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THE EFFECT OF CAPITAL STRUCTURE ON THE FIRM'S PROFITABILITY

Evidence from companies listed on the London Stock Exchange (LSE)

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Abstract

This research examines the relationship between capital structure and the firm's profitability with a sample of 138 companies listed on the London Stock Exchange (LSE) from 2015 to 2022. These companies are divided into manufacturing and non-manufacturing firms. Currently, most studies are focusing on the US market and the investigation has mixed results. Therefore, this research will provide a deeper understanding of the relationship between funding structure and the firm's performance. In this study, while Return On Assets (ROA) is used as the proxy for the firm's profitability, Debt/Equity (TDE), Debt/Tangible Assets (TDTA) and Interest Coverage (CR) are used for representing capital structure. The result supports the pecking order theory that profitable firms are likely to have a lower debt level compared to less profitable ones. In addition, the research also looks at the relationship between firm size, industry and the level of profitability.

Keywords: Capital structure, Profitability, Firm Size

JEL Classification: G32, F65, L25

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CHAPTER 1: INTRODUCTION

Profitability, often perceived as an essential prerequisite for the prosperity of enterprises, is considered a fundamental indicator of financial robustness and operational sustainability (Fareed et al., 2016). For decades, the topic of what are the most important factors affecting the profitability of a company has been at the centre of many strategy research. Among those factors, capital structure decision is among the most important matters for a firm since such decision directly affects the profitability. Effectively utilizing debt allows a company to leverage its resources for funding large-scale projects such as infrastructure, research and development, or market expansion, while still maintaining ownership and control. However, an overreliance on debt implies financial risks and restricts flexibility, potentially curtailing growth prospects. Conversely, a conservative capital structure, characterized by a high proportion of equity, provides stability and resilience, empowering the company to survive through economic downturns and pursue strategic investments with reduced financial constraints. For a period of nearly one hundred years, from the time of Modigliani & Miller's theorem (1958), many researchers have been trying to figure out the underlying correlation between funding structure and profitability. The research on how capital structure affects profitability will enable us to identify existing correlations between capital structure and a firm's performance and, therefore come up with a winning strategy in these competitive business environments.

Academics have demonstrated a strong interest in modelling and explaining this relationship, particularly those in the fields of finance. One of the most significant theorems in the corporate finance world was developed by Modigliani and Miller, which is widely known as the M&M Theorem (1958). This popular theory is the first study on the relationship between capital structure and business market value, laying the foundation for many other later theories (Stern & Chew, 2003). The first version was developed in 1958 with the assumptions of a perfectly efficient market, no taxes, no bankruptcy cost and symmetric information. Under this hypothesized market, Modigliani & Miller concluded that the capital structure does not affect the firm performance, in other words, its market value is based on its earning potential and the risk of underlying assets. The assumption of a perfectly competitive market faces several objections from critics since they see that the real world is different from the ideal world developed in M&M propositions (Gifford, 1998). Due to the limitations in the assumptions of the first theory version, Modigliani & Miller introduced an updated version of their original theory, known as M&M2 (1963) in which the existence of tax is taken into consideration. Due to the effect of the tax shield, the cost of capital (WACC) decreases, therefore, the firm's value increases. Under a market with imperfection, firms can benefit from the inclusion of debt in their capital structure, therefore, they are likely to use more leverage in their investment decisions. In contrast to the conclusion of the first M&M theory, in this version, Modigliani & Miller demonstrate

that the value and performance of the firm increase as the leverage increases, which implies that there is a positive correlation between the capital structure and the firm performance.

The research of Modigliani and Miller (1958 & 1963) only mentioned that debt/equity ratio and share price can be used as a proxy for capital structure and return respectively. It raises a question about whether a relationship between funding and a firm's profitability exists since profitable companies tend to have a high return on their shares and can other ratios be used to measure capital structure. In addition, there are conflicting results conducted by other researchers who are inspired by M& M theory. With observations from the US market, some studies illustrate that leverage has a positive impact on return (Masulis 1983; Bhandari 1988), whereas alternative findings suggest the inverse relationship (Korteweg 2004; George and Hwang 2010). This discrepancy could be attributed to differences in methodologies, proxies of leverage and samples. In this paper, we will investigate the relationship between capital structure and a firm's profitability. To be more specific, capital structure is presented through Debt/Equity (TDE), Debt/Tangible assets (TDTA) and Interest Coverage (CR) ratio, meanwhile, Return On Assets (ROA) is the proxy for profitability.

