The Impact of Capital Structure on Firm's Profitability: A Case of Cement Industry of Pakistan

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Abstract

The objective of the study is to find out the impact of capital structure on firm's profitability and explore the optimal capital structure of cement industry of Pakistan. The data are collected of 18 companies listed on Karachi Stock Exchange (KSE) for the time series of 10 year from 2006-to-2015. The firm's profitability is measured by ROA and ROE, while capital structure determinants like, debt equity ratio (DER), interest coverage ratio (ICR), debt Ratio (DR), short term debt ratio (STDR), and long term debt ratio (LTDR). The balance panel data has been used to obtain results of descriptive, correlation and panel least square by using E-Views 9. Results demonstrate that debt ratio and long term debt ratio have significantly negative relationship with return on asset (ROA) and return on equity (ROE), while short term debt have significantly positive link with ROA and ROE. This study explores the impact of capital structure on firm's profitability and helps the firm's manager to formulate optimal capital structure.

Keywords: Capital Structure, Return on Asset, Cement Industry, Karachi Stock Exchange, Pakistan

1. Introduction

The study objective is to discover the impact of capital structure on firm's profitability and to explore optimal capital structure of cement industry of Pakistan. Capital structure is important along with each decision of capital investment because such determinations affect firm's profitability. Capital structure the overall total of payable long-term securities of mutually debt and equity by Taylor and Venhorn, (1996). Capital structures the long-term finance used by the companies such as long term debt, preferred stock and equity acknowledged by Weston and Bingham, (1978). Capital structure is important element of balance sheet and capital structure of the firm is blend of debt, equity and preference shares. Profitability is the ability of a business to earn profit. It indicates through return on asset (ROA) and return on equity (ROE).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. Numerous finance researchers found that capital structure is the best mainly element between other elements which can influence the profitability of firms.

The link of decision regarding capital structure with profitability of firms recommended in many studies, mainly well-known by 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 leader of every 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 in 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 resources composition to enhance firm performance so capital structure is quiet a problem. Managers used different strategies to get better organization performance, base on consumption of debt and equity size in funds (Gleason et al, 2000).

Therefore, the majority of organizations strive to attain most favorable capital structure in classify 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. The three percent of 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 rupees thirty billion in national fund of Pakistan through taxes. This study attempts to find the impact of capital structure on firm's profitability cement industry of Pakistan over the period 2006-2015. The paper is structured in sections: Section-II provides the findings of the previous studies, the effect of capital structure on firm's profitability. Section-III describes graphical model of study. Section-IV defines research data, methodology and variables. Section-V presents the statistical results and discussion. Conclusions are presented in the ending section.

2. Literature Review

Literature review includes some previous researches that are linked to discover the impact of capital structure on firm's profitability and earlier studies play an important part in conducting all type of studies. The analysis of some major studies has undertaken to build up a clear picture related with the relationship among capital structure and firms profitability. Past studies shows different results associated with capital structure and firm's profitability, the review of few previous studies are given below; Agha, (2015) conducted a study in which found that the capital structure determinants analysis and their relationship in the listed firms of cement industry in Pakistan. The results shows that 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. Another studies conducted by authors results shows that negative relationship among the financial performance and leverage, also results of research shows that when the leverage increases, the profitability decrease (Mahmoudi, 2014; Nawaz & Ali, 2016). A study conducted by Ahmad,(2014) for examined effect of capital structure on profitability of firms of cement industry of Pakistan. He used a time series data for the period of 2005-2010 by using 16 firms registered on the Karachi Stock Exchange. Results obtained that profitability negatively associated with long-term debt while positively linked 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 2004-2012 and data gathered from the banking industry listed on Nairobi Stock Exchange, Kenya. The results of research indicate that the link among the long-term debt and profitability are adverse while the link among the short-term debt and profitability are positive. The study conducted by Akinyomi, (2013) on capital structure and financial performance by randomly selected three companies over the five years time period 2007-2011 from the beverage and food manufacturing industry. He used correlation analysis methodology to test his hypothesis and results found that debt to equity, short term debt ratio indicate optimistic and significant connection with ROA and ROE. But on the other hand, long term debt ratio shows major and adverse relationship with performance measure ROE and ROA. Khalaf, (2013) concluded a study on relationship among capital structure and performance by using data from 2005-2009 and 45 manufacturing firms selected as a sample. He found that there is negatively insignificant link among short term debt and return on assets by using multiple regressions.

