The Influence of Macroeconomic Variables on Capital Structure Decisions: Investigation from Cement Sector

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Abstract

This study explores the impact of macroeconomic variables on a firm's capital structure decisions. A balanced panel data of 10 firms from the Cement industry of Pakistan covering the period of 10 years from 2007 to 2016 is examined using a linear regression approach. The data was checked for multicollinearity and heteroscedasticity. The study reveals some interesting results suggesting that the firm-specific factor like a firm's size is significantly and positively correlated to a firm's choice of total debt over total equity (financial leverage). The country-specific factors like GDP and the inflation rate are significantly related to firms' financial leverage. The exchange rate is found to have an insignificant but negative impact on a firm's financial leverage. Furthermore, the impact of the real interest rate on the financial leverage of firms in the cement industry of Pakistan is found to be positive and insignificant, which is quite surprising. The study suggests that the management should consider the economic volatility while formulating the debt to equity proportion in capital structure composition.

Keywords: ***Capital structure decisions, financial leverage, macroeconomic variables.***

JEL Classification: C12

INTRODUCTION

The decisions about the composition of capital structure are among the most critical strategic decisions that the firms' management has to take. The composition of capital structure provides a clear strategic path to management for future requirements of funds to invest in new ventures. Therefore the composition of capital structure is crucial in defining the cost of equity

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and, ultimately, the firm's market value. There are many factors, internal and external, industry-specific and country-specific which the firm's management has to consider while deciding the debt to an equity share in capital structure composition. Capital structure is a mixture of equity and debt in such proportion that it can achieve an optimum level by reducing the cost of equity and increasing the form's value. As the ultimate objective of a firm's optimum capital structure is to maximise the firm's market value and reduction of related costs, therefore the management considers it the most crucial decision for the firm.

The firms generally need funds to finance their future operations and diversify their businesses. The primary source of funding for the firms is debt, common and preferred stock. Financial leverage measures the debt to equity proportion in the capital firms' capital structure composition, linking borrowed money and owner's equity. Leveraged firms are the combination of equity and debt in their capital structure composition, while those with only equity as a source of financing are termed unleveraged firms. Leveraged firms can get a tax shield on interest expenses compared to unleveraged firms.

Although there isn't any universally accepted or well-established theory that can provide an optimal debt/equity proportion level, there are different arguments about capital structure choice. However, various theories have emerged in the last few years thatch explain the firms' capital structure. These theories primarily considered the factors which are internal or firm-specific. The free cash flow theory, the pecking order theory (POT), agency theory, and the trade-off theory (TOT) are a few. It is up to management's choose what they consider adequate for the firm (Zwiebel, 1996). However, these existing theories of corporate finance cannot provide a complete guide in selecting the optimum capital structure (Norvaisiene and Stankeviciene2007).

Over the past couple of years, numerous studies have examined a firm's capital structure composition. It is a combination of securities and debt. The choice to make financing decisions for capital investments is the most debated topic in corporate finance. Modigliani & Miller (1958) have addressed the connection between a firm's capital structure choices to finance its operations and the firm's value.

Most of the literature about capital structure determinants established that firm-specific factors became the foundation of developing theories about capital structure composition. These factors include asset composition, operating income fluctuations, development, diversification, profitability, operating leverage, and exclusivity of the firm's product line exclusivityernal factors influence the capital structure's choice. Similarly, the Business risk is another firm-specific attribute that is considered correlated with the firm's capital structure. (Titman & Wessels (1988) claimed that financial policy decisions of corporations are remarkably consistent with the macroeconomic conditions and fluctuate accordingly.

There is an argument about the influence of financial risk on optimum leverage level in the capital structure choice of a firm, which might take various procedures of calculating financial risk. Castaias (1983) measures business risk using tax shield and bankruptcy costs and found that future costs are sufficient to bring firms to keep an optimal composition of debt and equity. It means that there is hardly any positive link between bankruptcy costs and optimal level of debt, which contradicts static to the tradeoff theory. Moreover, (Carleton & Silberman (1977) measured business risk using ROA and revealed that ROA and debt proportion are negatively

related. This is because the variance of assets return raises the equity cost and, therefore, decreases the firm's leverage level. In contrast, (Bradley, Jarrell, & Kim (1984) found that the volatility in operating income reduces the usage of debt finance because of increased uncertainty in tax shields. (Ferri & Jones (1979) have determined no significant link between business risk and the firm's debt proportion.

