

A STUDY ON IMPACT OF CAPITAL STRUCTURE ON PROFITABILITY OF CEMENT COMPANIES IN INDIA.Camillo Joseph*¹, Dr. N. Periyasami²¹Research Scholar, Department of Commerce, Annamalai University²Professor, Department of Commerce, Annamalai University**ABSTRACT**

The research was carried out to determine the effect of capital structure on the profitability of cement companies in India. The study chose 23 cement companies that are listed on the NSE or BSE as samples. The study used balanced panel data extracted from the company's financial statements over ten years, from 2010-2011 to 2019-2020. Nine explanatory variables were analyzed to determine their relationship with the profitability of cement companies in India. These variables included capital structure, trading on equity, asset structure, corporate tax, debt service capacity, size, business risk, liquidity, and growth. The study uses controllable variables such as trading on equity, asset structure, corporate tax, debt service capacity, size, business risk, liquidity, and growth. The study discovered a significant negative relationship between the capital structure and the ROCE and ROA of cement companies in India. There is no relationship between ROC and CS that is statistically significant. Additionally, the study discovered that corporate taxes have a negative and statistically significant impact on the ROCE of cement companies in India. However, it demonstrates no correlation with the ROA and ROC of cement companies. On the other hand, debt service capacity and liquidity have a significant positive effect on ROA and ROC of cement companies in India but do not affect ROCE. Additionally, the study discovered that business risk has a positive effect on profitability indicators such as ROCE, ROA, and ROC, while size has a negative effect.

Keywords: Capital Structure, Return on Capital Employed, Return on Asset, Return on Capital

INTRODUCTION

Capital structure is a term that refers to the aggregation of various sources of capital. It is comprised of several long-term capital sources. Long-term capital sources include equity share capital, preferred share capital, debentures, long-term loans, and retained earnings. These capital sources fall into two categories. The two types of capital are owner's equity and outsider's equity. Additionally, the owner's equity includes Equity Share Capital, and Retained Profits. Outsider capital is defined as all other forms of capital. A business that makes the best use of debt in its capital structure maximizes shareholder equity. Companies can deduct interest on the debt from earnings before interest and taxes because interest on debt is a deductible cost under the income tax act. This reduces taxation and increases profitability. Numerous empirical studies demonstrate a positive correlation between capital structure and profitability. Fatoki et al. (2017), Edim et al. (2014), Singh et al. (2019), and Movalia (2015) all demonstrate a relationship between capital structure and profitability in their respective studies. Numerous additional studies in a variety of industries were conducted to ascertain the relationship between CS and profitability. However, few studies have been conducted in the Indian cement industry to determine the relationship between CS and profitability. Because the pattern of CS varies by industry, the impact on profitability varies as well. In the service industry, the impact of CS on profitability may be different than in the automobile industry. As a result, a study of the impact of capital structure on profitability is necessary for the cement industry.

REVIEW OF LITERATURE

In their paper "The cost of capital, company finance, and the theory of investment," **Modigliani and Miller** formulated a theory that can address the cost of the capital question, and this theory enabled the development of a firm's theory of investment under uncertain conditions, and they

