Impact of capital structure on financial performance and value of the firm

A Dissertation for

Course code and Course Title: **COM-651 Dissertation**

Credits: **16**

Submitted in partial fulfillment of Master of Commerce Degree

M.com

By

DIVYATA DHANRAJ HARMALKAR

Seat No: 14-2022

ABC ID: 535074652103

PRN: 201904835

Under the Supervision of

SR. PROF. Y.V. REDDY

Goa Business School

Commerce

GOA UNIVERSITY

Date: April 2024

DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation report entitled, "Impact of capital structure on financial performance and value of the firm" is based on the results of investigations carried out by me in the Master of Commerce program at the Goa Business School, Goa University under the Supervision of Senior Prof. Y.V. Reddy and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will be not be responsible for the correctness of observations / experimental or other findings given the dissertation.

I hereby authorize the University authorities to upload this dissertation on the dissertation repository or anywhere else as the UGC regulations demand and make it available to any one as needed.

Harmalkar

Date: 30/4/24

Place: Goa University

Divyata Harmalkar

Seat no: 14-2022

COMPLETION CERTIFICATE

This is to certify that the dissertation report **"Impact of Capital Structure on Financial Performance and Value of the Firm"** is a bonafide work carried out by **Ms Divyata Dhanraj Harmalkar** under my supervision in partial fulfilment of the requirements for the award of the degree of Master of Commerce in the Discipline **Commerce** at the **Goa Business School**, Goa University.

Date: 30/4/24

Senior Professor Y.V. Reddy

Goa Business School ★ Goa University ★

Signature of Dean of the School

School Stamp

Date: 30/4/24

Place: Goa University

ACKNOWLEDGMENT

First and foremost, I would like to thank God for enabling me to work efficiently, obtain the required information, and complete the dissertation in time.

It is an immense pleasure to submit my dissertation as a part of my curriculum of Master of Commerce. I take this great opportunity to express my sincere gratitude to all the people for their support directly or indirectly. Their willful contribution has helped in completion of this dissertation.

I would like to express a special word of gratitude to my guide, for his constant motivation and invaluable guidance, to bring forth this dissertation report in its present form.

It gives me a great pleasure to thank our guide Senior Prof. Dr. Y.V. Reddy for taking time out from his busy schedules and helping me in every way possible. This dissertation would not have been successful without his help and continuous guidance throughout.

Big thanks to my family and friends for being my pillar of strength and encouragement throughout this dissertation.

CONTENTS

TABLES

ABBREVIATIONS USED

Entity	Abbreviation
Business Risk	BR
Company Size	SIZE
Debt Ratio	DR
Fixed Effects Model	FEM
Growth	GROW
Liquidity	LIQ
Modigliani–Miller's Approach	MM
Net Income	NI
Net Operating Income	NOI
Non-debt tax shield	NDTS
Ordinary Least Squares	OLS
Profitability	PROF
Random Effects Model	REM
Return on Assets	ROA
Return on Equity	ROE
Tangibility	TANG
Tobins's Q	TQ
Variance Inflation Factor	VIF

ABSTRACT

Capital structure is a combination of equity and debt financing used by firms in order to maximize the market value of the company over time. This research seeks to study the determinants of capital structure and the impact of capital structure on the financial performance and firm value of Nifty 50 companies listed on the National Stock Exchange of India from 2014 – 2023.

Debt ratio is used as the measure for capital structure. Firm-specific variables such as growth, profitability, company size, business risk, liquidity, non-debt tax shields, and tangibility were considered as determinants of capital structure. Whereas ROA and ROE are used as the proxy for financial performance, and Tobin's Q is used as the proxy for firm value.

The data has been analysed by using descriptive statistics, correlation and panel data regression models. The study has revealed that size, growth, tangibility, and profitability have a significant impact on capital structure. The capital structure has a significant impact on ROA and an insignificant impact on ROE and Tobin's Q.

Keywords: Capital Structure, Firm Specific Determinants, Firm Performance, Firm Value, Panel Data

CHAPTER 1: INTRODUCTION

1.1 Background

Finance is the heart of a business, which helps the business to survive and expand for a longer period of time. Finance is a basic and essential element that is required for different types of activities throughout the business life. Whenever funding is needed for new projects or follow-up tasks, finance's main responsibility is to raise the necessary funds and add them to capital.

Capital is needed to start a new business, and additional capital is needed for the business to grow and expand. So, the total funds for the investment can be obtained from a variety of sources and in different forms. Businesses can finance their assets with debt or equity capital. The ideal option is a combination of both equity and debt capital (Narinder and Mahima, 2019). Capital structure means a combination of equity and debt financing used by firms around the globe to finance their assets (Mohit and Arti, 2021).

Capital structure is one of the important components of corporate finance. Financial leverage is another term used for capital structure. The percentage of equity and debt in the capital structure keeps on fluctuating between the companies over a period of time, depending on their financial decisions. So, the businesses can either decide to utilize a combination of both debt and equity together or bit higher proportion of debt up to 70% or all proportions of equity only in their capital structure.

The company issues common and preferred stock to raise equity, and it can raise debt through the issuance of loans payable, notes payable, debentures, bonds, etc. Equity holders are the owners of the firm, who have a long-term commitment to the firm that it will expand in the near future. Whereas, debt holders, on the other hand, are the company's creditors; they have no long-term commitment to the firm as they are more concerned with the timely repayment

of their interest and principal amount. A company's financial manager wants to invest cash for future projects, while shareholders are more concerned with regular dividend payments. Therefore, the financial manager of a company has a crucial role to play in designing the capital structure (Saurabh and Anil K, 2015)

A finance manager's main job while designing the perfect capital structure is to make sure that the total cost of capital is low in order to maximize the firm's value, shareholder wealth, and profitability of the company. An optimal capital structure helps the business for increasing the output and performance. If the capital structure decision is taken without proper care and attention, then it can lead to financial distress, insolvency etc.

Thus, Capital structure decision is one of the most important decisions taken by any firm. One of the important issues during the capital structure decision-making is to deal with the determination of optimal capital structure of the firm (Saurabh and Anil K, 2015). Hence, proper planning of the capital structure is necessary, bearing in mind the shareholders wealth and the success of the business.

Financial leverage is the ratio of debt and equity, which represents the connection between borrowed funds and the owner’s funds in a company's capital structure. It differs between businesses and sectors. Businesses that just have equity are referred to as "unlevered firms," whereas businesses that have both debt and equity are known as "levered firms. (Saurabh and Anil K, 2015).

Debt financing has several benefits, such as tax-deductible interest expenses and associated costs connected with financial distress. It also restricts the company's capacity to raise equity as well as its growth ability by putting the pressure of timely repayment of debt principal and interest amount. The benefits of equity financing include no fixed payment obligations, increased cash flows that support business growth, decision-making power within the

organization, and also, the cost of equity is higher than the cost of debt. Thus, the achievement of a company is significantly influenced by having an ideal capital mix. (Saurabh and Anil K, 2015)

1.2 Theoretical Framework

1) Net Income (NI) Approach

Net Income Approach was presented by David Durand. According to David Durand (1952) the Net Income (NI) approach is the relationship between leverage, cost of capital and value of the firm. This theory states that there is a relationship between capital structure and the value of the firm and therefore, the firm can affect its value by increasing or decreasing the debt proportion in the overall financing mix. It beliefs leverage as a base, here value of company depends upon leverage means if there is change in leverage then value of the company will also change.

2) Net Operating Income (NOI) Approach

The Net Operating Income (NOI) approach is opposite of the NI approach. It was developed by David Durand. According to David Durand (1952), the market value of the firm depends upon the net operating profit or EBIT and the overall cost of capital. The capital structure is irrelevant and does not affect the value of the firm. There is no relation between leverage and value of the firm.

3) Traditional Theory

The traditional approach states that the value of the firm increases with increase in financial leverage but only up to a certain limit. Beyond this limit, the increase in financial leverage will increase its weighted average cost of capital and hence the value of the firm will decline (Modigliani,F., & Miller,M.H.1958). Traditional theory is the combination of both net income and net operating income theory.

4) Modigliani–Miller's Approach (MM Theory): - Modigliani and Miller approach is similar to the Net Operating Income (NOI) approach. As per Modigliani and Miller (1958) the value of a firm is independent of its capital structure. It means that even if there is increase or decrease in debt capital still the value of the firm will remain constant under perfect capital market, investors homogenous expectations, tax free economy and no transaction costs. Thus, capital structure is irrelevant in determining firm value.

5) Agency Cost Theory: - The concept of agency costs in the firm model was introduced by (Berle and Means 1932), and later developed into the agency cost theory by (Jensen and Meckling 1976). According to Jensen and Meckling (1976) agency costs arise from conflicts of interest between shareholders, managers, and creditors of a firm based on the decisions made by management. The agency cost theory is based on the assumption that agents may not always act in the interest of the principals and it will lead to conflict of interest between agents with those of principals and results in loss in return to the principals.

6) Trade-Off Theory: - The capital structure trade-off theory was initiated by Kraus and Litzenberger (1973) explained that there exists an optimal capital structure where a firm value is maximized, can be attained by developing a balance or trade-off between the tax-free benefit of debt and the distress cost of debt.