Moreover, the existing literature and evidence confirm that sound financial systems reduce the constraints related to outside financing of firms (Demirgüç-Kunt & Levine, 2004). According to (2000), firms with less financial constraints often encounter cross-cyclical leverage and factor variations in changing macroeconomic conditions. Furthermore, the firms with a higher financial constraint counter debt issue trends or countercyclical leverage. It means that the leverage choices of a firm are systematically related to current economic conditions. (Frank & Goyal (2004) argued that 70% of variations in the capital structure are estimated he external factors while the remaining 30% of variations are caused due to internal factors of a firm. Apart from internal factors, some external factors influence capital structure decisions. A firm whose cash flow trends are likely to be sensitive topic volatility will have to revise its capital structure composition by reducing its overall debt proportion (lower interest) or including exceptional features to the issuance of securities with variable interest rates. ratesonsiderable attention has been given to literature on credit channel mechanisms to the relationship between macroeconomic factors and the firm's access to the capital markets. This study principally emphasises firms' choice of capital structure and the effect of economic volatility like inflation, exchange rates and interest rates and economic growth.

Problem Statement

In developing countries like Pakistan, uncertain economic conditions and highly volatile capital markets make it difficult for the firms to sustain an ideal capital structure over the years. Therefore, corporate firms must understand the changing economic conditions and the role of such macroeconomic factors in influencing and stimulating capital structure choice to achieve optimal financial performance.

Objective of Study

This study primarily aims to measure the influence of macroeconomic variables in defining the firm's capital structure decisions in listed firms in the Cement industry of Pakistan.

Scope of Study

The scope of this study is limited to the ten listed firms in the cement industry with high market capitalisation covering the period of 10 years from 2007 to 2016.

Research Questions

Previous literature related to the relationship between macroeconomic factors and a firm's choice of capital structure leads to the following key questions:

- Q1. How does the firm's size affect the firm's decision on financial leverage (debt/ equity)?
- Q2. Is there any impact of economic growth on a firm's decision of debt over equity?

- Q3. Does the nominal rate of interest affect the firm's financial leverage level? How?
- Q4. Does inflation uncertainty affect the firm's leverage level?
- Q5. Does the exchange rate affect the firm's leverage level?

Hypotheses

H1: A firm's size positively relates to the firm's financial leverage.

H2: GDP and the firm's financial leverage are positively related.

H3: The interest rate and the firm's leverage ratio are negatively related.

H4: Inflation and the firm's leverage ratios are negatively related.

H5: The exchange rate and firm's leverage are negatively related.

LITERATURE REVIEW

Theoretical framework

A firm's capital structure is primarily a combination of debt/equity that a firm considers fit for its thriving business operations, diversification, and value creation considering various financial and economic constraints. According to Berger & Di Patti (2006), a high percentage of leverage in the capital structure composed of a firm decreases the agency cost of external equity. Therefore, the firm's management is more likely to perform in favour of the shareholders and ultimately increase the firm's value. IIn the past various theories to describe the capital structure mechanism has been presented. The capital structure-based theories are trade-off theories that describe the firms' ideal capital structure and establishes an equilibrium of cost and benefit in the proportion of debt/equity (Hovakimian, 2004; Modigliani & Miller, 1963). On the other hand, Hackbarth, Miao, & Morellec (2006) suggests that in case a firm chooses optimal leverage level to get the advantage of tax-shield and bankruptcy costs. Macroeconomic factors should also be taken into consideration while making a cost-benefit analysis. Macroeconomic factors significantly affect the expected outcome of debt because these expected benefits of leverage can only be achieved depending upon economic expansion or recession. Moreover, expected leveraged costs, e.g. (agency costs and costs of bankruptcy) pose the risk of default and bankruptcy, which are highly influenced by the current economic state (Hackbarth et al., 2006). A financial economics insight establishes that—the economy's business cycle stage ought to be an essential measure of capital structure choices. Fanelli & Keifman (2002) and Fanelli, Bebczuk, & Pradelli (2002) described that firm's decision on the capital structure is greatly affected by the economic volatility and external shocks (Bokpin, 2009). An empirical result of previous studies indicates that the expected uncertainty in inflation results in significant fluctuations in debt-equity. (Korajczyk Levy (003) proposed that the decision of a firm to issue the shares is subject to various macroeconomic conditions and firm-specific variables.

