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Prifysgol Cymru
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MBA BANKING AND FINANCE THESIS

SUPERVISOR: JIA MIAO

OCTOBER 2023

TITLE:

EXAMINATION OF CAPITAL STRUCTURE IMPACT ON PROFITABILITY AND SHARE RETURNS: EVIDENCE FROM PHARMACEUTICAL AND BIOTECH INDUSTRY ON FTSE -ALL SHARES INDEX.

Abstract

This study examines the impact of capital structure on profitability and share returns of quoted pharmaceutical and Bio-Tech on the FTSE All Share index, UK. The empirical test was conducted on 30 companies using a multiple linear regression model with the aid of Excel. Based on a 0.05% significant level, I found that the relationship between share returns and capital structure is statistically insignificant. Also, the relationship between profitability and capital structure is insignificant. However, there are mixed reports between capital structure ROE and ROA relationship. The research findings reveal no correlation between share returns and capital structure, but a correlation exists between profitability and capital structure.

Keywords: FTSE All Share, Gearing, Capital structure, Equity, Pharmaceutical, Bio-Tech.

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Chapter One

Introduction

It entails a long-term course of action to meet the objectives of shareholders and stakeholder companies. The financing decision is one aspect of strategic financial management over the business life cycle (Bender, 2013). One of corporate finance's fundamental and strategic issues is capital structure, which combines debt financing and equity. According to (Ahmad et al.,2013), the role of capital structure is crucial to a company's survival and performance. Gearing has value when an investment earns more than the cost of debt (Positive NPV). The trade-off between returns and risk determined a company's financial leverage decision and whether to use more debt or equity (Modigliani & Miller 1963). Empirical research in the past supports the use of gearing, which enhances the company's share returns and profitability, while some researchers contradict the findings. The research's practical goal is to examine the capital structure impact on profitability and share returns of pharmaceuticals and Bio-Tech companies quoted on the United Kingdom FTSE-All Shares index.

1.1 *Structure*

To make the report easier for the readers to understand important information and digest the report within each section, I divide this report into five chapters and subheadings. Chapter one of this research contains the Introduction, aim, object and limitation. A theoretical and Previous literature review on capital structure is presented in chapter two of this report, and the methodology and data analyses employed in this report in chapter three. The results of the hypotheses and the relationship between the variables are presented in chapter four, and chapter five presents the conclusion, recommendation, and further study on this research topic.

1.2 *Topic Background and the Gap*

In the past, researchers unveiled the impact of leverage on share returns by examining this relationship within industries (Arditti,1967) and (Melicher,1974). (Hurdle, 1974) reported on leverage, risk, market structure and profitability based on the CAPM model plus Fama and French, and Carhart's model. (Adami et al., 2013), study the association between shareholder returns and capital structure across several UK industries. Based on investment strategy (Muradoğlu and Sivaprasad, 2014) examine the association between abnormal returns and capital structure in the hospitality industry. Recently (Hoang Dinh Huong, 2023) Looked at how the capital structure of plastic and packaging industries affected Profitability using debt-to-capital, debt to equity and other metrics. Short-term debt to total resources and long-term debt-to-total equity are independent variables, respectively, and the Scale of the securities company and equity size as dependable variables. According to (De Wet, 2006), capital structure varies between countries, industries and within industry. An earlier report on this research topic was on the Kompas 100 index of Indonesia but not in

developed countries (Chandra et al., 2019). Indonesia is a developing country. Chandra's report on the capital structure influence on the company's stock returns and profitability was based on 64 quoted companies (across industries) on the Kompas 100 index. This research focuses on a specific industry not specifically researched in developed countries.

Also, I am not examining FTSE 100 but the entire FTSE ALL shares index, which covers small, medium, and large market capitalisation companies. Pharmaceutical and Bio-Tech is one of the capital-intensive industries, and FTSE ALL Shares is one of the world's most recognised stock exchanges found in the financial hub city of London, United Kingdom. FTSE ALL index covers 99% of the UK company's market capitalisation and includes more than 2,000 corporate companies traded on the London Stock Exchange. The choice of FTSE ALL shares is because it comprises all quoted companies on the FTSE 100, FTSE 250, and FTSE 350 Index. Also, the FTSE ALL Shares index makes up both international and local company quoted companies, which facilitates comparison of capital structure within the industry. In this research, the pharmaceutical and Bio-tech industry, including animal medicine. The pharmaceutical and Bio-Tech industry contributes to the global economy with a total of 240 billion US dollars worldwide spending on research and development in 2022. The industry's worldwide market estimate is $1.48 trillion. In the past, we saw bankrupt and collapsed companies due to mismanagement or poor financial management. According to (Smith and Warner,1979), Some of these companies' top management pocket company money for their gains. Top management is involved in a higher degree of financial leverage that results in higher interest and financial distress, as said (Warner,1977). At the same time, some companies were over-capitalised due to capital structure decisions. Optimal capital structure enhances investment opportunity and productivity, maximising shareholders' wealth. The news of a well-structured company capital structure can affect stock demand and increase stock price.

1.3 ***Research Benefits***

This report has a window of opportunity. I will explore quantitative research methods and secondary data by conducting rigorous analysis and tests on gearing, profitability, and investment ratios using correlation and regression approaches. The research findings will help investors in their investment decisions and priorities. Secondly, Answers to the research questions will help Finance Managers understand how best capital structure to enhance shareholders' wealth and attract potential investors. On the other hand, there are chances that potential individual investors will invest in the stock market by understanding the relationship between share returns, Profitability, and capital structure. The statistical analysis results will help to capture the association between Operating profit margin, Return on capital employed, Gross profit margin and capital structure in a different way.

1.4 ***Research Questions:***

According to (Saunders et al.,2015), a given question seeks an illustrative answer. (Marshall and Rossman, 2016) Said that qualitative research questions aim at understanding specific situations and experiences. The following research questions help to focus and navigate the process and writing of this research report.

1 Are there any variations within the industry capital structure?

2. Does a relationship exist between capital structure and Profitability?

3. Does a relationship exist between capital structure and Share returns?

1.5 ***Research Aims and Objectives***

Overall Aim**:**

This research seeks to advance the knowledge of finance managers, provide understanding to potential stock investors through a comprehensive literature review, and examine the association between share returns, Profitability, and capital structure of quoted Pharmaceutical and Bio-Tech companies on FTSE ALL shares from the year 2018 to 2022 using annual shares price data. I will use multiple secondary data from Yahoo Finance, the London Stock Exchange and include financial statements from 30 pharmaceutical and Bio-Tech companies quoted on FTSE ALL shares. I will conduct qualitative data analyses using the regression method to prove the relationship between variables and the conclusion to the hypotheses.

Objectives:

The following research objectives would help me to achieve the above-stated aim:

1. To examine the relationship between the share returns and capital structure in the past five years through rigorous tests and practical data analysis.

2. To examine the relationship between the profitability ratio and capital structure through rigorous tests.

3. To examine the pharmaceutical capital structure through rigorous tests.

4. To examine capital structure variation within the industry.

Hypothesis:

To give answers to the research questions, I will conduct the following research hypothesis:

1. The capital structure and Share returns do not correlate.

2. The capital structure and Profitability do not correlate.

1.6 ***Research Limitation:***

1. Due to the research nature and numerical involvement, it is impossible to use primary data.

2 .There is a possibility of marginal error due to the restatement of financial statements and different accounting reporting standards within the industry, such as US GAAP, UK GAAP and IFRS standards.

3. The data collected from the year 2018 to 2022 might have been affected by the macro environment, such as the COVID-19 global economic crisis and the Ukraine-Russia war.

4. Another limitation of this report is that share returns are based on share price volatility in the market, excluding dividend yield or absolute share returns.

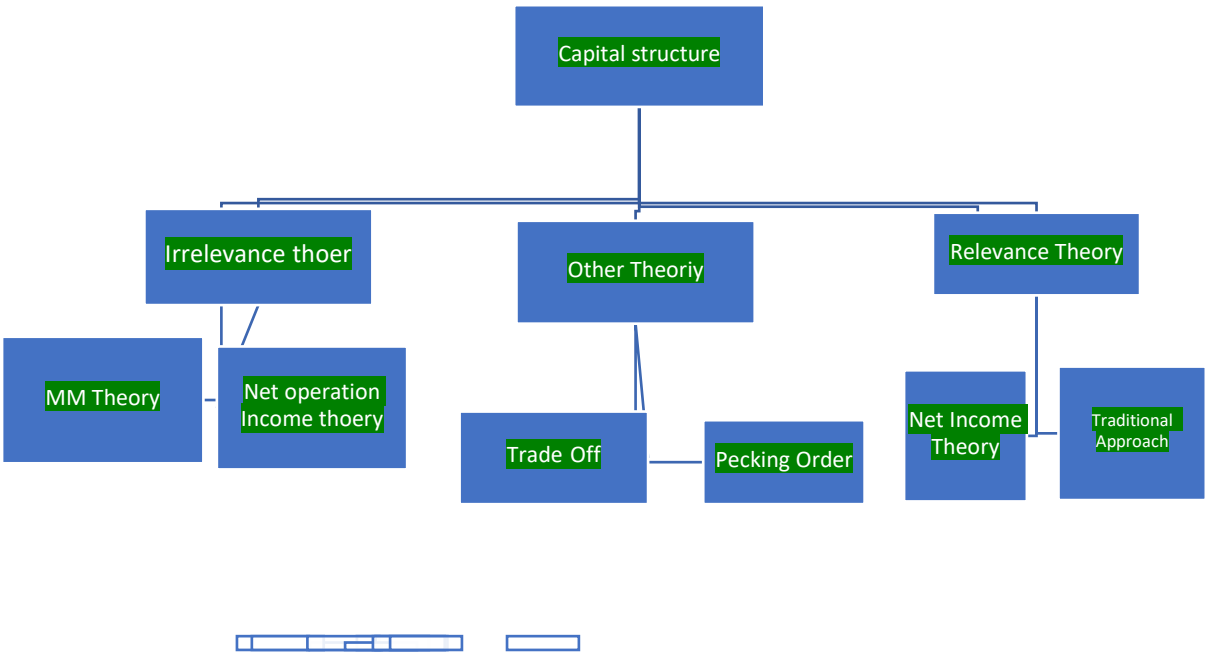

Fig 1

Chapter Two

Literature Review

The literature review is critical in this report because it helps develop knowledge and understanding of the scholarly literature that constructs an argument (Kjell Erik Rudestam and Newton (2014). Some theories and factors are essential in the optimal capital structure choice.

