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Impact of Financial Leverage on Firms' Profitability: An Investigation from Cement Sector of Pakistan

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Abstract
This research is an attempt to establish a stochastic relationship between Financial leverage and Profitability of cement sector operating in Pakistan. For this purpose 18 cement manufacturers out of 21 are incorporated in the study and six years annual data from 2005 to 2010 regarding financial leverage and profitability of the said firms were taken into consideration. The sample size for eighteen firms for six years consists of 108 observations. An Ordinary Least Square model is applied on the data to establish a causal relationship between the variables. The study finds that financial leverage has a statistically significant inverse impact on profitability at 99% confidence interval.
Keywords: Financial Leverage, Firms' profitability, OLS
JEL: C12, G32, L61

1. INTRODUCTION

1.1 Overview

In the business research the major objective of the researcher is to study the factors that can affect positively or negatively to the firm's profitability. It has been claimed by many finance researchers that financial leverage is the top most factor among the other factors that can affect the firm's profitability. It comprises the capital structure management concepts. Manager choice of making debt intensive or equity intensive company that formulate the financing of the company assets leads to the concept of capital structure formulation. It has been observed that most of the times managers of the company use some extent of debt and some extent of equity to finance their assets. Therefore right choice of the combination of debt and equity is very important for the manager of any company. Those companies who dislike to borrow funds for the financing of their assets have to rely completely on equity financing therefore they are free from any fixed amount of charges to pay which means there is no financial leverage associated with that company. It is obligatory that every individual organization have to give especial focus towards the most important questions of amount of financial leverage, associated coast of capital and their impact on the firm's profitability. Mostly firms take money from lenders in order to increase sales volume which leads to higher earnings, such money which company have taken from the lender show the financial leverage associated with that company. Generally financial leverage is measured by the ratio of total debts which company owe and total assets which a company own. Financial leverage ratio tells the extent to which company has used borrowed money in order to finance its capital structure. If company use more borrowed money in order to finance its capital structure. If company use more borrowed money than company have to pay more fixed cost associated with that money. If firm use less amount of debt than have to pay less amount of fixed cost associated with that borrowed money. Such fixed cost associated with the borrowed money is the cost of debt which is generally called as interest amount. If firm borrowed more money from creditors than firm has to pay more amount of cost of debt to the creditors which is called interest rate which leads to the less net income for the firm which means lower profitability. In economic boom period, higher financial leverage gives benefits to the firm but on the other hand, in economic recession this financial leverage have adverse impact on firms profitability. It can cause cash flow problems in economic recession period for the firm and firm might not be able to meet its interest charges. This could be happen because there will be less sale volume in economic recession which make the firm unable to cover the interest payments to the creditors. In the past numerous studies have been conducted on the market and book value measured of leverage as (Jnag, 2005; Titman and Wessels, 1998; Rajan and Zingales, 1995).

Historical studies conducted by (Miller, 1977; Myers, 1948; Sheel, 1944) suggest that financial leverage induce cost of capital, at last incline firms profitability and stock price. Trade off theory of capital

structure suggests that firms can take precedence of debt to enjoy a prominent return. If company adopt more debt than it will pay less income tax but on the other hand financial risk will increased. Debt is worthwhile if a firm reach excessive profits which improve the return to shareholders. Debt helps a firm in terms of making future plans because fixed cost of debt is usually pre decided which acknowledge proficient planning because cost is already known to the firm. If the interest on debt is less than the return from debt firm should take debt (Mandelker and Rhee, 1984). Leverage comes under financial strategy planning it helps to increase the rate of return by generating a greater return on borrowed money than the cost of using that money. If firms return on asset is greater than the before tax interest rate paid on debt than we can say that leverage is positive. If return on asset of the firm is less than before tax interest rate than we can say that leverage is negative (Larry and Stulz, 1995).

The aim of this study was to investigate the effect of financial leverage on cement manufacturing sector firms' profitability which are registered on Karachi Stock Exchange. For this purpose only one predicting variable, financial leverage was used in ordinary least square simple regression model which was measured as the ratio of total debt, which includes short term and long term debts, to total assets which include current assets and noncurrent assets. Dependent variable was profitability which was measured as the ratio of net income after tax to total assets also called return on assets (ROA). Financial statements of 18 cement sector companies for the year 2005 through year 2010 were collected from online database of different cement manufacturing firms.

1.2 Problem Statement

To study the impact of financial leverage on firm's profitability belongs to cement manufacturing sector of Pakistan.

1.3 Hypothesis

This particular research primarily focused on testing the following hypothesis:
H1: Financial leverage has significant negative impact on firm profitability.