The study conducted by Pouraghajan et al. (2012) to examine the affiliation among capital structure and firms performance by using four hundred firms of 12 sectors, listed on TSE (Tehran Stock Exchange). They found results that shows debt ratio have destructive and major impact on firm's performance. The study conducted by Rafique, (2011) focus on examination the capital structure of 11 listed companies in Pakistan automobile industry, by using an econometric framework over a time series of 5 years. Results depicts that profitability is strongly adversely related with capital structure. A research conducted by Simon-Oke and Afolabi, (2011) on capital structure and manufacturing Presentation in Nigeria for agency cost and trade-off theory opinion by using 5 companies over the 9 year time period 1999-2007. They used regression model technique to test results and discovered that equity financing positively related with firms performance. They also found that the optimistic link among debt to equity ratio and firms performance, while debt financing have negative relationship with firms performance due to high interest expenses on borrowing.

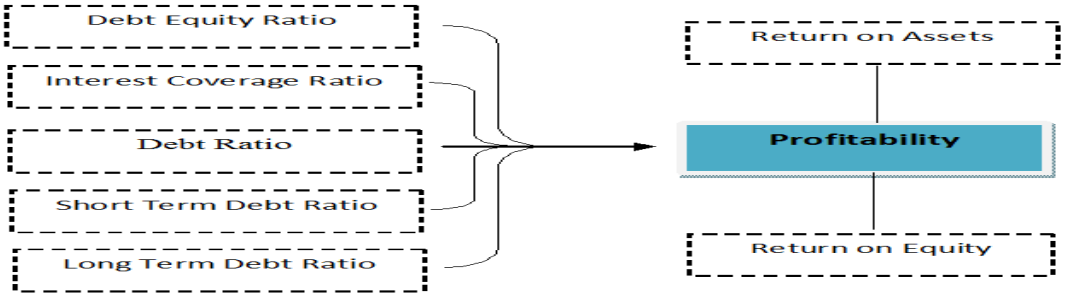
Ali, (2011) investigates in his research the negative relationship among profitability and debt ratio. He used data from 2003-2008 of capital structure, firms listed on Karachi Stock exchange, Pakistan. Results shows which were incompatible in environment ,as number of studies prove the link among capital structure and profitability is optimistic studies conducted by (Arbabiyan & Safari, 2009; Chakraborty, 2010; Mesquita & Lara, 2003; Hadlock & James, 2002;Huang, 2006;Pandey, 2004) The research conducted by Ong and The, (2011) explored the capital structure and companies performance on manufacturing industry of Malaysia over the 4 years time period 2005-2008. The performance of companies measure through NPM, EPS, OPM and ROE, while to indicate self-determining variables (capital structure) debt to common shareholders' equity, debt ratio, debt over market value of equity, long term debt to common shareholders' equality are used. They established that the connection exit among the capital structure and firms performance. Abdul, (2010) determined a study on link between capital structure judgments and firms presentation of the engineering industry of Pakistan listed on KSE over the 7 years time series 2003-2009. Gross margin (GM), return on equity (ROE) and return on asset (ROA) used as a degree of firms performance, while capital structure dignified by DR and STDR. He used Pooled Ordinary Least Square regression method to text data and establishes that there is a adverse and major connection among debt ratio and return on asset.

The research conducted by Mesquita & Lara, (2008) results shows there is adverse relationship among capital structure and profitability. They also found firms consuming long-term debt decrease profitability while those firms used STD have more investor and market value. Shah & Khan, (2007) examined a study on factors of capital structure by using data from 1994 to 2002 of non-financial firms listed on Karachi Stock Exchange, Pakistan. The result indicates that the growth, tangibility and profitability significantly related with debt ratio. The study conducted by Zeitun and Tian, (2007) on capital structure and corporate performance by using data from 1989-2003 of 167 Jordanian companies. In capital structure they used tangibility, size, leverage and growth while performance measure through profitability, ROE and ROA. After examining data they found that capital structure and firm's presentation has negative and significant relationship. Hijazi & Bin Tariq, (2006) conducted a study on the factors 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. Abor, (2005) conducted a study to explore the link among the capital structure and the profitability of firms listed on Ghana stock exchange. He found the results in his research the optimistic link among the short-term debt ratio with ROE while adverse link among the long-term debt ratio and ROE.

The studies conducted to examine and analysis that financial leverage effect on firm performance and found there is a positive relationship among debt to equity ratio and ROE. Also found negative relationship among leverage and firm performance by (Chhibber & Majumdar, 1999; Krishnan & Moyer, 1997).Rajan & Zingales, (1995) conducted a study they pointed when the source of finance is external and dividend are fixed profitability has adverse and significant link with leverage and short term financing, on the other hand profitability changes harmfully with change in leverage level. Sheel, (1994) conducted a study, found that adverse link among debt to assets ratio and firm's profitability. He used cross sectional regression model to learn the leverage activities of 32 companies in two industry groups, Hotel production and trade sector. Financial leverage stimulates 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 consume 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 studies conducted by (Mandelker & Rhee, 1984; Miller, 1977; Myers, 1984; Sheel, 1994).