7) Pecking Order Theory: - The pecking order theory, proposed by Myers and Majluf (1984), posits that firms have a preference for internal financing over external financing. According to this theory, businesses prioritize the use of retained earnings for investments, and only resort to external financing when necessary. In the pecking order theory, firms will first borrow, then issue bonds, and as a last resort, issue shares to meet their funding needs.

1.3 Research Gap

From the review of past studies, it is observed that the studies on the impact of capital structure on the financial performance and value of the firm have been carried out in developed markets, and few studies are focused on emerging markets like India. This study is comprehensive in nature, as previous studies have focused only on a single objective, whereas in this study we include determinants of capital structure, the impact of capital structure on financial performance, and the value of the firm all together. Most of the studies have been conducted on specific industries like manufacturing, the food and beverage industry, IT industries, automobiles, etc., but very few studies have been done on Nifty 50 companies in this area.

1.4 Statement of the Problem

In India, a few studies have been conducted to determine the impact of capital structure on financial performance and value of the firm. So, this study is an attempt to analyse and evaluate the impact of determinants on capital structure and the impact of capital structure on financial performance and value of the firm. Various and conflicting conclusions have been drawn from earlier relevant literature on the nature of association between the performance, factors, firm value and the capital structure of firms. This study strengthens the literature on the influence of capital structure on the company's value and performance in the Indian companies. Further, this study also sheds light upon the major factors that influence the capital structure in Indian firms. Studying all these aspects will help the financial manager to take appropriate decisions regarding the capital structure of the firm.

1.5 Research Objectives

1) To study the impact of determinants on capital structure of a firm.

2) To study the impact of capital structure on firm's financial performance.

3) To analyse the impact of capital structure on firm value.

1.6 Research Questions

1) Which determinants have an impact on capital structure?

2) Does capital structure influence financial performance of the firm?

3) How does capital structure influence firm value?

1.7 Research Hypotheses

H_0 :- There is no significant impact of determinants (Firm specific) on capital Structure.

H_1 :- There is a significant impact of determinants (Firm specific) on capital Structure.

H_0 :- There is no significant impact of capital structure on firm's Financial Performance.

H_1 :- There is a significant impact of capital structure on firm's Financial Performance.

H_0 :- There is no significant impact of capital structure on firm value.

H_1 :- There is a significant impact of capital structure on firm value.

1.8 Scope of the Study

Every corporate organization needs to make financial decisions. The financial manager of the company is responsible for calculating the right amount of debt, and it is necessary to carefully evaluate the effects of financial leverage to achieve the desired capital structure. So the current study intends to study the impact of capital structure on the financial performance and value of the firms in the Nifty 50 companies. The study's findings will be very helpful to corporate financial managers in creating the best possible capital structure, encouraging a balanced allocation of debt and equity, and enhancing the overall performance and value of the firm. These findings could be especially beneficial in helping enterprises make proper financial decisions regarding capital structure in developing countries like India.

1.9 Chapterisation Scheme

Chapter 1: Introduction

This chapter includes the background of the study including the concept of capital structure, theories of capital structure, Research Gap, Statement of the Problem, Objectives of the Study, Research questions, Hypothesis and Scope of the study.

Chapter 2: Literature Review

This chapter presents numerous related studies which have been researched in India and abroad to investigate the several aspects of capital structure of the various industries. It is mainly divided into three sub sections starting with review on determinants of capital structure, review of capital structure and firm performance and review of capital structure and firm value. These literatures are carefully examined in order to identify the gaps in the field and to understand the goals, methodologies, and conclusions of the studies.

Chapter 3: Research Methodology

This chapter includes period of the study, data collection sources, variables and techniques used in the study.

Chapter 4: Analysis and Conclusion

Lastly this chapter deals with the analysis and interpretation of the data done using the descriptive statistics, correlation analysis, unit root test and panel regression model. This chapter also includes the conclusion of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Literature review on determinants of capital structure

According to Anshu Handoo and Kapil Sharma (2014) factors like profitability, growth, asset tangibility, size, and cost of debt, tax rate, and debt serving capacity have significant impact on the leverage structure. Where by Saurabh Chadha and Anil K. Sharma (2015) found that size, age, asset tangibility, growth, profitability, non-debt tax shield, business risk, uniqueness and ownership structure have a strong correlation with the firm's financial leverage, but variables like dividend payout, liquidity, interest coverage ratio, cash flow coverage ratio (CFCR), inflation and GDP growth rate are insignificant in determining the capital structure. Mohit Pathak and Arti Chandani (2021) revealed that profitability, liquidity and non-debt tax shield are negatively associated whereas, company size, growth potential, age and tangibility are positively associated with the capital structure. Nur Ainna Ramlia, Hengky Latanb, et.all (2019) investigated how firm-specific variables and country- specific variables determine the capital structure and its effect on financial performance in Malaysia and Indonesia. In their research, they reported that asset structure, growth opportunities, liquidity, non-debt tax shield and interest rate are the attributes that were indirectly influenced by firm leverage on firm financial performance. Whereas Ajaya Kumar Panda and Swagatika Nanda (2019) found that firm-specific and macroeconomic variables have strong long-run equilibrium relationship with capital structure as a whole. Arindam Bandyopadhyay and Nandita Malini Barua (2016) discovered that the macroeconomic cycle has a major impact on the financial decisions made by companies and, consequently, on their performance. Aleksandra Stoiljkovi´c, Slavica Tomi´c et.all (2022) concluded that size, profitability, tangibility of assets, and risk are significant determinants of capital structure but in contrast to short-term and overall leverage, the size, profitability, and tangibility of assets have the opposite influence on long-term leverage. Rajni Sofat and Sukhdev Singh (2017) findings indicate that asset composition,

business risk and return on assets appear to be significant determinants of capital structure, while firm size and debt service capacity are insignificant determinants. Raja Rehan, Abdul Razak Abdul Hadi et.all (2023) indicate that the choices for capital structure determinants are different across sectors, but the entire market is primarily controlled by the total assets, which is significant in both construction and property sectors in Malaysia. Wherein Maria Psillaki, Nikolaos Daskalakis (2008) examined that size is positively related to leverage while the asset structure, profitability and risk is negatively related, whereas growth is not a statistically significant determinant of leverage. But according to Laura Serghiescua and Viorela-Ligia Văideanb (2014) profitability, tangibility and liquidity have a negative impact on leverage and on the other hand, the size of a company and its asset turnover has a positive correlation with leverage. Whereas, Poornima BG and Prof. Y.V. Reddy (2016) concluded that profitability, growth and tangibility significantly influence the financial leverage. Mohammad Alipour, Mir Farhad Seddigh Mohammadi et.all (2015) findings indicates that firm's size, financial flexibility, asset structure, profitability, liquidity, growth, risk and state ownership affect all measures of capital structure (short term debt ratio, long term debt ratio and total debt ratio).

2.2 Literature review on capital structure and firm performance

Capital structure is one of the important aspects among many that have a substantial impact on a firm's performance. Numerous empirical studies have been conducted to investigate the potential relationship or impact, whether it is positive, negative, or no relation between a firm's capital structure and performance.

According to Hariem Abdullah and Turgut Tursoy (2019) and Narinder Pal Singh and Mahima Bagga (2019) and Samuel Fosu (2013) capital structure has a significant positive impact on firm performance. Whereas, Mahfuzah Salim and Raj Yadav (2012) indicate that

Short-term debt (STD), long-term debt (LTD), and total debt (TD) are negatively correlated with return on asset (ROA), return on equity (ROE), and earning per share (EPS) but there is positive relationship between the growth and performance. While, according to Tobin's Q, there is a statistically significant positive correlation between long-term debt (LTD) and short-term debt (STD) and it also indicates that total debt (TD) has a substantial negative association with the company's performance. Saurabh Chadha and Anil K. Sharma (2015) found that financial leverage has no impact on the firm's financial performance parameters of return on asset and Tobin's Q but however, it is negative and significantly correlated with return on equity. While other independent variables like size, age, tangibility, sales growth, asset turnover and ownership structure are significant determinants of a firm's financial performance. Whereby, Sorana Vatavua (2015) results indicate that performance in Romanian companies is higher when they avoid debt and operate based on equity, wherein shareholders' equity has a positive impact on performance indicators, while total debt and short-term debt have negative relationships with ROA and ROE. Hirdinis M (2019) investigated that capital structure does not affect the profitability of the company. Whereas Hariandy Hasbi (2015) concluded that capital structure and growth together have a significant impact on profitability. Obumneme Renato Anozie et.all (2023) revealed that Long-term debt to total assets has a negative significant influence on return on assets, short-term debt to total assets and total debt to total equity had positive insignificant impact. But according to Thi Phuong Vy Le and Thi Bich Nguyet Phan (2017) found that capital structure is negatively affecting firm performance. Whereas, Nadeem Ahmed Sheikh and Zongjun Wang (2012) result indicate that all measures of capital structure (i.e. total debt ratio, long and short-term debt ratio) are negatively related to return on assets. Sunil M Rashinkar, Dr. Suchita Shukla et.all (2023) revealed that capital structure and investment significantly influence firm performance. Md Jahidur Rahman, Zhang Zhixuan et.all (2023) and Yusufjon Pulatov (2023) found that there is

a significant negative relationship between debt and profitability. Whereby, Kwadwo Ankomaha, Frederick Akpali Samenab et.all (2023) concluded that capital structure has a significant impact on the financial performance. Yohanes Amir (2023) findings indicate that profitability and liquidity has a significant effect on the capital structure. Clara Arisany Lasol , Steven Siaila et.all (2023) concluded that the liquidity has a positive and significant effect, the capital structure has a negative and insignificant effect, but simultaneous together have a positive effect on the profitability.