Unlike previous studies which mainly focus on the US market, I will take a look at tthe United Kingdom, one of the largest economies in Europe. The sample, which is collected from WRDS (Wharton Research Data Services), comprises 138 companies that are listed on the London Stock Exchange (LSE) over the period from 2015 to 2022. These companies span across 11 diverse sectors: healthcare, energy, financials, consumer staples, materials, industrials, utilities, consumer discretionary, communication services, information technology, and real estate. Besides, the companies are classified between non-manufacturing and manufacturing depending on their main activities and operations. The reason for this classification lies behind the fact that firms operating in manufacturing sectors are likely to have a higher level of debt compared to other sectors due to their capital need for building production plans or infrastructure. According to Aier & Ghose (2019), non-manufacturing firms have a lower debt level. This intuition is transformed into a dummy variable (INDUM) whereby 1 represents manufacturing and 0 for non-manufacturing. In addition, Firm Size (FS) presented as Ln(Revenue) is corporated as a control variable. Many studies consistently show a correlation between the size of a firm and its profitability. Larger companies tend to have greater profitability compared to smaller ones, owning to factors namely economies of scale, higher market share, and stronger bargaining power with suppliers and customers (Porter, 1979). In total, 3 hypotheses and 3 models are used to represent the relationship. In three models, OLS regression is used with firm-performance (ROA) as the dependent variable and Debt/Equity (TDE), Debt/Tangible Assets (TDTA), Interest Coverage (CR) ratio, Firm Size (FS) and Industry Dummy variable (INDUM) as independent variables.

Before conducting the analysis, I expect companies with a high level of leverage will turn financial support into profit. It also implies that large and manufacturing companies are likely to be more profitable. To choose the capital structure that would yield the highest level of profitability, these kinds of findings will be definitely beneficial. In this context, this study will demonstrate the relevance of capital structure on the firms profitability, which will help owners, managers, investors, and other stakeholders make better decisions about the level of debt and equity within the firm's capital.

In contrast with my expectations about the relationship between capital structure and profitability before conducting this research, the results show a negative correlation which means firms with a high level of debt within capital structure have a lower level of return. One possible explanation can be that highly leveraged companies are more vulnerable to changes in market conditions, therefore, in this unpredicted changing market dynamics world, these companies are more vulnerable. Meanwhile, large and manufacturing companies are more profitable compared to small and non-manufacturing companies due to their privileges in economies of scale and bargaining power with customers or suppliers.

After this section, the remainder of this research paper is structured as follows. Chapter 2 discusses previous research and relevant literature with the main topic related to capital and profitability. Next, in Chapter 3, models are elaborated with details about independent and dependent variables. After introducing the tested models, a description of the data is shown in Chapter 4. Chapter 5 summarizes all critical findings about the relationship between capital structure and the firm’s profitability concluded from regression models. Lastly, the conclusion and limitations of the research are included in Chapter 6.

CHAPTER 2: THEORETICAL FRAMEWORK

2.1. Capital Structure

Capital structure has long been a critical topic among researchers and economists since the choice of funding within the companies has a profound impact on different business aspects such as returns value, strategies or decisions. According to Myers (2001), capital structure is the mixture of equity and debts which companies use to finance their investments. Capital structure has attracted the attention of many researchers with the most early and important theory developed by Modigliani & Miller (M&M) in 1958. After the M&M theory came out the way, there were several theories developed afterwards to provide insights into the impact of capital structure such as the Trade-off theory (Kraus & Litzenberger, 1973), Agency theory (Jensen & Meckling, 1976), Pecking order theory (Myers, 1984), and Market-timing theory (Baker and Wurgler, 2002). However, there are opposing views about the effect of capital structure on firms' levels. Some researchers believe that incorporating a high level of debt within the capital structure will put companies at risk due to financial distress occurring from payment claims or borrowing costs (Persson & Ridderström, 2014). Conversely, others believe that firms can take advantage of tax shields to increase efficiency by employing debts in their capital structure. The different views raise a question about choosing the optimal capital structure to strike the balance between the costs and benefits of debts. As stated by Baker and Martin (2011), most CFOs agree that a targeted debt-to-equity ratio is considered in their funding decision. Therefore, it is vital to study the underlying relationship of capital structure on different firms' aspects, especially profitability, to come up with the most optimal funding ratio.

