

# INVESTIGATION OF RELATIONSHIP BETWEEN CAPITAL STRUCTURE DETERMINANTS AND MARKET POWER ON LEVERAGE: A CASE OF CEMENT SECTOR IN PAKISTAN

Sajjad Hussain<sup>1</sup>, Muhammad Ilyas<sup>2</sup>, Muqqadas Rehman<sup>3</sup>, Tehreem Fatima<sup>4</sup>

<sup>1</sup> Department of MGMT Sci, The Superior University Raiwind road Lahore

<sup>2</sup> Dean research degrees, The Superior University Raiwind road Lahore

<sup>3</sup> Assistant Professor, Hailey College of Commerce, Lahore

<sup>4</sup> Department of MGMT Sci, The Superior University Raiwind road Lahore

Corresponding author's email: [sajjadhussain1990@hotmail.com](mailto:sajjadhussain1990@hotmail.com)

**ABSTRACT:** *The main purpose of this article is to investigate the association between market power and capital structure. Capital structure has been tried with a different perspective by investigating its association with market power. To the best of authors' knowledge, this is the first study that investigates the relationship between market power and leverage in any developing economy by employing the data of cement firms of Pakistan. . We have also provide a logical explanation towards the factors affecting leverage.*

**Keywords** capital structure; leverage; corporate finance; trade-off theory; pecking order theory; market power; Pakistan.

## 1. INTRODUCTION

Composition of assets of a firm is called capital structure. This composition consists of equity or debt or a similar relationship both during the lifetime of the company [1]. The firm's basic objective is to maximizing its own value as well as value for its stockholders. The organizational value is the current discounted value of its potential cash flows which is calculated using weighted average capital costs. To increase the value of the company managers invest in different projects which ultimately means higher cash flows. Investment in different projects need money and money is collected by using equity or debt option. This composition of equity and debt when used in optimal ratio minimizes the weighted average cost of capital, maximizing shareholder and corporate value[4]. Capital structure describes the way a firm raises its total assets. The most challenging strategic decision, a firm makes is calculation of an optimal and appropriate ratio of both debt and equity in its financing [18]. Ratio of debt over equity is called financial leverage, and it shows the correlation between the loans and stockholders' funds. Leveraged firms are those having a mix of both the equity from owners and debts from lenders, while unlevered firms have only equity in their balance sheet. Debt part of the financing provides the benefit of tax exemption on interest expense, while its disadvantages include financial distress associated costs, lowering the firm's ability to increase equity and its growth by exerting pressure for paying the debt amounts back on time. On the other hand equity part of financing does not ensure any fixed amount of profit to the equity holders which also provide the growth opportunity by increasing cash flows. Moreover, it provides the equity holders an opportunity to vote for making strategic decision of the firm. But, the cost associated to equity gets more than the debt liability cost. Therefore, for choosing an optimal combination of both the equity and debt is strategically an important consideration for a firm and a significant determinant of its success.

Walid in [31] found that owners of organization can significantly influence the capital structure decision of the company and the supervisory role of these owners and agency problems may give different results in different

countries. Most of the literature is based on the findings of the countries that have established several environmental and organizational similarities. On the other hand, few papers have analyzed the capital structure in under-developed and developing economies which have different environmental and organizational factors and structures [5][24][31]. Capital structure has very confusing nature [29], which still continues [30]. So, this investigation is aimed for further investigating the capital structure, its different factors and determinants by incorporating market power in the matter. Market power has significant relationship with any organization. Therefore, it is necessary to analyze, whether and in what way it affects the LVG (leverage) and how organizations address the LVG by managing the price of share and/or their manufacturing. This issue does not have much literature in the context of Pakistan. Additionally, this is considered as one of the initial studies incorporating the market power to break down its impacts on leverage. The results of this investigation can also be expanded across the other developing economies to understand the concept of capital structure and its nature.

