Relationship between profitability and capital structure: Financial performance of infrastructure companies of india

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1.   Introduction:

Shareholders' interests are the driving force of any business. Among other interests, one of the most important is maximizing wealth and making the best use of the company's revenues and proceedings. To accomplish this, one of the most important decisions that the firm must make is its capital structure, which has the greatest impact on a company's profitability. Myers, S. C. (1984) describes capital structure as a combination of equity, debt, and other types of instruments that fund the company. According to Panigrahi (2012), capital structure refers to the share of long-term sources of cash, including owner funds and borrowed funds. Owner's finances include equity share capital, preference share capital, reserves and surpluses, or retained earnings, Borrowed funds include long-term obligations such as debentures, loans from banks, and loans from other financial organizations. Hasan et al. (2014).

According to Singh & Bagga (2019), one of the most important strategic decisions to be made by the leadership is to identify the optimal structure. The Optimal capital structure is when the value of the firm is maximum. As per Tailab (2014), the capital structure is optimal when the cost of capital is minimum, which inturn maximises the value of the firm.According to Mazumder (2017), a company's capital structure is influenced by a variety of internal and external factors, such as the size and nature of the business, capital gearing, cash position, equity trading, management's mindset, company age, governmental regulations, market conditions, and competition.

A capital structure which carries a higher level of Debt incurred higher level of interest obligations which are charged against the revenues of the said company, leading to a reduced profit, which essentially leads to lowering the shareholders wealth.however, on the other hand, debt funds have a positive contribution to the profitability due to the tax holiday in interest payments, which in turn reduces the tax liability of the said company. On the other hand, equity funding has always been considered safer and cheaper as the only obligations arising from the same are dividend payments, which are distributed only through the profits. Based upon the above interplay, Monga (2018) concludes that a higher Debt-Equity ratio leads to a higher financial risk for the firm.

The purpose of the paper is to focus on how the Equity and Debt mix influences the performance of select companies. In the paper, NIFTY INFRA companies listed on National Stock Exchange of India are analysed attempting to focus on how the Equity and Debt mix influence the performance of the companies. The capital structure is the companies are analysed with the help

of Descriptive analysis, Multiple regression analysis and Correlation analysis by using the data from 2004-2005 to 2024-2025.

2.   Literature Review:

To analyse the impact of capital structure on profitability, Kalyani and Mathur (2017) chose the Oil and Natural gas Industry in Indian landscape and selected 7 companies listed on National Stock exchange and Bombay Stock Exchange in India for a duration of 7 years, i.e from 2002 to 2015. The research methodology employed was multiple regression analysis and correlation analysis wherein the dependent variables identified were Return on Assets and Net Profit Ratios.WHile considering the Return in Assets, the independent variables such as logarithm of sales, degree of operating leverage, and asset growth has significant impact on determining the profitability of the companies. Moreover, for Net Profit ratio, in addition to the above variables, other components which significantly impacted the profitability were log assets, degree of financial leverage, underscoring the important role of the capital structure on the financial performance and profitability of the selected companies in Oil and Natural Gas Sector.

Abor (2005) selected 22 companies listed in Ghana Stock Exchange and conducted empirical investigation on the relationship between the profitability and capital structure based upon the data spanning over 5 years. Regression models were used for the study. It was inferred from the results of the study that the profit making firms from the 22 selected companies performed well by utilising higher levels of det,i.e using the leverage effect and supporting the trade-Off theory. The study also highlighted that in an emerging market environment, where the long term funds markets are in developmental stages, the short term financing options tend to be more lucrative for the companies for sustaining with higher availability and lower cost of capital in the market.Babbar & SIngh (2024) studies 23 companies listed in India in cement sector, over a period of 18 years from 2004 - 2021. The study concluded that Interest coverage ratio had a more positive relationship with the profitability indicators of the selected companies.

Vătavu (2015) conducted a study by selecting 196 companies in the manufacturing sector which were listed on the Romanian Stock Exchange. The study used panel data models to analyse the relationship between profitability and the capital structure of the selected companies. The independent variables were identified as Short Term Debt, Long Term Debt, Total Debt and Equity, while on the other hand, the dependent variables were Return on Assets and Return on Equity. It was observed that due to characteristics of the Romanian economy, there were higher taxes and inflation which in turn made borrowed funds to be more expensive, having a negative relationship with the profitability of the companies. On the other hand, equity had a more positive impact on the profitability of the selected companies. Panigrahi (2012) observed inter-industrial companies using panel data regression techniques. He observed that while high growth companies management preferred inhouse source of funds and avoided excessive costly debt, it mainly depended on the industry specific dynamics, which dictated the relationship between the capital structure and profitability.

Benyamin and Soekarno (2023) collected data spanning over a period from 2016-2021, 5 years from 16 selected companies listed in the Indonesian Stock Exchange. The said companies were

listed infrastructure companies in Indonesia. The study showed that the size of the company and the Tax Shields in the economy had a statistically significant impact on the capital structure decisions of individual companies. Serrasqueiro & Nunes (2008) conclude that Portuguese companies adjust the actual level of debt towards the optimal level of debt, although the level of adjustment is not substantial. Size and profitability can be considered determinant factors in explaining the capital structure of Portuguese companies, and consequently in explaining the adjustment towards optimal level of debt. Larger companies turn more to debt while the most profitable companies turn less to debt.

Table 1: Review of past studies for relationship between capital structure and profitability

Sr. No.	Author (Year)	Variables	Finding of the Study
1	Abor, J (2005)	Total Debt Long Term Debt Short Term Debt Return on Equity	It was concluded based upon the empirical data that there is a significant relationship between Short Term to Total assets ratio and Return on Equity.
2	Vătavu, S (2015)	Total Debt Long Term Debt Short Term Debt Total Equity to Total Assets Fixed Assets to Total Assets Business Risks Liquidity Ratio Return on Equity Return on Asset	While liquidity has a favorable effect on ROE, asset tangibility has a negative impact on ROA and ROE, possibly as a result of inflation decreasing asset efficiency. While total and short-term debt have a negative impact on both ROA and ROE, shareholders' equity improves the performance of the company.
3	Azhagaiah & Gavoury (2011)	Total Debt to Total Asset Expense to Income Ratio Liquidity Ratio DebtEquity Ratio Return on Equity Return on Asset	This research has proven that there is a one to-one relationship between capital structure variables and profitability variables, return on assets (ROA) and return on capital employed (ROCE). Capital structure is significantly influencing the profitability and by increasing the financial leverage tends to lower the profitability.
4	Singh & Bagga (2019)	Fixed Assets to Total Assets Ratio Tax to EBIT Ratio Liquidity Ratio Business Risk Ratio Total Liabilities to Total Assets Ratio Total Equity to Total Assets Ratio Return on Equity Return on Asset	Based upon the empirical analysis, it was concluded that there is a significant relationship between Profitability and Capital Structure, emphasising the relevance of optimal capital structure decisions.

