capital structure has a significant and negative relationship with firm's performance measured by return on assets (ROA) and profit margin in the European countries. By contrast, Hadlock & James (2002) find a positive relationship between capital structure and firms performance. Further, they note that firms with high level of profitability use high level of debts. Similarly, Holz (2002) also show a positive relationship between capital structure and firms performance.

Deesomsak et al. (2004) report a negative relationship between capital structure and firms performance measured by gross profit margin in the Malaysian firms. They indicate that in Singapore, Taiwan and Australian the relation of leverage with firm's performance is negative but statistically insignificant. Moreover, the effect of firm size on leverage is significant and positive for all the countries except Singapore, because in Singapore firms have government support and are less exposed to financial distress costs. On the same manner, Frank & Goyal (2004) also find a negative relationship between capital structure and firms performance by giving the predictions of pecking order theory in contrast to the off theory.

Abor (2005) investigate the relationship between capital structure and profitability of listed firms on Ghana Stock Exchange. He reveals a positive relationship between short term debt to total assets and return on equity due to low interest rates. Further, he suggests that in Ghanaian firm's short term financing shows 85 percent of total debt and is considered a main element of financing for them. Moreover, a negative relationship find between long term financing and equity returns, and a positive relation exists between total debt and profitability. He also

suggests that debt is considered as a major source of financing for high profitable firms.

Huang & Song (2006) find a negative relationship between capital structure measured by long term debt and total debt and performance measured by return on assets. They indicate that Chinese markets are, in developing phase for equity financing and firms should depend on debt capital from banks. However, Chinese most firms are state controlled and favor equity financing rather than debt financing because they still hold the controlling interest and weak laws exist to keep shareholders rights. Further, profitable firms use more debt and increase leverage due to increase in firm size.

Weill (2008) examines the relationship between financial leverage and firm's performance in seven European countries. He finds that in Spain and Italy financial leverage related significantly and positively with firms performance, while significantly and negatively in France, Norway, Germany and Belgium, but insignificantly in Portugal. Li Meng et al.(2008) also investigate that financial leverage has a negative relation with firm performance measured by return on assets, but has a positive relation with return on equity.

Ebaid (2009) reveal that capital structure has a very weak relationship with performance on the emerging market economy of Egypt. He shows that capital structure measured by short term, long term and total debt to total assets related insignificantly with firm's performance measured by return on equity. While short term debt and total debt to total assets related negatively and significantly with firms performance. Further, long term debt related negatively and insignificantly with performance measured by return on assets. Moreover, he also shows insignificant relationship between capital structure and gross profit margin.

Nimalathasan & Brabete (2010) evaluate the relationship between capital structure and profitability for listed manufacturing companies in Sri Lanka. They reveal that capital structure measured by debt to equity related positively and significantly with firms profitability measured by gross profit, operating profit and net profit margin.

San & Heng (2011) study the relationship between capital structure and performance of Malaysian Construction Industry in the financial crises of 2007-2008 that badly affect the economies of Malaysia. They demonstrate a weak relationship exists between leverage and performance measured by return on assets and return on equity of Malaysian Construction Industry. Further, Pratheepkanth (2011) find a negative relationship between capital structure and financial performance of business companies in Sri Lanka during 2005-2009.

Khan (2012) shows the relationship of capital structure decision with performance of 36 engineering firms in Pakistani market listed on Karachi Stock Exchange during 2003-2009. He finds a negative and significant relationship between financial leverage measured by short term debt to total assets (STDTA) and total debt to total assets (TDTA) and firm performance measured by return on assets (ROA), gross profit margin (GPM) and Tobin's Q. By contrast, Taani (2013) examines the impact

of capital structure on performance of 12 commercial banks listed on Amman Stock Exchange during 2007-2011. He finds that bank performance measured by net profit, return on capital employed and net interest margin related significantly and positively with total debt, whereas total debt is found insignificant with return on equity in the banking industry of Jordan.