### Literature review:

One of the most important decisions for corporate world is to understanding how the firms make financing choices [27]. The proposed capital structure that is insignificant in the business world in the absence of taxes, an initiative to investigate the costs associated with the business and market boundaries [17].

### Miller – Modigliani theory

In [17] the author developed this theorem which is close to the net operation income concept[1]. This theory is based upon the irrelevancy of capital structure theory which says that in valuation of a firm, capital structure of that firm is irrelevant [10] i.e. firm's leverage either high or low, does not influence the firm value. Moreover, this theory suggests that future growth opportunities of a firm are the real determinant of its market value apart from the investment risks [19]. This theory also describe that firm's value is insignificant from the capital structure mix or firm's financial decision. They also suggest that leverage or debt to equity ratio is trifling with value of firms in a perfect market.

### **Trade-off theory**

Although Miller & Modigliani theory has some limitation of unrealistic assumptions but in extended version of this theory in 1963, they presented the trade-off theorem and stated that optimal capital structure comprises of full debts because of the associated tax benefits on interest expenses. In [3] and [7] the authors came with an opposing view and stated that although debt financing has tax benefits, increase in leverage, enhances the risks of bankruptcy but these risks must be addressed in financing decision. Therefore, trade-off theory was updated suggesting that decisions regarding capital structure involve managing a balance between the debt benefits, agency costs, and risks of bankruptcy. Commonly, static trade-off theory suggests that business entities carry out a target for capital structure which trades-off the benefit of tax advantages of debt financing, bankruptcy and agency related costs [14]. This suggests that, firms should have a higher ratio of debts in their capital up to the level where debt financing exceeds bankruptcy associated costs. In the context of agency costs, this theory states that debt financing gets priority by the stockholders because it is considered as a monitoring and disciplining tool for the firm's management. Higher debt ratio will lessen the agency issues and conflict of interest as it generates lower amounts of free cash flows to be used by managers for their personal needs. Occasionally, researchers take agency costs as a separate theorem but [14] also states that this is only a separate aspect of this theory.

### **Pecking Order Theory**

Financial market players can manipulate their decisions and the capital structure that is important for corporate enterprises to achieve maximum operational production. Poor understanding of the concept may result in wrong decisions of choosing capital structure which may cause financial distress and even bankruptcy. Pecking order theorem is one of the famous results available on capital structure. It is one of the most prominent and related theorems in the concept of corporate capital structure and leverage. This theory believes in nothing like target capital structure which implies that family-owned businesses will probably retain the ownership to them and most of the marketed shares preferring internal financing instead of external [1]. Mainly, this theory is developed upon the assumption of asymmetry in information between the insiders (organizational management) and the outsiders (potential investors). It believes that the firm's inner players and people have more knowledge and understanding of firm's value than the outsiders, which urges those outsiders to claim incentive for this asymmetric information, when they lend their funds to origination [20]. Firms generally choose their internal resources first to meet the financing needs, then they move to debts involving lower risks and higher risks debts with last priority to the equity financing [9]. Pecking Order Theory emphasizes on the hierarchy of raising finance through different sources in which easily available debts get priority over equity for external financing. It is stated in [1] that this theory was first developed by Donaldson in 1961 and updated later on by [20]. According to this theory, there are three financing sources for firms: retained earnings, debts and equity. Equity faces severe unfavorable selection problems, debt causes minor selection problem and retained

earnings has as such not any unfavourable selection problem [1].

### **Independent variables**

#### ***Firm Size***

Pecking order with trade off suggests positive and also negative association between the organizational LVG (leverage) and its size. This theorem explains the positive correlation between LVG and the company has sized to large organizations, are generally more diversified, which is advantageous to lower the risk of bankruptcy. These characteristics help these organizations to get the debt economy suggests a correlation between the organization's influence and size is positive. Similarly, larger organizations, through different reports and information materials, provide more information to the stakeholders and outsiders than the smaller organizations, which results in lower information asymmetry for larger organizations [24]. So, the larger family-owned organizations have more stock options than the debts they have cost advantages with lower asymmetric information. So, the size of firm has positive impacts on its leverage, [14] [25] found similar findings. But, contrary results were found by [29] showing negative correlation in firm's leverage and size. General consensus shows that both variables are positively related, but the opposing views cannot be rejected totally. To calculate the firm size, this study uses natural log of sales as suggested by previous literature [13][24][29].