2.1 *Theoretical Framework*

The finance manager faces questions of how much we need to borrow and how to raise the money (Mixed, debt or equity). Which method is the cheapest? The choice depends on the company's value and risk (Ross et al., 2018). According to (Chandra,2016), finance managers are achieving their company's goal through financial decisions such as investment , financing, and dividend decisions. These three decisions formed the basis of capital structure decisions; hence, making the wrong option can lead to negative consequences. Capital structure is a mixture of equity and debt financing the company requires to finance businesses, investments or assets and daily business operations. A company's capital structure depends on the type of industry, industry life cycle, external factors, and size. Some companies are capital-intensive, while some are labour-intensive. Debt is borrowing or loan in terms of short- or long-term credit facility, while equity is the money contributed to a company in return for shares or ownership. The pros of debt financing are tax shield from interest payment, Debt financing does not dilute the company ownership, Debt financing is cheaper than equity, and the lender has no claim on remaining and future profit. The cons of debt financing are that companies settle agreed debt obligations before any other payment. Lenders may place covenants on the company-on-company assets or future borrowing, and excessive debt may lead to higher interest or bankruptcy.

On the other hand, equity financing leads to share or joint ownership of the company; equity financing costs more because of risk to the investors in case of higher interest and bankruptcy. The pros of equity financing are that investors lose limited by the amount contributed to the point of bankruptcy, there is no mandatory dividend payment to the investors, and equity financing can help the company mitigate debt repayment during the cashflow volatility period. Several factors, including protective covenant, signalling effects, agency cost and financial distress, determine the capital structure.

Overview of Capital Structure Theory:

As shown in Fig 1, Capital Structure theories comprise relevance theory (Net income approach and Traditional Approach), irrelevance theory (Modigliani and Miller approach, Net operating approach), and other theories, including Pecking order theory, Market Timing and Trade-Off theory. Scholars have tried to interpret capital

structure theories in the past. The Net income approach was used by (Durand,1952), but Modigliani and Miller developed the contemporary capital structure theory in 1958. According to the capital structure irrelevant theory, every company is autonomous of its capital structure in a world without taxes and financial cost; hence, the value of unleveraged and leverage are identical (Modigliani & Miller, 1958). On the other hand, capital structure is relevant according to David Durand's Net income approach in 1952 and M& M proportion 1 and 2 with tax theory 1963 that argued capital structure increases company value through interest cost save from tax deduction. According to (Kraus and Litzebnerger,1973), optimum capital is decidedly the trade-off between benefits and cost of debt. Companies favour debts rather than issue new ones when seeking external debt according to (Myers,1984). (Graham & Harvey 2001) in line with the pecking order theory company can borrow when there are no sufficient internal funds. Market timing, as first proposed by (Stein,1996), Rational Managers can use market timing to create company value by choosing financing based on market inefficiency. A rational manager takes advantage of overvalued shares to repurchase debt or issue more shares. However, a sensible manager issues debt and retires shares when the share price is undervalued in the stock market (Stein,1996).

Net income Approach (NI),

This theory assumes that debt is cheaper than other sources of funds; investors are indifferent to debt financing and no company tax. Under the Net Income approach, capital structure is relevant because the cost of capital will respond to gearing changes (Sharma and Mittal,2023). Therefore, increasing debt to equity will cause the weighted average capital cost to decline and increase company value and share price (Durand,1952). According to the Net income approach, capital cost determines capital structure, leading to optimal capital.

Traditional Approach,

The traditional approach says optimal capital structure will exist by maximised assets market value and minimised weighted average cost of capital through a mixture of debt and equity. Under this approach, there is the assumption that marginal optimal capital exists when the cost of debt is equal to marginal cost. Also, the cost of debt or equity varies with the gearing level. This means a company go for a capital structure with the lowest cost of capital (Sharma and Mittal,2023). The traditional approach considers that the cost of capital fall while company value increase as gearing increase to some point on the curve, but the reverse is the case if it goes beyond a certain point.

Net Operating Income Approach,

Under the Net operating income approach, capital structure is irrelevant regardless of gearing level (Durand,1952). This approach assumes company tax does not exist,

Business risk at every level of the mixture of debt and equity stays constant, the cost of capital is responding to change in gearing level, and changes to gearing will not cause company share price and total value to change. This means risk increases offset the benefit of injecting more debt to lower the cost of capital (Sharma and Mittal,2023).

Modigliani and Miller World without Taxes Proposition 1 and 2,

MM says that capital structure is not relevant. Based on this assumption that the capital market is perfect, no transaction cost, no corporate taxes, no bankruptcy cost, and all information is available freely.

MM Proposition 1 stated that the value of both leveraged and unleveraged companies remains the same because their value depends on the company's future earnings. Therefore, capital structure choices adopted by the company have no bearing on their value (Modigliani and Miller, 1958). MM says individual investors could borrow as much as large companies on the same terms.

MM Proposition 2, A company's overall cost of capital and value is independent of gearing because underlying assets risk and earning potential determine company market value. (Modigliani and Miller, 1958) Stated that the company increases risk for equity holders because the cost of equity capital and gearing are proportionate. Therefore, a company cannot substitute debt for equity to reduce the total cost of capital. One of the limitations of the MM approach is that transaction cost does exist when securities are sold or purchased contrary to no transaction cost assumption.

Modigliani and Miller World with Taxes Proposition 1 and 2,

MM Proposition 1: They developed the World with Taxes theory after criticism of the World without Taxes. This proposition depends on the availability of tax information. It says that a company should inject a hundred per cent debt to increase its value because of corporate tax advantages (Modigliani and Miller, 1963). With more debt, the company pay less taxes and increases leverage company value more than unleveraged due to the tax shield on interest payment.

MM Proposition 2: There is a direct proportional relationship between the cost of equity and gearing level, as shown in Table Appendix 1 (Arnold and Lewis, 2019). At the ratio of 0.11 of debt-to-equity financing, the cost of equity stands at 10.22%, while at 2.33 to equity, the cost of equity increased to 14.67%. Therefore, increasing gearing will increase a company's default chances, but investors are rewarded with a tax shield and consequently increase company value. According to (Copeland and Weston,1992), as more debt is injected into the business, it would lead to an increase in the company value. One of the limitations of the MM approach is that individual inventors and company interest rates differ because a company can access loans at a lower rate than individual investors; the assumption of the same interest rate is entirely void.

2.2 ***Other Factors on Capital Structure:***

Trade Off Theory,

According to the Trade-off theory, a company derives value from the tax shield due to interest payment, which encourages a company to increase gearing to a margin level where tax deductibility of interest payment is offset by the possibility of financial distress cost (Jensen and Meckling, 1976). (Mayer,2001) proved that increasing debt has a tax effect on company profitability. Modigliani and Miller's world with tax propositions 1 and 2 are far from actual world reality because investors will perceive too much as credit risk. Too much debt can cause financial distress, hence bankruptcy. According to (Graham, 2000), because of the low expected distress cost of big, reputable, and profitable companies, the big companies use debt financing to double their tax benefits until the marginal tax shield declines. Issue too much equity to investors means the share price is overvalued, which can cause the share price to drop. In the real world, no company favour bankruptcy and financial distress situations. That is why capital structure trade-off theory considers the trade-off between cost: Financial distress, Agency cost and benefits: Tax benefit, and cheap source of finance (Kraus and Litzenberger,1973). Equilibrium runs vice versa in tax benefit and risk-free interest rates (reduction in tax shield and risk-free interest increases). Based on trade-off theory, the optimal capital structure line on the curve where tax benefit is above bankruptcy. According to the researchers (Zhang and Gong, 2022) report leverage bias and risk-return trade-off, risk-returns are positive when target leverage is lower than actual leverage and negative when actual leverage is below targeting leverage.

Pecking Order Theory

This theory gives attention to asymmetrical information cost and is based on the view that companies have priorities in raising capital. (Mayers and Majluf,1984) and (Fama,2004) set out relevant choices of funding types for raising company capital. The most preferred order is retaining earnings, followed by debt financing and lastly, the issue of new shares to the public. In the real world, a company is committed to this theory because the issue of retaining earnings first helps the company to avoid loss of secrecy, avoid transaction costs, guarantee shareholder interest, and prevent a decrease in company value (Arnold and Lewis, 2019). When retaining earnings is insufficient to meet investment, the company will consider the external safest or cheapest funding source, starting with debt because it costs less and causes less loss of control. The company considers equity financing a last resort when the two earlier alternatives have been exhausted. In the year 2020 UK BT group reinvested their

earnings on the 5G network across the United Kingdom. The empirical report of (Degryse et al.,2012) on small firms' capital structure suggests that Dutch small and medium enterprise debt levels are reduced by using their profits. (Mazanec, 23AD) empirical report on transport sectors proved that transport companies favour the pecking order theory. According to (Budiandriani et al.,2023), using retained earnings to fund investment or business is a positive signal to Investors.

Optimal Capital Structure,

Trade-off theory opens a discussion on optimal capital structure. Finding an optimal balance between debt and equity financing is a predominant issue in financial management (Modigliani and Miller,1958). Optimal capital structure exists when company value is at maximum and the cost of capital at minimum with the combination of debt and equity finance. According to the traditional approach, Capital structure is optimal because company value is not independent of its capital structure. Much empirical research was conducted to find the optimal capital structure. Many scholars and academics maintain that optimal capital structure exists based on benefits and cost of debt source of financing, contrary to Modigliani and Miller's proposition both worlds, with and without taxes, excessive debt affects company value. Because too much debt will increase earnings volatility, higher interest payments, loan covenants, Agency costs, and bankruptcy. The researchers (Kontuš et al., 2022) and (De we,2006) report on the practical, contemporary Approach to optimal capital. Also (Machado and Pereira, 2023) report on optimal capital structure with stock market feedback, and (Yisau, 2012) report on the effect of optimal capital on firms' performance in Nigeria. The limitation of this theory is that there is no exact ratio to pinpoint the optimal level because of variations across industries, industry life cycles and exogenous factors. However, some scholars believe that optimal capital reflected in a strong balance sheet with a higher level of equity and a lower debt level.

