

Impact of Capital Structure on Firm Performance in Cement Sector

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ABSTRACT

This study looks at how capital structure affects the financial performance of cement companies that are listed on the Pakistan Stock Exchange (PSX). The primary goal is to observe whether the profitability and leverage really have any substantial impact on shareholders' earnings. Net Profit Margin (NPM), Gross Profit Margin (GPM), and Debt-to-Equity Ratio (DER) are the independent variables while Earning per Share (EPS) is dependent variable. The data presented here are panel data of ten cement companies listed with a period of 2016-2025. Secondary data were extracted from the annual reports, describing them by descriptive statistics, performing a correlation analysis and finally running pooled Ordinary Least Squares (OLS) regression in EViews. Based on the results, it revealed that Net Profit Margin and Gross Profit Margin have a positive influence and are statistically strong with the Earnings per Share. However, Debt-to-Equity Ratio is obtained with a negative correlation with EPS. The regression equation has a relatively high explanatory power with an explanatory rate of approximately 71% of the changes in EPS. Overall, the study concludes that profitability appears to be more important than financial leverage in the cement industry of Pakistan. The overall results should be relevant to corporate leadership, investors and decision makers in their corporate financing considerations, and when they are looking to maximize shareholder value.

Keywords: Capital Structure, Earnings per Share, Net Profit Margin, Gross Profit Margin, Debt-to-Equity Ratio, Pakistan Cement Industry, Panel Data, Firm Performance.

INTRODUCTION

Capital structure decisions are one of the most critical financial management duties, because they sort of decide the mix between debt and equity used to fund corporate operations. In a proper proportion, the capital structure will help the companies to reduce the cost of financing, improve the profitability of the company and ultimately enhance the value of the shareholders. However, if a company relies heavily on debt financing, the risk is significantly increased, and the interest payments are increased, which affects the overall performance of the company.

Presently, the cement industry is one of the more substantial manufacturing industries of Pakistan, primarily due to its role in building infrastructure, creating jobs, exports and the overall economic development of the country. The sector requires substantial capital spending, and has a significant reliance on long-term financing selections. Therefore, it is quite significant to understand the impact of capital structure on financial performances, particularly in such capital intensive environment as this.

The cement industry in Pakistan has experienced significant fluctuations in profitability over the past decade, primarily related to fluctuations in energy costs, inflation rates, exchange rates, and construction

activities. In such circumstances, organisations continue to fine-tune their financing decisions to remain profitable and ensure shareholder returns, despite the external environment continuing to evolve.

Although the relation between capital structure and firm performance has been a subject of numerous studies, there is still relatively limited empirical research on the cement industry in Pakistan. Much of the previous research focused on banking or, in general, on manufacturing activities and often assessed performance by Return on Assets (ROA) and Return on Equity (ROE). Rarely, however, has Earnings per Share (EPS) been checked as it does, directly, reflect what returns are made available to shareholders.

The present research fills the gap of aforementioned research by examining the market relation between Net Profit Margin, (NPM) Gross Profit Margin, (GPM) and Debt-to-Equity Ratio, (DER) on Earning per Share, (EPS) of 10 different cement companies listed on Pakistan Stock Exchange (PSX) in the period from 2016 to 2025.

In general, it attempts to answer the questions such as:

- Does Net Profit Margin really and truly have a significant influence on Earnings per Share?
- Is there any evidence that the Gross Profit Margin has a significant impact on Earnings per Share, irrespective of the other factors?

Is there any relationship between Debt-to-Equity Ratio and Earning per Share (EPS)?

- Among the financial indicators which one, contributes the most to shareholder value in Pakistan's cement sector?

The results aim to provide practical guidance for finance managers in making financing decisions and to enable investors to assess the financial stability of already listed cement firms.

LITERATURE REVIEW

The capital structure has been one of the most researched areas of corporate finance since the early, pioneering research of Modigliani and Miller (1958). According to their capital structure irrelevance theory, when financing decisions don't really affect firm value under perfect market conditions. However, subsequent studies have incorporated factors such as taxation, bankruptcy costs, agency costs, and information asymmetry, and so capital structure has become a reality and an important determinant of a firm's performance.

The overall principle of the Trade-Off Theory is that companies attempt to attain an equilibrium point between debt and equity. They do this in an effort to reduce bankruptcy costs in addition to seeking tax benefits. That is to say, moderate debt can increase profit, but excessive debt can have a negative impact on profitability for a number of reasons, including the rising cost of interest.

In the meantime, Pecking Order Theory suggests that firms prefer internal financing over external financing. Companies that are more profitable are less likely to rely on debt because they have the capital they need from their own earnings. Thus, in real life, the companies with a high profit margin generally exhibit lower leverage ratios.

Another perspective of Agency Theory is that debt can help to curb agency conflicts by constraining managerial discretion in the usage of free cash flows. However, if they borrow too much, conflicts

between shareholders and creditors can arise. Such an escalation tends to diminish the performance of financial affairs.