#### ***Tangibility***

Tangible assets consist of both fixed and current assets like buildings, machinery, and inventory etc. Tangible assets are not difficult to collateralize as compared to intangible or nonphysical assets, in order to minimize the loss in financial distress. Tangible assets are highly levered assets because they are better choice as collateral for debts [24]. Furthermore, higher tangibility ratio decreases the potential agency costs and issues. According to both trade-off and pecking order theorem, tangibility and leverage are related positively [11] as literature shows [21][28] that firms having higher tangibility ratio has higher leverage also. But, [6] presented a negative association between the both. For this study, positive relationship between the leverage and tangibility is assumed [24]. While fixed assets are divided by total assets to calculate the firms' tangibility in consistence to [8].

#### ***Profitability***

It has been seen as one of the most important variable is the capital structure in previous literature. It shows management's ability to properly use company assets. Trade off theorem says that organizations that have greater profitability is expected to raise more debt financing because it reduces their taxes. Moreover, high profitability lowers the risk of firm's financial distress and bankruptcy and potential investors will be eager to invest because the chances of default are lower. So, a positive connection exists in the profitability of a firm and its leverage. In contrast, pecking order theorem establishes a negative correlation with the reason that firms prioritize the retained earnings for financing as a first choice. Profitable organizations will hold more earnings as retained earnings causing the leverage to decrease. In [21] investigated the Canadian corporate entities

for capital structure and set up a significant positive link of profitability and debts. But, most of the extant literature indicates negative relationship between the two [12][28]. This study assumes negative correlation between profits of a firm and its leverage based upon the prior empirical evidence [5][6][28] ratio of EBIT (earnings before interest and tax) divided by total assets is used as indicator of profitability.

**Growth**

In [24] the author said that trade-off theorem shows a negative correlation between growth opportunities and leverage of a company. The major cause behind this linkage is that growing organizations during the financial distress lose their value more rapidly than the established mature organizations. Growing firms, in addition, experience higher agency related cost of debts since lenders think that these firms probably will invest their funds in high risk projects in future [6]. So, growth will minimize the leverage of firm [22]. As per pecking order theorem, suggesting that growing organization are expected to attain more debts. Growth is calculated by the proportionate change in sales as the previous literature shows [24 - 26].

**Market power**

In recent years [2], a little studies has been carried out to find out the linkage between the firm’s capital structure & its market power. In [23] studied the capital structure of organizations in the context of market power which firm has in market. Market power entails, control a firm has on the capacity of production or prices of the products. In functioning terms, market powers mean a business firm’s competitive powers, oligopoly or monopoly. [25] said that MP can be calculated using Lerner, Herfindahl index and Tobin’s Q. According to [15] found that theoretically, Tobin’s Q ratio is a most powerful and realistically a prominent way to calculate the market power of firms. All the firms will be having Q of one individually in competitive markets. Firms having Q>1 is anticipated to have competitive edge in business either through monopoly or oligopoly. Furthermore, in developing economies, quantities, prices and data of different segments are unavailable for calculating the Lerner index as well as Herfindahl–Hirschman index. This research also incorporates the Q to measure the market power assuming the positive connection in market power and capital structure.