		Leverage Profitability Tangibility Liquidity Growth Size of the companies	
5	Benyamin & Soekarno (2023)	Leverage Profitability Tangibility Liquidity Growth Size of the companies	Profitability, tangibility, and liquidity positively affect the leverage ratio, while growth has a negative significant effect.

Though there have been multiple studies being conducted, however no study was found in respect to the selected companies of NIFTY Infra Index over the selected time period covering the selected variables, as in this study. The main objective of the study is to focus and analyse the impact of capital structure on profitability on NIFTY Infra companies in India.

3.   Research Methodology:
This section mainly talks about the context of the study, objective of the study, research design, hypothesis of the study, the data and the method of data analysis.

3.1 Context:
The profitability of a company is a vital parameter to analyse the health of the company. Profitability is closely linked with the capital structure, and such a relationship has always been critical and received much importance in finance literature. The research on the interdependence of the capital structure and profitability help us in identification of possible issues and also identify other variables and components in the economic environment in which the selected companies are operating in. Therefore, such research shall help in formulating and choosing better investment models which in turn shall drive better profitability in the companies.

3.2 Objective of the Study:
The objective of the current study are as follows:
(1)   To review the past work and studies on the interdependence/relationship of capital structure and profitability on Listed Public Companies
(2)   To analyze the relationship between capital structure (Debt Equity Ratio and Interest Coverage Ratio) and profitability (Return on Equity, Return on Capital EMployed, Return on Assets, Net Profit per Share, Price to Net Operating Revenue) of the companies listed in NIFTY Infra Index , India.

3.3 Research Questions:
Based upon the above discussed background, the study attempts to answer the following questions:
(1)   Whether the debt equity ratio influence the financial performance of any organization
(2)   What is the relationship between interest coverage ratio and financial performance?
3.4 Hypothesis of the Study:
HO_1 :There is no significant impact of independent variables on Return on Equity
HO_2 :There is no significant impact of independent variables on Return on Capital Employed
HO_3 :There is no significant impact of independent variables on Return on Asset
HO_4 :There is no significant impact of independent variables on Net Profit per Share

HO$_5$:There is no significant impact of independent variables on Price to Net Operating Revenue Ratio

3.5 Data:

The Sample contains 30 selected companies which are listed in NIFTY Infra Index, National Stock Exchange and Bombay Stock Exchange, India. The data of the said companies are sourced from the annual reports, of the companies and websites such as Business Standard, MoneyControl, Screener. The data covers a period of 21 years from 2004-2005 to 2024-2025. The said data was processed through SPSS 25 version software.

In order to find the relationship between the capital structure and profitability, correlation and multiple regression analysis have been done.

After doing the existing literature review and analysing the existing literature in finance, Debt-Equity Ratio and Interest COverage Ratio has been chosen as Independent Variables, representing the Capital Structure, while on the other hand to measure the financial performance of the companies, dependent variables so selected are Return on Equity, Return on Capital Employed, Return on Assets, Net Profit per Share, Price to Net operating Revenue Ratio.

Table 2: Computation Of Dependent And Independent Variables

Sr. No.	Variable	Type	Computation
1	Debt-Equity Ratio	Independent	Total Debt / Shareholders' Equity
2	Interest Coverage Ratio	Independent	Earnings Before Interest and Tax (EBIT) / Interest Expense
3	Return on Equity	Dependent	Net Profit / Shareholders' Equity × 100
4	Return on Capital Employed	Dependent	EBIT / Capital Employed × 100
5	Return on Assets	Dependent	Net Profit / Total Assets × 100
6	Net Profit per Share	Dependent	Net Profit / Number of Equity Shares Outstanding
7	Price to Net operating Revenue Ratio	Dependent	Market Price per Share / Net Operating Revenue per Share
Source: Compiled by Author			

3.6 Methods of Data Analysis:

In order to achieve the objectives of the study, data was collected from the secondary sources through various websites on the internet and annual reports of the selected companies. As the first step, Ratio Analysis was done to calculate and analyse the dependent and independent variables. Secondly, Descriptive analysis was done to describe the behaviour of the variables. SUbsequently, multiple regression and correlation analysis was done to identify the relationship between the capital structure and profitability.

4.   Results and Discussion:
4.1 Descriptive Statistics:

Table 3: Descriptive Statistics of 30 Selected Companies

Variables No.of observations (630)	Mean	Minimum	Maximum	Range	Std. Deviation	Std. Error
ROE	1.81	-8964.77	584.92	9549.69	359.68	14.34
ROCE	11.75	-24.66	269.70	294.36	13.19	0.53
ROA	6.19	-44.17	27.55	71.72	5.71	0.23
NPS	219.24	-160.18	42481.10	42641.28	2229.85	88.91
PNOR	4.75	0.00	69.84	69.84	7.73	0.31
DE	0.71	-4.20	38.53	42.73	1.83	0.07
ICR	16.55	-12.21	535.10	547.31	42.32	1.69

4.2 Multiple Regression Model:

The findings of multiple regression analysis for specific Infra Index companies are presented in this section.Multiple regression analysis is used to evaluate the previously indicated effect of capital structure on profitability.The multiple regression equation's functional form is as follows:

$Y = a + b_1 * DE + b_2 * ICR$
Where,
Y= Dependent Variable (ROE, ROCE,ROA, Net Profit per Share, Price/Net Operating Revenue)
DE = Debt-Equity Ratio
ICR = Interest Coverage Ratio

The sample null hypothesis to be tested as a part of multiple regression analysis as under:
H_0: There is no significant impact of capital structure on profitability of Ultratech Cement Ltd.
H_1: There is a significant impact of capital structure on profitability of Ultratech Cement.