Inflation is considered a socialite because it levies some levies costs. Though, unexpected inflation is considered riskier than expected inflation because it can create equality in income and wealth distribution (Fischer and Modigliani, 1978). An unexpected rise in the Inflation rate increases the firm's volatility by disturbing firms' cost and price structure. It causes sudden

volatility in the firm's income, sales, and future cash flows, which ultimately increases the business risk for the firm. As a result, the firms generally prefer to issue shares to raise capital rather than debt to avoid the risk of default on future obligations and increased risk of bankruptcy. Therefore, the inflation uncertainty and a firm's financial leverage are expected and found to be negatively related (Hatzinikolaou I., 2002). Furthermore, a fundamental assumption of TOT is a direct correlation between a firm's financial leverage and tax shield (Modigliani and Miller, 1958). Assuming this, due to higher tax rate deductions on external debt, the inflation rate is estimated to relate to financial leverage directly.

Empirical finding obtained from previous literature reveals mixed results in both directions for explaining the correlation between inflation rate and a firm's financial leverage (Bokpin, 2009, Joeveer, 2013). This study obtains statistics on the inflation rate (CPI) from the State Bank of Pakistan (SBP) economic statistics database to predict inflation.

The firm's associated business risks can be highly affected by the exchange rate fluctuations, which ultimately can affect the firm's borrowing costs. The primary institution for firms to borrow funds is banks. The banks generally operate in an environment where they have more access to market and clientele information. Therefore, the banks are more exposed to exchange rate fluctuations which may ultimately replicate in their policy of loan pricing and structure (Diamond, 1984, James, 1987) as the devaluation of the local currency may negatively affect the import-oriented firms and reduces the chance to meet their current and future obligations on timely manners. Similarly, the exporting firms may affect in case of local currency appreciation. Most of the firms in the Cement industry of Pakistan import their fixed assets, plant and machinery from other countries and export their products to other countries. Therefore, the financial and operational cash flows and their investment are assumed to be influenced by exchange rate fluctuations. This study measures the exchange rate as a natural logarithm of the Pak Rupee in terms of the USD to explore this assumption. The statistics are obtained from the economic statistics of Pakistan.

It is argued that high economic growth gives rise to more excellent prospects for commercial development and growth opportunities which may ultimately provide more opportunities for firms to earn more profits. LaExtensivend diversified firms need more external funds to run their business; according to Trade-off theory, the firms reporting more profits generally have the advantage of borrowing the loan at lesser interest rates. Consistent with this argument, the relationship between economic growth and a firm's financial leverage is expected to be direct and positive. On the other hand, POT assumes that the firms generally prefer to utilise retained earnings when need of funds which means that profitability is negatively related to leverage; therefore, the economic growth and leverage are expected to be negatively related. Recent studies reveal the mix findings, e.g. economic growth has a positive relationship with the firm's financial leverage (Jong et al., 2008), while (Bokpin, 2009) states that economic growth and financial leverage have an inverse relationship in estimating the effect of economic growth on financial leverage of firm, this study has employed yearly per capita growth rate (GDP) as a natural logarithm. The data is obtained from the economic statistics of the State bank of Pakistan.