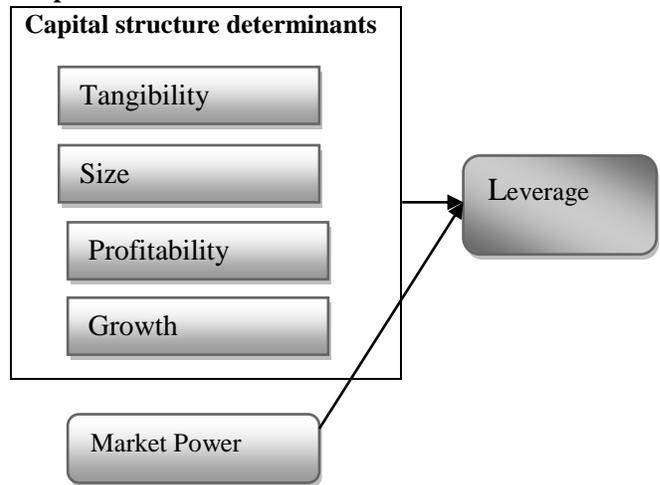
**Dependent variable**

Leverage ratio is used as a calculation for capital structure. So, it is better to explain the methodology incorporated in this paper to calculate the capital structure. Based upon the study by [16] dependentvariable of capital structure is calculated using leverage ratio (total debts over by total assets).

**Theoretical predictions between determinants &Leverage**

| Variables     | Dependent variable | Trade- off | Pecking- order |
|---------------|--------------------|------------|----------------|
| Size          | Leverage           | +          | -              |
| Growth        | Leverage           | +          | -              |
| Profitability | Leverage           | +          | -              |
| Tangibility   | Leverage           | +          | -              |

**Proposed modal**



**Hypothesis**

- H1:** Size has positive relationship with leverage.
- H2:** Tangibility has positive relationship with leverage.
- H3:** Profitability has positive relationship with leverage
- H4:** Market power has positive relationship with leverage.
- H5:** Growth opportunity has positive relationship with leverage.

| Variable             | Symbol | Measure (Proxy)                                       |
|----------------------|--------|---|
| <b>FIRM’S SIZE</b>   | SZ     | Natural Log (Sales)                                   |
| <b>TANGIBILITY</b>   | TANG   | Total Gross Fixed Assets/Total Assets                 |
| <b>FIRM’S GROWTH</b> | GRO    | Percentage Change in Sales                            |
| <b>PROFITABILITY</b> | PR     | EBIT/Total assets                                     |
| <b>MARKET POWER</b>  | MP     | Tobin Q,s ratio                                       |
| <b>LEVERAGE</b>      | LG     | Current liability + noncurrent liability/Total Assets |

**Methodology**

Based upon the extant studies, variables are selected to test the hypotheses and investigate the relationships of those variables theoretically. Panel data tools were employed in the methodology to develop the model. 10 cement firms were sampled for the analysis across the period of 2011-2015. Different symbols and letters show the respective variables, i.e. LG indicates leverage ratio; SZ shows size; PRO is for profitability; GRO shows growth; TANG shows tangibility ratio and MP shows market power of the firm.

$$LVG = C (1) + C (2)* GRO + C (3)* PRO+ C (4)* TANG + C (5)* SZ + C (6)*MP + [CX=F]$$

**Data**

The information and data used in this study was obtained from the SBP balance sheet analysis and from the comprehensive income and financial position reports of the sample trading firms listed in Stock Exchange of Pakistan (PSX). The Financial statements of Companies were available at PSX website and at official websites of cement sector companies own website. This study investigates the 10 cement firms of Pakistan registered on PSX (Pakistan) across the period of 2011 to 2015.

### Empirical results and discussions

Descriptive analysis of under research topic has been shown in table 1 below. Leverage mean value depicts that 53.16% of firm total asset finance by the external source of funding. While comparing these results, according to [24] firms of Pakistan cement sector come across are leveraged when are compared to those of Brazil, Jordan, Thailand, Zimbabwe, Malaysia and Mexico, and. In addition, Tables 2, 3 below represent the correlation between variables and regression matrix.