2.3 Literature review on capital structure and firm value

According to Thi Ngoc Bui, Xuan Hung Nguyen et.all (2023) the debt ratio has a positive impact on all three firm value indicators (ROA, ROE and Tobin's Q), in which the strongest impact is on Tobin's Q but however, the long-term debt ratio does not significantly affect firm value. Interestingly, both short-term and long-term debt ratios have negative effects on ROA, ROE, and Tobin's Q. Samuel Dunant Siregar, Nagian Toni, et.all (2023) found that dividend policy and profitability positively influence the firm's value, while the capital structure variable does not have a significant effect on Firm value. Whereby Xuan Vinh Voa and Craig Ellis (2017) indicate a negative relation between leverage and cumulative abnormal returns . They also reported that low levered firm are likely to create value for shareholders. Obaid Ur Rehman (2016) concluded that firms using more debt can create more worth but up to a fix limit which congruence with the total debt to total assets coefficient value. It also suggested that sales growth and boosting shareholder's wealth can create firm value but the study exposes that fixed assets turnover has no impact on firm value and Earning per share of any firm can create its respective firm value. Whereas Samuel Antwi, Ebenezer Fiifi Emire Atta Mills et.all (2012) reveals that, equity capital as a component of capital structure is relevant to the value of a firm, and Long-term-debt was also found to be the major determinant of a firm's value. Nguyen Thanh Cuong and Nguyen Thi Canh (2012) examined that the

relationship between leverage and firm value has a nonlinear relationship. Whereas, Duc Huu LUU (2021) concluded that the capital structure of firms has an inverse correlation with firm value. And Divya Aggarwal and Purna Chandra Padhan (2017) found that there is a significant relationship of firm value with firm quality and leverage. Habibu Ayuba, Abdu Ja'afaru Bambale, et.all (2019) revealed that capital structure, firm size and financial performance have both positive and negative effects on the firms' value. Wherein Nenggar Bestariningrum (2015) concluded that capital structure and firm size simultaneously have positive and significant effect on firm value.

CHAPTER 3: RESEARCH METHODOLOGY

In this study, the emphasis is on the effect of capital structure on the financial performance and value of the firm of Nifty 50 companies listed on the National Stock Exchange of India.

3.1 Data Source:

The data is collected from the CMIE ProwessIQ. But missing data of one company was downloaded from moneycontrol website. Out of 50 companies only 31 companies are considered because of the missing data of sales and debt.

3.2 Period of Study:

The study encompasses a span of last ten years, from 2014 to 2023.

3.3 Variables used in the Study:

The variables included in this study for the impact of determinants on capital structure of a firm are, the dependent variable is taken as debt ratio and Independent Variables are Profitability, Growth, Company size, Tangibility, Liquidity, Business risk and Non debt tax shield.

Model 1:

$$DR_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 TANG_{it} + \beta_3 BR_{it} + \beta_4 PROF_{it} + \beta_5 GROW_{it} + \beta_6 LIQ_{it} + \beta_7 NDTS_{it} + \varepsilon_{it}$$

Whereas, the variables for the impact of capital structure on firm's financial performance are, the dependent variables are ROA and ROE. Wherein independent variable is debt ratio with control variables like Profitability, Growth, Company size, Tangibility, Liquidity, Business risk and Non debt tax shield.

Model 2:

$$ROA_{it} = \alpha + \beta_1 DR_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 BR_{it} + \beta_5 PROF_{it} + \beta_6 GROW_{it} + \beta_7 LIQ_{it} + \beta_8 NDTS_{it} + \varepsilon_{it}$$

Model 3:

$ROE_{it} = \alpha + \beta_1 DR_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 BR_{it} + \beta_5 PROF_{it} + \beta_6 GROW_{it} + \beta_7 LIQ_{it} + \beta_8 NDTS_{it} + \varepsilon_{it}$

Wherein, the variables for the impact of capital structure on firm value are, the dependent variables is Tobin's Q and independent variable is debt ratio with control variables like Profitability, Growth, Company size, Tangibility, Liquidity, Business risk and Non debt tax shield.

Model 4:

$TQ_{it} = \alpha + \beta_1 DR_{it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_4 BR_{it} + \beta_5 PROF_{it} + \beta_6 GROW_{it} + \beta_7 LIQ_{it} + \beta_8 NDTS_{it} + \varepsilon_{it}$

Where, DR = Debt ratio, ROA = Return on assets, ROE = Return on equity, TQ = Tobins's Q ratio, SIZE = Company Size, TANG = Tangibility, BR = Business risk, PROF = Profitability, GROW = Growth, LIQ = Liquidity, NDTS = Non-debt tax shield, ε = error term and α = Intercept.

Table 3.1: List of Companies

Sr no.	Company Name	Sr no.	Company Name
1	Adani Enterprises Ltd.	17	Maruti Suzuki India Ltd.
2	Adani Ports & Special Economic Zone Ltd.	18	N T P C Ltd.
3	Apollo Hospitals Enterprise Ltd.	19	Nestle India Ltd.
4	Asian Paints Ltd.	20	Power Grid Corpn. Of India Ltd.
5	Bajaj Auto Ltd.	21	Reliance Industries Ltd.
6	Bharat Petroleum Corpn. Ltd.	22	Sun Pharmaceutical Inds. Ltd.
7	Bharti Airtel Ltd.	23	Tata Consultancy Services Ltd.
8	Britannia Industries Ltd.	24	Tata Consumer Products Ltd.
9	Dr. Reddy'S Laboratories Ltd.	25	Tata Motors Ltd.
10	Grasim Industries Ltd.	26	Tata Steel Ltd.
11	H C L Technologies Ltd.	27	Tech Mahindra Ltd.
12	Hindalco Industries Ltd.	28	Titan Company Ltd.
13	I T C Ltd.	29	U P L Ltd.
14	J S W Steel Ltd.	30	Ultratech Cement Ltd.
15	Larsen & Toubro Ltd.	31	Wipro Ltd.
16	Mahindra & Mahindra Ltd.		

Table 3.2: List of variables used in this study

Variables	Ratio	Adapted from
Debt Ratio	Total Debt / Total Assets	Mahfuzah Salim and Raj Yadav (2012), Thi Phuong Vy Le and Thi Bich Nguyet Phan (2017) and Nadeem Ahmed Sheikh and Zongjun Wang (2012)
Growth	Change in Sales	Mohit Pathak and Arti Chandani (2021)
Company Size	Natural Logarithm of Total Assets	Mohit Pathak and Arti Chandani (2021), Saurabh Chadha and Anil K. Sharma (2015) and Mohammad Alipour, Mir Farhad Seddigh Mohammadi et.all (2015)
Tangibility	Net Fixed Assets / Total Assets	Mohit Pathak and Arti Chandani (2021), Saurabh Chadha and Anil K. Sharma (2015) and Poornima BG and Prof. Y.V. Reddy (2016)
Liquidity	Total Current Assets / Total current liabilities	Mohit Pathak and Arti Chandani (2021), Saurabh Chadha and Anil K. Sharma (2015), Poornima BG and Prof. Y.V. Reddy (2016) and Mohammad Alipour, Mir Farhad Seddigh Mohammadi et.all (2015)
Business Risk	% Change in EBIT / % Change in Net Sales	Saurabh Chadha and Anil K. Sharma (2015) and Narinder Pal Singh and Mahima Bagga (2019)
Non- Debt Tax Shield	Depreciation / Total Assets	Poornima BG and Prof. Y.V. Reddy (2016)
Tobin's Q	Market Value / Total Assets	Saurabh Chadha and Anil K. Sharma (2015)
Profitability	Net Profit Margin	
ROA	Return on Total Assets	
ROE	Return on Net Worth	

Source:-Authors Compilation

Variables Definition:

Profitability

The amount of profit that a business makes is referred to as its profitability, which is a crucial indicator of its financial health and success. Profitability is the financial benefit that is realized when the amount of revenue gained from a business activity exceeds the expenditure, costs, and taxes needed to sustain the activity. (Anshu Handoo and Kapil Sharma,2014) It is assumed that higher the profit earned by the firm would result in higher retained earnings and ultimately firms would use lesser debt funds and vice-versa.

Growth

The another determinant that influences the capital structure decision of the firms is growth. Growth refers to the expansion and development of the business over time. Firms with high growth options and high cash flow volatility have incentives to decrease debt in their capital structure over a period of time and also higher the sales growth rate better will be the performance of the firm.

Company size

Size of the firm also acts as an influential factor in the financing decision of the company. Larger the size, more stable is the cash flow and easier excess to the capital market. However, it's not quite the same for small businesses. In contrast to the small size firms, financial distress risk is lower for large size firms. (Poornima and Y.V. Reddy, 2016)

Tangibility

Asset tangibility refers to all types of tangible assets that possess some degree of debt capacity. High levels of tangible assets provide businesses with the opportunity to raise larger amounts of debt by utilizing those assets as security.

