Determinants of Capital Structuring Of Firms of Cement Sector in Pakistan

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Abstract

In finance, capital structure is the combination of debt and equity, that how a firm finances its overall operations and growth needs by using different sources of funds. In this paper, researchers intend to identify the determinants for optimum level capital structuring in cement sector of Pakistan listed in Karachi Stock Exchange. The researchers identified that growth, size of the firm, profitability, and tangibility of assets has an effect on leverage of the firm. For this purpose 12 firms out of 20 firms listed in Karachi Stock Exchange (KSE) has been selected and data from 2006 till 20111 has been analyzed using Regression, Correlation and ANOVA to examine the determinants of capital structuring in cement sector. The results showed that all the factors have positive relationship with leverage in a firm. This study will help organization to analyze their capital structuring needs on the basis of debts and equity. Furthermore, it will increase the knowledge base of students, researchers and managers related to capital structuring.

Keywords: Capital Structuring, Profitability, Tangibility, Leverage

JEL Classification: **M1; M12**

Introduction

In finance, capital structuring is the combination of debt and equity through which the firm finances is entire operations. Debt can be classified as bonds or long term notes payable, whereas equity classified in the form of common stock, preferred stocks or retained earnings In general it is not a science or software to determine the capital structure for the firm; it needs large amount of data and calculations.

The modern theory of capital structuring of the firm was developed by Modigliani & Miller (1958) in which they proposed the choice between debt and equity financing has no substantial effect on the firms value therefore the management doesn't need to be anxious about the ratio of debt and equities.

The seminal work of Modigliani & Miller (1958) showed that "The market value of a firm is determined by its earning power and the risk of its underlying assets, and is independent of the way it chooses to finance its investments or distribute of dividends." After Modigliani & Miller (1958) many researches and remarkable theories have been proposed on the determinants of capital structuring which explains the performance of the firm. They are Static Trade off Theory and Pecking Order Theory by Myers.

The industry in Pakistan has its own unique attributes so the question arises of a best capital structure agitates in the minds of financial mangers therefore the idea is to answer the question of corporate finance that, how should firm finances their operations? What factors influenced their choices? This study is an attempt to identify the factors determining the status of capital structuring of cement sector in Pakistan and further to analyze the different variables like firm size, growth, profitability and tangibility of assets and their effect of leverage. The reason for choosing cement industry is because it is a capital intensive industry.

Therefore, we compare our results with Hijazi & Tariq (2006) paper who analyzed 16 firms however we consider 12 firms listed in Karachi Stock Exchange.

Problem statement

Capital structure is a key source for doing or starting a new business. To find out the different factors which have influenced the firm's choice of capital structure? As well as to analyze the various independent variables that has an effect on leverage.

Research objective

- To identify different factors of cement industry and its effects on leverage.

- To determine that how firm should select its capital structure.

- To identify the relationship between capital structures and firm's growth.

- To analyze the relationship between profitability and leverage on capital structuring.

- To find the relationship between firm's size and leverage

- To identify the interdependence between capital structures and firm's tangibility of assets.

Limitations

Due to time constrain and choice of topic there were numerous limitations faced by us.

- The first and the foremost limitation to this research is the shortage of time

- The study is restrained to six years data only i.e. 2006 – 2011, therefore a detailed analysis covering a long period, which may give different results cannot be made due to limitation of time

- Lastly, the recent data for the years 2012 – 2013 was not available.

Furthermore this paper is divided into four key sections. Section 2 presents the theoretical model for the analysis presented in this paper. Section 3 contains the literature review of the