Similarly, hypotheses will be tested for all 30 companies selected in this study. The results of multiple regression analysis in the form of values of regression coefficient, adjusted R^2 and p-values are shown in table 4 to table 8

Table 4: Multiple Regression Analysis between Debt/Equity Ratio & Interest Coverage

Sr. No.	Name of the Company	Multiple Regression Equation	Adjusted R^2 (p-Value)
1	Ultra Tech Cement	−5.814+13.629(DE)+1.608(ICR) (0.005)* (0.000*)	0.602 (0.000)*
2	Tata Power Co. Ltd.	-10.995+12.387(DE)+3.396 (ICR) (0.015)* (0.026)*	0.266 (0.024)*
3	Siemens Ltd.	8.028+0(DE)+0.102(ICR) (0.045)*	0.162 (0.045)*
4	Shree Cement Ltd.	12.183+13.531(DE) + -0.096(ICR) (0.001)* + (0.844)	0.377 (0.005)*
5	Samvardhana Motherson International Ltd.	6.764+14.621(DE)+0.694(ICR) (0.004)* (0.113)	0.340 (0.009)*
6	Reliance Industries Ltd.	-3.738+14.951(DE)+1.007(ICR) (0.095) (0.000)*	0.516 (0.001)*
7	Power Grid Corporation of India Ltd.	8.675+0.538(DE)+1.777(ICR) (0.708) (0.000)*	0.517 (0.001)*
8	Oil & Natural Gas Corporation Ltd.	10.981+4.892(DE)+0.079(ICR) (0.685) (0.000)*	0.723 (0.000)*
9	NTPC Ltd.	15.192--2.439(DE)+0.000(ICR) (0.024)* (0.996)	0.427 (0.003)*
10	Max Healthcare Institute Ltd.	0.18-15.72(DE)+0.456(ICR) (0.000)* (0.000)*	0.797 (0.000)*
11	Larsen & Toubro Ltd.	0.633+38.497(DE) +0.527 (ICR) (0.000)* (0.080)	0.530 (0.000)*

Ratio and Return on Equity for Nifty Infra Companies:

12	InterGlobe Aviation Ltd.	303.462-207.482(DE)+47.764(ICR) (0.000)* (0.510)	(0.821 (0.000)*
13	Indus Towers Ltd.	6.678+24.103(DE)+0.273(ICR) (0.151) (0.130)	0.145 (0.103)
14	Indian Oil Corporation Ltd.	3.420-0.127(DE) +1.762 (ICR) (0.973) (0.000)*	0.777 (0.000)*
15	Indian Hotels Co. Ltd.	4.697-6.176(DE)+0.884(ICR) (0.452) (0.216)	0.155 (0.085)
16	Hindustan Petroleum Corporation Ltd.	1.560+0.320(DE)+1.794(ICR) (0.953) (0.005)*	0.512 (0.001)*
17	Grasim Industries Ltd.	-2.357+25.760(DE)+1.029 (ICR) (0.001)* (0.000)*	0.798 (0.000)*
18	Godrej Properties Ltd.	-0.314+14.788 (DE) - 0.037 (ICR) (0.032)* (0.736)	0.168 (0.074)
19	GAIL (India) Ltd.	14.436+ 1.516 (DE) + 0.038 (ICR) (0.901) (0.574)	-0.091 (0.845)
20	DLF Ltd.	2.676 + 5.522 (DE) + 0.401 (ICR) (0.000)* (0.000)*	0.955 (0.000)*
21	Cummins India Ltd.	26.217-99.295 (DE) + 0.003 (ICR) (0.002)* (0.735)	0.357 (0.007)*
22	CG Power and Industrial Solutions Ltd.	17.271 + 3.628 (DE) + 0.037 (ICR) (0.537) (0.489)	-0.058 (0.646)
23	Bharti Airtel Ltd.	7.647-14.177(DE) + 1.023 (ICR) (0.056) (0.004)*	0.519 (0.001)*
24	Bharat Petroleum Corporation Ltd.	14.812-5.333 (DE) +0.955 (ICR) (0.236) (0.019)*	0.502 (0.001)*
25	Bharat Forge Ltd.	0.283 + 9.992 (DE) + 1.225 (ICR) (0.084) (0.004)*	0.307 (0.014)*
26	Ashok Leyland Ltd.	-5.132+ 2.283 (DE) + 9.926 (ICR) (0.713) (0.003)*	0.434 (0.002)*
27	Apollo Hospitals Enterprise Ltd.	3.166 + 3.922 (DE) + 1.286 (ICR) (0.412)	0.262 (0.025)*

		(0.023)*	
28	Ambuja Cements Ltd.	7.140 + 51.372 (DE) + 0.168 (ICR) (0.008)* (0.213)	0.261 (0.026)*
29	Adani Ports and Special Economic Zone Ltd.	29.137 - 11.152 (DE) - 0.320 (ICR) (0.013)* (0.717)	0.225 (0.039)*
30	Adani Green Energy Ltd.	0.373 - 0.186 (DE) + 0.633 (ICR) (0.748) (0.764)	-0.101 (0.921)

*All these values are significant as p-value is <= 0.05. The p-values are parentheses.
Source: data collected from annual reports and values calculated through MS Excel and SPSS

It can be inferred from the results of table 4, that the two independent variables representing the capital structure could not reveal a significant variability of Return on Equity for 6 out of the 30 companies, as the p-value for the same are greater than 0.05.The said companies are Indus Towers Ltd. (0.103), Indian Hotels Co. Ltd. (0.085), Godrej Properties Ltd. (0.074), GAIL (India) Ltd.(0.845), CG Power and Industrial Solutions Ltd. (0.646), Adani Green Energy Ltd. (0.921). For the remaining 24 companies, the multiple regression equation explains the significant level of variability on the Return on Equity of the companies. The regression equation fit most with DLF Ltd and Grasims Industries with adjusted R^2 values are 0.995 and 0.798 respectively, wherein Interest Coverage Ratios and Debt-Equity ratios, both predictors drive the Return on Equity.Companies in which the model fits poorly are GAIL(INdia) Ltd. with adjusted R^2 of -0.091, CG Power and Industrial Solutions Ltd. having adjusted R^2 value of -0.058 and Adani Green Energy, -0.101. It can be concluded that the regression model fits significantly in 80% of the companies in the Nifty Infra Index.