2. LITERATURE REVIEW

A lot of research has already been conducted on the impact of financial leverage on firm profitability. Titman & Wassels (1988) concluded in his study that firms which use their earnings instead of taking outside capital earn more profit because of less leverage as compare to the firms which rely more on outside capital which increase their leverage. Firm performance can be depicted by the price of its stock. If stock price of the firm is high than firms prefer to issue equity instead of taking outside capital that helps them to maintain their leverage. Wald (1999) in his research study argued that debt to assets ratio has significant negative relation with the firm profitability. He did his study on the firm's capital structure which operates in United State, United Kingdom, Japan, France, and Germany. He used firm size, growth and firm's riskiness as explanatory variables.

Sheel (1994) in his study also supported the negative relation between debt to assets ratio and firms past profitability. He used cross sectional regression analysis to study the leverage behavior of 32 firms in two industry groups, Hotel industry and manufacturing sector was examined. His findings confirmed that all leverage determinants except firm size are significant in explaining leverage variations in debt behavior. Eunju & Soocheong (2005) studied the relationship between profitability, financial leverage and size of the firm in restaurant industry. He took study period from 1998 to 2003 by using ordinary least square method. The aim of this study was to analyze the association between financial leverage and restaurants firm profitability and risk. For the sake of the achievement of objective of this study, he made three hypotheses. The first hypothesis was restaurant firms using a lower level of financial leverage have higher profitability. If a restaurant firm has a higher level of financial leverage than it has to spend large amount as interest expense despite the business situation. Second hypothesis was; firms with a higher level of financial leverage are riskier than those with a lower level of financial leverage. In his study he applied return on equity as a measure of profitability and financial leverage as a ratio of long term debt to total assets and total assets as firm size. Results of the study suggested that the restaurant firms having large assets were more profitable than small firms and the sign of financial leverage variable was negative which indicated that firms with higher debt rates were less profitable.

Mandelker & Rhee (1984) explained that the most profitable firm in many industries often have the lowest leverage ratio also found that large positive abnormal returns for a firm's stockholders are associated with leverage increasing events such as a stock repurchase or debt for equity exchange instead of leverage decreasing events such as issuing stocks. In contrast to the trade off theory, the pecking order theory of capital structure states that firms have a preferred hierarchy for finding decisions. The highest preference is to use internal financing such as retained earnings before restoring to any external funding. If a firm uses external funding the order of preference is debt, convertible securities, preferred stocks and common stock (Myers, 1984). Most studies of capital structure used a basic assumption of trade off theory. After selecting an optimal combination of financing which could be the combination of debt and equity way to gathering funds that deliver the tax benefit

given by the debt which increased costs of financial distress to the equity holders of the firms. Firms need to have the target structure of capital. Larry & Stulz (1995) conducted a study on the effect of debt on firms in Ghana which resulted positive significant association between total debt and total assets and return on equity. A study carried out by Murphy (1968), on financing behavior of listed Chinese firms resulted in a conclusion that a negative relationship between profitability and firms leverage exists. A higher rate of return on equity capital should produce in turn more rapid growth of earnings and dividends and higher valuation of the common stock. The return on equity capital, growth of earnings and dividends and the market's valuation of the firm's common stock are all directly tied to the leverage as far as theory is concerned. It is revealed that proportion of leverage in a firm's capitalization would be directly related to its relative return on common equity, growth of earnings, price appreciation and market valuation. Leverage also had no appreciable effect on market valuation. The long term debt to total capital ratio was generally unrelated to a firm's relative price to earnings ratio and to dividend yield on its common stock in all industries and all time periods. There were some tendency to the market to value highly leveraged companies at lower rather than higher prices in terms of price to earnings multiple and dividend yields. Gupta (1969) in his study explained that debt is considered as a way to highlight investors trust in the company, if a company issues debt it provides a signal to the markets that the firm is expecting positive cash flows in the future. The principal and interest payments on debt are fixed contractual obligation which the firm has to pay out of its cash flows. Therefore, higher level of debt shows the manager confidence in future cash flows. Another impact of the signaling factor is the peeking order theory is the problem of the under pricing of equity. If a firm intends to issue equity instead of debt for financing future projects the investors will interpret the signal negatively. Since managers have superior information about the firm than investor they might issue equity when it is over-priced. Amsaveni (2009) reported that there exists a negative relation between leverage and future growth. This relation is negative for firms whose growth opportunities are either not recognized by the capital markets or are not sufficiently valuable to overcome the effects of their debt overhang. They also confirmed that leverage does not reduce growth for firms known to have good profit opportunities. To examine the relationship between leverage and growth they used dataset over a period of 20 years and they found a strong negative relationship between them.