2.2. Capital Structure Theories

2.2.1. Modigliani & Miller Theorem

One of the most significant theorems in the corporate finance world was developed by Modigliani and Miller, which is widely known as the M&M Theorem (1958). This popular theory is the first study on the relationship between capital structure and business market value, laying the foundation for many other later theories (Stern & Chew, 2003). Through evaluating the market value of a firm, the profitability can be assessed since a high market value implies a profitable business. The hypothesis of Modigliani Miller's theorem depends on the leverage level of two enterprises. While the levered (L) implies that it depends entirely on equity, the unleveled capital (U) consists of both debt and equity. There are two versions of M&M theory, which are based on different assumptions about the market's condition.

The first version was developed in 1958 with the assumptions of a perfectly efficient market, no taxes, no bankruptcy cost and symmetric information. Under this hypothesised market, Modigliani & Miller

concluded that the capital structure has no effect on the firm performance, in other words, its market value is based on its earning potential and the risk of underlying assets. Pan (2012) states that the M&M theory equation can be written as follows:

$$V_L = V_U$$

V_L represents the value of the levered firm, whereas V_U represents the value of the unlevered firm.

The assumption of a perfectly competitive market faces a number of objections from critics since they see that the real world is different from the ideal world developed in M&M propositions (Gifford, 1998). Due to the limitations in the assumptions of the first theory version, Modigliani & Miller introduced an updated version of their original theory, known as M&M2 (1963) in which the existence of tax is taken into consideration. Due to the effect of the tax shield, the cost of capital (WACC) decreases, therefore, the firm's value increases. Under a market with imperfection, firms can benefit from the inclusion of debt in their capital structure, therefore, they are likely to take on more leverage. In contrast to the conclusion of the first M&M theory, in this version, Modigliani & Miller demonstrate that the value and performance of the firm increase as the leverage increases, which implies that there is a correlation between the capital structure and the firm performance.

Although the Modigliani-Miller (M&M) theory started with perfect market assumptions, it has inspired years of research in economics and finance. Scholars have delved into how real-world factors such as transaction costs, information imperfection, taxes, and regulations impact how businesses perform. This ongoing investigation shows a keen interest in understanding how financial decisions intersect with real market complexities, aiming to provide deeper insights into corporate behaviours and outcomes.

2.2.2. Trade-off Theory

Trade-off theory's original version came into being after the debate on the Modigliani-Miller theorem (Ai et al., 2020). The later version of M&M theory incorporates the effect of tax and demonstrates the benefits of tax shield on the firm value. This theory might imply that a company should have a high level of debt in its capital structure to take full advantage of tax shields. However, this theory has a flaw in that it does not count the cost of additional debts in relation to financial distress. Later, as stated by Kraus and Litzenberger (1973), it is recognized that the costs of financial distress are largely offset by the benefits from tax shields. Therefore, the trade-off theory is developed to take into account the relationship between the cost of financial distress and the tax shield benefits.

According to the trade-off theory, there is an optimal capital structure in which a well-balanced benefit between debts and equity financing exists and that a company should aim to achieve. In other

words, the optimal capital structure is attained when the marginal cost of borrowings is equal to its marginal benefit, balancing the potential tax benefits with the financial risk. There are various factors affecting the trade-off model. The cost of bankruptcy and financial distress might vary depending on the company's size, business model, and industry. To illustrate, financial distress costs may be higher for organizations with high fixed costs or asset-intensive operations than for those with service-oriented. In addition, depending on the tax laws and regulations environment in which the company operates, interest payments from debt may or may not be deductible. For that reason, based on variables including industry, business risk, and tax rate, each company may have a different optimal capital structure.

