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Effect of Capital Structure on Firms' Financial Performance: Empirical Evidence in Case of Construction and Materials (Cement) Sector of KSE-100 Index

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Abstract
The study is done to explain the impact of capital structure on firms' financial performance in Construction and Material (Cement) Sector of Karachi Stock Exchange. The data was collected from the annual reports of eight listed firms for the period of six years from 2009 to 2014. The balanced penal regression and correlation were used for analysis. The almost negative correlation studied between all variables of the study. The five models were regressed with five dependent and four independent variables. All models are significant but the results explained that the capital structure is not related with firms' financial performance. Also financial performance of the sector is not influenced by the controlling variable (size of the firm) and it may conclude that the optimal capital structure may not have such importance in this sector. With the help of this study the finance mangers can make better decisions and researches can create new themes for the future researches.
Keywords: Capital Structure, Firms' Financial Performance, Relevancy and Irrelevancy, Karachi Stock Exchange, KSE-100 Index.

1. Introduction

This study is related to the effects of empirical capital structure on the firm's financial performance. Around 57 years back MM presented his propositions on capital structure that whether it is relevant to firm's financial performance or not. According to Modigliani & Miller (1958) capital structure has no impact on the firms total value assuming that economy is tax free, there is no agency problem asymmetry of information and in the other is the factors under which the capital structure affects firm value. Many researches have concluded their results after the seminal work of Modigliani and Miller but left many questions after each research. Still it is an ambiguous question for the firms to raise equity is more profitable and valuable for a firm than to raise debt. According to Marsh (1982) capital structure is how companies actually select between financing instruments at a given point in time. For any firm, capital structure decisions are designed to maximize the profit and market value of any firm. For maximizing profits, firms choose one instrument of capital structure at a time and reject others for example, debt ratio varies market shares. According to Modigliani & Miller (1958) introduction of debt financing changes the market for shares in a very fundamental way because firms may have different proportions of debt in their capital structure.

The purpose of the study is to discuss firms' financial performance on the basis of capital structure empirical evidence in the case of construction and material (cement) Karachi Stock Exchange 100 index. The study is based on regression analysis, with the help of model the impact of capital structure has been studied on profitability. Impact of size of the firm also analyzed with profitability and investors ratio. As the previous studies shows that profitability has negative relation if debt ratio increases or has non-linear relationship. The negative relation between profitability and leverage is driven primarily by private placements and convertible debt, but reverse sign for bank debt (Graham & Mark 2009). To the extent that convertible debt is more informatively sensitive than bank debt this challenges the traditional pecking order interpretation of this relation (Graham & Mark 2009).

This study explains the relevancy and irrelevancy of capital structure in the case of construction and material (cement sector). Modigliani & Miller (1958) worked on two implications of capital structure i.e. static trade-off view (in which firms form target leverage that balances various costs) and the advantage of debt (tax

shield and other benefits of debt). Many researches proved that the capital structure is relevant and companies have target debt ratios that varies with the firm characteristics. According to Marsh (1982) companies behaves as though they have target debt ratios; whether they have similar targets for the composition of their debt: whether market conditions or the historical share price performance affects their choice of instrument; and whether debt ratio or the choice of financing instruments are influenced by other factors such as operating risk, company size, the composition of the company's assets and the rate at which retentions are generated.

1.1. Problem Statement and Research Questions

The work is done to study the effect of capital structure on the firm's financial performance empirical evidence from KSE 100 index. Following research questions will be answered in this research paper.

- Is capital structure relevant in construction and material (cement) KSE-100 index?
- What is the effect of capital structure on the firm's financial performance?
- Are financial performance influenced by the size of the firm?
- Is there any importance of target debt ratio in cement sector?

1.2. Hypotheses of the Study

1.2.1. Tests for Significance of Return on Assets

H_{0A}: Capital structure insignificantly related with return on assets
H_{1A}: Capital structure significantly related with return on assets

1.2.2. Tests for Significance of Earning before Interest and Taxes

H_{0B}: Capital structure insignificantly related with earnings before interest and taxes
H_{1B}: Capital structure significantly related with earnings before interest and taxes

1.2.3. Tests for Significance of Return on Equity

H_{0C}: Capital structure insignificantly related with return on equity
H_{1C}: Capital structure significantly related with return on equity

1.2.4. Tests for Significance of Earnings per Share

H_{0D}: Capital structure insignificantly related with earnings per share
H_{1D}: Capital structure significantly related with earnings per share

1.2.5. Tests for Significance of Net Profit Margin

H_{0E}: Capital structure insignificantly related with net profit margin
H_{1E}: Capital structure significantly related with net profit margin

1.3. Objective and Justifications of the Study

This study is done to explain the impact of capital structure in the financial performance of the listed firms of construction and material (cement) Karachi Stock exchange 100-index. In this study professionals and practitioner can analyze whether the practices in the empirical corporate world are related to the theoretical views of capital structure or not. This study is also a contribution of knowledge in the field of corporate finance which would give new ideas to researchers and scholars.

