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Impact of Capital Structure on Firms Profitability: Evidence from Cement Sector of Pakistan.

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Abstract
The objective of the study is to find the impact of capital structure on firm's profitability of cement sector of Pakistan. A panel data of 18 firms listed on the Karachi Stock Exchange and data taken for the period of 10 year from 2006 to 2015. To indicate capital structure set of variables are used i.e. Debt/Equity Ratio, Debt Ratio, Interest Coverage Ratio, Short term debt ratio, and Long term debt to ratio and for Profitability i.e. Return on Asset, Return on Equity. The variables were analyzed through correlation and regression methodology by using EViews 9. Results demonstrate that debt ratio and long term debt ratio has negative and significant relationship with profitability determinants return on asset and return on equity. The short term debt ratio has positive and significant relationship with return on equity.
Keywords: Return on equity, Debt, Equity, Capital Structure, Profitability, Asset

1. Introduction

Capital structure is important one along with all the decisions of capital investment because such determinations affected firm's performance. So a proper concentration should be paid deciding about capital structure.

Taylor and Venhorn, (1996) defined as: "Capital structure is overall total of payable long-term securities of mutually debt and equity."

Weston and Bingham, (1978) acknowledged capital structure is long-term finance used by a company such as long term debt, preferred stock and equity. Capital structure is important element of balance sheet and capital structure of a firm is blend of debt, equity and preference shares. Profitability is the ability of a business to earn profit. It indicates through return on assets and return on equity. It is necessary that each individual firm have to give special attention towards the main questions of sum of capital structure and related cost of capital and its impact on the firm's profitability.

Numerous finance researchers found that capital structure is the top mainly factors between the other factors that can influence the firm's profitability. The link of decision regarding capital structure with firm profitability were recommended in a many theories, mainly well-known are Modigliani and Miller Theory (1958) and (1963).Mostly results shows that the managers of the company most of the time use several amount of debt and several amount of equity to funding their resources. For that reason accurate selection of the blend of debt and equity is extremely significant for the manager of any firm. Therefore as decide on the subject of capital structure suitable concentration and be concerned with required information (Nawaz et al. 2015)

Along with all the financial choice capital structure is complex for the reason that from previous fifty years a lot of studies and research have not reached on suitable case that describe a convinced percentage of debt and equity in capital structure that enhance firm performance so capital structure is quiet a problem. Managers used different strategies to get better firm performance is based on consumption of debt and equity size in firm capital structure (Gleason et al, 2000). Therefore, the majority of firms strive to attain most favorable capital structure in order to reduce weighted average capital cost (WACC) and maximize firm performance.

In the economic development of Pakistan the cement industry plays an important role. The involvement of cement industry calculated through tax payments, employment opportunities, earning from exports, the total income generated and the addition of value in GDP (Gross Domestic Product) of Pakistan. For the making of infrastructure and location cement is extremely particular product.3 percent of the whole manpower of Pakistan directly and indirectly employing the cement industry of country. The cement industry of Pakistan hit the highest point due to the industrial and commercial constructions. The contribution of cement industry Rs.30 billion in national fund of Pakistan through taxes.

1.1 Objective

The objective of this study is to investigate the factors of the capital structure that affect the profitability of cement manufacturing firms in Pakistan and to explore the optimal capital structure of the Pakistani cement firms.

1.2 Research Questions

Is there an impact of capital structure on profitability in cement industry of Pakistan?
Is there most favorable capital structure in cement industry of Pakistan?

2. Literature Review

Past studies related to capital structure and profitability shows different results. The research conducted by (Mahmoudi, 2014; Nawaz & Ali, 2016) results shows that there is a negative relationship between the financial performance and leverage and also results of research shows that when the leverage increases, the profitability decrease. Agha, (2015) conducted a study found that the capital structure determinants analysis and their relationship in the listed firms of cement industry in Pakistan. The result arrived profitability is statistically important and negatively related with debt ratio .She recommended by finance manager should have a deep look in the financials of the cement industry, and maximize the shareholders wealth, and the debt structure lower to increase the ultimate profit.