Empirical Studies

Empirical studies revealed that the significant variations in the relation of debt and equity

are primarily determined by the vulnerability of expected inflation and uncertain economic conditions. Macroeconomic factors also play a crucial part in making capital decisions for a firm. In contrast, a recent study conducted to find out the capital structure determinants in India's manufacturing sector revealed that economic growth and inflation rate are not significantly impacting a firm's leverage decisions (Chadha & Sharma, 2015). However, the (2016) surge suggests macroeconomic conditions significantly contribute to deciding the firms' capital structure, and economic conditions highly affect firms' profitability and provide a highly conducive environment for making investments. (2017) highlighted the importance of macroeconomic variables in formulating firms' capital structures. Taddese Lemma & Negash (2013) argues that inflation and economic growth rate matter in detrimental structure. Jõeveer (2013) has argued that the fluctuations in the debt/equity ratio of a firm are affected by the industry and the economy of a country. The macroeconomic factors affect the firms with a narrow leverage policy. Özteka (2015) has found that, among macroeconomic factors, inflation is a primary determinant of the firm's capital structure. There is a tendency for less proportion of leverage of a firm under inflationary. Moreover, the institutional quality of a state also plays a significant role in the formulation and adjustment of targeted leverage proportion. Chen, Jiang, & Lin (2014) have investigated that larger firms preferably choose debt financing to finance its operation while the other chooses more share of equity capital to carry out the profitable operations.

The effect of economic variability varies with varying methods of measuring capital structure (Alufar Bokpin, 2009a). Korajczyk & Levy (2002) concluded that the firm-specific and macroeconomic variables highly influence a firm's decision to raise capital by issuing securities. They suggested that the firms consider the economic conditions for issuing securities. Accor, according, not only the firm-specific at the firm-specific attributes that influence firms' capital structure choice and firm's capital structure choice like stock market fluctuations, banking sector size and economic health. In examining the influence of macroeconomic conditions on adjustment speed towards targeted leverage, Drobetz, Pensa, & Wanzenried (2007) found that a firm adjusts faster in favourable macroeconomic conditions than in unfavourable conditions. It proposes that the adjustment rate of firms towards the targeted leverage becomes faster if interest rates in the economy are low and global financial risks are negligible. Lööf (2004) has also supported the argument that economic factors boost the firm's capital structure adjustment rate.

(2009) highly suggested that in most cases, the measurement of the correlation between economic factors and capital structure choice varies with varying determinants of capital structure. Bank credit and inflation rates significantly predict firms' capital structure choices (Alufar Bokpin, 2009). Hackbarth et al. (2006) examined that the macroeconomic conditions measure the firm's size of equity and adjustment speed. Therefore, firms should consider the internal and external factors in capital structure choice. Hackbarth et al. (2006) found that interest rate, the firm's leverage level and the size of short and long-term debt are inversely related to each other.

METHODOLOGY

Research Model

The following regression model is estimated to examine the effect of uncertain economic conditions like inflation on the firm's capital structure choice.

$DEit = \beta0 + \beta1lnTAit + \beta2INTit + \beta3lnGDPit + \beta4EXt + \beta5INFit + \mu it$

Here:

β0= Intercept

DE= Firm's debt to equity ratio (financial leverage)

lnTA= natural logarithm of total assets (a measure of firm size)

GDP= Real gross domestic product

INT= Real Interest rate

EX= Exchange rate

INF =Inflation rate

μ = Error term.

Variables

This study has employed financial leverage (debt/equity ratio) to measure the capital structure and took a dependent variable. The independent variables comprise uncertain macroeconomic factors like inflation rate, interest rate, firm's operating leverage, and firm size.

Data

This study has employed secondary data to measure the influence of economic volatility on capital structure decisions. The dataset is obtained from the annual financial reports of companies. The panel data is used to find out the influence of economic factors on a firm's capital structure choice, collected from various publications of the Economic Survey of Pakistan and the website of the State Bank of Pakistan, covering the period of 10 years from 2007 to 2016.

Statistical Technique

OLS regression technique is used to investigate the influence of economic volatility on the capital structure decisions of non-financial firms in the cement industry listed on the Pakistan Stock Exchange. E-Views-9 is employed to perform OLS regression analysis.

RESULTS AND DISCUSSION

Descriptive Statistics

The variables employed in this study are pre-tested and pre-analyzed in earlier studies, establishing reliability among constructs. However—in this study—the variables were tested

again to re-establish the reliabilities. Moreover, the normality of constructs was tested through Skewness and Kurtosis. The summarised results are given below in Table 1.