Financial Distress,

A company cannot take advantage of tax savings to continue taking on debt. If the debt increases and the company value increases, the greater the liability, the more likely it is that the company will default (Arnold and Lewis, 2019). Companies that are having difficulty repaying their debts are in financial difficulty. Financial distress occurs when a company's revenue or income no longer meets its financial obligations by the due date because of improper investments, economic downturn, or mismanagement (Gordon, 1971). In the year 1995, The management of the Coca-Cola company introduced a new drink, "New Coke", which was a disaster for the company's revenue because consumers rejected the new Coke, which resulted in a sharp drop in sales. Later, they introduced Coca-Cola Classic, and their sales grew to new heights. Financial distress comes with costs: indirect and direct costs. The indirect cost influences the company image because of uncertainties in customers' and suppliers' minds about dealing with the company; uncertainty in the staff's mind may lead to loss

of morale and alternative employment. Also, creditors may impose legal restrictions on management action. The direct cost of financial distress is an additional cost on top of company debt, including Court fees, Lawyers' fees, accountant fees or Bankruptcy costs. (Sewpersadh, 2022) empirical research on financial distress determinants found corporate governance practice as an additional determinant.

Agency Cost,

(Rose,1973) and (Mitnick,1973) were the first scholars that put forward agency theory. (Jensen and Meckling,1979) Shines a light on the conflict between the debtholder, shareholder, and manager. Agency cost arises when the company decisions of the agent on behalf of shareholders are dissatisfactory and disrupted because of the conflict of interest, which leads to the company's internal expenses. Personal gain is paramount to the management, not shareholder wealth maximisation; therefore, management may influence the choice of debt to equity. Agency cost of managing and aligning the conflicted parties with shareholder interest, including economic incentives such as performance bonuses and deferred or restricted shares options. In the real world, do these incentives solve agency risk? The probability is not 100%. The Enrol company senior management and board of directors fraudulently disposed of their shares at a higher price due to the window dressing accounting report. The world has witnessed insider trading on numerous occasions. The improper decision of America's fourth-largest investment bank management decision led Lehman Brothers to go bankrupt in the year 2008, as did Woolwich and BHS Stores in the UK.

Signalling Effect,

Signalling effect connected to asymmetry information. This theory believes financial health of a company is not accessible at the same time to all stakeholders. The signal can come from either company actions such as investment or management team (Shares Buyback), and it could be a positive or negative signal. Regardless of the form of a signal, it conveys a sign to stakeholders that will change the company's valuation. Debt financing could indicate to the equity investors that company gearing decisions are a reliable and profitable investment. Taking more debt can be a positive signal that the company is seeking new growth opportunity, and on the other hand, if the company issue new equity to raise capital and retire debt, investors may see it as a negative sign. The announcement of Netflix in 2017 to finance new content with 1.6 billion dollars was welcomed by investors. Thereafter, the company's share price went up, and Netflix's action in 2021 signalled financial strength by cessed of issuing new bonds. (Shahid et al., 2015) stated in their report that asymmetric information resulted in a decline in company value because a negative signal propels investors to withdraw from investment decisions.

Bankruptcy cost,

Bankruptcy happens when severe financial obligations grow high to the extent that they cannot be settled any longer. The equity value becomes zero when there is excess debt over company equity. When a company increase debt in its capital structure, the weighted average cost will increase above the optimal level, hence bankruptcy cost. When a company are deciding on capital structure, bankruptcy also should be considered. Most of the time, shareholders lose some or all they invested in the bankrupt company to the bondholders. The (Antill and Hunter, 2023) empirical research report on bankruptcy indirect cost concluded that news of bankruptcy would cause company sales to fall up to 35% as customers perceive product quality.

Loan/Bond Covenant,

A covenant is a binding agreement between the bond issuer and holder that is designed to protect the interest of the bondholder. Covenant could be restrictive or affirmative. Restrictive covenants prevent issuers from accumulating more debt as against Modigliani and Miller (preposition 2 with tax advantage) 100% debt finance. Restrictive covenants prevent companies from increasing gearing levels and new investment opportunities. (De Franco et al., 2019) Empirical research report on the benefit of the restrictive covenant. Affirmative covenants require bond issuers to perform specific requirements such as law and auditing compliance. (Denis and Wang, 2014) empirical research supported affirmative covenant on the right of bondholders over bond issuer operating and financial policies. (Mansi, Qi, and Wald, 2021) empirical report on bond use and firm default concluded that there is an association between bond covenants and higher bankruptcy.

2.3. ***Empirical Results on the Theories.***

Is capital structure relevant or not in corporate finance, according to scholars? Some scholars believe capital structure has no connection with company value or profitability, while some believe capital structure is a part of corporate strategic management. According to (Whittington et al.,2020), financial capability and assets are part of sustainable competitive advantage that a company need to satisfy customers over the long term. Some empirical studies support the irrelevance theory, while some support the relevance theory, according to the empirical reports and Appendix 1.

MM Irrelevance and Relevance Theory

Several empirical studies have been conducted on Trade-off, pecking order, and Modigliani and Miller Relevance and Irrelevance theories, both recent and past. According to (Modigliani and Miller, 1958), capital structure choices adopted by the company have no bearing on their value. Contrary to Modigliani and Miller's 1958 theory, empirical tests were conducted by (Aggarwal and Padhan, 2017) on the impact of company quality and capital structure on the company value of quoted hospitality companies in India between 2001 and 2015. Aggarwal used pooled OLS, fixed and

random effect methodology to explicate the hypotheses and concluded that Modigliani and Miller's irrelevance theory does not hold in India's hospitality industry. Aggarwal argued quality, liquidity and leverage significantly influence company value. In support of (Aggarwal and Padhan, 2017) finding, in the year 2021, (Mishelle, 2021) conducted empirical research in East Africa on the association between company value and capital structure using the GMM estimator technique. Mishelle applied Tobin's Q metric as a measure of company value, and the report concluded that there is a negative significant impact of leverage on company value, which is consistent with Aggarwal's report. Mishelle argued that gearing decreases the company value in East Africa. Thereafter (Hossain, 2021) conducted an empirical test on company capital structure across ten countries from the year 2004 to 2018 using ordinary least squares and GMM estimator. Hossain, in line with (Mishelle, 2021), concluded that MM irrelevance theories do not hold within the research period. Hossain argued that an increase in gearing because of a higher tax shield does not lead to higher company value, which supported Mishelle's statement. Consistent with Mishelle's report, (Obayagbona et al.,2022) conducted an empirical test on 16 manufacturing companies quoted on the stock exchange in Nigeria from the year 2010 to 2020 using fully modified ordinary least squares. Regression conducted between company value and short-term debt, long-term debt, and total debt to equity, Obayagbona's result concluded that in Nigerian manufacturing companies, regardless of tax benefit, MM irrelevance and relevance theories do not hold within the research period. Obayagbona suggested that long debt to equity does not have a significant effect on company value but is a sign of a negative coefficient; Obayagbona suggested that Nigeria's manufacturing companies should use equity financing instead of debt. Also (Nwokoye et al.,2022) conducted an empirical test on 15 Ghana Non-finance companies from the year 2010 to 2019 using the STATA computer econometric software package. Nwokoye's result concluded that MM's irrelevance and relevance theories do not hold in Ghana companies. Nwokoye argued that the value of Ghana companies was not influenced by tax shield as reported by (Hossain, 2021); therefore, Nwokoye's report is consistent with Obayagbona. The above empirical studies report indicates that capital structure is unimportant today. However, contrary to all the above empirical studies reports, several scholars disagreed with these findings. Empirical research was conducted by (Vega Zavala and Santillan Salgado, 2019) on the association between market value and capital structure of 69 non-financial Mexico-quoted companies from 2004 to 2014 using pooled ordinary least squares and random effect regressions. Vega Zavala concluded that change to capital structure affects the market value, which is consistent with (Modigliani and Miller,1963), contrary to Nwokoye's statement. However, Vega Zavala rejected the (Modigliani and Miller, 1958) Irrelevance theory. Vega Zavala believed that optimal capital exists according to their research finding. Furthermore (Hirdinis, 2019) conducted empirical tests on capital structure and firm size on firm value using multiple linear regression. Hirdinis M concluded that capital structure significantly and positively impacts company value. Hirdinis M's report is consistent with Vega Zavala's report, and Modigliani and Miller's 1963 theory. In support of Vega Zavala's report, (Maulida and Evania Karak, 21AD) conducted an empirical study on the effect of company size, profitability, and dividend policy using multicollinearity and heteroscedasticity tests. Maulida concluded that there is a significant impact of gearing

on company value. Consistent with Maulida's report, (Diantimala et al., 2021) used the least square dummy variable and ordinary least square to research the influence of capital structure on company value. Diantimala concludes that the choice of capital structure significantly and positively impacts company value. Diantimal argued that small and big companies impacted market value differently. As shown in Appendix 2, the mixture of debt and equity in Company X Ltd positively increases the shareholders' returns and value plus tax benefit than Company QS Ltd. On the other hand, Company QS Ltd could be more profitable, provided the Preference shares are convertible to ordinary shares in the future.

Trade-Off vs. Pecking Order Theory.