A study conducted by Ahmad, (2014) for examined impact of capital structure on profitability of firms of cement industry of Pakistan. He used a panel data for the time period of (2005 – 2010) by using 16 firms registered on the Karachi Stock Exchange. The results obtained that the profitability is inversely related with long-term debt and positively related with short-term debt.

Another research conducted by Yegon et al. (2014) for examined the relationship among capital structure and the firm's profitability. They used data for the period from 2004 to 2012 and data gathered from the banking industry listed on the Nairobi Stock Exchange, Kenya. The results of research shows that the negative relationship between the long-term debt and profitability and positive relationship between the short-term debt and profitability.

The study conducted by Rafique, (2011) focus on examination the effect of the profitability of the firm and financial leverage on the capital structure of the automobile sector companies in Pakistan. He examined the capital structure of 11 listed companies by using an econometric framework over a period of five years. He found that the firm's profitability is strongly negatively related to capital structure.

Studies conducted by (Arbabiyan & Safari, 2009; Chakraborty, 2010; de Mesquita & Lara, 2003; Hadlock & James, 2002; Huang, 2006; Pandey, 2004) shows results which were incompatible in environment ,as number of studies prove positive relationship between capital structure and profitability. Ali, (2011) investigates in his research the relationship between profitability and debt ratio is negative. He used data from 2003 to 2008 on capital structure of firms listed in Karachi Stock exchange, Pakistan.

The research of Mesquita & Lara, (2008) shows there is a negative relationship between capital structure ratios and profitability ratios. They found firms using long-term debt decrease profitability while those firms used short-term debt have more shareholder value and market value. Shah & Khan, (2007) conducted a research on determinants of capital structure by using data from 1994 to 2002 of non-financial firms listed on Karachi Stock Exchange, Pakistan. The result shows that the growth, tangibility and profitability significantly related with debt ratio.

Hijazi & Bin Tariq, (2006) conducted a study on the determinants of capital structure for Cement sector of Pakistan. Used pooled regression model analysis the data and selected 16 firms. The results of study show that the size and profitability inversely related with leverage and tangibility of assets and growth is positively related.

The study conducted by Abor, (2005) to explore the relationship between the capital structure and the profitability of firms listed on the Ghana stock exchange. He found the results in his research the positive relationship between the short-term debt ratio to total assets and return on equity and negative relationship between the long-term debt ratio to total assets and return on equity.

The research conducted by (Chhibber & Majumdar, 1999; Krishnan & Moyer, 1997) examine and analysis that financial leverage has negative impact on firm performance and also found there is a negative relationship between debt to equity ratio and ROE. There is a negative relationship between leverage and firm performance found by many researchers.

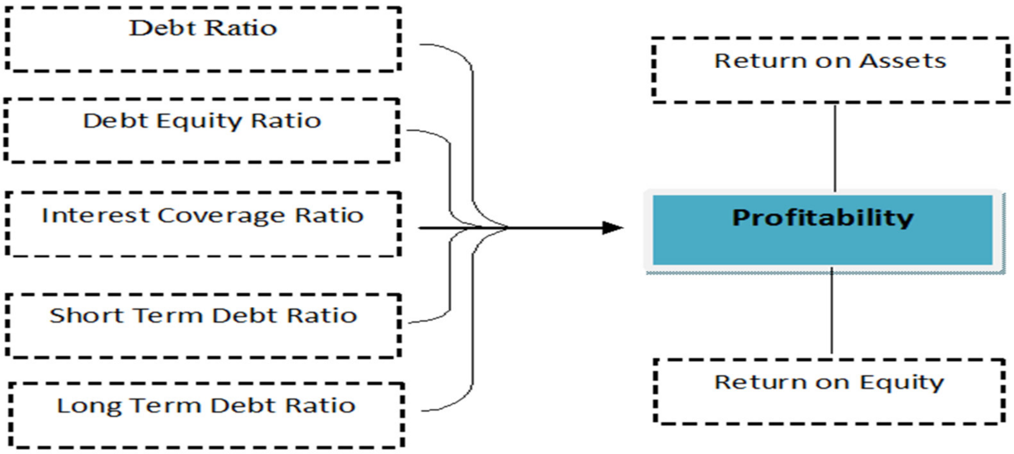
Rajan & Zingales, (1995) conducted a study they pointed when the source of finance is external and dividend are fixed profitability has significant negative relation with leverage and short run financing, profitability changes negatively with change in leverage level.