study including different theories and definitions of the variables. Section 4 provides a detailed explanation of the methodology and the model used for the analysis. Section 5 contains the result of the analysis, associating the result with the past outcomes. Lastly, section 6 summarizes and provides the conclusion of the analysis of this paper.
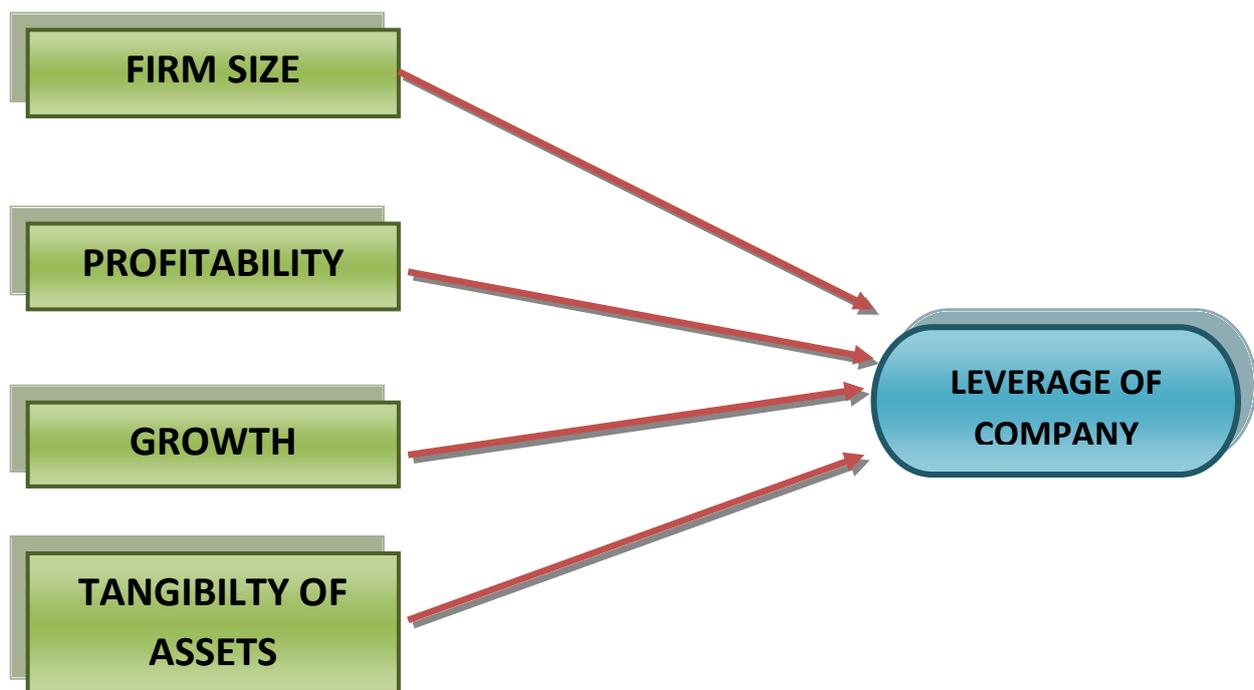
Theoretical Model

Figure 1: Theoretical Model

Literature Review

A general question that will come in mind that how a firm organize finance for their operations, there may be a lot of factors which deploys the choices of capital structure. Many theorists gave theories and ideas to answer the questions like Modigliani & Miller Theory (1958) on capital structure, Trade-off Theory which discuss the debt advantages against debt cost and Pecking Order Theory has been studied.

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Capital structure theories

Most of the theories have given attention to the amount of debt and equity in business balance sheet.

Modigliani and miller theory:

The contemporary theory of capital structure has given by Franco Modigliani and Merton Miller (1958) they verified by their theory that proposition of debt and equity has no significant effects on the value of firms cost of capital. Before Modigliani and Miller there was no theory of capital structure which states the clear position of debt and equity proposition. They also described that firms can issue two types of securities either by issuing risk free debt or risky equity. When a firm choose to proportion of debt and equity to finance its assets or operations all cash flows are distributed into among the investors.

Static trade-off theory

This theory expresses that the firm change towards the best leverage that is influenced by three important factors i.e taxes, bankruptcy and agency costs.

Tax which is paid after interests paid deductible expenses, due to the interest paid before taxes it decreases the tax liability and increases the after tax cash flow for the firm. Firms attempt to enlarge the cash flow and market value of tax if the rate is higher so the leverage may have positive response.

Bankruptcy occurs when the firm is unable to pay its obligations to creditors. In the result if firm makes default there is transfer of ownership from owners to creditors according to the procedure. In direct costs includes sales gone, profit loss, and the firm's performance cannot get credit or issue securities under unfavorable circumstances or disturbance between firm's suppliers and the customers which is associated with the transfer of ownership or control on the firm.

When there is an discrepancy in the interest, as a result it creates agency costs so; agency costs curtail the relationship between managers and shareholders, and between debt holders and shareholders (Jensen and Meckling, 1976) It is argued that managers do not put full efforts while managing the firm resources, and sometimes they may also transfer the firm resources for their own benefits.

Pecking order theory

Another theory that is put forward by Myers and Majluf (1984) and Myers (1984) was the Pecking order theory that states that firm follows a chain of command of financial decisions when establishing its capital structure. The theory is also focuses on two major assumptions, first managers have better information about their own firm as compare to the outsiders. Second, managers are the shareholders so; they put best efforts in the firm performance.

Determinants of capital structure

We present the elaboration of the variables that are used in this study these are tangibility of assets, growth, firm size and profitability which are the independent variables of the firm whereas the dependent variable is to determine the degree of leverage also proving them with evidences found in previous studies.

Leverage (dependent variable)

Previous research studies have used different methods of leverage. Frank and Goyal (2003a) state that "the difference between a debt ratio based on market value and one based on book values is that the former tends to regard the firm's future situation whereas the latter reflects the past situations." On the other side the initial cost of borrowing will enhance the chances of bankruptcy. According to Shah and Hijazi, (2005) " if a firm falls in financial

distress and goes bankruptcy, then the relevant value of the debt is the book value of debt not the market value of the debt."