The theory predicts that highly profitable firms will have higher debt levels in order to maximize taxation benefits and increase the availability of capital (Çerkezi, 2013). On the one hand, many studies, including those by Titman and Wessels (1988) and Fama & French (2002), demonstrate that enterprises with high profitability typically have fewer borrowings and this contradicts the actual trade-off prediction. When evaluating the costs and benefits of debt, Graham (2000) discovers that large and profitable companies with a low level of financial distress take debt sparingly. On the other hand, several studies validate the importance of a targeted level of leverage and support the trade-off theory. Marsh's research (1982) provides evidence that businesses choose their funding source with target levels for both the ratio of short-term and long-term debt ratio. Highly profitable firms have the capacity for greater levels of debt, taking substantial advantage of debt tax shields (MacKie-Mason, 1990).

There are some limitations around the trade-off theory related to overemphasis on tax benefits and the lack of non-financial factors. According to McCall (2022), the trade-off model is based on the assumption that debt financing is favourable since interest payments are tax deductible. However, this is not always the case, in some situations, higher interest rates or other expenses may cancel out the tax benefits of debt financing. Besides, the trade-off theory overlooks non-financial aspects that can also affect a company's financing choices, namely reputation or governance. Therefore, some other alternative theories come into existence to provide more valuable insights into a company's financing decisions.

2.2.3. Pecking Order Theory

Figure 1: Order of financial sources

Pecking order theory is developed based on the foundation set by the M&M theory and the trade-off theory. In 1984, Stewart Myers and Nicolas Majluf proposed the pecking order theory based on the idea that when considering funding sources, managers adhere to a hierarchy. As stated by Frank and Goyal (2009), the main underlying concept used to develop the pecking order theory is asymmetric information between company managers and external parties. The concept of information asymmetry implies that firm managers are better informed about the company's performance, future plan, prospects and risk compared to shareholders or debt holders. As a result, external users require a larger return in order to offset the risk they are facing and make up for information asymmetry.

Within the framework of the pecking order, companies should prioritise internal sources since they have the lowest information asymmetry costs, followed by debt and equity. As mentioned by Lemmon and Zender (2010), internal finance, or retained earnings financing, is provided directly by the business which helps reduce information asymmetry between parties. Therefore, internal financing is the most affordable and practical kind of funding. When a business finances its own operations through an internal finance source, it might be a signal indicating that the firm is doing well because its earnings are large enough to support both ongoing operations and future expansion. Besides, managers do not expect to lose their control over businesses, according to research by Hamilton and Fox (1998). This is also the reason why managers typically prioritize financing their projects with available retained earnings rather than accepting additional shareholders. When it is not possible to utilize the retained earnings, the issuance of debt is taken into account. Managers who believe that their firm is worth more than its current value and their stock price is cheap corresponding to future prospects will choose debt over equity. In addition, since debt is less risky than equity, to reduce the cost of capital, companies prioritize debt financing. External equity as predicted by the pecking order theory is chosen as the last option (Huang & Ritter, 2009; Bistrova, 2011). In case businesses issue new shares to raise capital, it might be an indication that firms' management boards believe their own stock is overpriced. External investors are always conscious of the level of debt and equity within a firm. As explained by Myers and Majluf (1984), if a company decides to issue equity, a rational investor will be alerted and re-value the stock price. Also stated by Moon (2006), when a company chooses to issue equity to raise more funding instead of debts, it will lead to investors' scepticism that the firm is overvalued and therefore, investors are likely to sell the firm's stocks.

The theory emphasized the choice between three main financing resources. As can be concluded from the pecking order theory by Boadi and Lartey (2015), high-performing companies are likely to finance their operation and activities with retained earnings and fewer debts. Many other scholars, such as Berger and Bonaccorsi di Patti (2006) and Fosu (2013), have further verified the trade-off theory that there is a positive relationship between firm performance and the level of leverage.

2.3. Capital Structure and Performance: Empirical Studies

Most of the current research takes a look at the relationship between capital structure and stock return, only a few studies directly examine the correlation of funding structure with the firm's performance. However, the stock return can be used as a proxy for the firm's performance since successful companies also have a high stock return (Nadyayani & Suarjaya, 2021). Therefore, these studies can be used as the foundation for the investigation of the correlation between financial leverage and the firm's profitability.