2. Literature Review

Capital structure decisions play a pivotal role in maximizing the performance of firm and its value. Khan (2012) involves in the decision making of the strategic level. Modigliani & Miller (1958) concluded to the broadly known theory of "capital structure irrelevance" where financial leverage does not affect the firm's market value. But in the empirical real world different aspects exist between the relevancy and irrelevancy. Capital structure of any firm represents a mix of three types of financing decision internal financing, debt financing and equity securities issuance decision. In the literature reviewed pecking order theory provides capital structure supports in the engineering, chemical sector and many other sectors of Pakistan also proved in the Athens Stock Exchange. The study of Khan (2012) on engineering sector of Karachi Stock Exchange says that due to underdeveloped debt market and inefficient equity market, engineering sector firms are largely financed by short term debt. Eriotis et al. (2007) studied that firms generally finance their activities following the financing procedure implied by the pecking order theory. Similarly the study of Amjed (2011) on listed chemical firms during 2001-2006 discussed profitable firms prefers to employ internally generated funds over the long term debt financing. He provided support for Pecking Order Theory and revealed the use of short term debt instead of long term financing. According to Amjed (2011) only financially distressed firms go for debt, furthermore they heavily depend on short term debt instead of long term debt.

Firms in the engineering sector of Pakistan are largely dependent on short term debt but debts are attached with strong covenants which affect the performance of the firm Amjed (2011) As the previous studies showed that the more use of debt is proved to be an inefficient instrument of financing and decreases the profitability of the firm. According to Khan (2012) the long term debt is expensive, employed by a few firms

with large asset structure but shows a negative relationship with Tobin's Q measure which shows that large size companies are inefficient in utilizing its assets towards improvement in performance. This statement is also proved by Amjed (2011) found that capital structure of a firm has significant impact on firms' financial performance and negatively related with each other. While the study of Greece resulted shows that the debt ratio of the firm is positively related to its size which is measured by the sales figure and larger firms employ more debt capital in comparison with smaller firms (Eriotis et al. 2007). It is stated that firm size acts as a controlling variable and governs the performance of the firm so the study of Sheikh & Wang (2012) resulted that the firm size and growth are positively related to corporate performance.

Empirical study of Sheikh & Wang (2012) on the non-financial listed companies of Karachi Stock Exchange in Pakistan showed that all measures of capital structure (i.e. total debt ratio, long and short-term debt ratio) are negatively related to return on assets. While Rehman (2013) found in the listed sugar companies of Pakistan that the positive relationship of debt equity ratio with return on asset and sales growth, and negative relationship of debt equity ratio with earning per share, net profit margin and return on equity and proves the relevancy of capital structure with profitability.

Capital structure of firms is affected by the market frictions as Marsh (1982) demonstrates that companies are heavily influenced by market conditions and the past history of security prices in choosing between debt and equity. Since years it is debated that changing capital structure changes performance and value of firm so the term of optimal capital structure is used and managements of the firm always want an optimal capital structure for maximizing the overall value of the firm. Optimal capital structure derives by the help of target debt ratios proposed by the use of debt to total asset. According to Marsh (1982) companies appear to make their choice of financing instrument as if they have target levels of debt in mind.

3. Research Methodology

The study follows deductive approach to explain the impact of capital structure on firms' financial performance. For this purpose eight firms from Construction and Material (Cement) Sector of KSE-100 Index were randomly selected for analysis for the period of six years from 2009 to 2014. Further more details of methodology are given below:

3.1. Research Design

The study is explanatory in nature and pre-determined hypotheses were tested. The study is based on statistical modeling and ordinary least square estimations were used. The unit of analysis is the listed firms in KSE-100 index with the minimal researchers' interference. Study incorporated balanced panel data which were collected from secondary sources.