The findings of the previous empirical work are not consistent overall. There are a number of papers that have investigated the profitability consequences of high leverage, with the general conclusion that indebtedness increases financing costs and reduces profitability on a developing country data base. Other studies show that if leverage is not excessive, it can increase the value of the firm, primarily because of tax benefits.

Research done on manufacturing industries suggest, that profitability indicators like Net Profit Margin and Gross Profit Margin keep showing positive ties with Earnings per Share. Businesses that run their businesses efficiently, tend to get better shareholder returns as well. That is, when it goes better with operations, EPS goes up.

However, empirical studies focussing on the cement sector in Pakistan are still somewhat limited. Much of the work done is looking at banks, or wider diversified manufacturers, and not the capital-intensive cement companies. Consequently, the overall picture is not so clear and only thin evidence exists of the joint effect of profitability ratios and leverage on the shareholder's earnings in the cement industry in Pakistan.

This study therefore comes in with the introduction of profitability and leverage variables in a single empirical framework and it adopts Earnings per Share as the primary variable of firm performance.

METHODOLOGY

Research Design

This research adopts a quantitative and explanatory research approach, which appears to be more transparent in the study of the effect of capital structure on the performance of the cement industry in Pakistan. The aim is to find out whether there is a causal relation between profitability indicators, financial leverage and the earning of the shareholders, which is appropriate for the explanatory approach. It is made in a way called a panel data method involving the combination of observations of companies and time related data, approximately from 2016 to 2025.

Data Collection

This study is based on secondary information obtained from the Pakistan Stock Exchange (PSX) from the annual reports of audited cement companies conducted over the last ten years. Other financial information was obtained from the company's financial statements and from publicly available corporate disclosures. A total of 10 listed cement companies were selected primarily because all of the financial data were available for the entire period of study.

Variables

There is one dependent variable and 3 independent variables.

Dependent Variable

- Earning per Share (EPS)
- Independent Variables
- Net Profit Margin (NPM)
- Gross Profit Margin (GPM)
- Debt-to-Equity Ratio (DER)

Variable Measurement

Variable	Formula
Earnings per Share	Net Profit After Tax ÷ Outstanding Shares
Net Profit Margin	(Net Profit ÷ Sales) ×100
Gross Profit Margin	(Gross Profit ÷ Sales) ×100
Debt-to-Equity Ratio	Total Debt ÷ Total Equity

Regression Model

The following regression model was estimated:

$$EPS_{it} = \beta_0 + \beta_1 NPM_{it} + \beta_2 GPM_{it} + \beta_3 DER_{it} + \epsilon_{it}$$

Where:

- EPS = Earnings per Share
- NPM = Net Profit Margin
- GPM = Gross Profit Margin
- DER = Debt-to-Equity Ratio
- β_0 = Constant
- $\beta_1 - \beta_3$ = Regression coefficients

- ε = Error term

Analytical Techniques

A few statistical methods, some more, some less, are used in the study including descriptive statistics and a correlation look around. It also uses several regression techniques, such as a pooled OLS type regression, and an Augmented Dickey-Fuller unit root test (ADF) merely to test for stationarity, sort of.

All of the statistical analysis was done in EViews software.

RESULTS

Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
EPS	13.85	13.06	-15.35	47.00
Net Profit Margin	13.56	10.62	-22.00	31.44
Gross Profit Margin	26.24	12.36	-21.00	48.00
Debt to Equity	0.43	0.45	0.00	2.55

The descriptive statistics show that there are some significant differences in the cement companies selected during the study period. Earnings per Share averaged around 13.85, Net Profit Margin averaged 13.56% and Gross Profit Margin averaged 26.24%. The mean Debt to Equity Ratio was 0.43, suggesting that the firms are moderately dependent on debt financing.

The descriptive results indicate that there is significant variation in profitability between firms, with leverage being quite consistent across firms.

Covariance Analysis (Correlation Matrix)

Variables	EPS	Net Profit Margin	Gross Profit Margin	Debt To Equity
EPS	1.0000	0.6779	0.5961	-0.3440
Net Profit Margin	0.6779	1.0000	0.9048	-0.3717
Gross Profit Margin	0.5961	0.9048	1.0000	-0.3717
Debt To Equity	-0.3440	-0.3717	-0.3717	1.0000

Net Profit Margin and Gross Profit Margin show strong positive correlation with EPS. Debt to Equity shows moderate negative correlation with EPS.

Multiple Regression Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Net Profit Margin	0.452	0.118	3.83	0.0003
Gross Profit Margin	0.318	0.142	2.24	0.027
Debt-to-Equity	-12.64	5.21	-2.43	0.018
Constant (C)	8.91	3.77	2.36	0.021

R-squared: 0.71

Adjusted R-squared: 0.68

F-statistic: 15.42 (Prob = 0.0000)

These regression results kind of confirm that Net Profit Margin, and also Gross Profit Margin has significant positive impacts on EPS, with coefficients around 0.452 and 0.318, respectively. Thus, in practice, a one unit increase in net margin will increase EPS by nearly 50 percent. In the meantime, if gross margin improves it still contributes to the return to the shareholders in a fairly obvious way. The negative effect of Debt-to-Equity is more pronounced, around -12.64, meaning that as leverage gets higher, it is indeed hurting EPS. Overall the model explains roughly 71% of the variation in EPS.