Liquidity

Another element influencing the capital structure is liquidity. The capacity to quickly turn an asset into cash is known as liquidity. In other words, it's a measure of how quickly and easily an asset can be bought or sold in the market. A company's risk of bankruptcy will decrease as its liquidity increases and this will raise confidence of investors in the company.

Business risk

Any unfavorable incident that has the ability to maximize a business's loss and minimize its gains is referred to as business risk. It states that there will be a higher likelihood of both business failure and bankruptcy if the company's earnings are less consistent. Hence companies with higher business risk may prefer lower debt levels to reduce the risk of financial distress.

Non- debt tax shield

A non-debt tax shield refers to any tax-deductible expense other than interest payments on debt. It represents a way for a company to reduce its taxable income and, consequently, its tax liability. Non-debt tax shields are valuable to companies because they can reduce the overall cost of capital. By reducing taxable income, these tax shields effectively lower the amount of taxes a company owes, increasing its after-tax cash flow. This, in turn, can improve a company's financial performance and make it more attractive to investors.

Debt ratio

The debt ratio is a financial metric used to assess a company's financial leverage. It essentially tells you what proportion of a company's assets are financed through debt compared to its total assets. A higher debt ratio indicates that a company has more debt relative to its assets, which can increase financial risk. Conversely, a lower debt ratio suggests that a company relies more on equity financing. .

Return on assets

Return on assets (ROA) is a profitability ratio that provides how much profit a company is able to generate from its assets. A higher ROA indicates that the company is more efficient in generating profit from its assets, while a lower ROA suggests that the company is less efficient.

Return on equity

Return on equity (ROE) is a financial ratio that measures a company's profitability by calculating how much profit it generates relative to its shareholders' equity. A higher ROE indicates that a company is more efficient in generating profit from its equity, while a lower ROE suggests lower profitability.

Tobin's Q

Tobin's Q is a ratio that compares the market value of a company to the replacement cost of its assets. Tobin's Q is used in finance and economics as a measure of investment efficiency and market valuation.

3.4 Techniques and Tools:

Descriptive Statistics, Correlation analysis, Unit root test, Panel data regression analysis such as pooled OLS method, fixed effects and random effects methods are used for the analysis of the data. Moreover tests like, the Breusch pagan LM-test and the Hausman test are used to establish as to which model is appropriate one. To analyze data, E-Views software has been used.

CHAPTER 4: DATA ANALYSIS AND CONCLUSION

The data set comprises of 310 observations, of only 31 companies under nifty 50 from 2014 to 2023. The results of objective one that is impact of determinants on capital structure are presented below.

4.1 Data analysis on determinants of capital structure

Before running the analysis we need to check if the data is free from autocorrelation, heteroskedasticity and multicollinearity problem. The results of the autocorrelation test show that, the Durbin-Watson test value is 0.495355, which is less than 1.50. So it can be concluded that there is autocorrelation in the model. So the HAC test is used to remove the autocorrelation. The results of the heteroskedasticity test, indicates that the data set has homoskedasticity. As the prob. Chi square value is greater than 0.05. Then, under first objective, seven independent variables have been taken. The results show that no independent variables have Variance Inflation Factor (VIF) values greater than 10 (VIF <10). So it indicates that there is no multicollinearity between independent variables, and all the variables are eligible for running a regression equation.

4.1.1 Descriptive Statistics

Table 4.1: Descriptive Statistics

	Debt Ratio	Business Risk	Growth	Liquidity	Company Size	Tangibility	Profitability	NDTS
Mean	0.177958	0.158028	0.127092	1.484516	10.72241	0.282468	0.109461	0.026777
Median	0.146515	0.985607	0.100821	1.2840000	10.85970	0.269882	0.096650	0.023894
Std. Dev.	0.163036	17.03473	0.229263	0.899737	1.271887	0.164904	0.104399	0.016057
Skewness	0.765001	4.754938	3.135291	1.432223	0.029733	0.413016	0.039216	1.458066
Kurtosis	2.600439	49.64428	22.23186	6.228955	2.546061	2.260867	7.508919	7.349640

Jarque-Bera	32.29883	29270.80	5285.301	240.6530	2.707296	15.87003	262.6798	354.2163
Probability	0.000000	0.000000	0.000000	0.000000	0.258296	0.000358	0.000000	0.000000
Observations	310	310	310	310	310	310	310	310

Source:-Authors Compilation

The Descriptive statistics provides the mean, median, maximum, minimum, standard deviation, kurtosis, skewness and Jarque Bera probability value for each dependent and independent variables, which are presented in above Table 4.1. All the variables in the table are positively skewed. Here, only company size is normally distributed and all other remaining variables are not normally distributed since their Jarque Bera probability value is less than 0.05. Some variables are platykurtic in nature as their kurtosis value is less than 3 and some variables are leptokurtic in nature as their kurtosis value is greater than 3. Based on the above table we can figure out that the mean of debt ratio is 0.177, its median is 0.146 and standard deviation is 0.163. The mean of business risk is 0.158, its median is 0.985 and standard deviation is 17.034. Then the mean value of growth is 0.127, median is 0.1008 and standard deviation is 0.229. For liquidity the mean is 1.4845, median is 1.2800 and standard deviation is 0.8997. Size has the highest mean value that is 10.722, with 10.859 as median and 1.2718 as its standard deviation. While tangibility has 0.2824 as mean, 0.2698 as median and 0.1649 as standard deviation. The mean value of profitability is 0.1094, its median is 0.0966 and its standard deviation is 0.1043. And the mean value of non-debt tax shield is 0.0267, with 0.0238 of its median and 0.0160 as its standard deviation.

4.1.2 Correlation Analysis

Table 4.2: Correlation Analysis

	Debt Ratio	Growth	Liquidity	Risk	Profitability	Tangibility	Size	NDTS
Debt Ratio	1.000000							
Growth	-0.0672055	1.000000						
Liquidity	-0.5175152	-0.044134	1.000000					
Risk	- 0.0897694	-0.003302	0.1068094	1.000000				
Profitability	-0.0992832	-0.022763	0.42646755	0.22760407	1.000000			
Tangibility	0.45483430	-0.0563029	-0.3366919	-0.0180969	-0.0586785	1.000000		
Size	0.35975069	-0.025172	-0.231166	-0.0601800	0.05085253	0.4522205	1.000000	
NDTS	0.06461329	-0.064937	-0.232680	-0.0441419	-0.1617391	0.58590906	0.2397289	1.00000

Source:-Authors Compilation

A connection among two variables is known as correlation. So the results of the above correlation matrix show that the debt ratio is positively correlated with tangibility, size, and non-debt tax shield, whereas it is negatively correlated with growth, liquidity, risk, and profitability. It means that the tangibility, size, and non-debt tax shield will all rise in line with the debt ratio. However, growth, liquidity, risk, and profitability will all decline as the debt ratio increases. Liquidity shows a low degree of negative relationship with tangibility, size, and the non-debt tax shield, whereas it shows a positive relation with risk and

profitability. Risk indicates a very low negative correlation with tangibility, size, and the non-debt tax shield, while shows a low degree of positive correlation with profitability. Profitability shows a negative relationship with tangibility and the non-debt tax shield, wherein it shows a very low positive correlation with size. Then, tangibility indicates a positive relation with size and the non-debt tax shield, and size is also positively correlated with the non-debt tax shield. Growth is negatively correlated and has a very low degree of correlation with all the variables in the present study.

4.1.3 Unit root test

Table 4.3: Unit root Test

Null Hypothesis	**Probability**	**Null Hypothesis**	**Probability**
Debt ratio has a unit root	0.0000	Risk has a unit root	0.0041
Growth has a unit root	0.0000	Size has a unit root	0.0000
Liquidity has a unit root	0.0000	Tangibility has a unit root	0.0022
NDTS has a unit root	0.0029	ROA has a unit root	0.0310
Profitability has a unit root	0.0007	ROE has a unit root	0.0355
Tobin's Q has a unit root	0.0001		

Source:-Authors Compilation

Prior to performing regression analysis, it is essential to check if all the variables are stationary or not. So, the stationarity of the data is checked by the Augmented Dickey-Fulller test. If the p-value is less than 0.05, it means that the variable is stationary. Here, growth, liquidity, profitability, risk, tangibility, ROA, and ROE are stationary at level. Whereas, debt ratio, non-debt tax shield, and Tobin's Q are stationary at the 1^{st} difference, and size is found to be stationary at the 2^{nd} difference. We therefore draw the conclusion that, at the 5 per cent significance level, all the variables are stationary.

4.1.4 Regression Analysis

To present a most relevant analysis of the factors affecting a company's capital structure, the three most popular models that are commonly used for panel data approaches were evaluated: the Pooled Ordinary Least Squares model (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM). So to choose an accurate model among the three, tests such as the, the Breusch-Pagan LM test, and Hausman test were applied for the appropriate results.

Initially, the pooled OLS approach was applied to the model. Then, to check whether pooled OLS is appropriate or not, the Breusch pagan LM test was used. The Breusch pagan LM test indicates that the p-value is less than 0.05, so used the REM and FEM models.

Then the REM model was performed. Afterwards, to find out whether a random effect or fixed effect model is more appropriate, the Hausman test was used. Since the p-value is less than 0.05, the Hausman test results indicated that the fixed effect model is the most appropriate one.

Since the fixed effect model is suitable, the results of FEM are displayed below in Table 4.4.