3.2. Theoretical Framework and Regression Model

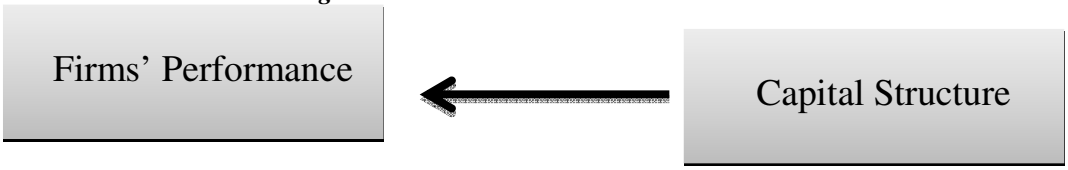

Table 1

Dependent Variables		*Independent Variables*	
	Symbols		***Symbols***
Return on Assets	**ROA**	Current Liabilities to Total Assets	**CLTA**
Earnings before Interest and Taxes	**EBIT**	Long-term Liabilities to Total Assets	**LTLTA**
Return on Equity	**ROE**	Total Liabilities to Total Assets	**TLTA**
Earnings per Share	**EPS**	Log of Total Assets	**LTA**
Net Profit Margin	**NPM**		

Regression models for the study:

1. $ROA_{i,t} = \alpha_1 + \alpha_2 CLTA_{i,t} + \alpha_3 LTLTA_{i,t} + \alpha_4 TLTA_{i,t} + \alpha_5 LTA_{i,t} + \varepsilon_{i,t}$ **1**
2. $EBIT_{i,t} = \beta_1 + \beta_2 CLTA_{i,t} + \beta_3 LTLTA_{i,t} + \beta_4 TLTA_{i,t} + \beta_5 LTA_{i,t} + \varepsilon_{i,t}$ **2**
3. $ROE_{i,t} = \gamma_1 + \gamma_2 CLTA_{i,t} + \gamma_3 LTLTA_{i,t} + \gamma_4 TLTA_{i,t} + \gamma_5 LTA_{i,t} + \varepsilon_{i,t}$ **3**
4. $EPS_{i,t} = \delta_1 + \delta_2 CLTA_{i,t} + \delta_3 LTLTA_{i,t} + \delta_4 TLTA_{i,t} + \delta_5 LTA_{i,t} + \varepsilon_{i,t}$ **4**
5. $NPM_{i,t} = \lambda_1 + \lambda_2 CLTA_{i,t} + \lambda_3 LTLTA_{i,t} + \lambda_4 TLTA_{i,t} + \lambda_5 LTA_{i,t} + \varepsilon_{i,t}$ **5**

3.3. Study Procedure and Plan of Analysis

The study is deductive in nature and the predetermined hypotheses were tested. Therefore, the secondary data was collected from the financial statements of selected firms. All dependent and independent variables were

calculated for further analysis according to the models requirement. Study uses correlation and regression analysis for explaining the facts of theory. Microsoft Excel and E-Views were used for quantitative analysis.

4. Results and Findings

4.1. Analysis for Return on Assets

The study uses two methods for testing the relationship between capital structure and firms' performance. First the Pearson's correlation was run for all models separately than the models were regressed to study the impact of capital structure variables on firms' performance variables. In first model return on assets is used as a proxy for firms' financial performance. Detailed results are given below.

Table 2: Results of correlation when dependent variable is ROA:

	ROA	CLTA	LTLTA	TLTA	LTA
ROA	1.000000				
CLTA	-0.639659	1.000000			
LTLTA	-0.453705	0.173500	1.000000		
TLTA	-0.669052	0.622100	0.878276	1.000000	
LTA	-0.234971	0.087613	0.084533	0.103444	1.000000

Table 2 explains the results of correlation and multicollinearity. The correlation between dependent variables return on assets and Independent variables current liability to total assets and total liabilities to total assets is strongly negative but return on assets has moderate negative correlation with long-term liability to total assets and log of total assets. The correlation matrix given above also indicated the strongly positive multicollinearity between total liabilities to total, current liabilities to total assets and long-term liabilities to total. But this multicollinearity is just because of the similarity of variables measurement methods. All independent variables were measured with respect to total assets therefore they have linear relationship with each other.

Table 3: Results of regression when dependent variable is ROA:

Independent Variables	*Coefficients*	*t-statistic*	*p-value*
CLTA	-0.742793	-0.419975	0.6766
LTLTA	-0.320627	-0.179245	0.8586
TLTA	0.068504	0.038492	0.9695
LTA	-4.372643	-1.494257	0.1424
F-statistic	13.37685	***p-value (F-statistic)***	0.000000
R-Square	0.554438	***Adjusted R-Square***	0.512991

Table 3 explains the results of ordinary least square regression. The first model which is given above indicates the impact of capital structure variables on return on assets. The model is highly significant and goodness prediction (R-Square) is 55.44%. All independent variables current liability to total assets, long-term liabilities to total asset, total liabilities to total assets and log of total assets are insignificantly related with return on assets. Therefore capital structure does not impact return on assets in Construction and Materials (Cement) Sector of Karachi Stock Exchange.