Table 1: *Descriptive Analysis*

	DE	LNTA	GDP	INT	EX	INF
Mean	1.185728	16.93921	9.971622	10.04500	86.69393	9.735000
Median	0.703023	16.90101	8.687279	9.500000	87.36880	8.690000
Maximum	32.55021	24.10458	20.28612	14.50000	105.8400	20.29000
Minimum	0.166493	8.768885	2.539516	5.750000	60.63420	2.540000
Std. Dev.	3.244445	2.881544	4.870728	2.751166	15.20021	5.148257
Skewness	9.182032	0.268272	0.574216	-0.035440	-0.490618	0.439708
Kurtosis	89.12599	4.724273	2.792328	2.075524	2.033749	2.600871
Jarque-Bera	32312.19	13.58749	5.675106	3.581998	7.901945	3.886146
Probability	0.000000	0.001121	0.058569	0.166793	0.019236	0.143263
Sum	118.5728	1693.921	997.1622	1004.500	8669.393	973.5000
Sum Sq. Dev.	1042.116	822.0262	2348.675	749.3225	22873.58	2623.951
Observations	100	100	100	100	100	100

The empirical results of the above table suggest a high variation in firms' debt to equity ratio with a mean value of 1.1857 and SD 3.2444. Operating leverage has less volatility with (Mean=0.7451, SD=0.1337).

Also, a high level of volatility is observed in economic variables like interest rate (Mean=10.0450, SD=2.7511), GDP, inflation rate (mean=9.7350, SD=5.1482) and exchange rate (mean=4.4457, SD=0.1877).

Correlation Matrix (Pairwise)

Correlation analysis is performed to check the issue of multicollinearity among the model constructs (Bryman & Bell, 2015). The values of correlated items should lie between 0.20-0.90 (Bryman & Bell, 2015). I the value of correlated constructs is less than 0.20, that item or construct should be dropped from the model. Similarly, if the correlation value among any constructs is more significant than 0.90, that item is either supposed to be dropped or merged. The summary of correlation analysis is as under:

Table 2: *Pair-wise Correlation*

	DE	LNTA	GDP	INT	EX	INF
DE	1.000000	-	-	-	-	-
LNTA	0.221787	1.000000	-	-	-	-
GDP	-0.073877	0.070726	1.000000	-	-	-
INT	-0.123619	0.093982	0.945058	1.000000	-	-
EX	0.092349	-0.095257	-0.679289	-0.693054	1.000000	-
INF	-0.108221	0.070709	0.991255	0.967134	-0.701681	1.000000

The probability of multicollinearity occurrence among the model constructs was tested by a correlation matrix (pairwise), given in the above table. The table shows a significant positive correlation between financial leverage and the firm's size, with a value of 0.22. The relationship between the firm's leverage and size is 0.21, also significantly positive. The correlation between

financial leverage and interest rate (0.12) and between leverage and GDP (0.01) is negatively and insignificantly correlated. Financial leverage also positively correlates with the exchange rate of 0.09 and negatively correlates with the inflation rate. A firm's size has a significant correlation of 0.49 with operating leverage but an insignificant positive correlation with an interest rate of 0.09, exchange rate of 0.09 and inflation rate of 0.07 and a negative correlation with GDP.

Operating leverage reveals a positive correlation with financial leverage, firm's size, interest rate, GDP, and exchange rate with 0.21, 0.01, 0.06 and 0.07, respectively. However, a negative correlation reveals the inflation rate of (0.02). The inflation rate and interest rate are positively correlated at 0.97, while the exchange rate and inflation rate are significantly negative correlations. Collectively, the values of correlation coefficients show that the issue of multicollinearity does not potentially exist in the regression model.