3. Conceptual Framework

The study conducted by Nirajini and Priya, (2013) in which they used graphical model. The authors of this study also used graphical model are:



Source: Developed by Authors

4. Research Methodology

To achieve the objective of study, in cement industry twenty two cement manufacturing companies listed on Karachi Stock Exchange (KSE), 18 firms are select, while four companies excluded due to unavailability of data. The ten year data from 2006 - 2015 taken from the annual reports of cement manufacturing companies operating in Pakistan. The balance panel data has been used to obtain results of descriptive, correlation and panel least square by using E-Views 9.

4.1 Variables Description

In this research profitability is use as dependent variable which calculated the ratios of return on assets and return on equity. It also used Abor, (2005) and Yegon et al.(2014) in previous studies. 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. The 5 variables are use in the study to represents independent variable (Capital Structure) of cement industry of Pakistan (Table-1).

Table-1

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

Dependent variables: In this study return on asset (ROA) and return on equity (ROE) use as a determinants of firms profitability of cement industry of Pakistan.

Return on asset (ROA) expressed in percent and defined as net profit after tax and zakat over total assets. Return on equity (ROE) explained as net profit to shareholder equity and shows in percentage (Visic, 2013; Nirajini and Priya, 2013).

Independent variable: Independent variable (Capital Structure) are explained with debt equity ratio, interest coverage ratio, debt ratio, short term debt ratio, and long term debt ratio;

- *Debt equity ratio (DER):* The Debt to equity ratio shows percentage of debt an organization is utilizing to fund its benefits in respect to the measure of significant value spoken to in shareholders' value. It can be calculated total debt over shareholders equity.
- *Interest coverage ratio (ICR):* ICR ratio used to measure how an organization can pay interest expense on debt. It can be measured EBIT of specific period divided by interest expense of particular period.
- *Debt ratio (DR):* The debt ratio shows that portion of firms assets are financed through debt. It can be calculated total debt to total asset (Nirajini and Priya, 2013).
- *Short Term Debt Ratio (STDR)*: The ratio of short term debt represents the portion of company's assets that financed by debt below than 1 year, while it can be calculated short term debt to total asset.

- *Long Term Debt Ratio (LTDR:* It can be dignified the long term debt divided by total asset, while this ratio shows the percentage of firms assets financed through loans that above than 1 year (Nirajini and Priya, 2013).

4.2 Research Model:

The balance panel data is use to study the impact of capital structure on firm's profitability. In balance panel data, the model consists I cross-section units, denoted i=1, observe every one of T time period, t=1. In data position, the total observation is I×T. The essential framework for the balance panel data is defines in the following regression model:

$$Y_{IT} = \alpha + \beta x_{IT} + \varepsilon_{IT} \ldots\ldots\ldots\ldots\ldots (1)$$

In above model the dependent variable (Profitability) denoted by Y_{IT} , α represents constant coefficient, independent variables (Capital Structure) denoted by βx_{IT} and ε_{IT} use for error term. In previous studies regression model also used for examination of sample data (Raheman et al. 2007; Chowdhury and Chowdhury, 2010). For this paper regression models are given below;

$$ROA = \alpha + \beta_1 DER_{IT} + \beta_2 ICR_{IT} + \beta_3 DR_{IT} + \beta_4 STDR_{IT} + \beta_5 LTDR_{IT} + \varepsilon_{IT} \ldots\ldots\ldots\ldots (2)$$
$$ROE = \alpha + \beta_1 DER_{IT} + \beta_2 ICR_{IT} + \beta_3 DR_{IT} + \beta_4 STDR_{IT} + \beta_5 LTDR_{IT} + \varepsilon_{IT} \ldots\ldots\ldots\ldots (3)$$

5. Statistical Results and Discussion

Descriptive Statistics, Correlation and Regressions results summarized below in tables:

Table-2: Descriptive Statistics

	Mean	Min.	Max.	Std.Dev.
ROA	6.0716	-19.0000	44.0000	11.8517
ROE	10.7444	-92.7000	77.6000	24.7217
DER	3.2716	-13.2000	178.8000	14.5779
ICR	18.3716	-157.6000	421.1000	54.2929
DR	51.2722	-167.0000	177.6000	28.8742
STDR	28.0427	0.6000	129.8000	19.4447
LTDR	24.9144	-6.2000	57.3000	13.7325

In table-2 descriptive statistics results depicts that, the variables of capital structure mean and maximum values are greater than determinants of profitability return on asset (ROA) and return on equity (ROE). Debt ratio (DR) and interest coverage ratio (ICR) mean and maximum value is high but on other hand, return on asset (ROA) and return on equity (ROE) mean and maximum values are low.