Table 4.4: Regression Analysis

	OLS	**REM**	**FEM**
CONSTANT	0.080698 (0.2236)	-0.078717 (0.3778)	-0.049689 (0.6242)
GROWTH	-0.055821 (0.0668)	-0.048764 (0.0009)	-0.046591 (0.0016)
LIQUIDITY	-0.080161 (0.000)	-0.026685 (0.0001)	-0.020930 (0.0036)
PROFITABILITY	0.105557 (0.1711)	-0.213286 (0.0001)	-0.230115 (0.000)
RISK	-0.000542 (0.1963)	0.0000913 (0.6477)	0.000111 (0.5776)
SIZE	0.016586 (0.0080)	0.029995 (0.0002)	0.027350 (0.0038)

TANGIBILITY	0.428416 (0.0000)	0.099421 (0.0617)	0.040371 (0.4703)
NDTS	-3.247983 (0.000)	-0.891751 (0.0685)	-0.554616 (0.2780)
R2	0.455559	0.173020	0.896781
F Statistics	36.09968	9.026319	63.86923
Breusch Pagan LM Test	(0.0000)		
Hausman Test		Chi-square(7) =0.0008	

Source:-Authors Compilation

According to the results of fixed effect model, growth has a negative (0.046591) and significant 0.0016 impact on debt ratio. Similarly, liquidity and profitability has a negative (0.020930), (0.230115) and significant 0.0036, 0.0000 impact on debt ratio. Whereas, non-debt tax shield has a negative (0.554616) and insignificant 0.2780 impact on debt ratio. Risk and tangibility has a positive 0.000111, 0.040371 and insignificant 0.5776, 0.4703 impact on debt ratio. Wherein size has a positive 0.027350 and significant 0.0038 impact on capital structure. This indicates that for every unit change in size, the value of debt ratio is expected to increase by 0.027350. Hence, we reject the null hypotheses and accept the alternative hypotheses that the determinants have a significant impact on capital structure.

Its R square is 0.8967 states how well all the independent variables can explain the impact on the capital structure. The adjusted R square is 0.882. The R square value is 0.8967, which is greater than 60%, so better will be the model.

4.2 Data analysis on capital structure and financial performance (ROA)

Then the results of objective two that is impact of capital structure on financial performance are presented below relating to ROA as a performance indicator.

The results of the autocorrelation test show that the Durbin-Watson test value is 0.512773, which is less than 1.50. So it can be concluded that there is autocorrelation in the model. And also, the results of the heteroskedasticity test, indicate that the data set has heteroskedasticity. As the prob. Chi square value is less than 0.05. So, both autocorrelation and heteroskedasticity were removed through the HAC test.

Here, under the second objective, eight independent variables have been taken. The results show that no independent variables have Variance Inflation Factor (VIF) values greater than 10 (VIF <10). So it indicates that there is no multicollinearity between independent variables, and all the variables are eligible for running a regression equation.

4.2.1 Descriptive Statistics

Table 4.5: Descriptive Statistics

	ROA	Debt Ratio	Business Risk	Growth	Liquidity	Size	Tang.	Prof.	NDTS
Mean	0.094490	0.177958	0.158028	0.127092	1.484516	10.72241	0.282468	0.109461	0.026777
Median	0.065350	0.146515	0.985607	0.100821	1.2840000	10.85970	0.269882	0.096650	0.023894
Std. Dev.	0.083854	0.163036	17.03473	0.229263	0.899737	1.271887	0.164904	0.104399	0.016057
Skewness	0.770054	0.765001	4.754938	3.135291	1.432223	0.029733	0.413016	0.039216	1.458066
Kurtosis	3.206712	2.600439	49.64428	22.23186	6.228955	2.546061	2.260867	7.508919	7.349640
Jarque-Bera	31.18937	32.29883	29270.80	5285.301	240.6530	2.707296	15.87003	262.6798	354.2163
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.258296	0.000358	0.000000	0.000000
Observations	310	310	310	310	310	310	310	310	310

Source:-Authors Compilation

The above table 4.5 presents the mean, median, maximum, minimum, kurtosis, skewness and jarque-bera probability for all the variables, derived using descriptive statistics. In this case, all the variables are positively skewed. The sole normally distributed variable in this case is the size of the company; the other variables are not, as their Jarque Bera probability value is less than 0.05. By looking at the preceding data we can determine that the mean of ROA is 0.094, median is 0.065 and standard deviation is 0.0838. While the debt ratio's mean is 0.1779, median is 0.146, and standard deviation is 0.163. Business risk has a mean of 0.158, a median of 0.985, and a standard deviation of 17.034. The growth value then has a mean of 0.127, a median of 0.1008, and a standard deviation of 0.229. The standard deviation is 0.8997, the median is 1.2800, and the mean is 1.4845 for liquidity. The largest mean value is 10.722 for size, with a median of 10.859 and a standard deviation of 1.2718. The standard deviation, mean, and median for tangibility are 0.1649, 0.2824, and 0.2698 respectively. Profitability has a mean value of 0.1094, a median of 0.0966, and a standard deviation of 0.1043. Additionally, the mean value of non-debt tax shield is 0.0267, with a standard deviation of 0.0160 and a median value of 0.0238.

4.2.2 Correlation analysis

Table 4.6: Correlation analysis

	ROA	**Debt Ratio**	**Growth**	**Liquidity**	**NDTS**	**Profitability**	**Risk**	**Size**	**Tang.**
ROA	1.000000								
Debt Ratio	-0.6062014	1.000000							
Growth	0.0358509	-0.0672055	1.000000						

Liquidity	0.5962922	-05175152	-0.04413	1.000000					
NDTS	-0.0628619	0.0646132	-0.06493	-0.232680	1.000000				
Profitability	0.5697475	-0.099283	-0.02276	0.4246755	-0.161739	1.000000			
Risk	0.1455926	-0.089769	0.003302	0.1068094	-0.044141	0.22760407	1.000000		
Size	-0.1345767	0.3597506	-0.02517	-0.231166	0.2397289	0.05085253	-0.0601	1.000000	
Tangibility	-03167241	0.4548343	-0.05630	-0.336691	0.5859090	-0.058678	-0.0180	0.45222056	1.0000

Source:-Authors Compilation

As shown in the above table, ROA is positively correlated with growth, liquidity, profitability, and risk while it is negatively correlated with debt ratio, non-debt tax shield, size and tangibility. It means that the debt ratio, tangibility, size, and non-debt tax shield will all decline as the ROA increases. However, growth, liquidity, risk, and profitability will all increase as the ROA increases. The debt ratio is positively correlated with tangibility, size, and non-debt tax shield, whereas it is negatively correlated with growth, liquidity, risk, and profitability. Liquidity shows a low degree of negative relationship with tangibility, size, and the non-debt tax shield, whereas it shows a positive relation with risk and profitability. A non-debt tax shield indicates a negative relation with profitability and risk while shows positive relation with size and tangibility. Profitability shows a very low negative relationship with tangibility, wherein it shows a positive correlation with size and risk. Risk indicates a very low negative correlation with tangibility and size. Wherein size is positively correlated with the tangibility. Growth is negatively correlated and has a very low degree of correlation with all the variables in the present study.

4.2.3 Regression Analysis

To provide a most relevant analysis of the capital structure affecting financial performance of the firm, the Pooled Ordinary Least Squares model (OLS), Fixed Effects Model (FEM), and Random Effects Model (REM) are the three most often used models for panel data techniques. Thus, tests like the Hausman test and the Breusch-Pagan LM test were used in order to select an accurate model among the three.

The model was initially subjected to the pooled OLS technique. Next, the Breusch pagan LM test was performed to determine the suitability of pooled OLS. Then employed the FEM and REM models since the Breusch pagan LM test shows that the p-value is less than 0.05.

Next, the REM model was used. The Hausman test was then applied to determine whether a fixed effect model or a random effect model is more suitable. The fixed effect model is the most suitable, according to the Hausman test results, since the p-value is less than 0.05.

The results of the FEM are shown in Table 1 below since the fixed effect model is appropriate.

Table 4.7: Regression Analysis

	OLS	**REM**	**FEM**
CONSTANT	0.017589 (0.5135)	0.150069 (0.0000)	0.159891 (0.0000)
DEBT RATIO	-0.222299 (0.0000)	-0.072022 (0.0003)	-0.048363 (0.0187)
GROWTH	0.010385 (0.4017)	0.025110 (0.0000)	0.026210 (0.0000)
LIQUIDITY	0.016402 (0.0001)	-0.005115 (0.0338)	-0.006733 (0.0062)
NDTS	0.823661 (0.0004)	0.209463 (0.2146)	0.143097 (0.4072)
PROFITABILITY	0.375421 (0.0000)	0.329528 (0.0000)	0.329059 (0.0000)

RISK	-0.0000487 (0.7749)	-0.0000754 (0.2636)	-0.0000754 (0.2643)
SIZE	0.004675 (0.0675)	-0.006174 (0.0376)	-0.007356 (0.0226)
TANGIBILITY	-0.079592 (0.0020)	-0.048949 (0.0080)	-0.039275 (0.0380)
R2	0.662941	0.587874	0.955820
F Statistics	74.00240	53.66997	154.2895
Breusch Pagan LM Test	(0.0000)		
Hausman Test		Chi-Square (8) =0.0003	

Source:-Authors Compilation

According to the results of fixed effect model, debt ratio has a negative -0.0483 and significant 0.0187 impact on ROA. It means that for every unit change in debt ratio, the value of ROA is expected to decrease by 0.0483.