discovered that the correlation between the cost of capital and leverage was significantly equal to zero. With leverage, the estimated yield on common stock in either class should rise. They concluded that common stock investment is beneficial to existing, stockholders, if and only if the yield reaches the capitalization rate. Even when capital markets are fine, the benefit will accrue to stakeholders from getting debt in the Capital Structure when a corporate income tax is considered in which interest is a deductible cost. **Myers, S. C.** advocates "static tradeoff" and "pecking order" theories of capital structure choice by companies. According to the static trade-off principle, the optimum capital structure is achieved when the tax gain of borrowing is offset by the costs of financial distress. Firms prefer internal funds to external funds, and debt to equity if external funds are needed, according to the pecking order theory. As a result, the debt ratio represents the total amount of external funding required. Simple asymmetric knowledge models predict pecking order behavior. **Kester** tested the hypothesis that Japanese manufacturing firms were more highly leveraged than U.S. manufacturing firms in his research "Capital and ownership structure: A comparison of the United States and Japanese manufacturing companies." Development, profitability, risk, size, and industry classification were all factors considered when determining capital structure. In total, 344 Japanese companies and 452 American companies from 27 different industries were included in the survey. The leverage was calculated using market and book values. Under both bases, the regression result revealed a negative relationship between leverage and profitability. After adjusting for characteristics such as growth, profitability, risk, size, and industry classification, he concluded that there were no significant country differences in leverage between U.S. and Japanese manufacturing firms on a market value basis, but there was a significant country difference when leverage was calculated on a book value basis, and this result was concentrated among the smallest firms. **Titman and Wessels** used 469 samples of manufacturing firms in the United States from 1974 to 1982 to analyze "The Determinants of Capital Structure Preference." The research looked at several capital structure theories and their empirical consequences for various types of instruments, as well as using a factor analytic methodology to estimate the effect of unobservable attributes on corporate debt ratio selection. Transaction costs were discovered to be a major factor in capital structure selection. Firm size was found to be negatively linked to both long- and short-term debt ratios. The study found that the different costs and benefits associated with leverage were not especially important in assessing the degree of leverage. **Rajan and Zingales** examined the determinants of capital structure preference by examining the financing decisions of public firms in the major industrialized countries in a paper titled "What do we know about capital structure? Some evidence from international data." Firm leverage was found to be somewhat comparable across the G-7 countries on an aggregate basis. Leverage was found to be negatively associated with profitability. They claimed that dividends and acquisitions were fixed in the short run and that if debt funding was the primary source of external financing, increases in profitability would be negatively associated with changes in leverage. **Singh and Bagga** in their study examine the effect of capital structure on the profitability of the Nifty 50 companies listed on the National Stock Exchange of India between 2008 and 2017. The data were analyzed using descriptive statistics, correlation, and regression models for multiple panel data. The relationship between capital structure and profitability was investigated using four different regression models. The study examines the individual effect of total debt and total equity ratios on profitability, i.e., ROA and ROE, in these models. Each of the four models was validated using pooled OLS, fixed effects, and random effects. The study concludes that capital structure has a significant positive effect on a firm's profitability. **Movalia** in his study examines the capital structure and its effect on the profitability of the Indian tyre industry. The researcher selected 14 tyre companies that are listed on the BSE and NSE. The study's primary objective is to ascertain the relationship between the capital structure and profitability of the Indian tyre

industry by examining all companies listed on the BSE and NSE. The study analyzed five years of data, from 2009-10 to 2013-14. The study discovered a significant relationship between the capital structure of tyre companies (debt-equity ratio) and their profitability. MRF, Apollo Tyres, Dunlop India, and Modi Rubber all demonstrate how an optimal debt-equity ratio contributes to a company's profitability. **Salim and Yadav** in their study examine the relationship between a firm's capital structure and performance. The investigation was conducted using a panel data procedure on a sample of 237 Malaysian companies that were publicly traded on the Bursa Malaysia Stock Exchange between 1995 and 2011. As a dependent variable, the study uses four performance measures (return on equity, return on asset, Tobin's Q, and earnings per share). As an independent variable, the five capital structure measures (long term debt, short term debt, total debt ratios, and growth) are included. The size of the object is a control variable. The data is segmented into six sectors: construction, consumer products, industrial products, plantation, real estate, and trading and service. The findings indicate that firm performance, as measured by return on asset (ROA), return on equity (ROE), and earnings per share (EPS), is negatively related to short term debt (STD), long term debt (LTD), and total debt (TD) as independent variables. Additionally, there is a positive correlation between growth and performance across all sectors. According to Tobin's Q, the relationship between short-term debt (STD) and long-term debt is significantly positive (LTD). Additionally, it reports that total debt (TD) has a significant negative relationship with the firm's performance, which is consistent with the previous analysis. **Zeitum and Tian** conducted a study to examine the effect of capital structure on corporate performance using a panel data sample of 167 Jordanian companies from 1989 to 2003. The findings of the study indicated that a firm's capital structure had a significant negative impact on both accounting and market-based performance measures. Additionally, the study discovered that the level of short-term debt to total assets (STD/TA) has a statistically significant positive effect on the market performance metric (Tobin's Q). The study observes that the Gulf Crisis of 1990-1991 had a positive effect on Jordanian corporate performance, whereas the outbreak of the Intifadah in the West Bank and Gaza in September 2000 had a negative effect.