Tangibility of assets (independent variable)

A firm which is having large amount of fixed assets can easily enhance its debt. Companies having higher ratios of tangibility of assets have an ease to borrow loans that are relatively cheaper in rate so that we can expect a positive response between tangibility of assets and leverage. On the contrary the firms whose are having higher levels of tangibility are normally huge firms that can easily issue equities of common stocks in the market at affordable prices; therefore these firms do not need to issue debts so the expected relation between these two should be negative.

Growth opportunities (independent variable)

Myers (1977) drive that a debt which is issued by the firm has its negative relationship with its growth opportunity based on future investment opportunities, has also suggest that if the firm financed its operations with risky securities, so the firm leave behind some of its valuable opportunities. Growth opportunities are the capital assets for the firm, they are intangible in nature and they are also valuable for the firm, However the firm with remarkable debts may relinquish this opportunity because of efficient transfer of wealth from stockholders to debt holders hence we found that firm with elevated growth does not need to issue debts in the market therefore the leverage is expected to be negatively related with the firms growth opportunity.

Firm size (independent variable)

Many authors give observations on the relationship of firm size with leverage that this should be positive. By considering the tradeoff theory firm surfaces lower bankruptcy costs and large firms are no more diversifiable and borrow more. Moreover huge firms probably

having low agency costs because of unequal cash flow and easy way to reach the capital market, these suggested that the firm size and leverage ratio are positive in relation. However this contradicts the pecking order theory which states the negative relationship of these two variables.

Profitability (independent variable)

The major source for financing is retained earnings, second preference for financing is debt financing, and third is issue new equities, firms which have high profitability encourage to use debt, because firms get advantage while using the debt. Whereas pecking order theory holds the argument that "firms are willing to use the internally generated funds and use debt financing over equity when it's easily available." It is usually observed that firms whose having larger profits are relatively smaller in issuing of debts so that it can be said that there could be a negative relationship between the leverage and the profitability of the firm.

Research Methodology

Sample design

The total population that considered in this study was 20 cement companies of Pakistan but the sampling frame and size for this study includes only 12 companies of cement sector from the year 2006 to 2011 so for the purpose of the research six years data was collected from the financial statements and other secondary sources. This research uses secondary data collected form annual reports of cement companies, publication by state bank of Pakistan, Karachi Stock Exchange.

Data analysis methodology

The research focuses on quantitative data and the results based on T test of Hypothesis. Furthermore its is processed by Descriptive statistics i.e Mean, Standard deviation and the inferential part consist of Correlation, Regression tests using SPSS

Research design

The purpose of study is Descriptive study whereas the type of investigation is Correlation. The research interference is Minimal. However the study setting is Non-contrived and it is a Field study. The unit of analysis is Organizational and the time horizon was Cross sectional.

Hypothesis

This research is to reveal the impact of defining the main variables of capital structure performance on experimental results. Therefore, the following alternative hypotheses are extracted

H_{A1}**:** There is positive impact of firm size on leverages.

H_{A2}**:** There is relationship between value of fixed assets and debt ratio.

H_{A3}**:** There is no relationship between profitability and leverages.

H_{A4}**:** Company's debt ratio is affected positively by growth rate.

Data Analysis

We used regression and correlation as analysis tools for my research as our research is based on statistical analyses.

We use Regression analysis to define the bond or link between variables such as constructive or undesirable, and correlation technique practice to decide whether bonding between variables exists or not.

Regression analysis:

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.755[a]	.571	.545	.131833

    a. Predictors: (Constant), Growth, Profitability, Tangibility Of Assets, Size

In the exemplary summary table, the "R" in this slab, is Coefficient of correlation. The coefficient of correlation concludes the strong suit direction of a linear bonding between variables. The assortment of correlation coefficient is from –1 to +1. If there is solid constructive linear relationship between variables the rate of "R" will be closed to +1. If there is a undesirable linear relationship between variables the rate of "R" will be close to -1. If there is no bonding between the variables the rate of "R" will be near to 0. But if the rate of "R" is neither close to -1, 0 nor +1, there will be the partial correlation bonding between variables.

In the above statistics analysis "R" is 0.755 which shows that there is partial correlation between dependent variable (leverage) and independent variable (size, growth, tangibility of assets and profitability).