2.3.1. The Negative Relationship

After the introduction of the first M&M theory in 1958, several studies were conducted by many researchers to examine the conclusion of the theory. In the study by Hall and Weiss (1967), the link between leverage with the proxy of equity/assets ratio and profitability is tested. Through investigating and analyzing the data from 500 leading industrial firms from 1956 to 1962, a negative relationship between leverage ratios and returns is concluded by Hall and Weiss, which is opposed to their initial expectation since they believed that a high level of debt implies greater risks, therefore, a negative relationship between returns and equity/assets ratio should be expected.

Baker (1973) investigates the relationship between leverage and profitability at the industry level. In his study, the profitability is measured by the profit-after-tax of leading companies in an industry within 10 years and the leverage ratio is estimated inversely as the ratio of equity/assets over the same period. His finding concludes that a low equity/assets ratio (high leverage) has a significant and negative impact on profitability.

In 2004, Korteweg conducted his empirical study based on pure exchange offers' evidence. His research aims to test the conclusion expected from M&M2 (1963) that stock returns are likely to increase with financial leverage. Unlike past studies using cross-sectional data and the CAPM model, Korteweg uses the Fama-French 3-factor model and time-series data for his study which allows a better control for the model. Based on the results generated from the model and sample, the M&M2 theory is rejected. In addition, he also finds out that incorporating more debts will create benefits for low-debt companies, however, the benefits will decrease if the level of leverage becomes too high.

George and Hwang (2010) investigate the relationship between leverage puzzles and cross-sectional stock returns based on monthly data of NYSE, Amex, and Nasdaq companies during the 1965 - 2003 period excluding firms with leverage levels constrained by laws. The research follows the Fama and MacBeth (1973) approach to estimate returns in low- and high-leverage contexts. The results show a significant and negative correlation between leverage and returns. Moreover, the study also finds that

during stressed periods, the performance of low-leverage firms tends to be unpredictable and decreases significantly compared to high-leverage companies.

Dao and Ta (2020) conducted a meta-analysis of capital structure and firm performance. Their study delves into the correlation between leverage and firm performance, aiming to investigate the strength of this relationship and identify factors that influence its magnitude. Analyzing data included in 50 papers with 340 studies from 2004 to 2019, with data points from 1998 to 2017, the meta-analysis concluded a negative relationship between corporate performance and capital decisions, consistent with both the trade-off model and pecking order theory.

2.3.2. The Positive Relationship

In contrast to the negative relationship found in many research mentioned above, there are some studies existed which showed a positive correlation between capital structure and returns performance. In the study conducted by Masulis (1983), he examined how the firm's value changes correspond to the change in the debt level through issuer exchange offers and recapitalizations. The research used data from companies listed on the NYSE or ASE between 1963 and 1978. A positive correlation was found between stock prices and firms' value with the leverage level. This result aligns with the M&M2 (1963) theory that firms can take advantage of tax shields due to a high level of debt in their funding structure.

Another study which also indicates a positive relationship between debt/equity ratio and stocks' return is the one conducted by Bhandari in 1988. It is concluded from the research that the expected returns on common stock show a positive correlation with the debt-to-equity ratio, after adjusting for beta, firm size, and January effect. This relationship remains consistent across different market proxies, estimation methods, and other variations. The findings also indicate that the additional return associated with the debt/equity ratio is unlikely to be solely attributable to a risk premium. Although there is less research proving the positive correlation between capital structure and performance compared to negative ones, management boards must take into consideration the opposing results to come up with the most optimal capital structure which allows companies to take advantage of debts.

2.4. Capital Structure: The UK Market

The paper by Bevan and Jo Danbolt (2002), which is inspired by the work of Rajan and Zingales (1995), explores the determinants of capital structure in UK companies. The research by Rajan and Zingales reveals a positive relationship between the firm's leverage with both the tangibility (FA/TA) of assets and size (natural logarithm of revenue), whereas, a negative correlation between the level of gearing and the company's profitability (EBITDA/TA) as well as its growth prospects is identified. However, there is a concern about the sensitivity of the results in Rajan and Zingales's study with

respect to gearing and interest measures. Due to this reason, Bevan and Jo Danbolt conducted the research based on the capital structure of 822 companies in the UK with different gearing and interest estimations. For gearing, four measures namely non-equity liabilities to total assets, debt to total assets, debt to capital and adjusted debt to adjusted capital are used, meanwhile, market-to-book, log sales, profitability and tangibility are independent variables. Similar results with previous research are found in this study, nevertheless, if debt measure is corrected for trade credit and equivalent, a different result is observed. The analysis underscores the complexity of corporate financing decisions and the need for a comprehensive understanding of debt components (short-term and long-term) in shaping capital structure choices.