<Table 1> Summary Table for Literature Review

S#	Year	Authors Name	Relationship b/w Capital Structure and Firm Performance
1	2000	Gleason, Mathur, & Mathur	Negative
2	2002	Hadlock & James	Positive
3	2002	Holz	Positive
4	2004	Deesomsak, Paudyal, & Pescetto	Negative
5	2004	Frank & Goyal	Negative
6	2005	Abor	Both Positive & Negative
7	2006	Huang & Song	Negative
8	2008	Weill	Both Positive & Negative
9	2008	Meng et al	Both Positive & Negative
10	2009	Ebaid	Negative
11	2010	Nimalathasan & Brabete	Positive
12	2011	San & Heng	Both Positive & Negative
13	2011	Pratheepkanth	Negative
14	2012	Khan	Negative
15	2013	Taani	Positive

4. Objectives of the Study:

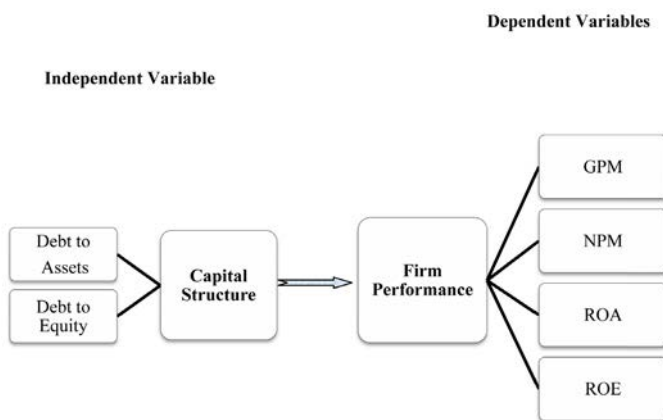The present study is planned to accomplish the following objectives;
- To identify the nature of relationship between capital structure and firm performance.
- To investigate the impact of capital structure on firm performance.

5. Research Methodology:

The present study uses secondary data, because of the main purpose is to empirically investigate the impact of capital structure on performance of cement companies in Pakistan listed on Karachi Stock Exchange for the period 2009-2013. Secondary data is defined as data that are already available i.e. it refer to the data which have already been collected and analyzed by someone else (Kothari, 2004). Secondary data are typically past data and do not need access to subjects or respondents because it is already assembled. The current data is obtained from the annual reports and financial statements of 25 cement companies listed on Karachi Stock Exchange for the period 2009-2013.

5.1. Conceptual Framework

Empirical literature uses many variables in a capital structure choice which will affect a firm performance. Abor (2005 & 2007) and Ebaid (2009) used the three (Short term, long term and total debt) to total assets as measures of capital structure. This study uses two of the most important measures of capital structure i.e. debt to assets and debt to equity. Moreover, literature also uses a number of different measures of firm performance include accounting based measures calculated from firm financial statements such as GM, NM, ROA and ROE (Abor, 2005; Meng et al., 2008; Ebaid, 2009). This study uses four accounting based measures of performance include GPM, NPM, ROA and ROE. The figure 1 shows the conceptual framework of the study.

<Figure 1> Conceptual Framework

5.2. Hypothesis of the Study

Based on conceptual framework and previous studies this study formulates the following hypothesis.

H_1: There is a negative relationship between debt to asset and firm performance variables (GPM, NPM, ROA and ROE).

H_2: There is a negative relationship between debt to equity and firm performance variables (GPM, NPM, ROA and ROE).

H_3: There is a significant impact of capital structure on firm performance.

6. Data Analysis:

For data analysis, this study uses descriptive statistics, correlation and regression analysis. Correlation analysis is used to find out the relationship between dependent and independent variables, whereas regression analysis is used to investigate the impact of capital structure on firm performance.

6.1. Descriptive Statistics

Table 2 reveals the summary of descriptive statistics for all dependent and independent variables of the study. The results of descriptive statistics indicate that mean of debt to assets for cement companies listed on Karachi Stock Exchange during 2009-2013 is 64.51%, whereas mean of debt to equity is 171.71%. It shows that about 64.51 percent of total assets of cement companies are financed by debt. Further the table shows that mean of gross profit margin, net profit margin, return on asset and return on equity are 8.81%, -19.7%, 2.4% and 5.38% respectively. These results indicate a poor performance by cement companies during 2009-2013.

<Table 2> Descriptive Statistics

	N	Minimum	Maximum	Mean
Debt to Assets	125	.18	4.82	.6451
Debt to Equity	125	-8.24	33.12	1.7171
Gross Profit Margin	125	-2.58	.64	.0881
Net Profit Margin	125	-7.24	.28	-.1970
Return on Assets	125	-.22	.24	.0240
Return on Equity	125	-3.42	2.27	.0538
Valid N (list wise)	125			

6.2. Correlation Analysis

Correlation Analysis describes the strength of relationship between two variables. This study uses Pearson Correlation Analysis to find out the relationship between dependent variables (Debt to Asset & Debt to Equity) and independent variables (GPM, NPM, ROA and ROE). The results reveal the amount of relationship exist between dependent and independent variables.