Regression analysis

Table 3: *Regression Analysis*

Dependent Variable: DE

Method: Panel Least Squares

Sample: 2007, 2016

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.496498	1.940276	-1.802062	0.0747
LNTA	0.258262	0.107573	2.400804	0.0183
GDP	1.271936	0.481056	2.644050	0.0096
INF	-1.271268	0.455123	-2.793240	0.0063

R-squared	0.128112	Mean dependent var	1.185728
Adjusted R-squared	0.100866	S.D. dependent var	3.244445
S.E. of regression	3.076470	Akaike info criterion	5.124621
Sum squared resid	908.6081	Schwarz criterion	5.228828
Log-likelihood	-252.2310	F-statistic	4.701968
Durbin-Watson stat	1.103060	Prob(F-statistic)	0.004168

The above results show that the regression coefficients are statistically highly significant, for their probability values are low, $p < 0.10$. The regression was initially performed with other macroeconomic variables like interest rate and exchange rate. The findings reveal that a firm's size—a firm-level factor—has a statistically and significantly positive correlation with the firm's financial leverage. An increase in firm size will significantly increase its financial leverage. Similarly, the other variable in the model, like GDP and inflation, which are the country-level factors, are significantly related to the firm's financial leverage. The coefficient of GDP, which is statistically highly significant, with a positive value, indicates that an increase in economic growth will ultimately increase the firm's leverage. The coefficient of inflation is negative but

statistically significant. An increased inflation rate in the economy will reduce the firm's level of leverage. This finding is consistent with (Alufar Bokpin, 2009a). Moreover, the real interest rate regression results are insignificant, as shown in table-4 in the appendix. The real interest rate and inflation rate were found to be collinear. Therefore, to avoid the issue of multicollinearity, the interest rate variable was dropped from the model, as given in table-4 of the appendix. Similarly, the model's exchange rate coefficient was found insignificant and dropped from the model, as given in the table-5 of the appendix.

The value of F statistics is highly significant with less than 10% of probability. Therefore, based on F statistics, it is established that collectively all the variables in this model are highly statistically significant and the overall model is statistically reliable.

The R2 value for the model is about 13%, representing the collective influence of all the independent variables on the dependent variable. Therefore, 13 per cent of variations in the dependent variable are explained collectively by all the explanatory variables present in the model. The R2 value is not very high, which is usual for cross-sectional data. The value of the Durbin-Watson statistic (d=1.10) indicates that there is no serial correlation issue among the constructs. Therefore, a firm's size, operating leverage, real interest rate and exchange rate are the key factors affecting the capital structure choices in the cement sector of Pakistan.

Discussion

Some of the results of this study support the previously conducted studies. In contrast, few findings are opposite to previously conducted studies on the relationship between macroeconomic variables and a firm's capital structure. The firm's size, which is a firm-level factor, indicates a positive relationship with the firm's financial leverage, which is consistent with the studies conducted by (Ahsan et al., 2016; Bayrakdaroğlu & Yalçın 2013). This implies that larger firms are less risky due to many fixed assets and diversified portfolios. Therefore, creditors are less reluctant to issue a credit to larger firms. Also, the more prominent firm generates better cash flows. This finding contradicts the study by Rajan & Zingales (1995), which indicates a negative relationship between a firm's size and leverage. The highly significant and positive association firm's financial leverage of economic growth empirically confirms the theory (Jensen & Meckling, 1976), suggesting that firms with high growth may risk investing in projects for diversification at the cost of creditors. The finding suggests that high economic growth leads the firms to rely on debt financing rather than equity. The firms employ more debt in their capital structure in growing economies. This indicates that high economic growth provides more business opportunities for the firms and gives a supportive corporate environment to flourish and diversify. However, this finding is contrary to a previously conducted study in the context of Pakistan (Ahmed Sheikh & Wang, 2011)

The study has found a negative relationship between inflation with financial leverage of firm, which suggests that the firms in the cement industry of Pakistan reduces the proportion of debt in their capital structure composition in the times of high inflation rate and employ more equity or retained earning which is contrary to the study of (Frank & Goyal, 2009). Moreover, the association of exchange rate and interest rate with the firm's financial leverage is established as insignificant in the cement industry of Pakistan, which is in the opposite direction(Ahsan et al., 2016).

Hypotheses Assessment Summary

	Hypotheses	Sig. value	Decision
H1	A firm's size positively relates to the firm's financial leverage.	0.0183	Supported
H2	GDP and the firm's financial leverage are positively related.	0.0096	Supported
H3	The rate of interest and the firm's leverage ratio are negatively related.	0.9580	Rejected
H4	Inflation and the firm's leverage ratios are negatively related.	0.0063	Supported
H5	The exchange rate and a firm's leverage are negatively related.	0.9511	Rejected

CONCLUSION AND LIMITATIONS

Conclusion

Various studies have established capital structure with firm-specific and industry-specific factors in developed countries. A few studies have reported capital structure in a country-specific context, especially in developing economies. In this study, country-specific macro-economic variables with panel data covering the period of 10 years starting from 2007 to 2016 have been utilised.