Mangalam & Govindasamy (2010) analyzed and understand the impact of leverage on the profitability of the firm by investigating the relationship between the leverage and the earning per share. He analyzed leverage in three ways which were financial leverage, operating leverage and combine leverage. For analysis purpose he took seven public limited companies listed on the Bombay stock exchange. These were ACC Cement, Chettinad Cement, India Cements, Dalmia Cement, Ambuja Cement, Birla Cement and Prism Cement. He took the period of seven years for analysis. He used Analysis of Variance (ANOVA) as analysis tool in his study. He evaluates the hypothesis of relationship between degree of financial leverage and earnings per share. Operating leverage is caused due to fixed operating expenses in a firm. It is the firm's ability to use fixed operating costs to magnify the effects of changes in sales on its earnings before interest and taxes. Financial leverage is caused due to fixed financial costs in firm. It is the ability of the firm to use fixed financial charges to magnify the effects of change in EBIT on the earning per share. It involves the use of funds obtained at a fixed cost in the hope of increasing the return to the shareholders. The financial leverage employed by the company is intended to earn more return on fixed charge funds than their costs. There is a close relation exists between the financial leverage and earnings per share of the company. If degree of financial leverage is high and the return on investment is greater than the cost of debt capital, then the impact of leverage on EPS will be favorable. The impact of financial leverage is unfavorable when the earning capacity of the firm is less than what is expected by the lender. The results suggest that there is a significant negative relationship exists between financial leverage and earnings per share. The leverage effect is positive when the earnings of the firm are higher than the fixed charges to be paid for the lenders. The leverage is an important factor which is having impact on the profitability of the firm and the wealth of the shareholders can be maximized when the firm is able to employ more debt.

Baker (1973) analyzed that effect of financial leverage or relatively greater use of debt capital, on industry profitability. This study developed and tested a model consisting of two equations, one explaining industry profitability in terms of the usual market structure variables plus leverage and the other one was a new equation incorporating risk variables to explain leverage. He measured inversely as the ratio of equity to total assets for the leading firms in an industry over ten years. First he used two stages least square method of estimation which shows leverage is significant and has the theoretically correct negative sign which means low amounts of leverage tend to raise industry profit raises. Secondly he used ordinary least square estimation which also indorsed the same results.

Ezeoha (2008) studied the nature and significance of the firm size as a determinant of corporate financial leverage from an undeveloped market prospective. The key variables he used in the study were firm size, financial leverage ratios, with profitability, firm age, and assets tangibility as control variables. Financial leverage served as dependent variable while the other used as independent variables. He used financial leverage in three forms which were short term financial leverage measured as short term debt to total assets ratio, long

term financial leverage measured as long term debt to total assets ratio and total financial leverage measure as total debt to assets ratio. Firm size was measure as the natural logarithm of the firm. Assets tangibility was measure as the ratio of fixed assets to total assets. Profitability was measure as the ratio of earnings before interest and taxes to total assets. He analyzed 71 firms listed on Nigerian Stock Exchange over a 17 years period from 1990 to 2006. The results affirm that relationship between profitability and financial leverage is highly significant and negative which means that firms that are more profitable are very much likely to rely on internal capital in financing their operations.

3. METHODOLOGY

3.1 Method of Data Collection

The secondary data necessarily required to perform the research was gathered from the official sites of cement producing companies operating in Pakistan. Various financial statements of eighteen firms were used for data extraction.

3.2 Sample Size

There were twenty one cement manufacturing companies listed on KSE 100 index, eighteen companies were selected, while three companies were excluded due to unavailability of data in selected sample year. The data used for the purpose of research consisted of six years annual data of the variables used in this study. Data of all the variables belonged to period starting from year 2005 to year 2010 was taken in this study.

3.3 Variables Description

Profitability is used as dependent variable in this study which was measured as the ratio of net income after tax to total assets. It is a comprehensive indicator of a firm's performance because it provides information as to how well company is using its total assets to generate profits.

Profitability (ROA) = Net Income / Total Assets

Financial leverage is used as independent variable in this study which was measured as the ratio of total debt to total assets. Total debt includes short-term debt maturity of less than one year and long term debt maturity of more than one year. This ratio gives an indication of a company's total liabilities in relation to their total assets. The higher the ratio, the more leverage the company is using and the more risk it is assuming.