However, other independent variables like liquidity, size and tangibility has a negative (0.0067), (0.0073), (0.0392) and significant 0.0062, 0.0226, 0.0380 impact on ROA. Wherein risk has a negative (0.0000754) and insignificant 0.2643 impact on ROA. Whereas, growth has a positive 0.0262 and significant 0.0000 impact on ROA. Similarly, profitability has a positive 0.3290 and significant 0.0000 impact on ROA. But, non-debt tax shield has a positive 0.1430 and insignificant 0.4072 impact on ROA. Hence, we reject the null hypotheses and accept the alternative hypotheses that the capital structure have a significant impact on financial performance.

Its R square is 0.9558 states how well all the independent variables can explain the impact on the ROA. The adjusted R square is 0.9496. The R square value is 0.9558, which is greater than 60%, so better will be the model.

4.3 Data analysis on capital structure and financial performance (ROE)

Then the results of objective two that is impact of capital structure on financial performance are presented below relating to ROE as a performance indicator.

The results of the autocorrelation test show that the Durbin-Watson test value is 0.499000, which is less than 1.50. So it can be concluded that there is autocorrelation in the model. And also, the results of the heteroskedasticity test, indicate that the data set has heteroskedasticity. As the prob. Chi square value is less than 0.05. So, both autocorrelation and heteroskedasticity were removed through the HAC test.

Here, under second objective, eight independent variables have been taken. The results show that no independent variables have Variance Inflation Factor (VIF) values greater than 10 (VIF <10). So it indicates that there is no multicollinearity between independent variables, and all the variables are eligible for running a regression equation.

4.3.1 Descriptive Statistics

Table 4.8: Descriptive Statistics

	ROE	Debt Ratio	Business Risk	Growth	Liquidity	Size	Tang.	Prof.	NDTS
Mean	0.170662	0.177958	0.158028	0.127092	1.484516	10.72241	0.282468	0.109461	0.026777
Median	0.141500	0.146515	0.985607	0.100821	1.2840000	10.85970	0.269882	0.096650	0.023894
Std. Dev.	0.163679	0.163036	17.03473	0.229263	0.899737	1.271887	0.164904	0.104399	0.016057
Skewness	1.752314	0.765001	4.754938	3.135291	1.432223	0.029733	0.413016	0.039216	1.458066
Kurtosis	11.31330	2.600439	49.64428	22.23186	6.228955	2.546061	2.260867	7.508919	7.349640
Jarque-Bera	1051.332	32.29883	29270.80	5285.301	240.6530	2.707296	15.87003	262.6798	354.2163
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.258296	0.000358	0.000000	0.000000

Observations	310	310	310	310	310	310	310	310	310

Source:-Authors Compilation

Using descriptive statistics, the variables' mean, median, maximum, minimum, standard deviation, kurtosis, skewness, and jarque-bera probability are displayed in table 4.8 above. Here all the variables are positively skewed. In this case also, the company's size is the only variable that is normally distributed; the other variables are not due to the Jarque Bera probability value is less than 0.05. The above data shows that the ROE has a mean of 0.1706, a median of 0.1415, and a standard deviation of 0.1636.The debt ratio's standard deviation is 0.163, median is 0.146, and mean is 0.1779. Business risk is characterized by a standard deviation of 17.034, a median of 0.985, and a mean of 0.158. The growth value then has a standard deviation of 0.229, a mean of 0.127, and a median of 0.1008 values. For liquidity, the mean is 1.4845, the median is 1.2800, and the standard deviation is 0.8997. In terms of size, the mean value is 10.722, with a standard deviation of 1.2718 and a median of 10.859. For tangibility, the values are 0.1649, 0.2824 and 0.2698 for the standard deviation, mean, and median. With a standard deviation of 0.1043, a median of 0.0966, and a mean of 0.1094, profitability is measured. Furthermore, the non-debt tax shield has a mean value of 0.0267, a median value of 0.0238, and a standard deviation of 0.0160.

4.3.2 Correlation Analysis

Table 4.9: Correlation Analysis

	ROE	**Debt Ratio**	**Growth**	**Liquidity**	**NDTS**	**Profitability**	**Risk**	**Size**	**Tang.**
ROE	1.000000								
Debt Ratio	-0391455	1.000000							

Growth	0.0613159	-0.067205	1.000000						
Liquidity	0.3229513	-0.517515	-0.04413	1.000000					
NDTS	0.0166659	0.0646132	-0.06493	-02326808	1.000000				
Profitability	04923038	-0.099283	-0.02276	0.4264675	-0.161739	1.000000			
Risk	0.1492474	-0.089769	-0.00330	0.106809	-0.044141	0.22760407	1.000000		
Size	-0.3167241	0.359750	-0.02517	-0.2311666	0.239728	0.05085253	-0.0601800	1.000000	
Tangibility	-0.3167241	0.4548343	-0.05630	-0.336691	0.5859090	-0.0586785	-0.0180969	0.452220	1.000000

Source:-Authors Compilation

As can be seen in the above table, ROE is positively correlated with growth, liquidity, profitability, risk and non-debt tax shield while it is negatively correlated with debt ratio, size and tangibility. It implies that the debt ratio, tangibility and size will all decline as the ROE increases. However, growth, liquidity, risk, non-debt tax shield and profitability will all increase as the ROE increases. The debt ratio is positively correlated with tangibility, size, and non-debt tax shield, whereas it is negatively correlated with growth, liquidity, risk, and profitability. Liquidity shows a low degree of negative relationship with tangibility, size, and the non-debt tax shield, whereas it shows a positive relation with risk and profitability. A non-debt tax shield indicates a negative relation with profitability and risk but shows positive relation with size and tangibility. Profitability shows a very low negative relationship with tangibility, wherein it shows a positive correlation with size and risk. Risk indicates a very low negative correlation with tangibility and size. Wherein, size is positively correlated with

the tangibility. Growth is negatively correlated and has a very low degree of correlation with all the variables in the current study.

4.3.3 Regression Analysis

For panel data methodologies the three most generally used models are the Pooled Ordinary Least Squares model (OLS), Fixed Effects model (FEM), and Random Effects model (REM), which together provide a most relevant study of how the firm's capital structure affects its financial performance. Thus, among the three models, tests such as the Hausman test and the Breusch-Pagan LM test were employed to determine which model was the most accurate.

The pooled OLS approach was first applied to the model. The appropriateness of pooled OLS was then assessed using the Breusch pagan LM test. Since the Breusch pagan LM test indicates that the p-value is less than 0.05, the FEM and REM models were applied.

The REM model was then applied. The suitability of a fixed effect model or a random effect model was then assessed using the Hausman test. The random effect model is the most suitable, according to the Hausman test results, since the p-value is more than 0.05.

The results of the REM are shown in Table 4.10 below.

Table 4.10: Regression analysis

	OLS	**REM**
CONSTANT	0.032892 (0.6420)	0.250670 (0.0205)
DEBT RATIO	-0.349235 (0.0000)	-0.088747 (0.1925)
GROWTH	0.037636 (0.2480)	0.066861 (0.0003)
LIQUIDITY	-0.009184 (0.4023)	-0.041981 (0.0000)
NDTS	1.663978 (0.0066)	0.758968 (0.2051)

PROFITABILITY	0.768983 (0.0000)	0.777443 (0.0000)
RISK	0.000211 (0.6381)	-571E-05 (0.8153)
SIZE	0.010675 (0.1121)	-0.005979 (0.5499)
TANGIBILITY	-0.121992 (0.0702)	-0.182999 (0.0052)
R2	0.388560	0.398385
F Statistics	23.91007	24.91504
Breusch Pagan LM Test	(0.0000)	
Hausman Test		Chi-square (8) = 0.1198

Source:-Author Compilation

According to the results of the random effect model, debt ratio has a negative (0.0887) and insignificant 0.1925 impact on ROE. Since the p-value is greater than 0.05, the debt ratio is insignificant hence, it is considered as zero, indicating that the debt ratio has no effect on ROE.

However, other independent variables like liquidity and tangibility has a negative (0.0419), (0.1829) and significant 0.0000, 0.0052 impact on ROE. Wherein risk and size has a negative (0.000057), (0.00597) and insignificant 0.8153, 0.5499 effect on ROE. Whereas, growth and profitability has a positive 0.0668, 0.7774 and significant 0.0003, 0.0000 impact on ROE. But, non-debt tax shield has a positive 0.7589 and insignificant 0.2051 effect on ROE.

Its R square is 0.3983 and adjusted R square is 0.3823. The R square value is 39%, which is less than 60%, so not good will be the model.

4.4 Data analysis on capital structure and firm value

Lastly, the results of objective three that is impact of capital structure on firm value are presented below:-

The results of the autocorrelation test show that the Durbin-Watson test value is 0.377001, which is less than 1.50. So it can be concluded that there is autocorrelation in the model. And also, the results of the heteroskedasticity test, indicate that the data set has heteroskedasticity. As the prob. Chi square value is less than 0.05. So, both autocorrelation and heteroskedasticity were removed through the HAC test.