Sheel, (1994) conducted a study, found that negative relation between debt to assets ratio and firm's profitability. He used cross sectional regression model to learn the leverage activities of 32 firms in two industry groups, Hotel industry and manufacturing sector.

The research conducted by Harris & Raviv, (1991) should identify the accurate mix debt and equity , maintain this more favorable capital structure according to requirements. The studies conducted by (Miller, 1977; Myers, 1984; Sheel, 1994) recommend that financial leverage stimulate cost of capital, at last dispose firm's profitability and stock price. To enjoy a high return firm's can take preference of debt suggested that trade off theory of capital structure. When companies use more debt financial risk will increased but on the other hand it will pay less income tax. Debt is valuable if a firm attain extreme profits which get better the return to shareholders (Mandelker & Rhee, 1984).

3. Conceptual Framework

Nirajini and Priya, (2013) also used a conceptual framework in their study. The conceptual framework for this research is:



4. Research Methodology

Twenty two cement manufacturing companies listed on Pakistan Stock Exchange, eighteen companies were selected, while four companies were excluded due to unavailability of data in selected sample year. The ten year data from 2006 to 2015 taken from the official sites of cement manufacturing companies operating in Pakistan and financial statements analysis of companies listed at Karachi stock exchange by State Bank of Pakistan. The data has been analyzed using descriptive, correlation and panel least square method by using EViews 9.

4.1 Variables Description

In this research profitability is used as dependent variable which calculated the ratio of return on assets and return on equity. It is broad indicator of firm's performance because it provides information as to how well company is using their resources of funds to produce profits. To indicate capital structure a set of variables are use i.e. Debt Equity Ratio, Debt Ratio, Interest Coverage Ratio, Short term debt ratio, and Long term debt ratio.

Table1

Determinants	Variables	Definitions	Notations
Profitability	Dependent		
	Return on Assets	Ratio of Net Income to Total Assets	ROA
	Return on Equity	Ratio of Net Income to Total Shareholder Fund	ROE
Capital Structure	Independent		
	Debt Equity Ratio	Ratio of Total Debt to Total Equity	DER
	Interest Coverage Ratio	Ratio of Earnings Before Interest & Tax to Interest Expense	ICR
	Debt Ratio	Ratio of Total Liabilities to Total Assets	DR
	Short-Term Debt to Assets	Ratio Short Term Debt to Total Assets	STDR
	Long Term Debt to Assets	Ratio Long Term Debt to Total Assets	LTDR

4.2 Research Model:

In order to find the impact of capital structure on profitability of cement firm's uses descriptive, correlation and panel least square method. We used two estimation equations. In previous studies estimation equations also used for examination of sample data (Raheman, A et al. 2007; Chowdhury and Chowdhury, 2010). For investigation of dependent variables used model estimation equations are given below;

$ROA_{i,t} = \alpha + \beta_1 DER_{i,t} + \beta_5 ICR_{i,t} + \beta_2 DR_{i,t} + +\beta_4 STDR_{i,t} + \beta_3 LTDR_{i,t} + \varepsilon_{i,t}$

$ROE_{i,t} = \alpha + \beta_1 DER_{i,t} + \beta_5 ICR_{i,t} + \beta_2 DR_{i,t} + +\beta_4 STDR_{i,t} + \beta_3 LTDR_{i,t} + \varepsilon_{i,t}$

Where

α = constant coefficient

β = slope coefficient of independent and control variables

i = number of firms (18 in our study)

t = time period (10 years in our study)
Ɛ = error term

5. Hypothesis
This research is mainly focused on checking the hypothesis:
H_0: Capital structure does not have impact on firm profitability.
H_1: Capital structure has impact on firm profitability.