Other exciting theories are Trade-Off and Pecking Order. Both are crucial to a company's optimal capital structure in terms of risk, returns and cost of capital. However, the question is, which of these theories is most acceptable today and can both apply simultaneously? Modigliani and Miller 1968 100 % debt financing and tax benefits will result in bankruptcy due to excessive debt and bankruptcy costs. Bankruptcy cost is the disadvantage that a company trades off against tax benefits. As shown in Appendix 1, as the debt-to-equity ratio increases, the cost of distress and equity increases. The trade-off and pecking order theory offers a better understanding of capital structure, contrary to Modigliani and Miller's theory. Several empirical research studies have been conducted on these theories; some scholars consider trade-off before pecking order theory, while others consider pecking order theory before trade-off. According to (Shyam-Sunder and C. Myers, 1999), based on 157 industrial companies in the years 1971, 1981 and 1989 using ordinary least squares. The empirical test on static Trade-off against pecking order theory concluded that pecking order theory was more favoured in the corporate finance decision. Also (Culata and Gunarsih, 2012) conducted an empirical study of the pecking order and trade-off theory of capital structure on Indonesian quoted companies between 2009 to 2010 using regression, Fama and French. The empirical study concluded that though trade-off theory predicted optimal capital, the companies were in favour and followed the pecking order theory of sources of financing company, which is consistent with Myer et al. Furthermore, based on the Ordinary least square method and GMM .(Jaworski et al.,2023), empirical study on the financial behaviour of small and medium-sized enterprises in Poland concluded that small and medium enterprises in Poland's capital structure decisions followed the pecking order theory. Jaworski argued that their group of small -medium enterprises sought optimal capital structure through trade-off theory. Does this mean that all scholars agreed with the above finding? However, the following researcher reports different from all the above findings. The empirical report of Jaworski was consistent with Culate. Also (Wang, 13AD) conducted an empirical study on pecking order theory and static trade-off using non-financial company headquarters in the UK between the years 2006 to 2011. Based on ordinary least squares, Wang concluded that the trade-off theory has more domination than the pecking order theory in the UK capital structure. Wang argues that UK company affected by the financial distress cost due to the tax shield benefit advantage. In support of the (Wang, 13AD) report, an empirical test conducted on capital structure

theories for quoted Vietnamese companies by (Nguyen et al., 2019) using the generalised method of moment (GMM) concluded that Vietnamese quoted companies determined capital structure by following the trade-off theory but there no evidence of pecking order theory in capital structure decision. Nguyen argued that the fund flow deficit negatively affects the debt issue, consistent with the pecking order theory.

To sum up, The traditional approach theory does not back empirical theory or method but common sense because it does not pinpoint the optimal point of capital structure. The reality is that finance managers engage in trial and error to find the optimal point. On the other (Modigliani and Miller's proposition 1958) with no taxes is not practicable or applies to any country in the world. Secondly, just because companies are in the same industry does not mean they will have 100% similar risk during Covid -19 pandemic. Some airlines bankrupt, such as Ernest Airline, Avianca, and City Jet, went bankrupt. At the same time, some survived, including British Airways. (Modigliani and Miller 1963) The world with taxes supports optimal capital at 99.9% gearing, but in the real world, as debt increases, so also the possibility of risk of tax exhaustion. By looking at the empirical results, the researcher's methodology was different, though they produced similar conclusions. It into easy to compare the findings against each other due to different regions or countries. Finally, the date of their data range was different; therefore, it may be difficult for some finance manager to choose the right finding that applied to their industry. According to the traditional approach, using a pecking order will help the company achieve optimal capital structure; therefore, the company should set a target gearing ratio that is monitored and controlled by the trade-off theory.

2.4 ***Related Literature on the Effect of Capital Structure on Profitability and Share Returns.***

Capital Structure and Share Returns.

Several Researchers conducted empirical studies on the association between profitability, capital structure and Share returns. Some researcher's studies concluded that capital structure affects share returns, while some researchers believe that capital structure does not affect share returns.

The following empirical studies reports concluded a positive association between share returns and capital structure. In the year 1958 (Modigliani and Miller,1958) examined the relationship between gearing and share returns using the linearity test. The report indicated that the relationship between gearing and share returns was positive. Modigliani and Miller argued that proposition 2 expresses that leverage and share have a linear relationship. Also, in line with Modigliani and Miller's

1958 experiment (Masulis, 1980) conducted research on the effect of capital structure change on security prices using statistical methodology. Masulis's empirical study indicated that stock price significantly responds to changes in capital structure, both increase and decrease in gearing level. In 1991 (Harris and Raviv, 1991) examined capital structure theory on 831 medium and large companies using simultaneous and panel data. Harris and Raviv's empirical results indicated that leverage changes in capital structure would cause stock prices to increase due to exogenous factors reaction. Harris's report was consistent with Masulis's 1980 empirical study. Furthermore, (Yang et al., 2010)conducted research on co-determinants of stock returns and capital structure of Taiwan non-financial companies between 2003 and 2005. Yang applied Titman and Wessels 1988 utilise structural equation methodology. The findings (Yang et al., 2010) also imply that there is a positive association between leverage and stock returns. The result of Yang was consistent with Modigliani and Miller in 1958. In line with Modigliani and Miller and Yang et al. in 2010, (AlZou'bi et al., 20AD) examined the Capital Structure influence on Stock Returns in Jordan, and they concluded that capital structure has a positive influence on stock returns based on regression analysis. An empirical study of AlZou'bi' is consistent with (Hermuningsih, 2013), (Khan et al.,2013) and (Bhandari, 1988).

Contrary to the above positive reports, (Eckbo, 1986) empirical research on the valuation effects of corporate debt offerings. Eckbo concluded that corporate debt offerings impacted share prices negatively. The outcomes of Panel regression analysis and the Baron and Kenny 1986 four-step model showed that capital structure has adversely affected stock returns. Also, based on regression and correlation analysis models, the (Myers, 1993) empirical study conclusion on Still Search for Optimal Capital Structure says profitability and financial leverage are strongly negatively correlated. Myers's empirical study was consistent with Eckbo's in 1986. In line with Myer's empirical report, Ahmad conducted an empirical study on the co-determinants of stock returns and capital structure of 100 non-financial companies in Karachi, Pakistan. Evidence from (Ahmad et al.,2013) through the generalised method of moments concluded that the association between stock returns and leverage is negative ($\beta 1 < 0$). Also (Sivaprasadd et al., 13AD) examine the association between shareholder returns and capital structure in the UK between the years 1980 and 2008. Based on asset pricing models of CAPM, Fama and French, and Carhart, the report concluded that gearing (debt finance) is negatively related to estimated returns. The empirical study of Sivaprasadd was consistent with Eckbo,1986. Inconsistent with Sivaprasadd, an empirical study conducted by (Nayeem Abdullah et al.,2015)on the capital structure effects on stock returns of manufacturing companies quoted on the stock exchange in Dhaka. Based on the ordinary least square regression analysis model, Abdullah's study indicated a negative effect between share returns and capital structure. Abdullah argued that because of low competition in the industry, manufacturing companies in Dhaka maintained low debt financing. Inconsistent with Abdullah et al in 2015, (Tahmoorespour et al., 15AD) studied the association between share returns and capital structure ratio of companies across Australia, China, Hong Kong, Japan, South Korea, Malaysia, Singapore, and Taiwan from the year 1990 to 2012. Tahmoorespour using panel regression methodology, the results of the study differ across the countries as well as the industrial sectors. A negative association was

reported between stock returns and capital structure in China, Korea, and Australia. Furthermore, (Ndua et al., 23AD) examined Ownership Concentration, Capital Structure and Stock Returns of Firms Using Nairobi Securities Exchange-quoted companies' data from the year 2006 to 2019. The outcomes of Panel regression analysis and the Baron and Kenny (1986) four-step model show that capital structure has adversely affected stock returns. Ndua's empirical study was consistent with Tahmoorespour's 2015.

Capital Structure and Profitability.

If capital structure is relevant, there must be an impact of financial gearing on company profitability. Therefore, some scholars conducted empirical studies on this topic to determine if capital structure really impacted profitability positively or negatively. In the year 2013 (Mehdi Mohammadzadeh et al., 2013) conducted empirical research on the capital structure effects on 30 Iran pharmaceutical companies using SPSS and correlation coefficient methodology. Mehdi concluded that capital structure and profitability are negatively related to all models applied. Further, Mehdi mentioned that between the years 2001 and 2010, Iran's pharmaceutical companies followed the pecking order theory, which means the industry favours internal financing before debt, consistent with (Culata and Gunarsih, 2012) report on Trade-Off vs. Pecking Order. Inconsistent with Mehdi (Aidoo et al, 22AD) carried out an empirical research study on the capital structure and profitability of quoted manufacturing companies in Ghana. Based on SPSS and multiple regression methodology, Aidoo indicated a statistically significant correlation between profitability and capital structure. The researcher discovered an adverse relationship between Profitability and capital structure in Ghana manufacturing companies. Aidoo suggested a reduction of debt financing to the companies. According to an empirical study conducted by (Hoang Dinh Huong, 2023) on 30 quoted plastic and packaging companies in Vietnam using linear regression method and descriptive data. The research findings concluded that the industry's capital structure negatively affected profitability. Due to the cost of debt financing, Hoang suggested that the industry should focus on internal financing more. Hoang empirical study was consistent with (Quang and Xin, 2014), (Odesanya et al., 2018) and (Isik, 2017). On the other hand, an empirical study conducted based on a sample from quoted Kompas 100 firms by (Chandra et al., 2019) concluded that capital structure significantly and positively affected profitability, contrary to negative reports of Hoang and other researchers. Also, Chandra's empirical study shows that capital structure has no impact on share returns, which is consistent with Myer and others. According to Chandra, growth affects capital structure, whereas profitability is determined by other variables, including the size of a company, company growth, uniqueness, etc. In line with Chandra, (Singh and Bagga, 2019) carried out empirical research on the capital structure effect on the profitability of 50 quoted companies on the stock market in India between 2008 and 2017. Based on fixed effect and ordinary least square methodology, Singh concluded that capital structure significantly and positively impacted company profitability. Also (Gill et al.,2011) examined the capital structure effects on the profitability of 272 quoted American companies on the New York Stock Exchange from the year 2005 to 2007. According to correlation and

regression analysis, Gill's empirical test indicated that a positive relation exists between capital structure and profitability. Gill suggested that company profitability depends on debt financing. The report of Gill was consistent with Singh and Bagga, (Goyal,2013) and (Chisti et al.,2013). Furthermore (Ahmad, 2014) carried out empirical research on the capital structure effects on the profitability of 16 quoted cement companies on the Karachi stock exchange from the year 2005 to 2010. Based on STATA 11 and random effect methodology, Ahmed concluded that there is a negative association between profitability and long-term debt, but positive association exist between short-term debt and profitability. Ahmad argued that the increase in debt adversely affected company earnings. Also (Yegon et al., 2014) conducted an empirical study on capital structure's effect on profitability. Based on samples collected in Nairobi, quoted Banks from the year 2004 to 2012. Based on the ordinary least square method, Yegon concluded that the relationship between long-term debt and profitability is negatively related. In contrast, short debt and profitability are positively related. Yegon argued that Nairobi's financial institution followed the pecking order theory due to short-term financing. The report of Yegon was consistent with Ahmad's empirical study in 2014. (Kerim et al., 2019) examined the capital structure effects on the profitability of 15 quoted insurance companies in Nigeria between 2013 and 2017. Based on the ordinary least square method, empirical results indicated a significant negative effect of short-term debt on profitability, but profitability positively impacted long-term debt. Kerim suggested that quoted insurance companies should reduce debt financing of their capital structure. The empirical report of Kerim was opposite of Yegon in 2014 and Ahmad in 2014. In one of my interactions with individual investors, one of them said, *"I do not care about capital structure, but I invested my money in a company that issues annual divided."* Therefore, capital structure directly impacts profitability but does not affect share returns. There are mixed empirical reports on capital structure's relationship with profitability and share returns, both positive and negative, due to different methodologies and industry exogenous environmental factors. Therefore, the company should be cautious and apply the best-fit report to its capital structure strategy.