Table 5: Multiple Regression Analysis between Debt/Equity Ratio & Interest Coverage Ratio and Return on Capital Employed for Nifty Infra Companies

Sr. No.	Name of the Company	Multiple Regression Equation	Adjusted R^2 (p-Value)
1	Ultra Tech Cement	6.135−0.550(DE)+0.657(ICR) (0.789) (0.000)*	0.555 (0.000)*
2	Tata Power Co. Ltd.	4.911+4.489(DE)-0.011(ICR) (0.037)* (0.986)	0.172 (0.071)
3	Siemens Ltd.	9.364 +0.000(DE) + 0.097 (ICR) (N/A) (0.036)*	0.180 (0.036)*
4	Shree Cement Ltd.	13.472-0.634(DE)-0.019(ICR) (0.772) (0.947)	-0.105 (0.956)

5	Samvardhana Motherson International Ltd.	8.547+2.170(DE) +0.567(ICR) (0.561) (0.106)	0.052 (0.239)
6	Reliance Industries Ltd.	5.078+1.400(DE)+0.424(ICR) (0.0.794) (0.006)*	0.280 (0.020)*
7	Power Grid Corporation of India Ltd.	8.601-2.892(DE)+1.627(ICR) (0.139) (0.003)*	0.379 (0.005)*
8	Oil & Natural Gas Corporation Ltd.	11.669+9.573(DE)+0.026 (ICR) (0.378)(0.078)	0.348 (0.008)*
9	NTPC Ltd.	3.777+2.190(DE)+0.231(ICR) (0.037)* (0.008)*	0.258 (0.026)*
10	Max Healthcare Institute Ltd.	0.441-3.741(DE)+0.459(ICR) (0.221) (0.000)*	0.782 (0.000)*
11	Larsen & Toubro Ltd.	8.125+10.511(DE)+0.503 (ICR) (0.035)* (0.003)*	0.477 (0.001)*
12	InterGlobe Aviation Ltd.	3.475-0.090(DE)+2.433(ICR) (0.775) (0.022)*	0.211 (0.046)*
13	Indus Towers Ltd.	6.963+17.069(DE)+0.317(ICR) (0.273) (0.067)	0.156 (0.091)
14	Indian Oil Corporation Ltd.	7.105-4.587(DE)+1.496(ICR) (0.363) (0.001)*	0.656 (0.000)*
15	Indian Hotels Co. Ltd.	6.697-8.477(DE)+0.821(ICR) (0.050)* (0.029)*	0.552 (0.000)*
16	Hindustan Petroleum Corporation Ltd.	-4.229+2.175(DE) +1.674 (ICR) (0.426) (0.000)*	0.768 (0.000)*
17	Grasim Industries Ltd.	2.049+6.924 (DE) + 0.769 (ICR) (0.287) (0.000)*	0.611 (0.000)*
18	Godrej Properties Ltd.	10.866+1.208 (DE) - 0.050 (ICR) (0.677) (0.310)	-0.025 (0.485)
19	GAIL (India) Ltd.	14.413-14.965(DE)+ 0.070 (ICR) (0.054)* (0.099)*	0.337 (0.010)*
20	DLF Ltd.	5.569 -0.246 (DE) +0.273 (ICR) (0.309) (0.001)*	0.443 (0.002)*
21	Cummins India Ltd.	26.228 - 66.298 (DE) + 0.004 (ICR) (0.044)* (0.692)	0.136 (0.104)
22	CG Power and Industrial Solutions Ltd.	32.154 - 53.294 (DE) + 0.005 (ICR) (0.000)* (0.884)	0.902 (0.000)*
23	Bharti Airtel Ltd.	7.391-3.679 (DE) + 0.589 (ICR) (0.137) (0.000)*	0.693 (0.000)*

24	Bharat Petroleum Corporation Ltd.	19.291 -9.949 (DE) + 0.468 (ICR) (0.021)* (0.181)	0.515 (0.001)*
25	Bharat Forge Ltd.	8.872 - 5.477 (DE) + 1.118 (ICR) (0.156) (0.000)*	0.609 (0.000)*
26	Ashok Leyland Ltd.	7.602 -14.019 (DE) + 6.475 (ICR) (0.032)* (0.033)*	0.567 (0.000)*
27	Apollo Hospitals Enterprise Ltd.	4.389 + 3.558 (DE) + 0.773 (ICR) (0.513) (0.209)	0.000 (0.387)
28	Ambuja Cements Ltd.	7.875 + 26.505 (DE) + 0.153 (ICR) (0.061)* (0.146)	0.123 (0.119)
29	Adani Ports and Special Economic Zone Ltd.	11.786 - 4.579 (DE) + 0.836 (ICR) (0.009)* (0.022)*	0.396 (0.004)*
30	Adani Green Energy Ltd.	0.905+ 0.545 (DE) + 1.117 (ICR) (0.126) (0.377)	0.098 (0.153)

*All these values are significant as p-value is $\leq$ 0.05. The p-values are parentheses.
Source: data collected from annual reports and values calculated through MS Excel and SPSS

It can be inferred from the results of table 5 that the two independent variables representing the capital structure could not reveal a significant variability of Return on Capital Employed for 9 out of the 30 companies, as the p-value for the same are greater than 0.05. The said companies are Tata Power Co. Ltd, (0.071), Shree Cement Ltd, (0.956), Samvardhana Motherson International Ltd. (0.239), Indus Towers Ltd (0.091), Godrej Properties Ltd. (0.485), Cummins India Ltd. (0.104), Apollo Hospitals Enterprise Ltd. (0.387), Ambuja Cements Ltd.(0.119) and Adani Green Energy Ltd. (0.153). For the remaining 21 companies, the multiple regressions equation explains the significant level of variability on the Return on Capital Employed of the companies. The regression model fits the most with CG Power and Industrial Solutions Ltd, Max Healthcare Institute Ltd. and Hindustan Petroleum Corporation Ltd. with adjusted R^2 as 0.902, 0.782 and 0.768 respectively. On the other hand, the model fits poorly on Shree Cement Ltd and Godrej Properties Ltd with -0.105 and -0.025 adjusted R^2 respectively. Interest Coverage Ratio is statistically significant in 21 companies out of 30 companies. It can be concluded that the regression model fits significantly in 70% of the companies in the Nifty Infra Index.