Here, under the third objective, eight independent variables have been taken. The results show that no independent variables have Variance Inflation Factor (VIF) values greater than 10 (VIF <10). So it indicates that there is no multicollinearity between independent variables, and all the variables are eligible for running a regression equation.

4.4.1 Descriptive Statistics

Table 4.11: Descriptive Statistics

	Tobin's Q	Debt Ratio	Business Risk	Growth	Liquidity	Size	Tang.	Prof.	NDTS
Mean	3.618120	0.177958	0.158028	0.127092	1.484516	10.72241	0.282468	0.109461	0.026777
Median	2.334815	0.146515	0.985607	0.100821	1.2840000	10.85970	0.269882	0.096650	0.023894
Std. Dev.	3.608196	0.163036	17.03473	0.229263	0.899737	1.271887	0.164904	0.104399	0.016057
Skewness	2.232399	0.765001	4.754938	3.135291	1.432223	0.029733	0.413016	0.039216	1.458066
Kurtosis	8.881980	2.600439	49.64428	22.23186	6.228955	2.546061	2.260867	7.508919	7.349640
Jarque-Bera	704.3731	32.29883	29270.80	5285.301	240.6530	2.707296	15.87003	262.6798	354.2163
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.258296	0.000358	0.000000	0.000000

Observations	310	310	310	310	310	310	310	310	310

Source:-Authors Compilation

Table 4.11, displays the mean, median, maximum, minimum, standard deviation, kurtosis, skewness, and jarque-bera probability of all the variables, as provided by the descriptive statistics. In this case, all the variables are positively skewed. Since the Jarque Bera probability value is less than 0.05, the other variables in this instance are similarly not normally distributed but the company's size is the only variable that is normally distributed. According to the above data the Tobin's Q has a mean of 3.6181, a median of 2.3348, and a standard deviation of 3.6081. The mean of the debt ratio is 0.1779. The median is 0.146, and the standard deviation is 0.163. The standard deviation, median and mean of business risk are 17.034, 0.985, and 0.158, respectively. The growth value then has a mean of 0.127, a median of 0.1008, and a standard deviation of 0.229. The standard deviation is 0.8997, the median is 1.2800, and the mean is 1.4845 for liquidity. With respect to size, the median is 10.859, the standard deviation is 1.2718, and the mean value is 10.722. The standard deviation, mean, and median for tangibility are 0.1649, 0.2824, and 0.2698. Profitability is calculated with a mean of 0.1094, a median of 0.0966, and a standard deviation of 0.1043. In addition, the non-debt tax shield's values are as follows: 0.0267 for the mean, 0.0238 for the median, and 0.0160 for the standard deviation.

4.4.2 Correlation analysis

Table 4.12: Correlation analysis

	Tobin's Q	**Debt Ratio**	**Growth**	**Liquidity**	**NDTS**	**Profitability**	**Risk**	**Size**	**Tang.**
Tobin's Q-0	1.000000								

Debt Ratio	-0.402164	1.000000							
Growth	0.0720908	-0.067205	1.000000						
Liquidity	0.2775972	-0.517515	-0.04413	1.000000					
NDTS	0.1243504	0.0646132	-0.06493	-0.23268	1.000000				
Profitability	0.1293123	-0.099283	-0.02276	0.426467	-0.161739	1.000000			
Risk	0.015559	-0.089769	-0.00330	0.106809	-0.04414	0.2276040	1.000000		
Size	-0.186367	0.359750	-0.02517	-0.231166	0.239728	0.0508525	-0.060180	1.000000	
Tangibility	-0.195603	0.454834	-0.05630	-0.336691	0.585909	-0.058678	-0.018096	0.452220	1.00000

Source:-Authors Compilation

As shown in the above table, Tobin's Q is positively correlated with growth, liquidity, profitability, risk and non-debt tax shield while it is negatively correlated with debt ratio, size and tangibility. It implies that the debt ratio, tangibility and size will all decline as the Tobin's Q increases. However, growth, liquidity, risk, non-debt tax shield and profitability will all increase as the Tobin's Q increases. The debt ratio is positively correlated with tangibility, size, and non-debt tax shield, whereas it is negatively correlated with growth, liquidity, risk, and profitability. Liquidity shows a low degree of negative relationship with tangibility, size, and the non-debt tax shield, whereas it shows a positive relation with risk and profitability. A non-debt tax shield indicates a negative relation with profitability and risk but shows positive relation with size and tangibility. Profitability shows a very low negative relationship with tangibility, wherein it shows a positive correlation with size and risk. Risk indicates a very

low negative correlation with tangibility and size. Wherein, size is positively correlated with the tangibility. Growth is negatively correlated and has a very low degree of correlation with all the variables in the current study.

4.4.3 Regression Analysis

With the aim to present the most appropriate analysis of the capital structure affecting the firm value, the three most generally used models for panel data analysis were used, such as Pooled Ordinary Least Squares model (OLS), Fixed Effects model (FEM), and Random Effects model (REM). For the purpose of choosing an accurate model among the three, tests such as the Hausman test and the Breusch-Pagan LM test were employed.

The model was first subjected to the pooled OLS technique. The Breusch pagan LM test was then used to evaluate the suitability of pooled OLS. The FEM and REM models were used since the Breusch pagan LM test shows that the p-value is less than 0.05.

Then, the REM model was applied. The Hausman test was then used to evaluate the applicability of either a random effect model or a fixed effect model. The Hausman test results show that since the p-value is greater than 0.05, the random effect model is the most appropriate one.

Table 4.13: Regression analysis

	OLS	**REM**
CONSTANT	4.811352 (0.0061)	-2799471 (0.2680)
DEBT RATIO	-5.402665 (0.0004)	-2.242461 (0.1509)
GROWTH	1.109222 (0.1673)	0.938500 (0.0218)
LIQUIDITY	0.406454 (0.1331)	-0.194316 (0.3170)

NDTS	70.88967(0.0000)	46.71240 (0.0007)
PROFITABILITY	3.975579 (0.0508)	1.092607 (0.4663)
RISK	-0.007813(0.4792)	-0.006901 (0.2089)
SIZE	-0.196797(0.2342)	0.646390 (0.0057)
TANGIBILITY	-4.241893(0.0109)	-4.653164 (0.0018)
R2	0.235772	0.096540
F Statistics	11.60769	4.020462
Breusch Pagan LM Test	(0.0000)	
Hausman Test		Chi-square = 0.1597

Source:-Authors Compilation

According to the results of the random effect model, debt ratio has a negative (2.2424) and insignificant 0.1509 impact on Tobin's Q. Since the p-value is greater than 0.05, the debt ratio is insignificant hence, it is considered as zero, indicating that the debt ratio has no effect on Tobin's Q.

However, other independent variables like liquidity and risk has a negative (0.1943), (0.0069) and insignificant 0.3170, 0.2089 impact on ROE. Wherein size has a negative (0.6463) and significant 0.0057 effect on ROE. Whereas, growth and non-debt tax shield has a positive 0.9385, 46.712 and significant 0.0218, 0.0007 impact on ROE. But, profitability has a positive 1.0926 and insignificant 0.4663 effect on ROE. Hence, we accept the null hypotheses that the capital structure have no significant impact on firm value.

Its R square is 0.0965 and adjusted R square is 0.0725. The R square value is very less than 60%, so the model is not good.

4.5 Conclusion

In this study we analyse the impact of firm specific determinants on capital structure and also impact of capital structure on financial performance and value of the firm of nifty 50 companies from 2014-2023. We found that growth, liquidity and profitability has a negative and significant impact on debt ratio. Whereas, non-debt tax shield has a insignificant negative impact on debt ratio. Risk and tangibility has a positive and insignificant impact on debt ratio. Wherein size has a significant positive impact on capital structure.

Capital structure is positively and significantly impacted by size. This means that as the size of a company increases, its debt ratio tends to change in a particular way. Whereas, capital structure is positively but insignificantly impacted by risk and tangibility. It implies that risk and tangibility might affect the financing decisions of a company, but their impact is not statistically significant. Growth, liquidity, and profitability, on the other hand, have a negative but significant impact on capital structure. This indicates that for every unit change in growth, liquidity, and profitability, the value of debt ratio is expected to decrease. This suggests that size, growth, liquidity and profitability is an important factors that influence capital structure decisions.

Then afterwards we analysed the impact of capital structure on financial performance. ROA and ROE were used to measure the financial performance of the company. We found that debt ratio has a significant negative impact on ROA. Whereas debt ratio has a insignificant negative impact on ROE.

Other independent variables such as tangibility, growth, size, profitability, liquidity, business risk and non-debt tax shield are the determinants of a firm's financial performance.

Lastly, we analyzed the impact of capital structure on firm value. Our findings revealed that the debt ratio has a negative and insignificant impact on Tobin's Q, indicating that the debt ratio has no effect on Tobin's Q.

Hence, in order to establish a suitable capital structure, this study will help businesses in understanding the factors that influence a company's capital structure as well as, get an idea of how capital structure impacts the financial performance and value of the firm.