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2.5 *Difference Between this Research and Past Research.*

Several researchers have researched the association between share returns and capital structure or the impact of capital structure on company profitability. However, in the year 2019, (Chandra et al., 2019) researched both topics; they examined the influence of capital structure on share returns and profitability. Narrowing this topic to a specific industry will serve the audience better. Secondly, industries' capital structure varies; therefore, examining specific industries will help finance managers apply best-fit capital structure to their corporate financial and strategic management. Therefore, this research is focused on specific and capital-intensive industries. Chandra conducted empirical research on a developing country and population samples drawn from quoted companies on the Compass Index 100 of Indonesia. They used a total of

64 companies' data. However, this research will be conducted in a developed country. I will use data from 30 companies quoted on the FTSE All Share index of the United Kingdom, where credit facilities are accessible easily. Chandra based their research on multiple industries from year 2010 to 2016, but this research is focused on the Pharmaceutical and Bio-Tech industries. Chandra used capital structure and capital structure determinant factors as research variables and measurements, including Liquidity, Volatility, Growth, Uniqueness, Tangibility, Stock returns, Company size and Profitability for their empirical test. However, in this research, I excluded capital structure determinant factors. I will use capital structure, Stock returns, gearing ratios and profitability ratios as research variables and measurements for empirical tests. With the assistance of the AMOS technique, Chandra used a path analysis model for their empirical test and analysis. Instead, I will use multiple regression and correlation analysis models with the help of the EXCEL technique.

Furthermore, Chandra used Total Debt to Total Assets as a proxy for capital structure and earnings after tax to Total Assets as the profitability proxy. I will use Net Profit Margin, Gross Profit margin and Operating Profit Margin as profitability proxies. I will use the Debt to Debt-equity ratio, Debt-capital ratio, and Returns on Assets as profitability proxies. In contrast, Returns on equity, Returns on Capital Employed and Annual share price will be proxies for share returns. Lastly, the findings of this report will also consider any variability in the capital structure within the industry.

Chapter Three

Data and Methodology:

3.1 *Data:*

In this research, the data presented are Secondary data. These will consist of substantial data collection from the London Stock Market website and Financial Statements of pharmaceuticals and Bio-tech companies over long periods from 2018 to 2022. One of the reasons for my choice of stock exchange market is that FTSE All Share index data are dependable and credible regarding companies' information. I will use secondary data to study the association between profitability, stock returns and capital structure. Capital structure metrics are debt-to-equity ratio and debt-to-capital ratio. Profitability is measured as Gross profit margin, Operating profit margin, Net profit margin, returns on capital Employed, Returns on Assets and Returns on Equity. At the same time, Share return would be calculated based on annual share price percentage changes.

3.2 *Methodology*

Several researchers used different methods for their research purposes. This research examines the statistical significance of the relationship between each variable (the independent variable and the dependent). I will use popular multiple regression models and the Excel statistical packages. I will examine the empirical link between profitability, capital structure and stock return of pharmaceutical and Bio-Tech quoted companies from 2018 to 2022. I will use the Correlation coefficients matrix to examine the relationship between each variable (Independent and dependent) and establish the direction of the relationship between the variables. Regression identifies variables that impacted the topic of interest and allows the researcher to determine the most crucial factors. Regression confidently determined those factors affect each other's. Dependent variables are the factors we want to predict or understand, while independent ones impact the dependent variable. Regression analysis is one of the statistical applications in finance. The model is often used in the Capital Asset Pricing Model, business performance forecast and securities returns.

Multiple regression statistical methods are flexible and easy to use for estimation when there are more research variables, both dependent and independent. Multiple regression can tell us the strength of relationships between variables, each independent variable's statistically significant, and regression coefficients. Multiple can help model future relationships. The following mathematical formula represents the multiple regression model:

$Y = a+bx1+cx2+dx3+E$

Y is the Dependent variable

X1 to X3 is independent variable.

b, c, d is sloping.

E is residual or (error)

3.3 ***Variables Calculations and Definitions:***

Table 1

Variables	Calculations
Debt to Equity	$\frac{\text{Long-term debt + Short-term debt}}{\text{Total Equity}}$

Debt to Capital	Long-term debt + Short-term debt --- Long term debt+ Short term debt+ Total Equity
Gross Profit Margin	Gross Profit --- Revenue
Operating Margin	Operating Profit --- Revenue
Net Profit Margin	Net Profit --- Revenue
Returns on Capital Employed	Operating Profit --- Total Assets − Current Liabilities
Returns on Equity	Net Profit --- Total Shareholders' Equity
Returns on Asset	Net Profit --- Total Assets
Share returns	Share Price *t* – share Price *t*−1 --- Share Price *t*−1

4. Chapter Four

Empirical Results and Findings.

The following assumptions govern the empirical test:

The dependent variable Y and independent variables are normally distributed.

The dependent variable Y and independent variable X have a linear relationship.

The hypothesis is that there is no correlation between dependent variables Y and independent variables X.

4.1 Statistically Significant and Coefficient Criteria:

In these summaries of empirical output, I explained four essential criteria in the regression statistics: R-Square, Significant, P-Value and Correlation Coefficient.

In the below output, **the Intercept** tells us the average expected value for dependable variables when all independent variables equal zero. **R-square and adjusted R-square** tell us the proportion of dependent y explained by independent X variables for statistics regression. The **significance** explained the degree of association and whether the relationship is merely apparent; therefore, I set the significance of this model at 95% confidence intervals. The null hypothesis is significant if it < 0.05; the alternative hypothesis is not significant if it is greater than 0.05 and has no impact. **The P-value** indicates the relationship between dependent y and independent X, whether their relationship is statistically significant. If the P-value of independent variables x is < 0.05, means that dependent y and independent variables X is related; otherwise, there is no relationship between them. The **Correlation coefficient** explains the degree of linear association, and it is measured on a scale of +1 to -1; the proportion of change in independent variables X will correspondently change dependent y variables. Therefore, in this report, X < 0.00 is a negative coefficient, X>0.00 indicates a positive coefficient and X at 0.00 means no correlation.

Share returns vs. Capital ratio.

Below is the summary of empirical regression test of the capital structure and share returns relationship.

EMPIRICAL SUMMARY 1							

Regression Statistics								
Multiple R	0.0954							
R Square	0.009101							
Adjusted R Square	-0.00438							
Standard Error	0.942607							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	1.199633	0.599817	0.675083	0.510685			
Residual	147	130.6106	0.888508					
Total	149	131.8102						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.259162	0.077884	3.327536	0.0011077	0.105245	0.4131	0.1052	0.41308
X Variable 1	0.001696	0.023099	0.073413	0.941577	-0.04395	0.0473	-0.044	0.04735
X Variable 2	-0.02226	0.019244	-1.15666	0.249286	-0.06029	0.0158	-0.06	0.01577

Y=a+b1X1+b2X2

‘

Y (Share returns)
X1 (Total Debt to Total Equity)
X 2 (Total Debt to Capital)

Gross Profit Margin vs Capital Structure:

Below is the summary of empirical regression test of the capital structure and gross profit relationship.

EMPIRICAL SUMMARY 2								
Regression Statistics								
Multiple R	0.046423							
R Square	0.002155							
Adjusted R Square	-0.01142							

Standard Error	1.234762							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	0.484047	0.242024	0.158742	0.853363			
Residual	147	224.1216	1.524637					
Total	149	224.6057						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.274592	0.102024	2.691458	0.007939	0.07297	0.476215	0.07297	0.476215
X Variable 1	0.016158	0.030259	0.533992	0.594154	-0.04364	0.075957	-0.04364	0.075957
X Variable 2	0.004966	0.025209	0.197002	0.844098	-0.04485	0.054785	-0.04485	0.054785
Y=a+b1X1+b2X2								
Y (Gross profit)								
X1 (Total Debt to Total Equity)								
X 2 (Total Debt to Capital)								

Operating Profit Margin vs Capital Structure:

Below is the summary of the empirical regression test of the capital structure and operating profit relationship.

EMPIRICAL SUMMARY 3								
Regression Statistics								
Multiple R	0.054376							

R Square	0.002957							
Adjusted R Square	-0.01061							
Standard Error	34.66438							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	523.8213	261.9106	0.217965	0.804413			
Residual	147	176638	1201.619					
Total	149	177161.8						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-8.62661	2.864185	-3.01189	0.003057	-14.2869	-2.96632	-14.2869	-2.96632
X Variable 1	0.54619	0.84948	0.64297	0.521245	-1.13258	2.224962	-1.13258	2.224962
X Variable 2	0.120865	0.707709	0.170784	0.864629	-1.27773	1.519463	-1.27773	1.519463
Y=a+b1X1+b2X2								
Y (Operating profit)								
X1 (Total Debt to Total Equity)								
X2 (Total Debt to Capital)								

Net Profit Margin vs Capital Structure:

x

Below is the summary of the empirical regression test of the capital structure and net profit relationship.