Table 6: Multiple Regression Analysis between Debt/Equity Ratio & Interest Coverage Ratio and Return on Assets for Nifty Infra Companies

Sr. No.	Name of the Company	Multiple Regression Equation	Adjusted R^2 (p-Value)
1	Ultra Tech Cement	0.340 + 2.380 (DE)+0.106(ICR) (0.137) (0.000)*	0.666 (0.000)*

2	Tata Power Co. Ltd.	-1.549+1.718(DE)+1.427(ICR) (0.312) (0.011)*	0.235 (0.035)*
3	Siemens Ltd.	7.678 + 0 (DE) + 0.006 (ICR) (0.769)	-0.503 (0.768)
4	Shree Cement Ltd.	9.606+0.401(DE)-0.057(ICR) (0.805) (0.792)	-0.102 (0.931)
5	Samvardhana Motherson International Ltd.	7.692+0.268(DE)+0.186(ICR) (0.905) (0.374)	-0.062 (0.665)
6	Reliance Industries Ltd.	-0.563+4.240(DE)+0.532(ICR) (0.320) (0.000)*	0.054 (0.000)*
7	Power Grid Corporation of India Ltd.	5.517-1.537(DE)+0.596(ICR) (0.002)* (0.000)*	0.680 (0.000)*
8	Oil & Natural Gas Corporation Ltd.	8.413-13.500(DE)+0.043(ICR) (0.078) (0.000)*	0.513 (0.001)*
9	NTPC Ltd.	8.342-3.420(DE)+0.124(ICR) (0.000)* (0.037)*	0.912 (0.000)*
10	Max Healthcare Institute Ltd.	0.09-11.073(DE)+0.380(ICR) (0.000)* (0.000)*	0.799 (0.000)*
11	Larsen & Toubro Ltd.	3.112+9.086(DE)+0.058(ICR) (0.010)* (0.566)	0.271 (0.022)*
12	InterGlobe Aviation Ltd.	1.103-0.108(DE) + 1.591 (ICR) (0.598) (0.021)*	0.234 (0.035)*
13	Indus Towers Ltd.	5.319+0.388(DE)+0.190(ICR) (0.968) (0.079)	0.075 (0.201)
14	Indian Oil Corporation Ltd.	2.536-1.644(DE)+0.613(ICR) (0.190) (0.000)*	0.837 (0.000)*
15	Indian Hotels Co. Ltd.	2.151-3.086(DE)+0.727(ICR) (0.400) (0.029)*	0.386 (0.005)*
16	Hindustan Petroleum Corporation Ltd.	1.714-0.625(DE) + 0.439 (ICR) (0.520) (0.000)*	0.728 (0.000)*
17	Grasim Industries Ltd.	-0.104 + 6.469 (DE) + 0.760 (ICR) (0.223) (0.000)*	0.702 (0.000)*
18	Godrej Properties Ltd.	3.153+1.039 (DE) + 0.007 (ICR) (0.443) (0.765)	-0.073 (0.731)
19	GAIL (India) Ltd.	8.995-4.748(DE) + 0.033 (ICR) (0.407) (0.297)	0.053 (0.238)

20	DLF Ltd.	2.641 -0.111(DE) + 0.223 (ICR) (0.400) (0.000)*	0.651 (0.000)*
21	Cummins India Ltd.	17.769-61.380 (DE) + 0.002 (ICR) (0.001)* (0.721)	0.411 (0.003)*
22	CG Power and Industrial Solutions Ltd.	4.554 + 10.098 (DE) + 0.038 (ICR) (0.001)* (0.120)	0.452 (0.002)*
23	Bharti Airtel Ltd.	5.442-7.466 (DE) +0.463 (ICR) (0.008)* (0.001)*	0.666 (0.000)*
24	Bharat Petroleum Corporation Ltd.	6.768 - 3.798 (DE) + 0.304 (ICR) (0.043)* (0.055)	0.552 (0.000)*
25	Bharat Forge Ltd.	5.456 - 1.968 (DE) + 0.411 (ICR) (0.235) (0.001)*	0.553 (0.000)*
26	Ashok Leyland Ltd.	1.602-3.356 (DE) + 3.012 (ICR) (0.172) (0.014)*	0.515 (0.001)*
27	Apollo Hospitals Enterprise Ltd.	2.633 - 0.571 (DE) + 0.819 (ICR) (0.827) (0.010)*	0.515 (0.001)*
28	Ambuja Cements Ltd.	5.459+27.280 (DE) + 0.123 (ICR) (0.031)* (0.180)	0.163 (0.078)
29	Adani Ports and Special Economic Zone Ltd.	13.178 - 6.656 (DE) + 0.136 (ICR) (0.000)* (0.646)	0.531 (0.000)*
30	Adani Green Energy Ltd.	0.082 + 0.027 (DE) -0.315 (ICR) (0.793) (0.410)	-0.068 (0.703)

*All these values are significant as p-value is <= 0.05. The p-values are parentheses.
Source: data collected from annual reports and values calculated through MS Excel and SPSS

It can be inferred from the results of table 6, that the two independent variables representing the capital structure could not reveal a significant variability of Return on Assets for 7 out of the 30 companies, as the p-value for the same are greater than 0.05.The said companies are Siemens Ltd. (0.768), Shree Cement Ltd., (0.931), Samvardhana Motherson International Ltd., (0.665), Godrej Properties Ltd., (0.731), GAIL India Ltd (0.238), Ambuja Cements Ltd., (0.078), Adani Green Energy Ltd.(0.703). For the remaining 23 companies, the multiple regressions equation explains the significant level of variability on the Return on Assets of the companies. The regression model fits the most with NTPC Ltd and Max Healthcare Institute Ltd.with adjusted R^2 being 0.912 and 0.799 respectively. The Interest Coverage ratio is statistically significant for 20 out of the 30 companies, with mostly positive relationships, while on the other hand, the Debt-Equity ratio is important for fewer companies and the relationship with Return on Assets is mostly negative. It can be concluded that the regression model fits significantly in more than 75% of the companies in the Nifty Infra Index.