OBJECTIVES OF THE STUDY

The objective of the study is to analyze the impact of capital structure on Earnings per Share of Cement Companies in India

METHODOLOGY OF THE STUDY

Data were collected from secondary sources. Ten-year Annual Reports from 2011-2020 of 23 leading Cement Companies in India were collected for data analysis. All the companies are listed in BSE or NSE.

Sampling Design

The purposive sampling technique has been adopted in the study. This study imposes certain specific restrictions on the sample selection and only those firms, which fulfill the following criteria, qualify for sampling:

1. Firm should be a company listed either on the Bombay Stock Exchange (BSE) or National Stock Exchange (NSE).
2. Firm should have maintained its identity and reported its audited annual financial statements without any gaps for the financial years from 2011-12 to 2019-2020.
3. The company should follow its financial year from April 1st to March 31st.
4. The firm should have a business in Cement Manufacturing.

Period of Study

The study was based on data of 10 years comprising of the financial year 2010-2011 to 2019-2020

Data Collection

The research in this study is based on secondary data. The financial statements of the selected Cement Companies, such as the profit and loss account and balance sheets, were the main sources of data for this report. The information was obtained from the archives of company websites and other websites like moneycontrol.com, bseindia.com, and nseindia.com. These data were collected ranging from 2010-2011 to 2019-20.

DATA ANALYSIS, FINDINGS, AND INTERPRETATION

A panel data model has been estimated to examine the factors influencing the indicators of the profitability, i.e., 'Return on Capital Employed (ROCE), Return on Assets (ROA), and Return on Capital (ROC) of the cement manufacturing firms in India. The following panel data econometric models were specified for the purpose.

$ROCE = f(TOE, AS, CT, DSC, BR, \text{Size}, \text{Tangibility}, \text{Liquidity}, \text{Growth}, \text{DER}, \text{Leverage}, \text{Time})$

$ROA = f(TOE, AS, CT, DSC, BR, \text{Size}, \text{Tangibility}, \text{Liquidity}, \text{Growth}, \text{DER}, \text{Leverage}, \text{Time})$

$ROC = f(TOE, AS, CT, DSC, BR, \text{Size}, \text{Tangibility}, \text{Liquidity}, \text{Growth}, \text{DER}, \text{Leverage}, \text{Time})$

The Construction of these variables is explained in Table 1. The model includes 12 explanatory variables.

Table 1
Description of the Variables Used in the Panel Data Regression Models

Sl. No.	Variables	Variables Description
1	ROCE (Return on Capital Employed)	It is the dependent variable in the model, here, the Return on Capital Employed (i.e., the ratio of Earnings Before Interest and Tax and Capital Employed) is taken as a measure of the profitability of the firm in this model.
2	ROA (Return on Assets)	It is the dependent variable in the model, here, the <i>ROA</i> (which is the ratio of Net Income and Total Asset) is taken as a measure of the profitability of the firm in this model.
3	ROC (Return on Capital)	It is the dependent variable in the model, here, the <i>ROC</i> (which is the ratio of Net Income and Capital) is taken as a measure of the profitability of the firms in this model.
4	TOE (Trading on Equity)	It is the ratio of <i>Earnings Before Interest and Tax</i> (EBIT) to <i>Earnings Before Tax</i> (EBT)
5	AS (Asset Structure)	It is the ratio of <i>Net Assets</i> to <i>Total Assets</i>
6	Corporate Tax (CT)	It is the ratio of <i>Provision for Tax</i> to <i>Profit Before Tax</i>
7	Debt Service Capacity (DSC)	It is the ratio of <i>Earnings Before Interest and Tax</i> to <i>Interest</i>
8	Business Risk (BR)	Standard Deviation of EBIT
9	Size	Total Assets are taken as the proxy of the size of the firm.
10	Liquidity	It is the ratio of <i>Current Assets</i> to <i>Current Liabilities</i>
11	Growth	Annual growth of assets (End Value-Base Value)/Base Value
12	Debt-Equity Ratio (DER)	The <i>Debt Equity Ratio</i> , which is a measure of the capital structure of the firms.
13	Leverage	It is a dummy variable that takes value 1 if the firm is a high levered one (D.E ratio of the firm, on average, is greater than 1), and 0 otherwise.
14	<i>Time</i>	It is a time variable, were, $t = 1, 2, 3, \dots, 10$ for the years 2010/11, 2011/12, 2012/13,, 2019/20