The second column which shows "R Square" (coefficient of determination) which shows that 57.1% of variation in leverage is caused by independent variables, third column is "Adjusted R square" which shows 54.5% of deviation is affected by independent variables, bearing in mind numbers of interpretations and the integer of forecasted variables

Analysis of variance (anova)

Table 2: ANOVA[b]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.547	4	.387	22.256	.000[a]
	Residual	1.164	67	.017		
	Total	2.712	71			

    a. Predictors: (Constant), Growth, Profitability, Tangibility Of Assets, Size
    b. Dependent Variable: Leverages

The ANOVA technique investigates the acceptability of exemplary summary and how it fits. T

regression is displayed evidence about the deviation accounted for by the model and the subs

residual shows evidence about the deviation that is not accounted by the exemplary summary.

In ANOVA table, if significance value of F > 0.05 then it means that model is not satisfactory

demonstrated by the model is by chance. However, if significance value of F < 0.05 then it mean

acceptable and deviation indicated in the model is not just accidental.

Hence, the statistical analysis of this investigation demonstrates that the **significance value**

which is less than 0.05, so it means that ANOVA model is acceptable and deviation described b

not just accidental.

Coefficient analysis

Table 3: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.478	.106		4.505	.000
	Size	-1.381	.175	-.781	-7.872	.000
	Tangibility Of Assets	-.002	.000	-.327	-3.542	.001
	Profitability	.135	.133	.086	1.014	.314
	Growth	.000	.000	.132	1.587	.117

a. Dependent Variable: Leverages

In the coefficient table, the first row shows the constant which is second column of

first row **0.478** shows that when all predictors (Growth, Profitability, Tangibility Of Assets,

Size) are held to zero, the amount of leverage is **0.478** and the constant is also significant

P<0.05.

Then, there is first slope which is **Size** that has a significant value P=0.000 which is

less than 0.05 (P<0.05) and **t**=-7.872 which shows that size has a significant impact on

leverage. The value of beta for size is -1.381 which shows that if size changes by 1 million it will bring -1.381 million change in leverage. Hence, H_{O1} is rejected and H_{A1} is accepted.

H_{A1}**:** There is positive impact of firm size on leverages.

Equation for this relationship is:

$$Leverage = 0.478+ (-1.381)\ SZ$$

Where SZ is Size

Then, the second slope is **Tangibility of Assets**, that has also a significant value P=0.001 which is less than 0.05 (P<0.05) and **t=**-3.542 which shows that Tangibility of Assets has a significant impact on leverage. The value of beta for Tangibility of Assets is -.002 which shows that if Tangibility of Assets changes by 1 million it will bring Tangibility of Assets million change in leverage. Hence, H_{O2} is rejected and H_{A2} is accepted.

H_{A2}**:** There is relationship between value of fixed assets and debt ratio. (Positive)

Equation for this relationship is:

$$Leverage=0.478+ (-0.002)\ TOA$$

Where TOA is TANGIBILITY OF ASSET

Then, the third slope is **Profitability**, that has also a significant value P=0.314 which is greater than 0.05 (P>0.05) and **t=**1.014 which shows that Profitability has an insignificant impact on leverage. The value of beta for Profitability is 0.135 which shows that if Profitability changes by 1 million it will bring .135 million change in leverage. Hence, H_{O3} is accepted and H_{A3} is rejected.

H_{A3}**:** There is no relationship between profitability and leverages.

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Equation for this relationship is:

$$Leverage= 0.478+0.135PRF$$

Where PRF is PROFITABILITY

Then, the fourth slope is **<u>Growth</u>**, that has also a significant value P=0.117 which is greater than 0.05 (P>0.05) and **t=**1.587 which shows that Growth has an insignificant impact on leverage. The value of beta for Growth is 0.000 which shows that if Growth changes by 1 million it will bring 0.000 million change in leverage. Hence, **H_{O4}** is accepted and **H_{A4}** is rejected.

H_{A4}: Company's debt ratio is affected positively by growth rate.

Equation for this relationship is:

$$Leverage= 0.478+0.000GRT$$

Where GRT is GROWTH

Conclusion

In this research paper there is a sample of 12 firms out of 20 firms of cement sector are analyzed. In this research T test of hypothesis for the mean is used to calculate the determinants of capital structure of the firm working in Pakistan

There are fewer opportunities of growth and profitability for the firm and more cost-effective firms are not willing to make use of debt. Firms have to make capital structure by analyzing its current situation and then make capital structure decision. First of all firms have to use retained earnings in their capital structure as the best option and move to external financing such as debt financing.

Larger firms are prefer to apply long term debt so, sooner or later it will affects the firm's capital structure because as we find the results in our tests that capital structure has the significant impact over the firms value.

Recommendation

Small firm should not depend on debt, because by relying firms may lose their opportunities. Firms should use their internal funding in their capital structure such as Retained earnings.

Firms which are having excess cash flow, they should use that cash to implement in new projects Firms which have larger growth rate look for the future investments and have an opportunity to diversify their business.

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