EMPIRICAL SUMMARY 4								

Regression Statistics								
Multiple R	0.031668							
R Square	0.001003							
Adjusted R Square	-0.01259							
Standard Error	65.39799							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	631.1553	315.5776	0.073787	0.928904			
Residual	147	628703.9	4276.897					
Total	149	629335.1						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-11.5829	5.403587	-2.14355	0.033714	-22.2616	-0.90412	-22.2616	-0.90412
X Variable 1	0.561047	1.602634	0.350078	0.726781	-2.60613	3.728226	-2.60613	3.728226
X Variable 2	0.226195	1.335167	0.169413	0.865705	-2.41241	2.864796	-2.41241	2.864796
Y=a+b1X1+b2X2								
y (Net profit)								
X1 (Total Debt to Total Equity)								
X2 (Total Debt to Capital)								

ROCE vs Capital structure:

Below is the summary of the empirical regression test of the capital structure and ROCE relationship.

EMPIRICAL SUMMARY 5							

Regression Statistics								
Multiple R	0.032319							
R Square	0.001045							
Adjusted R Square	-0.01255							
Standard Error	17.31806							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	46.09957	23.04979	0.076854	0.926062			
Residual	147	44087.54	299.9153					
Total	149	44133.64						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.96673	1.430925	-1.37445	0.171394	-4.79457	0.86111	-4.79457	0.86111
X Variable 1	-0.00013	0.424394	-0.0003	0.999763	-0.83883	0.838575	-0.83883	0.838575
X Variable 2	-0.13855	0.353566	-0.39186	0.695728	-0.83728	0.56018	-0.83728	0.56018
Y=a+b1X1+b2X2								
y (ROCE)								
X1 (Total Debt to Total Equity)								
X2 (Total Debt to Capital)								

ROE vs Capital Structure:

Below is the summary of the empirical regression test of the capital structure and ROE relationship.

EMPIRICAL SUMMARY 6								
Regression Statistics								
Multiple R	0.277066							
R Square	0.076765							
Adjusted R Square	0.064204							
Standard Error	14.31675							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	2505.3	1252.65	6.111404	0.002821			
Residual	147	30130.48	204.9693					
Total	149	32635.78						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-1.23482	1.182938	-1.04386	0.298263	-3.57259	1.102939	-3.57259	1.102939
X Variable 1	-1.19822	0.350844	-3.41526	0.000824	-1.89157	-0.50487	-1.89157	-0.50487
X Variable 2	0.186094	0.292291	0.636674	0.525328	-0.39154	0.763729	-0.39154	0.763729
Y=a+b1X1+b2X2								
y (ROE)								
X1 (Total Debt to Total Equity)								
X2 (Total Debt to Capital)								

ROA vs Capital structure:

Below is the summary of the empirical regression test of the capital structure and ROA relationship.

EMPIRICAL SUMMARY 7								
Regression Statistics								
Multiple R	0.144021							
R Square	0.020742							

Adjusted R Square	0.007419							
Standard Error	0.834508							
Observations	150							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	2	2.168366	1.084183	1.556833	0.214258			
Residual	147	102.3712	0.696403					
Total	149	104.5396						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.29819	0.068952	-4.32455	2.81E-05	-0.43445	-0.16192	-0.43445	-0.16192
X Variable 1	0.018167	0.02045	0.888341	0.375809	-0.02225	0.058581	-0.02225	0.058581
X Variable 2	-0.02547	0.017037	-1.4951	0.137031	-0.05914	0.008197	-0.05914	0.008197
Y=a+b1X1+b2X2								
y (ROA)								
X1 (Total Debt to Total Equity)								
X2 (Total Debt to Capital)								

4.2 *Findings*

Hypothesis 1: There is no correlation between capital structure and Share returns.

Share returns and Capital ratio empirical result:

Table 1

			Result	Condition
Significant f	0.510685		Not significant	>0.05
R-Square	0.009101			
Variables	X1	X2		
P-Value	0.941577	0.249286	Not significant	>0.05
Coefficient	0.001696	-0.02226	Mix correlation	X1 >0.00, X2<0.00

Significant F: The above model's significant f is 0.510685, which indicates that the model is insignificant because it is greater than 0.05.

Intercept: As shown in Empirical summary 1, The intercept of this output is 0.259162, which indicates average expected share returns at zero gearing ratio. The P-value of this output is at 0.00, which indicates that the intercept term is different statistically from zero.

R-Square: As shown in Table 1, The R-Square of the analysis is incredibly low, 0.01; this indicates that X1 and X2 variables (capital structure) only explained 0.01 % of the Y variable (Share returns).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is at 0.94, which means the debt-to-equity ratio and share returns relationship is insignificant since the P-value is higher than 0.05 alpha level. Also, the P-value of the total debt-to-capital ratio (variable X2) is at 0.25, which means there is a statistically insignificant link between share returns and total debt-to-capital ratio because the P-value is greater than the alpha 0.05.

Coefficient: From the output, the coefficient of share returns and total debt to equity ratio (variable X1) correlates at 0.00; therefore, on average, each additional increase in debt to equity ratio will make no changes in share returns while the coefficient of share returns and total debt-to-capital ratio (variable X2) is a negative correlation at -0.02. Therefore, an increase in debt-to-capital ratio adversely or reduces share returns by 0.02. This analysis shows that though finances suit a company, other factors, such

as macroeconomic factors, investor views, and non-industry cycles, influence the share price. The share price of pharmaceutical and Bio-Tech respond according to the non-industry or product cycle. An example was vaccine development and Cancer drugs. The shares of most of the companies that produced or researched these drugs saw a share price increase (PANDEY, 19AD).

The contrary to the findings of (Modigliani and Miller,1958) (Masulis, 1980) (Khan et al.,2013) and many others. As shown in Table 1, The empirical finding in this table is consistent with the (Eckbo, 1986) (Myers, 1993) (Ahmad et al,2013) (Sivaprasadd et al., 13AD) (Nayeem Abdullah et al.,2015)(Tahmoorespour et al., 15AD) (Ndua et al., 23AD), according to the total debt-to-capital and debt to equity ratio coefficient figure. The statistical report shows no correlation link between capital structure and share returns; therefore, the hypothesis holds.

Implication of this Finding :

According to signalling theory, the financial strength of a company is not accessible at the same time to all stakeholders. Signal can come from either company actions such as investment or management team (Shares Buyback). An increase in share price means management increases company wealth by investing in a positive project, financially strong or enjoying market share and competitive advantage. The negative correlation result contradicts the traditional approach of the capital structure theory of Durand and proposition No Tax (Modigliani and Miller) 2; this implies that the company's outstanding share does not change with increased debt. Then, the stock price will also drop. A negative correlation may indicate a decrease in company value and induce corporate investors to demand more returns, or they may decide to give up their shares and invest their money in a profitable company. Secondly, because the average cost of capital rises with the increased cost of capital, discounted future cash flow will also be at a high rate. That means lower valuations for the company, hence a reduction in the share price. High debt is unsuitable for companies and shareholders because it hampers company cash surplus and dividend payout, which means the trade-off theory cannot explain the share price effect. Therefore, management will be pressured to invest in products or investments with better and positive Net Present Value, or management may reduce the company's capital structure's debt level, increasing profitability chances.

Hypothesis 2: There is no correlation between capital structure and Profitability.

Gross Profit Margin vs Capital Structure:

Table 2

			Result	Criteria
Significant f	0.853363		Not significant	>0.05
R-Square	0.002155			
Variables	X1	X2		
P-Value	0.594154	0.844098	Not significant	>0.05
Coefficient	0.016158	0.004966	Positive correlation	>0.00

Significant f: The above model's significant f is 0.85, indicating that the model is insignificant because it is greater than 0.05.

Intercept: As shown in the Empirical summary 2, The intercept of this output is 0.274592, which indicates the average expected gross profit margin at zero gearing ratio level, and the corresponding P-value of this output is at 0.01; this indicates that the intercept term is different statistically than zero.

R-Square: As shown in Table 2, The R-Square of the analysis is incredibly low, 0.00; this indicates that X1 and X2 variables (capital structure) only explain 0.00 % of the Y variable (Gross profit margin).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is at 0.55, which means the debt-to-equity ratio and gross profit margin relationship are statistically insignificant since the P-value is higher than 0.05 alpha level. Also, the P-value of the

total debt-to-capital ratio (variable X2) is at 0.84, which means there is a statistically insignificant link between gross profit and total debt-to-capital ratio since the P-value is higher than the alpha 0.05 threshold.

Coefficient: From the output, the coefficient of total debt to equity ratio (variable X1) and gross profit margin correlates at 0.02; this indicates a positive correlation. Therefore, when the total debt-to-capital ratio (variable X2) and the gross profit margin coefficient are both 0, each incremental rise in the debt-to-equity ratio will typically result in an increase in the gross profit margin of 0.02 percent. Therefore, no effect of the debt-to-capital ratio on the gross profit margin.

Operating Profit Margin vs Capital Structure:

Table 3

			Result	Criteria
Significant f	0.804413		Not significant	>0.05
R-Square	0.002957			
Variables	X1	X2		
P-Value	0.521245	0.864629	Not significant	>0.05
Coefficient	0.54619	0.120865	Positive correlation	>0.00

Significant f: The above model's significant f is 0.80, indicating that the model is insignificant because it is greater than 0.05.

Intercept: As shown in the Empirical summary 3, The intercept of the output is -8.62661, which indicates the average expected operating profit margin at zero gearing ratio level, and the corresponding P-value of this output is at 0.00; this indicates that the intercept term is different statistically than zero. As shown in Table 3, The R-Square of the analysis is incredibly low, 0.003; this indicates that X1 and X2 variables (capital structure) only explain 0.00 % of the Y variable (Operating profit margin).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is at 0.52, which means the operating profit margin and debt-to-equity ratio relationship are statistically insignificant since the P-value is higher than 0.05 alpha level. Also,

The P-value of the total debt-to-capital ratio (variable X2) is at 0.87, which means a statistically significant relationship does not exist between the operating profit margin and total debt-to-capital ratio since the P-value is higher than the 0.05 alpha threshold.