The descriptive statistics of the data used in the panel data regression models are given in Table 2

Table 2
Descriptive Statistics of the Data used in the Panel Data Regression Models

Sl. No.	Variables	Mean	S.D.	N
1.	ROCE (Return on Capital Employed)	0.14	0.15	230
2.	ROA (Return on Assets)	0.04	0.05	230
3.	Return on Capital (ROC)	0.05	0.09	230
4.	Trading on Equity	1.78	4.65	230
5.	Asset Structure	0.54	0.15	230
6.	Corporate Tax	0.27	0.78	230
7.	Debt Service Capability	5.50	13.70	230
8.	Business Risk	388.27	919.50	230
9.	Size	4093.62	8843.96	230
10.	Liquidity	1.17	0.56	230
11.	Growth	0.07	0.15	230
12.	Debt-Equity Ratio	1.66	13.91	230
13.	Leverage	0.30	0.46	230
14.	Time	5.50	2.89	230

The three-step model-search process reported in Table 3 helped us to identify, the *random-effects model* as the appropriate one for the estimation of the factors influencing the Return on Capital Employed (ROCE) of the cement manufacturing firms in India. The Wald joint test on time dummies revealed the absence of statistically significant time effects, $\chi^2(8) = 8.737, p = .365$.

Table 3
Panel Data Model Selection Test Results (ROCE Model)

Step	Model Comparison	Test	Statistic	p-value	Preferred Model
1	FE vs. Pooled OLS	F or Wald Test	$F(21, 196) = 8.93802$	<.001	Fixed Effects Model
2	RE vs. Pooled OLS	Breusch - Pagan Test	$LM = 123.523$	<.001	Random Effects Model
3	FE vs. RE	Hausman Test	$H = 12.836$	.233	Random Effects Model

The estimated panel data regression model (random-effects model) is shown in Table 4. The overall fit of the chosen random-effects model was low ($R^2 = 0.393$), however, and the model as a whole was statistically significant, $\chi^2(12) = 140.43, p < .001$.

The error terms were not significantly different from normal distribution, $\chi^2(2) = 3.21, p = .201$. Wooldridge test revealed the presence of a statistically significant first-order autocorrelation in the panel data, $F(1, 22) = 23.024, p < .001$. There was no severe multicollinearity among the regressors as per the *Belsley-Kuh-Welsch (BKW)* collinearity diagnostics and the average value of the condition index was found to be 2,89. The *robust standard errors (HAC)* have been used for the significance testing of the estimated regression coefficients in the presence of the autocorrelation problem in the estimated model.