4.2. Analysis for Earnings before Interest and Taxes

The second proxy for measuring the firms' performance is earning before interest and taxes. In table 4 and table 5 the results of correlation and regression are given.

Table 4: Results of correlation when dependent variable is EBIT:

	EBIT	CLTA	LTLTA	TLTA	LTA
EBIT	1.000000				
CLTA	-0.460602	1.000000			
LTLTA	-0.353337	0.173500	1.000000		
TLTA	-0.504741	0.622100	0.878276	1.000000	
LTA	0.391198	0.087613	0.084533	0.103444	1.000000

The above table explains the results of correlation. Current liabilities to total assets, long-term liabilities to total assets and total liabilities to total assets are negatively correlated with earnings before interest and taxes but log of total assets is positively correlated with earnings before interest and taxes. Moreover, the impact of capital structure on firms' financial performance was measured with the help of regression and results are as under.

Table 5: Results of regression when dependent variable is EBIT:

Independent Variables	*Coefficients*	*t-statistic*	*p-value*
CLTA	-374.8483	-0.771918	0.4444
LTLTA	-300.3581	-0.611572	0.5440
TLTA	239.4614	0.490067	0.6266
LTA	3391.476	4.221149	0.0001
F-statistic	10.66989	***p-value (F-statistic)***	0.000004
R-Square	0.498130	***Adjusted R-Square***	0.451445

The second econometric model can also be used for explaining the impact because F-statistic is 10.67 and the results from model are highly significant. In this model only firm size impacts the earnings before interest and taxes in positive terms. Other all independent variables do not impact earnings before interest and taxes because t-statistic of all explanatory variables is insignificant.

4.3. Analysis for Return on Equity

Table 6: Results of correlation when dependent variable is ROE:

	ROE	CLTA	LTLTA	TLTA	LTA
ROE	1.000000				
CLTA	-0.597387	1.000000			
LTLTA	-0.418613	0.173500	1.000000		
TLTA	-0.621313	0.622100	0.878276	1.000000	
LTA	-0.261866	0.087613	0.084533	0.103444	1.000000

Third proxy for firms' financial performance is return on equity. The table 6 explains the linear relationship between variables. All explanatory variables are negatively correlated with return on equity. So the relationship between dependent and independent variables is negative. To study the impact of capital structure on return on equity the model was regressed and results are as under in table 7.

Table 7: Results of regression when dependent variable is ROE:

Independent Variables	*Coefficients*	*t-statistic*	*p-value*
CLTA	-0.500874	-0.146038	0.8846
LTLTA	0.233181	0.067224	0.9467
TLTA	-0.647648	-0.187664	0.8520
LTA	-9.884061	-1.741802	0.0887
F-statistic	10.53662	***p-value (F-statistic)***	0.000005
R-Square	0.494988	***Adjusted R-Square***	0.448010

The results explain that the third model is also highly significant. All independent variables are insignificantly the return on equity. Therefore, it can be concluded from above analysis that the capital structure does not related with firms' financial performance in Construction and Materials (Cement) Sector of Karachi Stock Exchange.

4.4. Analysis for Earnings per Share

Table 8: Results of correlation when dependent variable is EPS:

	EPS	CLTA	LTLTA	TLTA	LTA
EPS	1.000000				
CLTA	-0.563178	1.000000			
LTLTA	-0.519189	0.173500	1.000000		
TLTA	-0.683941	0.622100	0.878276	1.000000	
LTA	-0.061557	0.087613	0.084533	0.103444	1.000000

Table 8 explains the results of correlation when dependent variable is earnings per share. Earnings per share are fourth proxy which is used as a firms' financial performance. Current liability to total assets, long-term liabilities to total asset and total liabilities to total assets are negatively correlated with dependent variable earnings per share. The correlation between log of total assets and earnings per share is very small which can be eliminated. Therefore, no linear relationship found between firm size and earnings per share.