Table 7: Multiple Regression Analysis between Debt/Equity Ratio & Interest Coverage Ratio and Net Profit per Share for Nifty Infra Companies

Sr. No.	Name of the Company	Multiple Regression Equation	Adjusted R^2 (p-Value)
1	Ultra Tech Cement	168.372−116.550(DE)−0.204(ICR) (0.005)* (0.937)	0.320 (0.012)*
2	Tata Power Co. Ltd.	-5.467-4.461(DE)+8.848(ICR) (0.414) (0.000)*	0.664 (0.000)*
3	Siemens Ltd.	27.160+ +0 (DE) + 0.060(ICR) (N/A) (0.552)	-0.0345 (0.552)
4	Shree Cement Ltd.	195.553-227.818(DE)+16.647(ICR) (0.000)* (0.028)*	0.546 (0.000)*
5	Samvardhana Motherson International Ltd.	4.565+0.155(DE)--0.065(ICR) (0.888) 0.520)	-0.083 (0.793)
6	Reliance Industries Ltd.	-2.496+50.240(DE)+5.057(ICR) (0.186) (0.000)*	0.583 (0.000)*
7	Power Grid Corporation of India Ltd.	322.102-96.160(DE)-35.763(ICR) (0.009)* (0.001)*	0.539 (0.000)*
8	Oil & Natural Gas Corporation Ltd.	12.444+184.792(DE)+0.183(ICR) (0.001)* (0.007)*	0.797 (0.000)*
9	NTPC Ltd.	8.970+5.240(DE)-0.237(ICR) (0.066) (0.431)	0.465 (0.001)*
10	Max Healthcare Institute Ltd.	0.049-6.776(DE)+0.342(ICR) (0.006)* (0.000)*	0.801 (0.000)*
11	Larsen & Toubro Ltd.	51.089+ 29.325 (DE)+ 0.321 (ICR) (0.321) (0.726)	-0.036 (0.532)
12	InterGlobe Aviation Ltd.	3548.768+290.770(DE)+270.207(ICR) (0.368) (0.786)	-0.061 (0.659)
13	Indus Towers Ltd.	-63.246+6246.013(DE)-5.230(ICR) (0.082) (0.887)	0.069 (0.212)
14	Indian Oil Corporation Ltd.	28.334-11.143(DE)+1.773(ICR) (0.568) (0.233)	0.132 (0.108)
15	Indian Hotels Co. Ltd.	1.734+0.129 (DE)+0.835(ICR) (0.987) (0.235)	0.021 (0.321)
16	Hindustan Petroleum Corporation Ltd.	33.207-6.301(DE)+2.657 (ICR) (0.734) (0.175)	0.180 (0.065)

17	Grasim Industries Ltd.	-19.207+103.773 (DE) + 10.508 (ICR) (0.038)* (0.000)*	0.853 (0.000)*
18	Godrej Properties Ltd.	9.444+7.078 (DE) -0.013 (ICR) (0.292) (0.911)	-0.037 (0.537)
19	GAIL (India) Ltd.	22.985+ 4.949 (DE) -0.044 (ICR) (0.791) (0.672)	-0.086 (0.812)
20	DLF Ltd.	17.387+2.626 (DE) - 0.582 (ICR) (0.547) (0.627)	-0.079 (0.770)
21	Cummins India Ltd.	25.358 - 0.589 (DE) + 0.019 (ICR) (0.995) (0.521)	-0.085 (0.807)
22	CG Power and Industrial Solutions Ltd.	4.223 + 6.028 (DE) + 0.008 (ICR) (0.033)* (0.729)	0.147 (0.092)
23	Bharti Airtel Ltd.	11.576- 19.794 (DE) + 1.000 (ICR) (0.111) (0.072)	0.292 (0.017)*
24	Bharat Petroleum Corporation Ltd.	35.911 - 10.168 (DE) + 2.747 (0.551) (0.070)	0.288 (0.018)*
25	Bharat Forge Ltd.	15.811 - 8.690 (DE) + 1.253 (ICR) (0.296) (0.037)*	0.291 (0.018)*
26	Ashok Leyland Ltd.	0.860 - 2.540 (DE) + 1.924 (ICR) (0.198) (0.044)*	0.418 (0.003)*
27	Apollo Hospitals Enterprise Ltd.	-10.855+ 21.807 (DE) + 7.154 (ICR) (0.554) (0.091)	0.119 (0.123)
28	Ambuja Cements Ltd.	7.533 - 5.502 (DE) + 0.051 (ICR) (0.279) (0.188)	0.117 (0.126)
29	Adani Ports and Special Economic Zone Ltd.	12.000 - 3.989 (DE) + 0.317 (ICR) (0.163) (0.598)	0.020 (0.322)
30	Adani Green Energy Ltd.	0.050 - 0.040 (DE) + 0.051 (ICR) (0.762) (0.917)	-0.105 (0.953)

*All these values are significant as p-value is <= 0.05. The p-values are parentheses.
Source: data collected from annual reports and values calculated through MS Excel and SPSS

It can be inferred from the results of table 7, that the two independent variables representing the capital structure could not reveal a significant variability of Net Profit per Share for 17 out of the 30 companies, as the p-value for the same are greater than 0.05. The said companies are Siemens Ltd. (0.552), Samvardhana Motherson International Ltd., (0.793), Larsen & Toubro Ltd. (0.532), InterGlobe Aviation Ltd. (0.659), Indus Towers Ltd. (0.212), Indian Oil Corporation Ltd. (0.108), Indian Hotels Co. Ltd. (0.321), Hindustan Petroleum Corporation Ltd. (0.065), Godrej Properties Ltd., (0.537), GAIL India Ltd (0.812) DLF Ltd (0.770), Cummins India Ltd., (0.807), CG Power and Industrial Solutions Ltd. (0.092), Apollo Hospitals Enterprise Ltd. (0.123), Ambuja Cements Ltd., (0.126), Adani Ports and Special Economic Zone Ltd. (0.322) and Adani Green Energy

Ltd.(0.953). For the remaining 13 companies, the multiple regressions equation explains the significant level of variability on the Net Profit per Share of the companies. The regression model fits the most with Max Healthcare Institute Ltd. and Grasims Industries with adjusted R^2 being 0.801 and 0.853 respectively. The Interest Coverage ratio is statistically positively associated with Net profit per Share for most of the companies. It can be concluded that the regression model fits significantly in more than 40% of the companies in the Nifty Infra Index.