The findings of this study reveal that there are not only the internal, firm-specific factors that determine the financial leverage behaviour in firms' capital structure but also external, country-specific macroeconomic factors that significantly determine the leverage behaviour in the capital structure choice of firms. It is found that firms use different measures to determine financial leverage. The firms in the Cement industry of Pakistan generally follow capital structure theories (TOT and POT). It is empirically found that the gross domestic product (GDP) is significantly and positively correlated with firms' financial leverage. Also, the inflation rate significantly contributes to defining the leverage behaviour in capital structure formation. This study proposes an inverse relationship between inflation and the firm's financial leverage. At the same time, the relationship of the exchange rate with financial leverage is significantly positive.

Furthermore, the interest rate and exchange rate are insignificantly related to the firms' financial leverage in the Cement industry of Pakistan.

Limitations and Future Suggestions

This study has emphasised ten listed firms with a high market capitalisation in the cement industry of Pakistan. Future studies can cover all the firms in the cement industry. Moreover, this study has emphasised the effect of economic volatility on capital structure decisions of firms; future researchers can also consider corporate taxes, FDI, the effect of CPEC and political instability on the capital structure of Pakistani firms. The findings of this study have substantial implications for the management of firms and policymakers. In Pakistan, the Cement sector is the one which is more capital intensive and needs external funds to finance and diversify its projects. Therefore, low-interest rates and stable exchange rates can make the corporate sector more profitable for the industry and the economy. The conclusion of this study may also be helpful for the economies facing the same challenges as Pakistan.

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APPENDIX

Table 4: *Regression Analysis*

Dependent Variable: DE

Method: Panel Least Squares

Sample: 2007-2016

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.429721	4.473429	-0.766687	0.4452
LNTA	0.257169	0.109637	2.345649	0.0211
GDP	1.288682	0.539316	2.389475	0.0189
INT	0.025952	0.491859	0.052764	0.9580
EX	-0.001805	0.029356	-0.061494	0.9511
INF	-1.304082	0.663682	-1.964919	0.0524
R-squared	0.128173	Mean dependent var		1.185728
Adjusted R-squared	0.081799	S.D. dependent var		3.244445
S.E. of regression	3.108917	Akaike info criterion		5.164551
Sum squared resid	908.5445	Schwarz criterion		5.320861
Log-likelihood	-252.2275	F-statistic		2.763917
Durbin-Watson stat	1.102887	Prob(F-statistic)		0.022499

Note: *The table presents the regression analysis determining the influence of macroeconomic variables on capital structure decisions. The model uses the debt to equity ratio as the dependent variable. Independent variables include the firm's size as a log of total assets, gross domestic product (GDP), real interest rate, exchange rate, and inflation.*

Table 5: *Regression Analysis*

Dependent Variable: DE

Method: Panel Least Squares

Sample: 2007-2016

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.300167	3.719674	-0.887220	0.3772
LNTA	0.257818	0.108372	2.379006	0.0194
GDP	1.277219	0.491024	2.601134	0.0108
EX	-0.001810	0.029202	-0.061987	0.9507
INF	-1.279955	0.478485	-2.675016	0.0088
R-squared	0.128147	Mean dependent var		1.185728
Adjusted R-squared	0.091438	S.D. dependent var		3.244445
S.E. of regression	3.092557	Akaike info criterion		5.144580
Sum squared resid	908.5714	Schwarz criterion		5.274839
Log-likelihood	-252.2290	F-statistic		3.490844
Durbin-Watson stat	1.103169	Prob(F-statistic)		0.010508

Note: *The table presents the regression analysis determining the influence of macroeconomic variables on capital structure decisions. The model uses the debt to equity ratio as the dependent variable. Independent variables include the firm's size as a log of total assets, gross domestic product (GDP), exchange rate, and inflation.*