Table 4

Panel Data Regression Results on the Factors Influencing the Return on Capital Employed (ROCE) of the Cement Manufacturing Companies in India

Method: Random-effects (GLS)

Dependent Variable: Return on Capital Employed (ROCE)

Sl. No.	Regressors	Coefficient	Std. Error	z	p-value	Significance ^e	Collinearity Statistics	Model Summary Statistics
							Condition Index ^b	
1	(Constant)	0.339	0.186	1.83	0.068	*	1.00	$R^2 = 0.393$ Joint test on regressors: $\chi^2(12) = 140.431, p < .001$ $AIC = -189.537$ $BIC = -144.842$ Durbin-Watson = 0.82016 $p\text{-value} < .001$
2	Trading on Equity	-0.001	0.001	-1.07	0.284	ns	1.53	
3	Asset Structure	-0.092	0.106	-0.87	0.384	ns	1.61	
4	Corporate Tax	-0.016	0.009	-1.72	0.086	*	1.86	
5	Debt Service Capability	0.002	0.001	1.50	0.133	ns	2.08	
6	Business Risk	1.37E-04	6.16E-05	2.22	0.026	**	2.12	
7	Size	-1.88E-05	5.43E-06	-2.19	0.029	**	2.39	
8	Liquidity	-0.094	0.073	-1.29	0.199	ns	2.70	
9	Growth	0.044	0.077	0.57	0.571	ns	2.83	
10	Debt-Equity Ratio	-0.001	1.99E-04	-2.97	0.003	***	3.62	
11	Leverage	-0.010	0.046	-0.21	0.836	ns	6.22	
12	Time	-0.007	0.004	-1.72	0.086	*	6.91	

Notes: # Robust (HAC) standard errors; @ *** indicate significant at 01 percent level, ** indicates significant at 05 percent level, * indicates significant at 10 percent level, and 'ns' indicates not significant;

according to Belsley-Kuh-Welsch (BKW) collinearity diagnostics, $CI \geq 30$ indicates "strong" near-linear dependence, and CI between 10 and 30 is "moderately strong".

The estimates of the panel data regression model shown in Table 4 indicate that the capital structure has a significant negative influence on the return on capital employed of cement companies in India. It shows a *p-value* of 0.003. It indicates that the return on capital employed of the cement manufacturing firms was inversely related to the firms. At the same time, business risk had a statistically significant positive influence on the ROCE of the cement manufacturing companies in India. It shows a *p-value* of 0.026. It indicates that keeping other things constant, an increase in the business risk of the companies, on average, resulted in a corresponding increase in the ROCE of the firms. Along with these variables, the size had a statistically significant negative influence on the ROCE of the Cement companies in India. It indicates that the return on capital employed of the cement manufacturing firms was inversely related to the size of the firms.

The model for the panel data regression was selected in a two-step model-search process reported in Table 5. Finally, the *pooled OLS model* was chosen for the estimation of the factors influencing the return on asset (ROA) of the cement manufacturing firms in India. The *Wald joint test* revealed that there were no statistically significant time effects, $\chi^2(8) = 13.652, p = .091$.

Table 5
Panel Data Model Selection Test Results (Return on Asset)

Step	Model Comparison	Test	Statistic	p-value	Inference
1	FE vs. Pooled OLS	F or Wald Test	$F(21, 196) = 1.24429$	.218	Pooled OLS
2	RE vs. Pooled OLS	Breusch Pagan Test	$\chi^2(1) = LM = 0.00563$	.940	Pooled OLS

The model summary statistics reported in Table 5 indicate that the model as a whole is statistically significant, $F(12, 217) = 7.749, p < .001$. However, the goodness of fit of the model was low as indicated by the coefficient of determination ($R^2 = .300$); but this R^2 value was statistically significant as per the F-test reported above.

The model was estimated using the pooled ordinary least square (Pooled OLS) method and the estimated regression results are presented in Table 6.

The important model adequacy tests were conducted and the results revealed that the estimated model was correctly specified [as per Ramsey's RESET, $F(2, 215) = 2.12, p = .123$], the error terms were normally distributed [as per JB test, $\chi^2(2) = 3.18, p = .204$], there was no first-order autocorrelation in the data [as per Wooldridge test for autocorrelation in panel data, $t(22) = 0.822, p = .420$], there was no heteroskedasticity problem, [$LM = 62.24, p = .986$], and there was no severe multicollinearity problem among the regressors (the average VIF was 1.85). Therefore, valid inferences can be made from this estimated model as it was found adequate as per the important model adequacy tests.