**Table1: Descriptive results analysis**

| Variable | Obv | Mean    | STD    | Mini    | Maxi  |
|----------|-----|---------|--------|---------|-------|
| LG       | 50  | 0.5316  | 0.2019 | 0.00    | 1.50  |
| SZ       | 50  | 12.9043 | 1.6803 | 5.4230  | 17.90 |
| PRO      | 50  | 0.1120  | 0.1684 | -0.5954 | 0.83  |
| GRO      | 50  | 0.1525  | 0.2534 | -0.5612 | 0.91  |
| MP       | 50  | 0.0541  | 0.3901 | 0.019   | 0.30  |
| TANG     | 50  | 0.5012  | 0.2589 | 0.0000  | 1.10  |

**Table 2:Regression Analysis**

| Variables          | coeff    | T-value | P-value |
|--------------------|----------|---------|---------|
| SZ                 | -0.015** | -7.995  | 0.000   |
| PRO                | 0.223**  | 7.498   | 0.000   |
| GRO                | -0.091   | -6.532  | 0.001   |
| TANG               | -0.072** | -3.939  | 0.002   |
| MP                 | 0.219**  | 1.659   | 0.007   |
| R2                 |          | 0.19    |         |
| Adj.R2             |          | 0.17    |         |
| F-value            |          | 30.33   | 0.000   |
| Durbin-Watson Stat |          |         | 1.9869  |
| Hausman Test       |          |         | 0.0000  |

**Table 3: Correlation matrix**

| Variables | LG       | SZ       | PRO    | GRO    | Tang  | MP |
|-----------|----------|----------|--------|--------|-------|----|
| LG        | 1        |          |        |        |       |    |
| SZ        | -0.202** | 1        |        |        |       |    |
| PRO       | 0.049*   | 0.215**  | 1      |        |       |    |
| GRO       | -0.190** | 0.003*   | 0.031  | 1      |       |    |
| TANG      | 0.035    | -0.214** | 0.005* | 0.004* | 1     |    |
| MP        | 0.061**  | -0.064** | 0.003* | 0.002* | 0.004 | 1  |

### CONCLUSION AND DISCUSSION

This paper was aimed to investigate the capital structures determinants and players which impact the capital structure choices in the context of Pakistan by sampling 10 non-financial firms. This investigation adds up to the literature regarding capital structure via explaining the variables as well as issues related to capital structure. Theoretical models and empirical tests were employed to get the findings regarding our determinants. Different variables like size of the firm, profitability it generates, growth prospects, tangibility ratio influence the capital structure in different ways. Size of the firm and its tangibility ratio shows significant negative influence on leverage, suggesting that big firms which have extra physical assets are anticipated to have lower debt liabilities. Similar results were produced by [6][31]. They reasoned this behavior of size to leverage with the market timing hypothesis, according to which the larger firms declare shares when market reputation and environment for the firm is suitable. Profitability, growth

prospects, and market power showed a positive impact on leverage. However, results also indicate that the profit generating Pakistani firms paying dividends to its stockholders are having larger debt levels in their capital structure. Moreover, the profit generating firms are exposed more to the lenders and debt financiers due to the lower threat of default [24]. Also, the firms which can regulate their shares prices timely are expected to get more debt financing for their future growth opportunities.

This study also investigated a variable that was never investigated before in Pakistani corporate studies, that is market power. Findings of this study suggest a significant positive connection of an organization's market powers with its leverage, which implies that having the power of regulating market prices of their shares and manage their manufacturing operations accordingly, are more likely to raise their finances through debts.

Future studies can be conducted by taking short as well as long-term debts ratios and total debts ratios to analyze various relationships in a specific sector in Pakistan economy. Also, more factors like dividends pay out, life-span of firms and competitive advantage of the firm and economy level factors like rate of interest, structure of the stock market, GDP, and inflation etc. can be investigated to examine whether and how they influence the capital struct of firms.

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