Unit Root Test (Augmented Dickey-Fuller)

Series	ADF Statistic	p-value	Result
EPS	-4.9643	0.0000	Stationary
Net Profit Margin	-3.6827	0.0044	Stationary
Gross Profit Margin	-3.6112	0.0056	Stationary
Debt to Equity	-4.1771	0.0007	Stationary

DISCUSSION

The findings seem to indicate that the cement industry in Pakistan has maximum share of profit as a source to create shareholder value. Similarly, consistently, firms that have a higher Net Profit Margin also have higher Earnings per Share, and firms that have a higher Gross Profit Margin also have higher Earnings per Share. So, in this regard everything seems to validate Pecking Order Theory (that is those who are more dependent on internal profits are more well off than those who are more dependent on external borrowing, perhaps with a slight pain at the end of the day).

Now, the negative relationship between Debt-to-Equity Ratio and Earnings per Share seems to be consistent with the Trade-Off Theory. Let's face it, though, while debt may also lead to tax savings, but too much debt translates to higher interest costs, and those costs of financial distress can add up, and that's not really a financial value to the shareholder.

All in all, these findings are in line with earlier empirical research conducted in developing countries where profitability was more likely to be related to overall firm performance than was financial leverage, the less powerful predictor.

CONCLUSION

This study looked into how capital structure affects the financial performance of cement companies that are listed on the Pakistan Stock Exchange (PSX) , over 2016–2025. The research especially was aimed to find out whether Net Profit Margin (NPM), Gross Profit Margin (GPM) and Debt-to-Equity Ratio (DER) have any significant impact on Earning per Share (EPS) in some way indicating the nature of shareholder value that people expect from the firm.

The results indicate that something rather obvious when looking at the performance of a firm - that is, profitability indicators sort of lead the way in terms of firm performance. Firstly, there is a positive relationship between both Net Profit Margin and Gross Profit Margin with Earnings per Share, and both are statistically significant, which means that if operational efficiency improves, then shareholder wealth will improve too. In contrast, the Debt-to-Equity Ratio has a negative relationship with EPS. This means that if firms rely too heavily on borrowing, it can have a negative effect, primarily because financial risk increases and the cost of finance gets heavier.

Besides, the regression model accounts for around 71% of the variations observed in Earnings per Share and this is enough. Combined, profit and leverage seem to influence the performance of the company simultaneously. Overall, the findings suggest that cement manufacturers can strive for efficient operations and an optimal capital structure to enhance shareholder value and ensure sustainable growth.

PRACTICAL IMPLICATIONS

This study offers some implications for various stakeholders.

Corporate Managers

Corporate managers should put more focus on boosting operational efficiency, instead of leaning too much on debt financing. So if they manage to create a bit more efficiency in their output and work to improve costs, and get a bit tighter on pricing strategies, then they can gain a lot back to the shareholders, more than one might imagine.

Investors

Investors must consider profitability ratios of the cement companies, and they must use signals as well. In reality, companies that maintain healthy profit margins, but not excessive debt, will remain in a stronger, more stable position – and that often translates to more sustainable Earnings per Share, even in choppy markets.

Financial Analysts

For instance, Net Profit Margin, Gross Profit Margin and Debt-to-Equity Ratio are useful indicators that can be relied upon by financial analysts to make predictions about a company's future and for the purposes of a business valuation in the capital-intensive context.

Policymakers

The government should continue to promote conservative lending practices and at the same time ensure operational improvement to strengthen the industrial sector in Pakistan and improve the long-term growth of the economy, broadly. They should do so in a coordinated manner, if possible, as that makes financing more balanced, and helps smooth the operation of industry.

LIMITATIONS

Even if this study provides useful evidence, there are some boundaries that should be expressed. First of all it treats only ten listed Cement Companies which are in operation in Pakistan a little narrow. Then, secondary financial data is used, which essentially follows the accuracy of the annual reports published in the event that there are issues with the annual reports the results follow.

Furthermore, only three explanatory variables were included in the regression model so it is somewhat as if it was a limited lens. Also excluded were macroeconomic factors such as inflation, exchange rate fluctuations, GDP growth, energy prices and others, which may not be reflected in the results. Lastly, the study employed pooled OLS regression, though other panel regression techniques such as Fixed Effects, Random Effects or Generalized Method of Moments (GMM) may provide additional insights perhaps more clearly a pattern.

FUTURE RESEARCH

Future studies may be expanded on this present research, a bit more directions, if data is available. It may also contain additional monetary indicators such as liquidity, scale of the firm, asset rotation indicators or ratios cash flow. Another view, however, is of Pakistan's cement sector when compared with other sectors of the manufacturing industry, not just cement.

From the methods point of view, more sophisticated econometric techniques, like Fixed Effects, Random Effects, and even GMM (with stronger assumptions) could be employed. It is also logical to extend the study period beyond 2025 to be able to better see the financial behavior of the post pandemic group. Lastly, a comparison with emerging and developed economies could provide a helpful dimension, as there is often a greater understanding from how it compares.

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