Table 6
Pooled OLS Regression Results on the Factors Influencing the Return on Asset of the Cement Manufacturing Companies in India

Method: Pooled OLS

Dependent Variable: Return on Asset (ROA)

Sl. No.	Regressors	Unstandardized Coefficients		Standardized Coefficients	t - ratio	p-value	Significance [@]	Collinearity Statistics	Model Summary Statistics
		B	Std. Error	Beta				VIF	
1	(Constant)	.036	.017	--	2.075	.039	**	--	$R^2 = 0.300$ $Adj. R^2 = 0.261$ $F(12, 217) = 7.749, p < .001$ $AIC = -765.0063$ $BIC = -720.3113$ $Durbin-Watson = 1.788$
2	Trading on Equity	.000	.001	.026	.461	.645	ns	1.017	
3	Asset Structure	-.036	.024	-.105	-1.489	.138	ns	1.532	
4	Corporate Tax	-.005	.004	-.072	-1.127	.261	ns	1.267	
5	Debt Service Capability	.001	.000	.184	3.089	.002	**	1.096	
6	Business Risk	7.418E-5	.000	1.314	5.982	<.001	***	4.951	
7	Size	-6.916E-6	.000	-1.178	-5.329	<.001	***	5.145	
8	Liquidity	.013	.006	.142	2.089	.038	**	1.434	
9	Growth	.017	.022	.050	.800	.424	ns	1.220	
10	Debt-Equity Ratio	-.001	.000	-.158	-2.574	.011	**	1.163	
11	Leverage	.004	.007	.033	.535	.593	ns	1.200	
12	Time	.001	.001	.038	.632	.528	ns	1.120	

Notes: @ *** indicates significant at 01 percent level, ** indicates significant at 05 percent level, * indicates significant at 10 percent level, and 'ns' indicates not significant.

The model summary statistics reported in Table 6 indicate that the model as a whole is statistically significant, $F(12, 217) = 7.749$, $p < .001$. However, the goodness of fit of the model was low as indicated by the coefficient of determination ($R^2 = .300$); but this R^2 value was statistically significant as per the F-test reported above.

It can be noticed from the pooled OLS regression estimation results presented in Table 6 that the debt service capability, business risk, and liquidity had a statistically significant positive effect while the size of the firm and debt-equity ratio had a statistically significant negative effect on the return on asset of the cement companies in India during 2010-2011 to 2019-2020. However, the remaining seven explanatory variables included in the model had no statistically significant influence on the ROA of the cement companies in India. The results suggest that by controlling the other factors, an increase in debt in the capital structure of cement companies will reduce its ROA. At the same time increase in the debt service capacity, business risk, and liquidity of the companies tend to increase the return on assets of the cement companies in India, while an increase in the size of the firm tends to reduce the return on asset of the cement companies in India.

The two-step model-search process results shown in Table 7 helped us to fix the *pooled OLS model* for the estimation of the factors influencing the return on capital (ROC) of the cement manufacturing firms in India. The Wald joint test revealed that there were no statistically significant time effects, $\chi^2(8) = 11.934$, $p = .154$.

Table 7
Panel Data Model Selection Test Results (Return on Capital)

Step	Model Comparison	Test	Statistic	<i>p-value</i>	Inference
1	FE vs. Pooled OLS	<i>F</i> or Wald Test	$F(21, 196) = 0.591219$	.922	Pooled OLS
2	RE vs. Pooled OLS	Breusch - Pagan Test	$\chi^2(1) = 2.79073$	.095	Pooled OLS

The estimates of the pooled ordinary least square (Pooled OLS) regression model are shown in Table 7.