REFERENCES

Abdullah, H., & Tursoy, T. (2019). Capital structure and firm performance: Evidence of germany under IFRS adoption. *Review of Managerial Science*, *15*(2), 379–398. https://doi.org/10.1007/s11846-019-00344-5

Aggarwal, D., & Padhan, P. C. (2017). Impact of capital structure on firm value: Evidence from Indian Hospitality Industry. *Theoretical Economics Letters*, *07*(04), 982–1000. https://doi.org/10.4236/tel.2017.74067

Ahmed Sheikh, N., & Wang, Z. (2013). The impact of capital structure on performance. *International Journal of Commerce and Management*, *23*(4), 354–368. https://doi.org/10.1108/ijcoma-11-2011-0034

Alipour, M., Mohammadi, M. F., & Derakhshan, H. (2015). Determinants of Capital Structure: An empirical study of firms in Iran. *International Journal of Law and Management*, *57*(1), 53–83. https://doi.org/10.1108/ijlma-01-2013-0004

Amir, Y. (2023). The effect of profitability and liquidity on capital structure in manufacturing sub-sector companies in 2019-2022. *INFA International Journal of The Newest Finance and Accounting*, *1*(2), 74–85. https://doi.org/10.59693/infa.v1i2.19

Ankomah, K., Samena, F. A., Sikayena, I., Ofori-Oppong, P., Arpoh-Baah, B., Boadi, E., & Harley, K. A. (2023). Capital Structure and financial performance of listed non-financial firms in Ghana. *Asian Journal of Empirical Research*, *13*(3), 58–67. https://doi.org/10.55493/5004.v13i3.4860

Anozie, O. R., Muritala, T. A., Ininm, V. E., & Yisau, N. S. (2023). Impact of capital structure on financial performance of oil and gas firms in Nigeria. *Future Business Journal*, *9*(1). https://doi.org/10.1186/s43093-023-00186-4

Bandyopadhyay, A., & Barua, N. M. (2016). Factors determining capital structure and corporate performance in India: Studying the business cycle effects. *The Quarterly*

Review of Economics and Finance, *61*, 160–172. https://doi.org/10.1016/j.qref.2016.01.004

Bestariningrum, N. (2015). Analyzing the Effect of Capital Structure and Firm Size on Firm Value (Case Study: Company That Listed in LQ-45 Index Period 2010-2014). *Jurnal Berkala Ilmiah Efisiensi*, *15*(04), 354–365.

BG, P., & Reddy, and P. Y. V. (2016). Determinants of capital structure in automobile companies An Empirical Study. *NICE Journal of Business*, *11*(1&2)

Bui, T. N., Nguyen, X. H., & Pham, K. T. (2023). The effect of capital structure on firm value: A study of companies listed on the Vietnamese Stock Market. *International Journal of Financial Studies*, *11*(3), 100. https://doi.org/10.3390/ijfs11030100

Chadha, S., & Sharma, A. K. (2015a). Capital structure and firm performance: Empirical evidence from India. *Vision: The Journal of Business Perspective*, *19*(4), 295–302. https://doi.org/10.1177/0972262915610852

Chadha, S., & Sharma, A. K. (2015b). Determinants of capital structure: An empirical evaluation from India. *Journal of Advances in Management Research*, *12*(1), 3–14. https://doi.org/10.1108/jamr-08-2014-0051

Clara Arisany Lasol, Steven Siaila, R. C. (2023). The Effect of Liquidity and Capital Structure on Profitability in Retail Sub Sector Companies on the Indonesia Stock Exchange in 2018-2021. *ProBisnis : Jurnal Manajemen*, *14*(4), 29–33.

Cuong, N. T. (2016). Threshold effect of capital structure on firm value: Evidence from Seafood Processing Enterprises in the South Central Region of Vietnam. *International Journal of Finance & Banking Studies (2147-4486)*, *3*(3), 14. https://doi.org/10.20525/.v3i3.186

Fosu, S. (2013). Capital Structure, product market competition and firm performance: Evidence from South Africa. *The Quarterly Review of Economics and Finance*, *53*(2), 140–151. https://doi.org/10.1016/j.qref.2013.02.004

Habibu Ayuba, Abdu Ja'afaru Bambale, Murtala Aminu Ibrahim, S. A. S. (2019). Effects of Financial Performance, Capital Structure and Firm Size on Firms' Value of Insurance Companies in Nigeria. *Journal of Finance, Accounting and Management*, *10*(January), 2–3.

Handoo, A., & Sharma, K. (2014). A study on determinants of capital structure in India. *IIMB Management Review*, *26*(3), 147. https://doi.org/10.1016/j.iimb.2014.07.005

Hasbi, H. (2015). Islamic microfinance institution: The Capital Structure, growth, performance and value of firm in Indonesia. *Procedia - Social and Behavioral Sciences*, *211*, 1073–1080. https://doi.org/10.1016/j.sbspro.2015.11.143

Le, T. P., & Phan, T. B. (2017). Capital structure and firm performance: Empirical evidence from a small transition country. *Research in International Business and Finance*, *42*, 710–726. https://doi.org/10.1016/j.ribaf.2017.07.012

LUU, D. H. (2021). the Impact of Capital Structure on Firm Value in Vietnam. *Journal of Asian Finance, Economics and Business*, *8*(5), 287–292. https://doi.org/10.17654/as069020115

M, H. (2019). Capital structure and firm size on firm value moderated by profitability. *International Journal of Economics and Business Administration*, *VII*(Issue 1), 174–191. https://doi.org/10.35808/ijeba/204

Panda, A. K., & Nanda, S. (2020). Determinants of capital structure; a sector-level analysis for Indian Manufacturing Firms. *International Journal of Productivity and Performance Management*, *69*(5), 1033–1060. https://doi.org/10.1108/ijppm-12-2018-0451

Pathak, M., & Chandani, A. (2021). The nexus between capital structure and firm-specific factors: Evidence from Indian companies. *Journal of Economic and Administrative Sciences*, *39*(2), 470–487. https://doi.org/10.1108/jeas-02-2021-0028

Psillaki, M., & Daskalakis, N. (2008). Are the determinants of capital structure country or firm specific? *Small Business Economics*, *33*(3), 319–333. https://doi.org/10.1007/s11187-008-9103-4

Pulatov, Y. (2023). The effect of capital structure on profitability of north american oilfield service companies Article. *World Economics & Finance Bulletin (WEFB)*, *25*, 307–323. https://doi.org/10.4018/978-1-4666-6635-1.ch018

Rahman, J., Zhixuan, Z., Chaity, N. S., & Kennedyd, S. I. (2023). Capital Structure and Profitability : Evidence from China. *Indonesian Journal of Business, Technology and Sustainability*, *1*(2), 19–28.

Ramli, N. A., Latan, H., & Solovida, G. T. (2019). Determinants of capital structure and firm Financial Performance—a PLS-SEM approach: Evidence from Malaysia and Indonesia. *The Quarterly Review of Economics and Finance*, *71*, 148–160. https://doi.org/10.1016/j.qref.2018.07.001

Rashinkar, S. M., Shukla, S., Malagatti, V. D., & Aarif, M. (2023). Measuring the Effectiveness of Capital Structure on Firm Performance : A Comparative Analysis. *European Economic Letters*, *13*(4), 121–134.

Rehan, R., Abdul Hadi, A. R., Hussain, H. I., & Adnan Hye, Q. M. (2023). Capital structure determinants across sectors: Comparison of observed evidences from the use of time series and panel data estimators. *Heliyon*, *9*(9). https://doi.org/10.1016/j.heliyon.2023.e19618

Rehman, O. U. (2016). Impact of Capital Structure and Dividend Policy on Firm Value. *Journal of Poverty, Investment and Development*, *21*(2006), 40–57. https://iiste.org/Journals/index.php/JPID/article/view/28887

Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies. *Procedia - Social and Behavioral Sciences*, *65*, 156–166. https://doi.org/10.1016/j.sbspro.2012.11.105

Samuel Antwi, Ebenezer Fiifi Emire Atta Mills, P. X. Z. (2012). Capital Structure and Firm Value: Empirical Evidence from Ghana. *Internatioanl Journal of Business and Social Sciense*, *3*(22), 252–261.

Serghiescu, L., & Văidean, V.-L. (2014). Determinant factors of the capital structure of a firm- an empirical analysis. *Procedia Economics and Finance*, *15*, 1447–1457. https://doi.org/10.1016/s2212-5671(14)00610-8

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. https://doi.org/10.1177/2278682118823312

Siregar, S. D., Toni, N., & Ariesa, Y. (2023). Impact of dividend policy, capital structure, and profitability on consumer goods firm value: Role of firm size (2013-2022). *Journal of Economics and Business Letters*, *3*(4), 38–48. https://doi.org/10.55942/jebl.v3i4.234

Sofat, R., & Singh, S. (2017). Determinants of Capital Structure: An empirical study of manufacturing firms in India. *International Journal of Law and Management*, *59*(6), 1029–1045. https://doi.org/10.1108/ijlma-05-2016-0051

Stoiljković, A., Tomić, S., Leković, B., & Matić, M. (2022). Determinants of capital structure: Empirical evidence of manufacturing companies in the Republic of Serbia. *Sustainability*, *15*(1), 778. https://doi.org/10.3390/su15010778

Vo, X. V., & Ellis, C. (2017). An empirical investigation of capital structure and firm value in Vietnam. *Finance Research Letters*, *22*, 90–94. https://doi.org/10.1016/j.frl.2016.10.014

Vătavu, S. (2015). The impact of capital structure on financial performance in Romanian listed companies. *Procedia Economics and Finance*, *32*, 1314–1322. https://doi.org/10.1016/s2212-5671(15)01508-7