Table 8: Multiple Regression Analysis between Debt/Equity Ratio & Interest Coverage Ratio Price/Net Operating Revenue for Nifty Infra Companies

Sr. No.	Name of the Company	Multiple Regression Equation	Adjusted R^2 (p-Value)
1	Ultra Tech Cement	4.779 −1.947(DE)−0.091(ICR) (0.002)* (0.024)*	03860 (0.005)*
2	Tata Power Co. Ltd.	0.201+2.338(DE)+0.426(ICR) (0.006)* (0.075)	0.294 (0.017)*
3	Siemens Ltd.	6.711+ 0(DE) -0.021(ICR) (0.059)*	0.138 (0.059)*
4	Shree Cement Ltd.	5.145-2.590(DE)+0.057(ICR) (0.004)* (0.490)	0.459 (0.001)*
5	Samvardhana Motherson International Ltd.	8.519--3.887(DE)--0.058(ICR) (0.041)* (0.721)	0.126 (0.115)
6	Reliance Industries Ltd.	3.589-0.593(DE)--0.131(ICR) (0.844) (0.102)	0.047 (0.252)
7	Power Grid Corporation of India Ltd.	0.484+0.193(DE)+1.144(ICR) (0.860) (0.001)*	0.422 (0.003)*
8	Oil & Natural Gas Corporation Ltd.	2.330-1.969(DE)+0.009(ICR) (0.421) (0.011)*	0.294 (0.017)*
9	NTPC Ltd.	2.931-1.473(DE)+0.109 (ICR) (0.016)* (0.091)	0.702 (0.000)*
10	Max Healthcare Institute Ltd.	2.240-26.166)DE)+1.477 (ICR) (0.048)* (0.000)*	0.685 (0.000)*
11	Larsen & Toubro Ltd.	3.315-2.981(DE)+0.003(ICR) (0.122) (0.962)	0.033 (0.287)
12	InterGlobe Aviation Ltd.	0.435+0.079 (DE)+0.179(ICR) (0.020)* (0.078)	0.231 (0.036)*
13	Indus Towers Ltd.	5.151-10.405(DE)+0.022(ICR) (0.230) (0.808)	-0.023 (0.472)
14	Indian Oil Corporation Ltd.	0.398-0.235(DE)+0.008(ICR) (0.015)* (0.215)	0.524 (0.000)*

15	Indian Hotels Co. Ltd.	8.672-7.766(DE)+0.744(ICR) (0.040)* (0.023)*	0.577 (0.000)*
16	Hindustan Petroleum Corporation Ltd.	0.136 - 0.034 (DE) + 0.006 (ICR) (0.134) (0.020)*	0.611 (0.000)*
17	Grasim Industries Ltd.	5.490 - 6.854 (DE) - 0.029 (ICR) (0.005)* (0.597)	0.354 (0.008)*
18	Godrej Properties Ltd.	33.159-13.792 (DE) -0.159 (ICR) (0.089) (0.237)	0.092 (0.163)
19	GAIL (India) Ltd.	1.937 - 2.900 (DE) - 0.012 (ICR) (0.006)* (0.037)*	0.306 (0.015)*
20	DLF Ltd.	17.598 -2.858 (DE) + 0.395 (ICR) (0.052) (0.311)	0.123 (0.119)
21	Cummins India Ltd.	4.121 - 7.364 (DE) + 0.003 (ICR) (0.580) (0.419)	-0.046 (0.580)
22	CG Power and Industrial Solutions Ltd.	1.874 + 0.341 (DE) + 0.023 (ICR) (0.396) (0.000)*	0.668 (0.000)*
23	Bharti Airtel Ltd.	1.987 + 2.628 (DE) + 0.093 (ICR) (0.011)* (0.036)*	0.279 (0.020)*
24	Bharat Petroleum Corporation Ltd.	0.187 - 0.063 (DE) + 0.011 (ICR) (0.121) (0.003)*	0.652 (0.000)*
25	Bharat Forge Ltd.	5.136 -2.913 (DE) + 0.168 (ICR) (0.073) (0.129)	0.304 (0.015)*
26	Ashok Leyland Ltd.	2.160- 1.094 (DE) - 0.0256 (ICR) (0.006)* (0.134)	0.287 (0.018)*
27	Apollo Hospitals Enterprise Ltd.	4.347- 4.349 (DE) + 0.427 (ICR) (0.438) (0.492)	0.130 (0.110)
28	Ambuja Cements Ltd.	4.959 - 3.929 (DE) - 0.026 (ICR) (0.191) (0.257)	0.021 (0.320)
29	Adani Ports and Special Economic Zone Ltd.	-11.942 + 9.566 (DE) + 4.256 (ICR) (0.101) (0.002)*	0.406 (0.004)*
30	Adani Green Energy Ltd.	1.950 + 3.351 (DE) + 4.275 (ICR) (0.018)* (0.375)	0.258 (0.027)*

*All these values are significant as p-value is <= 0.05. The p-values are parentheses.
Source: data collected from annual reports and values calculated through MS Excel and SPSS

It can be inferred from the results of table 8, that the two independent variables representing the capital structure could not reveal a significant variability of Price/Net Operating Revenue for 9 out of the 30 companies, as the p-value for the same are greater than 0.05.The said companies are Samvardhana Motherson International Ltd. (0.115), Reliance Industries Ltd. (0.252), Larsen &

Toubro Ltd. (0.287), Indus Towers Ltd. (0.472), Godrej Properties Ltd. (0.163), DLF Ltd. (0.119), Cummins India Ltd. (0.580), Apollo Hospitals Enterprise Ltd. (0.110), Ambuja Cements Ltd. (0.320). For the remaining 21 companies, the multiple regressions equation explains the significant level of variability on the Price/Net Operating Revenue of the companies. The regression model fits the most with Max Healthcare Institute Ltd. and Indian Hotels Co. Ltd. with adjusted R^2 being 0.685 and 0.577 respectively. The Interest Coverage ratio is statistically associated with Price/Net Operating Revenue for 17 of the companies while Debt -Equity ratio is statistically significant for 18 companies. It can be concluded that the regression model fits significantly in 70% of the companies in the Nifty Infra Index.

4.2 Correlation Analysis:

This section presents the results of the Correlation between Capital Structure (DEbt-Equity Ratio and Interest Coverage Ratio) and Profitability (Return on Equity, Return on Capital EMployed, Return on Assets, Net Profit per Share, Profit/Net operating Revenue) of the companies in NIFTY INFRA. The Correlation coefficient is calculated to assess the impact of capital structure on profitability as mentioned earlier.