Table 3 shows a strong negative correlation between debt to asset and firmperformance variables, because R values of debt to asset and gross profit margin is -0.557**, debt to asset and net profit margin is -0.528**, debt to asset and return on asset is -0.569**, debt to asset and return on equity is -0.022. Further it reveals high significant relationship between all variables except debt to asset and return on equity.

Table 3 further indicates a positive relationship between firmperformance variables (GPM & NPM) and debt to equity, whereas negative relationship between (ROA &ROE) and debt to equity. The R values of debt to equity and gross profit margin is 0.066, debt to equity and net profit margin is 0.254**, debt to equity and return on asset is -0.031, and debt to equity and return on equity is -0.555**.

<Table 3> Correlation Analysis

		Debt to Asset	Debt to Equity	GPM	NPM	ROA	ROE
Debt to Assets	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	125					
Debt to Equity	Pearson Correlation	-.019	1				
	Sig. (2-tailed)	.835					
	N	125	125				
GPM	Pearson Correlation	-.557**	.066	1			
	Sig. (2-tailed)	.000	.466				
	N	125	125	125			
NPM	Pearson Correlation	-.528**	.254**	.602**	1		
	Sig. (2-tailed)	.000	.004	.000			
	N	125	125	125	125		
ROA	Pearson Correlation	-.569**	-.031	.555**	.532**	1	
	Sig. (2-tailed)	.000	.736	.000	.000		
	N	125	125	125	125	125	
ROE	Pearson Correlation	-.022	-.555**	.026	-.036	.404**	1
	Sig. (2-tailed)	.807	.000	.776	.692	.000	
	N	125	125	125	125	125	125

**. Correlation is significant at the 0.01 level (2-tailed).

Based on above results hypothesis H1 is accepted because the results reveal a negative relationship between debt to asset and firm performance variables. Further, the relationship between debt to equity and firmperformance variables show different results. The relationship between debt to equity and firmperformance variables (GPM & NPM) is positive and research hypothesis H2 is rejected. Whereas the relationship between debt to equity and firm performance variables (ROA & ROE) is negative and the research hypothesis H2 is accepted.

6.3. Regression Analysis

Regression analysis is a statistical method to measure the impact of one (independent) variable on other (dependent) variable. Therefore, this study uses regression analysis to test the hypothesis H3 to measure the impact of capital structure on firm performance.

Table 4 indicates the regression analysis between dependent variable (debt to asset) and independent variables (GPM, NPM, ROA, and ROE). The beta coefficient shows that gross profit margin and return on asset significantly predict debt to asset when all variables included. It also indicates collinearity statistics where tolerance and VIF give the same information (Tolerance = 1/VIF). If the tolerance value is low (< 1-R2), then there is probably a problem with multicollinearity. The tolerance value is 0.553 (1-R2) which shows no problem with multicollinearity.

The model summary reveal the correlation coefficient R, using all the predictors simultaneously is 0.669, R2 = 0.447 and the adjusted R2is 0.429 that indicate 42.9% of the variance in debt to asset can be predicted from independent variables (GPM, NPM, ROA, and ROE), whereas the remaining 57.1% influenced by others which are not considered for this study. According to Cohen (1988), this is a large effect.

The table further uses Durbin Watson statistic to find out the existence of autocorrelation in the residuals. According to Al saeed (2006), if Durbin Watson values are between 1 and3, then there is no autocorrelation problem. As shown in table, Durbin Watson value is 2.131, which represent no autocorrelation problem in the regression models. In addition, it also demonstrates that overall F statistics is 24.244, which indicates the combination of independent variables (GPM, NPM, ROA, and ROE) significantly predict debt to asset.

Table 5 indicates the regression analysis between dependent variable (debt to equity) and independent variables (GPM, NPM, ROA, and ROE). The beta coefficient represents that net profit margin and return on equity significantly predict debt to equity when all variables included. It also shows collinearity statistics where tolerance and VIF give the same information (Tolerance = 1/VIF). If the tolerance value is low (< 1-R^2), then there is probably a problem with multicollinearity. The tolerance value is 0.615 (1-R^2) which reveals no problem with multicollinearity.