Coefficient: From the output, the coefficient of total debt to equity ratio (variable X1) and operating profit margin correlate at 0.55; this indicates a positive correlation. Therefore, on average, each additional increase in debt-to-equity ratio will result in a 0.55 increase in operating profit margin, whereas the coefficient of total debt-to-capital ratio (variable X2) and operating profit margin is positively correlated at 0.12. Therefore, an increase in the debt-to-capital ratio will result in a 0.12 profit gain in operating margin.

Net Profit Margin vs Capital Structure:

Table 4

			Result	Criteria
Significant f	0.928904		Not significant	>0.05
R-Square	0.001003			
Variables	X1	X2		
P-Value	0.726781	0.865705	Not significant	>0.05
Coefficient	0.561047	0.226195	Positive correlation	>0.00

Significant f: The above model's significant f is 0.93, which indicates that the model is insignificant because it is greater than 0.05.

Intercept: As shown in the Empirical summary 4, The intercept of the output is -11.5829, which indicates the average expected net profit margin at zero gearing ratio level, and the corresponding P-value of this output is at 0.03; this indicates that the intercept term is different statistically than zero.

R-Square: As shown in Table 4, The R-Square of the analysis is incredibly low, 0.00; this indicates that X1 and X2 variables (capital structure) only explain 0.00 % of the Y variable (Net profit margin).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is at 0.73, which means the net profit margin and debt-to-equity ratio relationship are statistically insignificant since the P-value is higher than 0.05 alpha level. Also, the P-value of the total debt-to-capital ratio (variable X2) is at 0.87, which means there is a statistically insignificant link between net profit margin and total debt-to-capital ratio since the P-value is higher than the 0.05 alpha threshold.

Coefficient:
Coefficient: From the output, the coefficient of total debt to equity ratio (variable X1) and operating profit margin correlate at 0.55; this indicates a positive correlation. Therefore, on average, each additional increase in debt-to-equity ratio will result in a 0.55 increase in operating profit margin, whereas the coefficient of total debt-to-capital ratio (variable X2) and operating profit margin is positively correlated at 0.12. Therefore, an increase in debt to-capital ratio will increase the operating margin by a profit of 0.12.

ROCE vs Capital structure:

Table 5

			Result	Criteria
Significant f	0.926062		Not significant	>0.05
R-Square	0.001045			
Variables	X1	X2		
P-Value	0.999763	0.695728	Not significant	>0.05
Coefficient	-0.00013	-0.13855	Negative correlation	<0.00

Significant f: The above model's significant f is 0.93, which indicates that the model is insignificant because it is greater than 0.05.

Intercept: As shown in the Empirical summary 5, The intercept of the output is -1.96673, which indicates the average expected ROCE at zero gearing ratio level and the corresponding P-value of this output is at 0.17; this indicates that the intercept term is different statistically than zero.

R-Square: As shown in Table 5, The R-Square of the analysis is incredibly low, 0.00; this indicates that X1 and X2 variables (capital structure) only explain 0.00 % of the Y variable (ROCE).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is 1.00, which means the ROCE and debt-to-equity ratio relationship are statistically insignificant since the P-value is higher than the alpha 0.05 threshold. Also, the P-value of the total debt-to-capital ratio (variable X2) is at 0.70, which means there is a statistically insignificant link between ROCE and total debt-to-capital ratio since the P-value is higher than the 0.05 alpha threshold.

Coefficient: From the output, the coefficient of ROCE and the total debt-to-equity ratio (variable X1) correlate at -0.00; this indicates a negative correlation. Therefore, an increase in debt-to-equity ratio will lead to a -0.00 fall in net profit margin. In contrast, the coefficients of ROCE and the total debt-to-capital ratio (variable X2) are negatively correlated at -0.14. Therefore, an increase in debt-to-capital ratio will reduce ROCE by -0.14.

ROE vs Capital structure:

Table 6

			Result	Criteria
Significant f	0.002821		Significant	<0.05
R-Square	0.076765			
Variables	X1	X2		
P-Value	0.000824	0.525328	Mix Significant	>0.05
Coefficient	-1.19822	0.186094	Mix correlation	X1<0.00, X2>0.00

Significant f: The above model's significant f is 0.00, which indicates that the model is significant because it is less than 0.05.

Intercept: As shown in the Empirical summary 6, The intercept of the output is -1.23482, which indicates the average expected ROE at zero gearing ratio level, and the corresponding P-value of this output is at 0.30; this means that the intercept term is different statistically than zero.

R-Square: As shown in Table 6, The R-Square of the analysis is incredibly low, 0.08; this indicates that X1 and X2 variables (capital structure) only explain 0.08% of the Y variable (ROE).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is at 0.00, which means the ROE and debt-to-equity ratio relationship are statistically significant since the P-value is lower than the alpha 0.05 threshold. Also, the P-value of the total debt-to-capital ratio (variable X2) is at 0.53, which means a statistically significant link does not exist between ROE and total debt-to-capital ratio since the P-value is higher than the alpha 0.05 threshold.

Coefficient: From the output, the coefficient of the ROE and the total debt-to-equity ratio (variable X1) correlate at -1.20; this indicates an adverse correlation. Therefore, each additional increase in debt-to-equity ratio will lead to a 1.20 fall in net profit margin. In contrast, the coefficient of the total debt-to-capital ratio (variable X2) and ROE is positively correlated at 0.20. Therefore, an increase in the total debt-to-capital ratio will generate a 0.20 percent increase in ROE.

ROA vs Capital structure:

Table 7

			Result	Criteria
Significant f	0.214258		Not significant	>0.05
R-Square	0.020742			
Variables	X1	X2		
P-Value	0.375809	0.137031	Not significant	>0.05
Coefficient	0.018167	-0.02547	Mix correlation	X1>0.00, X2<0.00

Significant f: The above model's significant f is 0.21, indicating that the model is insignificant because it is greater than 0.05.

Intercept: As shown in the Empirical summary 7, The intercept of the output is 0.29819, which indicates the average expected ROA at

zero gearing ratio level and corresponding P-value of this output is at 2.81; this means that the intercept term is different statistically than zero.

R-Square: As shown in Table 7, The R-Square of the analysis is incredibly low, 0.02; this indicates that X1 and X2 variables (capital structure) only explain 0.02 % of the Y variable (ROA).

P-Value: The P-value of the total debt-to-equity ratio (variable X1) is at 0.38, which means the ROA and debt-to-equity ratio relationship are statistically insignificant since the P-value is higher than the alpha 0.05 threshold. Also, the P-value of the total debt-to-capital ratio (variable X2) is at 0.14, which means there is a statistically insignificant link between ROA and the total debt-to-capital ratio since the P-value is higher than the alpha 0.05 alpha threshold.

Coefficient: From the output, the coefficient of the ROA and the total debt-to-equity ratio (variable X1) correlate at -.02; this indicates a negative correlation. Therefore, on average, each further rise in the debt-to-equity ratio will generate a 0.02 fall in net profit margin. In contrast, the coefficient of the total debt-to-capital ratio (variable X2) and ROA is negatively correlated at -0.03. Therefore, an increase in debt-to-capital ratio will reduce ROA by 0.03.

As shown in Tables 2 to 7, The p-value of both independent variables X1 and X2 on all variable Y is greater than 0.05; hence, independent X 1 and X2 are statistically insignificant except for the ROE debt-to-equity ratio

significant. The regression coefficient of independent X1 and X2 is positive with operating profit, gross profit and net profit margin but shown negative with ROCE. ROE independent variable X1(Debt to Equity) coefficient is negative while independent variable X2 coefficient is positive. ROA independent variable X1(Debt to equity) is positive, but independent variable X2 is negative. This analysis, in line with the *PubMed Central journal 504822*, shows that industry capital structure, other factors such as cost-effective product development and macro environment factors influence profitability (Sendyona et al., 2016).

In contrary to the negative report of (Mehdi Mohammadzadeh et al., 2013) (Hoang Dinh Huong, 2023) and many others. The empirical finding in these tables is consistent with (Chandra et al., 2019), (Singh and Bagga, 2019), (Gill et al.,2011), (Goyal,2013) and (Ahmad, 2014), (Chisti et al.,2013), (Kerim et al., 2019), (Yegon et al., 2014). The statistical report indicates that (capital structure) total debt to equity, total debt-to-capital and profitability are positively correlated; therefore, the hypothesis does not hold.

Implications of this Finding:

According to the summary results, the correlation coefficient of ROCE and capital structure are negative. Therefore, the company's short-term debt financing level increase is unproductive; because of this, management is pressured to use long-term debt financing since it is less expensive than short-term debt financing. The negative correlation between ROA and total debt-to-capital ratio means companies may reduce their capital asset investment or engage in asset leasing. On the other hand, gross profit, net profit and operating profit margin are positively correlated with capital structure, which indicates how well management converts every penny of the capital structure to profitable investment. A higher ability to generate profitable investment enables a company to expand and increase investors' expected returns. The positive out indicates effective use of debt that resulted in excess revenue over interest payments expenses like tax shield that reduce tax burden according to trade-off theory. In addition, Deferred tax is an internal source of financing; a company with an effective Tax management system benefit from interest-free deferred company taxes. This may encourage managers to increase gearing levels, which may lead to high-interest payments yearly, agency costs resulting in low performance and a reduction in net profit.

4.3 ***Other Findings***

Another objective of this report is to examine if there is any variation in the Pharmaceutical and Bio-Tech capital structure, according to the empirical findings of (DeHan, 2014) on capital structure over the life cycle. After rigorous examination, there are variations in the industry capital structure; many of these pharmaceutical companies structured their capital structure in accordance with the industry or product life cycle with little or no debt financing at early stages and more gearing during the growth stages of their products or company as is shown in Appendix 5 and 6. Pharmaceutical and Bio-Tech company's early-stage expenses mostly are on research and development. Examples are Astra Zeneca, Faron, Ergomed and E. Therapeutical company. Astra Zeneca and Faron's capital structure differs from Ergomed and E. Therapeutical capital structure. Astra Zeneca and Faron's average 5years debt to equity ratios are 1.07 and 1.61, respectively, while Ergomed and E . Therapeutical 5years average debt to equity ratio is 0.00, respectively; hence, equity financing affects a company's profitability but not on equity shareholders return because increasing a share capital of accompany will dilute the share value, voting rights and payouts dividend.