Financial Leverage = Total Debt / Total Assets

3.4 Statistical Model

$$ROA = \beta_0 + \beta_1(Financial\_Leverage) + \varepsilon$$

3.5 Hypothesis

H1: Financial leverage has significant negative impact on firm profitability

3.6 Statistical Technique

OLS Simple Linear Regression analysis technique will be used to test the developed hypothesis. This technique will be used in this study because the dependent and independent variable is numeric (scale) and under this situation the prediction power of regression analysis is stronger as compared with the other technique.

4. RESULTS & DISCUSSION

4.1 Findings and Interpretation of the results

The sample of eighteen firms of cement industry listed on Karachi Stock exchange was taken; Simple Linear Regression (SLR) as a statistical technique was used for this research study. The identified technique was used to examine the impact of studied independent variable on the dependent variable i.e profitability of firm. For the examination and analysis of the data Statistical Package for the Social Sciences (SPSS) was used. Following are the interpretation of results:

Table:1.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.546	**.298**	.291	8.72245

The model summary table explains the amount of variability in the dependent variable explained by the independent variable. The value of r-square is 0.298 that means approximately 29.8% of the variability of dependent variable "Profitability" is explained by the independent variable "Financial Leverage" and remaining of the variance is unexplained.

Table: 1.2 ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3425.324	1	3425.324	45.022	.000[a]
	Residual	8064.600	106	76.081		
	Total	11489.924	107			

ANOVA test whether the regression model is valid or not. F-statistics is 45.022 which are very high and sig. value is highly significant which is less than 5% level of significance this implies that the test of ANOVA is highly significant and model is valid from the given predictors.

Table: 1.3 Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	24.002	3.173		7.564	.000
	Financial Leverage	**-.348**	.052	-.546	-6.710	**.000**

Above table is concerned with the parameters of the regression model. Coefficients' table shows the significance of individual independent variable in explaining the dependent variable. The un-standardized coefficient (B) value shows the magnitude and relationship between dependent variable "Profitability" and independent variable "Financial Leverage". If that value is positive that means there is a positive relationship exist between predictor and dependent variable. If that value is negative, which is in our case, this means there is a negative relationship exist between predictor and dependent variable. If there is one unit increase in Financial Leverage of the firm it will decrease the profitability of the firm by 0.38 units. The t-test statistics is highly significant at 5% level of significance that means coefficient value differs significantly from zero and predictor is making significant contribution in the model.

4.3 Hypothesis Assessment Summary

The hypothesis of the study was there is a significant negative relationship exists between financial leverage and profitability of the firms in cement production sector listed on Karachi Stock Exchange. Following is the hypothesis assessment on the basis of statistical test results.

Hypothesis	β	Siq. Value	
Financial leverage has significantly negative impact on firm profitability.	-0.348	9.866 E -10	Accepted

5. CONCLUSION LIMITATIONS & RECOMMENDATIONS

5.1 Conclusion

This study investigated the relationship between financial leverage and profitability of the firms belongs to cement manufacturing sector of Pakistan. It was hypothesized that there is a significant negative relationship exist between financial leverage and firm profitability. The statistical test result show that there is a significant negative relationship exists between financial leverage and the profitability of the firm in cement manufacturing sector of Pakistan. Highly leverage firms have lower profitability and lower leverage firms have higher profitability. The results of this study are consistent with the results of previous studies conducted by Titman and Wessels (1988), Wald (1999), Sheel (1994), Eunju and Soocheong (2005). The results of this study are not matching with the results of previous studies conducted by Larry and Stulz (1995) in which he found a significant positive association between leverage and profitability. He conducted the study in Ghana where the cost of debt is lower than the cost of debt in Pakistan and he took top twenty companies listed on stock exchange of Ghana. This could be the reason of contradiction in results of both studies.

5.2 Limitation & Recommendations

This study was limited to the firms belongs to cement manufacturing sector of Pakistan which are listed on Karachi Stock Exchange. Data was taken from year 2005 to year 2010. Profitability was used as dependent variable and was measured as the ratio of net income after tax to total assets and financial leverage was used as the independent variable and was measured as the ratio of total debt to total assets ratio. Data of eighteen firms listed on Karachi Stock Exchange were available to conduct this study. This study can also be conducted by taking data of all firms listed on Karachi Stock Exchange. The cement sector is highly leveraged sector of Pakistan. Major companies have taken debt for expansion of their units which require them to pay fix cost on debt which is very high in Pakistan. High fixed cost put adverse impact on firm bottom line which means it reduces net income of the firm. Economic and political uncertainty and worst law and order situation is creating adverse situation for this sector.

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APPENDEX: Companies List

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