The model adequacy tests were carried out and the estimated model satisfied the important model adequacy tests. The model is free from specification bias as per *Ramsey's Regression Specification Error Test* (RESET) and therefore, the model is correctly specified, $F(2, 215) = 2.04$, $p = .133$. The *White's test* indicated that the estimation was not affected by the heteroscedasticity problem, $LM = 105.125$, $p = .117$. *Wooldridge test* for autocorrelation revealed that there was statistically significant first-order autocorrelation in the data, $t(22) = 1.360822$, $p = .187$. The *Jarque-Bera (JB) test* revealed that the distribution of the error terms was not significantly different from the normal distribution, $\chi^2(2) = 2.17$, $p = .338$. The *variance inflation factor (VIF)* revealed that there was no serious multicollinearity among the regressors (the VIF for all the explanatory variables were less than the cut-off value of 10 and the average VIF was 1.850). Therefore, valid inferences can be drawn from the estimated model as it was found adequate as per the important model adequacy tests.

The model summary statistics are reported in Table 7, the results indicate that the model as a whole was statistically significant, $F(12, 217) = 4.59$, $p < .001$. However, the goodness of fit of the model was weak as indicated by the coefficient of determination ($R^2 = .202$); but this R^2 value was statistically significant as per the F-test reported below.

Table 7
Pooled OLS Regression Results on the Factors Influencing the Return on Capital of the Cement Manufacturing Companies in India

Method: Pooled OLS

Dependent Variable: Return on Capital (ROC)

Sl. No	Regressors	Unstandardized Coefficients		Standardized Coefficients	t - ratio	p-value	Significance [@]	Collinearity Statistics	Model Summary Statistics
		B	Std. Error	Beta				VIF	
1	(Constant)	.033	.030	--	1.098	.273	ns	--	R ² = 0.202 Adj. R ² = 0.158 F (12, 217) = 4.592, p < .001 AIC = -504.5431 BIC = -459.8481 Durbin-Watson = 1.748
2	Trading on Equity	.001	.001	.041	.671	.503	ns	1.017	
3	Asset Structure	-.031	.043	-.054	-.725	.469	ns	1.532	
4	Corporate Tax	-.005	.007	-.043	-.625	.532	ns	1.267	
5	Debt Service Capability	.001	.000	.185	2.912	.004	***	1.096	
6	Business Risk	8.846E-5	.000	.949	4.049	<.001	***	4.951	
7	Size	-8.272E-6	.000	-.854	-3.619	<.001	***	5.145	
8	Liquidity	.022	.011	.144	1.979	.049	**	1.434	
9	Growth	.045	.038	.080	1.188	.236	ns	1.220	
10	Debt-Equity Ratio	-.001	.000	-.097	-1.488	.138	ns	1.163	
11	Leverage	-.003	.012	-.015	-.228	.820	ns	1.200	
12	Time	.001	.002	.024	.380	.705	ns	1.120	

Notes: @ *** indicates significant at 01 percent level, ** indicates significant at 05 percent level, and 'ns' indicates not significant.

The pooled OLS regression estimation results presented in Table 7 reveal the Capital Structure along with the remaining 7 explanatory variables included in the model had no statistically significant influence on the ROC of the cement companies in India. While the debt service capacity, business risk, and liquidity had a statistically significant positive effect and the size had a statistically significant negative effect on the return on capital of the cement companies in India during 2010-2011 to 2019-2020. The results tell that controlling the other factors, increase in the debt service capacity, business risk and liquidity of the companies tend to increase the return on capital of the cement companies in India, while an increase in the size of the firm tends to reduce the return on capital of the cement companies in India.

CONCLUSION

The study is being conducted to ascertain the relationship between the capital structure and profitability of cement companies in India. The study examined nine independent variables, including debt-equity ratio, trading on equity, asset structure, debt service capacity, corporate tax, size, business risk, liquidity, and growth, to determine their relationship to profitability as measured by indicators such as Return on Capital Employed, Return on Asset, and Return on Capital for cement companies in India. The debt-to-equity ratio is used to estimate the capital structure. The study discovered a significant negative relationship between capital structure and ROCE and ROA. There is no significant relationship between CS and ROC of cement companies in India. Corporate tax has a significant adverse effect on the ROCE of cement manufacturers in India. However, it demonstrates no correlation with the ROA and ROC of cement companies. On the other hand, while debt service capacity and liquidity have a

significant positive effect on ROA and ROC, they did not affect the ROCE of cement companies in India. Additionally, the study revealed that Business Risk has a positive effect on profitability indicators such as ROCE, ROA, and ROC, while Size has a negative effect.