The results clarify that cement industry of Pakistan uses more debt than equity and due to this paid high interest expenses because of this firms maintaining low profitability.

Table-3: Correlations between Variables

	ROA	ROE	DER	ICR	DR	STDR	LTDR
ROA	1						
ROE	0.6602	1					
DER	-0.0051	-0.2725	1				
ICR	0.2828	0.1757	-0.0050	1			
DR	-0.3915	-0.1513	0.0619	-0.1372	1		
STDR	0.4918	0.0889	-0.0094	-0.1306	0.4104	1	
LTDR	-0.3965	-0.1222	0.0904	-0.1854	0.4811	0.1529	1

Table-3 shows the correlation among capital structure and profitability variables, the results depict that debt ratio (DR)and long term debt ratio (LTDR) show a negative relationship with profitability determinants return on asset (ROA) and return on equity (ROE).It shows when firm uses more long term debt then profitability will be low due to payment of high interest expenses. On the other hand short term debt ratio positively correlate with profitability indicators return on asset (ROA) and return on equity (ROE).

Table-4: Return on Asset (ROA)

Variables	Coefficient	T. Statistics	Prob.
C	14.3858	11.4069	0.0000
ROE	0.3024	15.0180	0.0000
DER	0.1527	4.5640	0.0000
ICR	0.0160	1.7989	0.0738
DR	-0.0082	-0.4037	0.6869
STDR	0.2298	8.6613	0.0000
LTDR	-0.2205	-5.5992	0.0000
R-Squared **F-statistics** **Prob.**	0.7308 78.3094 0.0000		

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. The value of Prob. 0.0000 describe that model is perfect fit. Debt ratio (DR) shows negative 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 (DER) and short term debt ratio (STDR) shows positive and significant relationship with return on asset (ROA).

Table-5: Return on Equity (ROE)

Variables	Coefficient	T. Statistics	Prob.
C	-19.5566	-5.0436	0.0000
ROA	1.8714	15.0180	0.0000
DER	-0.4805	-5.9919	0.0000
ICR	0.0003	0.0174	0.9861
DR	-0.0186	-0.3721	0.7102
STDR	0.4132	5.6970	0.0000
LTDR	-0.3961	-3.8778	0.0001
R-Squared **F-statistics** **Prob.**	0.6172 46.4978 0.0000		

In table-5 return on equity (ROE) used as dependent variable and results depict that short term .debt ratio (STDR) have significantly positive relationship with return on equity (ROE). 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 adverse impact on return on equity (ROE). Long term debt ratio (LTDR) shows negative and significant effect 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.

Conclusion and Recommendations:

The study objective is to find the impact of capital structure on firm's profitability, a case cement industry of Pakistan. The above results demonstrate that capital structure has effect on profitability of cement firms listed on Karachi Stock Exchange (KSE). It is concluded 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, so firm managers needs to pay a proper concentration deciding about capital structure. On the basis of results, recommended that cement firms have needs use a suitable portion of debt and equity to funding resources, which have low cost of capital and more portion of debt use through short term debt while less portion from long term debt. Because long term debt ratio (LTDR) has negative, significant relationship with profitability determinants return on asset (ROA) and return on equity (ROE). The short term debt ratio (STDR) has positive and significant relationship with return on equity (ROA) and return on asset (ROE).

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Appendix

Sr. No	Companies list	Notation
1	Attock Cement Pakistan Limited	ACPL
2	Bestway Cement Limited	BCL
3	Cherat Cement Limited	CCL
4	D.G Khan Cement Limited	D.G CL
5	Dadabhoy Cement Limited	DCL
6	Dandot Cement Limited	DCL
7	Dewan Cement Limited	DCL
8	Fauji Cement Limited	FCL
9	Fecto Cement Limited	FCL
10	Flying Cement Limited	FCL
11	Gharibwal Cement Limited	GCL
12	Kohat Cement Limited	KCL
13	Lafarge Pakistan Cement Limited	LPCL
14	Lucky Cement Limited	LCL
15	Maple Leaf Cement Limited	MLCL
16	Mustehkam Cement Limited	MCL
17	Pioneer Cement Limited	PCL
18	Thatta Cement Limited	TCL