6. Statistical Results and Discussion
Descriptive Statistics, Correlation and Regressions results summarized below in tables:

Table2. Descriptive Statistics

	Mean	Min.	Max.	Std.Dev.
ROA	6.07	-19.00	44.00	11.85
ROE	10.74	-92.70	77.60	24.72
DER	3.27	-13.20	178.80	14.57
ICR	18.37	-157.60	421.10	54.29
DR	51.27	-167.00	177.60	28.87
STDR	28.04	0.60	129.80	19.44
LTDR	24.91	-6.20	57.30	13.73

In table-2 descriptive results depict, the variables of capital structure mean and maximum values are greater than determinants of profitability. Debt ratio (DR) and interest coverage ratio (ICR) mean and maximum value is high but on the other hand, return on asset (ROA) and return on equity (ROE) mean and maximum values are low. The results clarify that cement sector of Pakistan uses more debt and paid high interest expenses because of this firms maintaining low profitability.

Table3. Correlation Coefficients

	ROA	ROE	DER	ICR	DR	STDR	LTDR
ROA	1						
ROE	0.66	1					
DER	-0.00	-0.27	1				
ICR	0.28	0.17	-0.00	1			
DR	-0.39	-0.15	0.06	-0.13	1		
STDR	0.49	0.08	-0.00	-0.13	0.41	1	
LTDR	-0.39	-0.12	0.09	-0.18	0.48	0.15	1

Table-3 shows the descriptive statistics results, the variables of capital structure and profitability for the time period of 2005 and 2015. The results depict that debt ratio, short term debt ratio and long term debt ratio have negative impact on profitability indicators return on asset (ROA) and return on equity (ROE).If firm use more long term debt then profitability is low due to payment of high interest expenses.

Table4. Dependent Variables: ROA

Variables	Coefficient	T.Statistics	Prob.
C	14.38	11.40	0.00
ROE	0.30	15.01	0.00
DER	0.15	4.56	0.00
ICR	0.01	1.79	0.07
DR	-0.00	-0.40	0.68
STDR	0.22	8.66	0.00
LTDR	-0.22	-5.59	0.00
R-Squared	0.73	**F-statistics**	78.30
		Prob.	0.00

In table-4 Regression results for return on asset demonstrates that value of R-square 0.7308 which tells about 73.08% of variability of profitability is explained by capital structure. Debt ratio (DR) shows negative and insignificant impact on return on asset (ROA). Long term debt ratio (LTDR) shows negative and significant impact on return on asset (ROA).The same results found by Mesquita & Lara, (2008) and Yegon et al. (2014). Debt equity ratio (DER) and short term debt (STDR) shows positive and significant impact on return on asset

(ROA).

Table5. Dependent Variables: ROE

Variables	Coefficient	T.Statistics	Prob.
C	-19.55	-5.04	0.00
ROA	1.87	15.01	0.00
DER	-0.48	-5.99	0.00
ICR	0.00	0.01	0.98
DR	-0.01	-0.37	0.71
STDR	0.41	5.69	0.00
LTDR	-0.39	-3.87	0.00
R-Squared	0.61	**F-statistics**	46.49
		Prob.	0.00

In table-5 return on equity (ROE) used as dependent variable and results depict that short term debt have positive and significant relation with return on equity. The same results of short term debt with return on equity found by Ahmad, (2014), Abor, (2005), Mesquita & Lara, (2008) and Yegon et al. (2014). The value of R-square 0.6172 which tells about 61.72% variability of profitability is explained by capital structure. Debt ratio (DR) shows negative impact on return on equity (ROE). Long term debt ratio (LTDR) shows negative and significant impact return on equity (ROE). Same results proved by Agha, (2015) and Ali, (2011). When firms use more portion of debt to funding their resources than equity, then profiability decrease due to payment of high interest expenses.

7. Conclusion and Recommendations:

The objective of the study is to find the impact of capital structure on profitability of firms, cement sector of Pakistan. The above results demonstrate that capital structure has impact on profitability of cement firms listed on Karachi Stock Exchange and we can discard null hypothesis. Results depict that cement industry of Pakistan use more debt to funding their resources. Due to uses of more debt firm's interest expenses increased and profitability decreased.

It is recommended that cement firms use suitable portion of debt and equity to funding resources. Furthermore, more portion of debt use through short term debt and less portion from long term debt. Long term debt ratio has negative, significant relationship with profitability determinants return on asset and return on equity. The short term debt ratio has positive and significant relationship with return on equity and return on asset.

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