REFERENCES

- [1] Modigliani, F. a. The cost of capital, corporation finance and the theory of investment. *The American Economics Review*, 1958, 261-97.
- [2] Jensen, M. C. Theory of firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 1976, 60-305.
- [3] Myers, S. C. Determinants of Corporate Borrowings. *Journal of Financial Economics*, 1977, 147-175.
- [4] Kester, C. W. Capital and ownership structure: A comparison of United States and Japanese manufacturing corporations . *Financial Management*, 1986, 5-16.
- [5] Titman, S. a. The determinants of capital structure choice. *The Journal of Finance*, 1988 1-19.
- [6] Rajan, R. G. What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 1995, 1421-1460.
- [7] Taani, K. (2011). The effect of financial ratios, firm size and cash flows from operating activities on earnings per share:(an applied study: on Jordanian industrial sector). *International journal of social sciences and humanity studies*, 3(1), 197-205.
- [8] Kennedy, P. S. J. (2003). Analisis pengaruh ROA, ROE, EPS, profit margin, asset turnover, leverage, DER terhadap return saham: Studi pada saham-saham yang termasuk dalam Iq-45 di bursa efek Jakarta (Doctoral dissertation, Thesis in Pasca Sarjana Ilmu Manajemen FEUI).
- [9] Tifow, A. A., & Sayilir, O. (2015). Capital structure and firm performance: An analysis of manufacturing firms in Turkey. *Eurasian Journal of Business and Management*, 3(4), 13-22.
- [10] Nguyen, V., Nguyen, T., Tran, T., & Nghiem, T. (2019). The impact of financial leverage on the profitability of real estate companies: A study from Vietnam stock exchange. *Management Science Letters*, 9(13), 2315-2326.
- [11] Patel, J. B. (2014). Impact of leverage on profitability: A study of Sabar Dairy. *International Multidisciplinary Research Journal*, 1(3), 1-6.
- [12] Hilmola, O. P. (2020). Role of inventory and assets in shareholder value creation. *Expert Systems with Applications: X*, 5, 100027.
- [13] Ukhriyawati, C. F., Ratnawati, T., & Riyadi, S. (2017). The influence of asset structure, capital structure, risk management, and good corporate governance on financial performance and value of the firm through earnings and free cash flow as an intervening variable in banking companies listed in Indonesia stock exchange. *International Journal of Business and Management*, 12(8), 249-260.
- [14] Sadiq, K., & McCredie, B. (2018, January 24). *The Conversation*. Retrieved from <https://theconversation.com/companies-that-pay-more-tax-deliver-shareholders-better-returns> new-study-90386
- [15] Fatoki, O. I., & Olweny, T. (2017). Effect of Earnings Per Shares on Capital Structure Choice of Listed Non-Financial Firms in Nigeria. *European Scientific Journal*, 13(34), 1857-7881.
- [16] Edim, N. O., Atseye, F. A., & Eke, F. A. (2014). Relationship between capital structure and firm's performance: Theoretical review. *Journal of Economics and Sustainable Development*, 5(17), 72-76.
- [17] Singh, N. P., & Bagga, M. (2019). The effect of capital structure on profitability: An empirical panel data study. *Jindal Journal of Business Research*, 8(1), 65-77.

- [18] Movalia, N. P. (2015). A study on capital structure analysis and profitability of Indian tyres industry. *Methodology*, 2013, 14.
- [19] Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia-Social and Behavioral Sciences*, 65, 156-166.
- [20] Zeitun, R., & Tian, G. G. (2014). Capital structure and corporate performance: evidence from Jordan. *Australasian Accounting Business & Finance Journal*, Forthcoming.