Table9:Correlation Coefficient between all the Variables

	ROE	ROCE	ROA	NPS	PNOR	DE	ICR
ROE	1	0.103** (0.010)	0.172** (0.000)	0.066 (0.099)	-0.005 (0.891)	-0.800** (0.000)	0.023 (0.568)
ROCE	0.103** (0.010)	1	0.207** (0.000)	0.043 (0.282)	-0.050 (0.211)	-0.188** (0.000)	0.247** (0.000)
ROA	0.172** (0.000)	0.207** (0.000)	1	0.085* (0.033)	-0.047 (0.240)	-0.151** (0.000)	0.340** (0.000)
NPS	0.066 (0.099)	0.043 (0.282)	0.085* (0.033)	1	-0.053 (0.183)	0.267** (0.000)	-0.031 (0.436)
PNOR	-0.005 (0.891)	-0.050 (0.211)	-0.047 (0.240)	-0.053 (0.183)	1	0.039 (0.329)	0.010 (0.805)
DE	-0.800** (0.000)	-0.188** (0.000)	-0.151** (0.000)	0.267** (0.000)	0.039 (0.329)	1	-0.107** (0.007)
ICR	0.023 (0.568)	0.247** (0.000)	0.340** (0.000)	-0.031 (0.436)	0.010 (0.805)	-0.107** (0.007)	1
Source: data collected from annual reports and values calculated through MS Excel and SPSS							

The result of the correlations is presented in Table 9 above. It can be inferred from the table that there is a positive correlation between Interest Coverage Ratio and ROE (0.023), ROCE (0.247), ROA (0.340) and a negative correlation with PNOR (-0.010). While on the other hand, Debt-Equity has a negative correlation with ROE (-0.800), ROCE (-0.188) and ROA (-0.151).

5.   Conclusion:

In this study, 30 companies listed on the Indian Stock market forming the Nifty Infra Index were examined for the relationship between capital structure and profitability. The period covered for the study is from 2004-2005 to 2024-2025. There were two independent variables for the capital structure indicators, namely Debt-Equity Ratio and Interest COverage ratio and on the other hand five dependent variables for profitability measures, namely Return on Equity (ROE), Return on Capital Employed (ROCE), Return on Assets (ROA), Net Profit per Share (NPS), and Price to Net Operating Revenue (PNOR).

Employing the multiple regression model, the findings clearly depict that Interest Coverage Ratio has a statistically significant and positive relationship with profitability, specially with Return on Equity and Return on Capital Employed. The consistency of significance indicates that companies with higher Interest Coverage Ratio reflect a better and stronger operational efficiency and debt coverage capacity and as a result, a better financial performance. On the other hand, there is a predominantly negative relationship between the Debt-Equity Ratio and Profitability measures such as Return on Equity and Return on Assets. This clearly suggests that the risks of leveraging and increasing the debt in the capital structure of the companies outweigh the tax shield benefits from increasing such debt. Also, the overall poor model fit for Price to Net Operating Revenue and Net Profit per SHare suggests that there are multiple other factors such as environmental factors, free market factors, internal operational dynamics which also contribute to the profitability of the selected companies, other than the capital structure decisions.lone.

These findings are consistent with the expectations of the trade-off theory, which proposes an ideal debt level that strikes a balance between tax benefits and bankruptcy expenses, and the pecking order theory, which contends that businesses favor internal financing over external debt in order to avoid financial trouble. The study concludes with strong empirical support for the idea that capital structure has a major impact on business profitability in the Indian infrastructure industry, with greater interest coverage ratios and lower debt levels being associated with better financial performance. According to these views, infrastructure firms should strive to maximize their capital structure by reducing their exposure to debt and increasing their earnings before interest and taxes, which will increase their interest coverage. Long-term sustainability and better financial health may come from strategic capital structuring, which favors internal or equity funding.

6.   Suggestions:

It is suggested that the selected companies in the infrastructure sector should reassess their leverage strategies. The companies should adopt safer options and utilise other means of finance other than Debt. The companies should explore other options such as Public investments,

government investments and the government should also support more rewarding PPP models for better operational efficiencies of the said companies. More Sector specific policies are the need of the hour, in which the government has been very proactive and is in the process of developing and rolling out supportive policies which inturn shall facilitate the operational efficiency of the companies in various sectors.

Further studies can be made incorporating other economic and market based performance indicators to build a more comprehensive understanding on the relationship of the capital structure and profitability.

References:
1. Abor, J. (2005). The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. The journal of risk finance, 6(5), 438-445.
2. MYERS, S.C. (1984), The Capital Structure Puzzle. The Journal of Finance, 39: 574-592.
3. Panigrahi, A. K. (2012). Capital Structure & Leverage Analysis: A Case Study of Steel Authority of India Ltd.(SAIL). ASBM Journal of Management, 5(1).
4. Hasan, M. B., Ahsan, A. M., Rahaman, M. A., & Alam, M. N. (2014). Influence of capital structure on firm performance: Evidence from Bangladesh. International Journal of Business and Management, 9(5), 184.
5. 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.
6. Tailab, M. (2014). The effect of capital structure on profitability of energy American firms. International Journal of Business and Management Invention, 3(12).
7. Mazumder, D. B. (2017). The impact of capital structure on profitability of listed indian infrastructure companies. IOSR Journal of Business and Management (IOSR-JBM), 06-11.
8. MongaR. (2018)Impact of capital structure on profitability with special reference to Telecom Sector in India, International Journal of Creative Research Thoughts, 6(2), 394-400.
9. Kalyani, S., & Mathur, N. (2017). Impact of capital structure on profitability: With reference to select companies from the oil and natural gas industry of India. Inspira-J. Mod. Manag. Entrep, 7, 129-137.
10. Babbar, Alka & Singh, Netra. (2024). The Relationship between Capital Structure and Financial Performance of Cement Industry in India. 28. 59-77.
11. Vătavu, S. (2015). The impact of capital structure on financial performance in Romanian listed companies. *Procedia Economics and Finance*, *32*, 1314–1322.
12. Benyamin, P. L., & Soekarno, S. (2023). Capital structure determinants of public infrastructure companies in Indonesia. *International Journal of Current Science Research and Review*, *6*(2), 131–140.
13. Azhagaiah,R., &Gavoury,C.(2011).The Impact of Capital Structure on Profitability With Special Reference to IT Industry in India. Managing Global Transitions: International Research Journal, 9(4), 370-392.
14. Serrasqueiro, Zelia & Nunes, Paulo. (2008). Determinants of Capital Structure: Comparison of Empirical Evidence from the Use of Different Estimators. International Journal of Applied Economics. 5.