<Table 4> Regression Analysis between Debt to Assets and Independent Variables

		Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.687	.036		19.180	.000		
	GPM	-.255	.099	-.235	-2.569	.011	.550	1.817
	NPM	-.085	.048	-.164	-1.784	.077	.547	1.827
	ROA	-1.800	.438	-.409	-4.111	.000	.465	2.150
	ROE	.133	.074	.144	1.811	.073	.550	1.817
Model Summary								
R		.669						
R Square		.447						
Adjusted R Square		.429						
Durbin Watson		2.131						
F - Statistics		24.244						

Predictors: (Constant), GPM, NPM, ROA, ROE
Dependent Variable: Debt to Asset

<Table 5> Regression Analysis between Debt to Equity and Independent Variables

		Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.163	.338		6.398	.000		
	GPM	-1.542	.936	-.159	-1.648	.102	.550	1.817
	NPM	1.063	.449	.229	2.369	.019	.547	1.827
	ROA	7.303	4.134	.185	1.767	.080	.465	2.150
	ROE	-5.136	.695	-.618	-7.393	.000	.550	1.817
Model Summary								
R		.621						
R Square		.385						
Adjusted R Square		.365						
Durbin Watson		1.532						
F - Statistics		18.787						

Predictors: (Constant), GPM, NPM, ROA, ROE
Dependent Variable: Debt to Equity

The model summary reveal the correlation coefficient R, using all the predictors simultaneously is 0.621, R^2 = 0.385 and the adjusted R^2 is 0.365 that indicate 36.5% of the variance in debt to equity can be predicted from independent variables (GPM, NPM, ROA, and ROE), whereas the remaining 63.5% influenced by others which are not considered for this study. According to Cohen (1988), this is a large effect. As shown in table 4, Durbin Watson value is 1.532,which represents no autocorrelation problem in the regression models. In addition, it also reveal that overall F statistics is 18.787, which indicates the combination of independent variables (GPM, NPM, ROA, and ROE) significantly predict debt to equity.

Based on above results, hypothesis H3 is accepted because it indicates that capital structure variables have significantly impact on firm performance.

7. Conclusions:

The main objective of this study is to empirically investigate the impact of capital structure on firmperformance using 25 cement companies listed on Karachi Stock Exchange during 2009-2013. Descriptive statistics results show a poor performance by cement companies, because about 64.51 percent of total assets of cement companies are financed by debt. Based on correlation results this study finds a negative relation between debt to asset and firm performance variables (GPM, NPM, ROA, and ROE). It also indicates a positive relation between debt to equity and firm performance variables (GPM & NPM), whereas a negative relationship between debt to equity and firm performance variables (ROA & ROE). Besides, regression results reveal that there is a significant impact of capital structure on firm's

performance. Because the adjusted R2 demonstrates that 42.9% of the variance in debt to asset can be predicted from independent variables (GPM, NPM, ROA, and ROE), whereas the remaining 57.1% influenced by others. On the other hand 36.5% of the variance in debt to equity can be predicted from independent variables (GPM, NPM, ROA, and ROE), whereas the remaining 63.5% influenced by others which are not considered for this study.

Based on empirical literatures and findings the study concludes that there is significant impact of capital structure on firm performance. Although business companies generally depend on the debt capital therefore financial analyst and managers should be cautious while using debt as a source of finance, since exist almost negative relationship between capital structure and firm performance of cement industry. The managers must an attempt to finance their activities and behaviors with retained earnings and employ debt as a final alternative. Consequently, this study suggests that financial analyst and managers should emphasize on optimal level of capital structure decision and efficient utilization and allocation of resources to achieve the targeted level of productive efficiency in cement industry of Pakistan.

8. Recommendations:

The main recommendations of this study include;
• The investors should be communicated and established with the performance standards to take better decisions and achieve good standard. One of best standard to improve the firm performance is to identify weaknesses of investment, as it shows the region, in which problems occurred.
• Investors should be stimulated by firms through different programs (conferences) to get high level of firm performance.
• Debt capital of firms should be control, because high level of debt capital tends to worst performance. By controlling debt capital, firms can get the preferred level of performance.
• Firm performance should be motivated by increasing the equity capital. However, it also helps to increase the measures of firm performance.
• The government should notice the economic growth to control the inflation, because inflation rate also affect the firm performance.
• The government should also consider improving the efficiency of Karachi Stock Exchange, because international financial crisis and ethnic problem are also main cause for the inefficiency of the share market.
• The government and banks should encourage the owners to increase the firm performance.
• The government should also build a facilitating business friendly environment so that businesses can boom and thus raise firm performance level.

9. Limitations

The main limitations of this study include;
• First, it only focuses on one sector of developing market so it can not signify the overall markets of transition economies. However there are many other sectors in Pakistan, therefore the results are limited to the selected sample only and not cover the other sectors.
• Secondly, the time period for this study includes only five year data. In order to get more accurate and defined results, the long time series data should be collected.
• Thirdly, we can get the impact of capital structure on firm performance by sector and then evaluate the findings to recognize the actual picture of the relationship.

Competing Interests: The authors declare that they have no competing interests.

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