Table 9: Results of regression when dependent variable is EPS:

Independent Variables	*Coefficients*	*t-statistic*	*p-value*
CLTA	-0.956895	-0.668407	0.5074
LTLTA	-0.762980	-0.526965	0.6009
TLTA	0.515190	0.357641	0.7224
LTA	0.544388	0.229832	0.8193
F-statistic	10.84207	***p-value (F-statistic)***	0.000004
R-Square	0.502132	***Adjusted R-Square***	0.455819

Table 9 explains the results of fourth model which is highly significant because p-value is very small (near to zero). The impact of all independent variables on earnings per share is insignificant. So there was no relationship found between earnings per share and capital structure.

4.5. Analysis for Net Profit Margin

Table 10: Results of correlation when dependent variable is NPM:

	NPM	CLTA	LTLTA	TLTA	LTA
NPM	1.000000				
CLTA	0.144116	1.000000			
LTLTA	-0.212344	0.173500	1.000000		
TLTA	-0.102128	0.622100	0.878276	1.000000	
LTA	-0.075189	0.087613	0.084533	0.103444	1.000000

Correlation matrix for variables of fifth model is given above. The table 10 explains the weak positive correlation between current assets to total liabilities and net profit margin. Point to be noted that in fifth model net profit margin was used as a proxy for firms' financial performance. Long-term liabilities to total assets and total liabilities to total assets are negatively related with net profit margin. There was no relationship found between net profit margin and log of total assets. For the confirmation of impacts the results of regression analysis are as under in table 11.

Table 11: Results of regression when dependent variable is NPM:

Independent Variables	*Coefficients*	*t-statistic*	*p-value*
CLTA	-1.257925	-0.575673	0.5678
LTLTA	-0.419541	-0.189840	0.8503
TLTA	0.220680	0.100366	0.9205
LTA	3.428204	0.948230	0.3483
F-statistic	14.31395	***p-value (F-statistic)***	0.000000
R-Square	0.571097	***Adjusted R-Square***	0.531199

Finally the results of fifth model explain no impact of capital structure on firms' financial performance. All independent variables are insignificantly related with net profit margin and the model fifth is also highly significant with very small p-value. Goodness of prediction from the model is 57.1%. In all models the capital structure does not impact the firms' financial performance.

5. Discussion and Conclusion

5.1. Discussion

The study develops five hypotheses for testing the impact of capital structure on firms' financial performance. The hypotheses of the study based on five different dependent variables those are return on assets, earnings before interest and taxes, return on equity, earnings per share and net profit margin. The independent variables those are used for measuring capital structure are current liabilities to total assets, long-term liabilities to total assets and total liabilities to total assets and the study incorporate a controlling variable (log of total assets) for a firm size.

The study uses two methods for analyzing the data; firstly the correlation matrix was used for analysis to explain the linear relationship between dependent and independent variables and further after the ordinary least square regression was used. The results of correlation explain the negative correlation between the variables of firms' financial performance and capital structure. Therefore, it can be concluded from the study that due to the change in capital structure the firms' financial performance would be decreased in Construction and Material (Cement) Sector of Karachi Stock Exchange.

The five models were regressed to test the impact of capital structure on firms' financial performance. In first model there was no evidence studied to accept H_{1A} therefore no impact of capital structure studied on return on assets. So it can be concluded that in Construction and Material (Cement) Sector the capital structure does not play any vital role to improve return on assets. In this work there was no evidence studied to accept H_{1B}, H_{1C}, H_{1D} and H_{1E} because all coefficients were insignificant at level of significance 95%.

5.2. Conclusion

The basic purpose of the study was to explain the relationship between capital structure and firms financial performance by which the professionals and researches can create new themes for the future researches. The study used six years financial data from eight randomly selected firms from Construction and Material (Cement) Sector of KSE-100 Index. After all analysis the study concludes that the results are inconsistent with previous studies therefore, in Construction and Material (Cement) Sector of KSE-100 Index the capital structure is irrelevant with firms' financial performance. Also financial performance of the sector is not influenced by the

controlling variable (size of the firm) and it may conclude that the optimal capital structure may not have such importance in this sector. The MM's hypotheses related to irrelevancy of capital structure are accepted according to the evidences.

The study is contribution toward the field of decision making for future financing therefore this work is useful for the finance managers to make better policies in Construction and Material (Cement) Sector in Pakistan. The study still has lot of issues those can be explored in future researches. This study is limited to the Construction and Material (Cement) Sector of Karachi Stock Exchange and sample size very small but a work can be done on large data set to obtain more consistent results. There is still a research gap in capital structure decision making by behavioral contexts and optimal capital structure can be designed in this sector or any of the sector in Pakistan by doing more work in this field.

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