Moreover, a 100% equity financing company will incur higher taxes and profit than a gearing company, contrary to Modigliani and Miller's preposition 1 world without taxes. On the other hand, equity financing instead of debt can save a company from interest payment debt covenants and offer a company financial flexibility. Most of these quoted pharmaceutical and Bio-Tech companies on the FTSE All-share index preferred equity to debt financing at their early stages. Lastly, many quoted companies use short-term or long-term debt, or both in their business financing.

Chapter Five

Conclusion

The primary goal of this report is to establish whether there are relations between the quoted FTSE All-share index pharmaceutical companies' capital structure, Profitability, and changes in share price in the past five years between 2018 and 2011. After rigorous testing and analysis, the conclusions of this research demonstrate that the total debt-to-equity ratio (variable X1) and share returns are correlated. Also, the total debt-to-capital ratio (variable X2) and share returns correlation is negative. Therefore, the conclusion is that there are no correlations between capital structure and share returns. This conclusion is consistent with (Chandra et al., 2019) findings on the influence of the capital structure on the share returns and profitability of the quoted Kompas 100 of Indonesia. Chandra's empirical study indicated that capital structure has no influence on share returns, consistent with Myer and others.

According to the individual investors' statements, "dividend payout motivates their investment decision, not capital structure, " proving that capital structure does not affect share returns but Profitability, consistent with Chandra's findings. Secondly, company profitability matters to management and the stakeholders. After rigorous testing and analysis, the second finding of this report indicates that net profit, gross profit, and operating profit margin are positively correlated, but ROCE is negative. ROE and ROA independent variables are mixed results. Therefore, the conclusion is that a perfect correlation exists between profitability and capital structure. The empirical finding is consistent with(Chandra et al., 2019) empirical result on the impact of capital structure on profitability and share returns of quoted companies on the Indonesia stock exchange. Chandra's empirical study indicated that capital structure positively impacted Profitability while Profitability impacted share returns, consistent with Ahmed and others.

This research has concluded that their pharmaceutical and Bio-Tech capital structure and gearing level vary with the industry or product cycle. Furthermore, the industry favours pecking order theory because equity financing is typical in the industry or product's early stage and debt financing to equity during growth. I recommend that finance managers adopt a flexible capital structure model that best fits their industry and maximises the investor's wealth since there is no specific capital structure modelling for a particular industries or companies.

5.1 ***Limitation and Further Study.***

The financial ratio may not precisely represent the industry due to different accounting policies and restated financial information in some financial reports. The report covered pre-covid and post-covid era; therefore, economic instability may cause bias in regression output. The report does not include pharmaceutical and Bio-Tech companies not quoted on the London Stock Exchange.

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5.2 ***Recommendation and Further Study.***

The past and this study on capital structure effect on Profitability and share returns based on Kompas and London FTSE All share, I will recommend future empirical research and comparison on this topic in developed countries other than the UK.

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Appendix 1

Debt to Equity Ratio	Weighted Average cost of capital	Cost of Debit	Cost of Equity
0.00			10.00%
0.11	10%	8%	10.22%
0.25	10%	8%	10.50%
0.43	10%	8%	10.86%
0.67	10%	8%	11.33%
1.00	10%	8%	12.00%
1.50	10%	8%	13.00%
2.33	10%	8%	14.67%
4.00	10%	8%	18.00%
9.00	10%	8%	28.00%

Appendix 2

	X Ltd	QS Ltd
	£	£
EBITDA =	300,000	300,000
Bond Interest payment =	(60,000)	(0)
Earning Before Tax =	240,000	300,000
Company-Tax @ 20% =	(48,000)	(60,000)
	192,000	240,000
Preference Dividend =	(0)	(80,000)
Shareholders profit	192,000	160,000

Appendix 3

5 Years Capital Structure mean

Name	Total Debt to Equity ratio 5yrs Mean	Total Debt to Capital Ratio 5yrs Mean

ALLERGY	0.084	0.078
ALLIANCE	0.406	0.288
ANIMAL Care	0.216	0.172
Astra Z	1.068	0.51
Avacta P	0.204	0.1
Bioventix	0	0
Dechra P	0.774	0.588
Eco animal	0.006	0.006
Ergomed	0	0
E. Therap	0	0
Faron. P	1.606	2.72
Futura. P	0	0
Genius P	0.27	0.212
GSK.P	2.656	0.656
Hemogenyx	-0.052	0.526
Hikma.P	0.386	0.276
Hvivo P	-0.038	-0.84
Hutchmed	0.058	0.052
Immu.P	0.006	0.006
Indivior.P	2.708	0.686
Maxctye P	0	0
Niox. P	0.26	0.114
Norformix	0.004	0.006
Oncimmune	-7.668	0.728
Optibiotix	0.054	0.046
Oxford	0.272	0.136
Puretech. P	0.016	0.016
Redx. P	2.028	0.394
Scancell	0.234	0.144
Shield Ther	-0.204	9.64

Top 5 = Light Green
Bottom 5 = Light Red

Appendix 4

CAPITAL STRUCTURE vs SHARE RETURNS

Shield

	Average of Column3	Average of Column4
Shield Ther 2018	0	0
Shield Ther 2019	0	0
Shield Ther 2020	0	0
Shield Ther 2021	0	0
Shield Ther 2022	-1.02	48.2
Grand Total	**-0.204**	**9.64**

GSK

Row Labels	Average of Debt/Equity	Average of Debt/capital	Average of Share returns
GSK.P 2018	7.1	0.88	0.191869656
GSK.P 2019	1.66	0.62	0.259892775
GSK.P 2020	1.31	0.57	-0.187484013
GSK.P 2021	1.13	0.53	0.285052221
GSK.P 2022	2.08	0.68	-0.061025723
Grand Total	**2.656**	**0.656**	**0.097660983**

FARON

Row Labels	Average of Debt/Equity	Average of Debt/capital	Average of Share returns
Faron. P 2018	5.78	0.85	-1.291055518

Faron. P 2019	1.51	0.6	1.829481085
Faron. P 2020	-1.54	2.85	0.980424818
Faron. P 2021	1.15	0.53	-0.451767161
Faron. P 2022	1.13	8.77	0.383239527
Grand Total	**1.606**	**2.72**	**0.29006455**

ASTRA Z

Row Labels	Average of Debt/Equity	Average of Debt/capital	Average of Share returns
Astra Z 2018	1.36	0.58	0.179361793
Astra Z 2019	1.2	0.55	0.347460716
Astra Z 2020	1.26	0.56	0.061768126
Astra Z 2021	0.76	0.43	0.187068861
Astra Z 2022	0.76	0.43	0.249457165
Grand Total	**1.068**	**0.51**	**0.205023332**

REDX

Row Labels	Average of Debt/Equity	Average of Debt/capital	Average of Share returns
Redx. P 2018	0	0	0.334179719
Redx. P 2019	0.31	0.24	0.272691315
Redx. P 2020	8.27	0.89	3.127730148
Redx. P 2021	1.09	0.52	0.30942381
Redx. P 2022	0.47	0.32	-0.309034014
Grand Total	**2.028**	**0.394**	**0.746998196**

Appendix 5

Profitability & ROCE vs CAPITAL STRUCTURE

ROE & ROA vs Capital Structure

Ergomed

Row Labels	Average of Return on Equity	Average of Return on Assets	Average of Debt/Equity	Average of Debt/capital
Ergomed 2018	-0.32	-0.19	0	0
Ergomed 2019	0.15	0.1	0	0
Ergomed 2020	0.18	0.11	0	0
Ergomed 2021	0.19	0.12	0	0
Ergomed 2022	0.18	0.12	0	0
Grand Total	**0.076**	**0.052**	**0**	**0**

Dechra

Row Labels	Average of Return on Equity	Average of Return on Assets	Average of Debt/Equity	Average of Debt/capital
Dechra P 2018	0.07	0.04	1.77	1.56
Dechra P 2019	0.06	0.03	0.61	0.38
Dechra P 2020	0.05	0.03	0.54	0.35
Dechra P 2021	0.09	0.05	0.48	0.33
Dechra P 2022	0.09	0.05	0.47	0.32
Grand Total	**0.072**	**0.04**	**0.774**	**0.588**

Oxford

Row Labels	Average of Return on Equity	Average of Return on Assets	Average of Debt/Equity	Average of Debt/capital
Oxford 2018	0.22	0.07	1.19	0.54
Oxford 2019	-0.21	-0.13	0	0
Oxford 2020	-0.06	-0.03	0	0
Oxford 2021	0.1	0.08	0	0
Oxford 2022	-0.19	-0.1	0.17	0.14
Grand Total	**-0.028**	**-0.022**	**0.272**	**0.136**

Avacta

Row Labels	Average of Net profit	Average of ROCE	Average of Debt/Equity	Average of Debt/capital
Avacta P 2018	-3.2	-0.49	0	0
Avacta P 2019	-2.83	-0.68	0	0
Avacta P 2020	-8.81	-0.3	0	0
Avacta P 2021	-8.95	-0.61	0	0
Avacta P 2022	-4.06	-1.3	1.02	0.5
Grand Total	**-5.57**	**-0.676**	**0.204**	**0.1**

Hikma

Row Labels	Average of Net profit	Average of ROCE	Average of Debt/Equity	Average of Debt/capital
Hikma.P 2018	0.14	0.14	0.36	0.27

Hikma.P 2019	0.22	0.2	0.29	0.23
Hikma.P 2020	0.18	0.19	0.4	0.28
Hikma.P 2021	0.17	0.17	0.31	0.24
Hikma.P 2022	0.08	0.08	0.57	0.36
Grand Total	**0.158**	**0.156**	**0.386**	**0.276**

Alliance

Row Labels	Average of Net profit	Average of ROCE	Average of Debt/Equity	Average of Debt/capital
ALLIANCE 2018	0.16	0.08	0.38	0.28
ALLIANCE 2019	0.18	0.09	0.28	0.22
ALLIANCE 2020	0.06	0.03	0.49	0.33
ALLIANCE 2021	0.05	0.05	0.41	0.29
ALLIANCE 2022	0.01	0.02	0.47	0.32
Grand Total	**0.092**	**0.054**	**0.406**	**0.288**