A similar study with data from 379 non-financial firms in the UK was conducted by Al-Najjar & Hussainey in 2011 to explore the main drivers of capital structure (Debt/Equity ratio) such as profitability (EBIT/Total Capital), business risk, asset tangibility (FA/TA), growth rate (Market-to-book ratio), governance factors and firm size (natural logarithm of total assets). According to the study, results for growth rate, governance and firm size are similar to the previous study except for asset tangibility, a negative correlation is observed and there is no empirical support for profitability and business risk.

Panno (2003) also investigated the determinants of the capital structure based on the data of the UK and Italy firms between 1992 and 1996. The results provide evidence of the positive impacts of size (natural logarithm of total assets) and profitability (Pre-tax profit margin) on the firm's financial leverage due to better access to financing sources of large companies and tax shields.

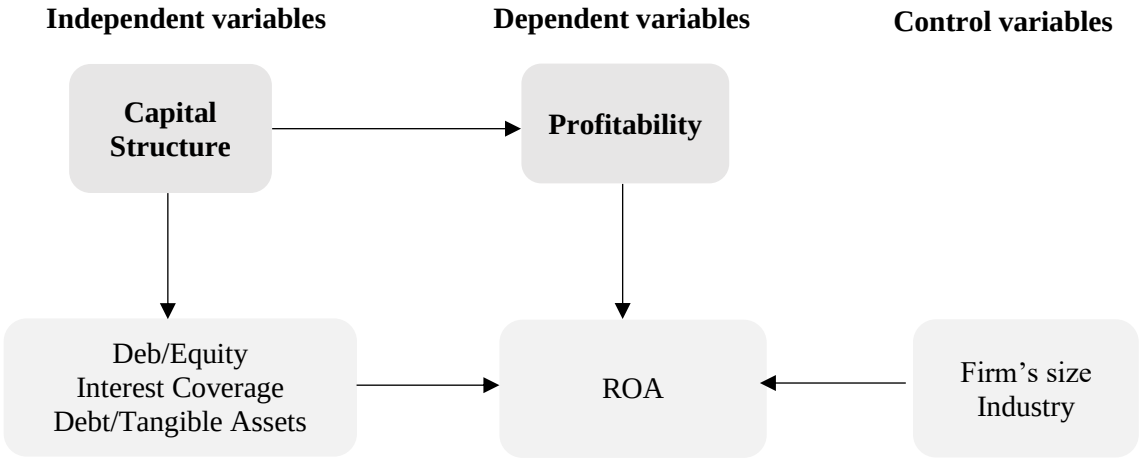
Different conclusions from these articles contribute to the ongoing debates about the relationship between the firm's characteristics and capital structure in the UK market emphasizing the importance of considering various firm-specific in understanding the complexities of capital structure. However, from these articles, it can be concluded that when studying the impact of any specific determinants on capital structure, it needs to control for different factors.

2.5 Hypothesis

2.5.1. Conceptual Framework

The graph below demonstrates the variables used in the research and how these variables are related to each other.

Figure 2: Conceptual Framework for the research hypotheses



The figure above is designed based on the predictive validity framework by Libby et al., (2002) to construct careful research designs and hypotheses. This model provides a useful description of the hypothesis testing process and focuses our attention on the key determinants of the internal and external validity of a research design (Libby, Bloomfield & Nelson, 2002).

2.5.2. Hypothesis Development

Many studies on the effect of funding structure have been carried out since the findings of Modigliani and Miller (1958) were published. Despite decades of investigation, the correlation between capital structure and business performance continues to spark considerable debate and scrutiny, primarily due to the inconsistent nature of research findings. This paper contributes to solving this puzzle, hoping to shed more light on how financial decisions shape the way companies operate and succeed in today's world. Hence, three distinct hypotheses are formulated for this paper research.

2.5.2.1. Profitability and Capital Structure

Many researchers have explored the relationship between a company's capital structure and its profitability. As stated by Huang and Song (2006), among these investigations, the pecking order theory emerges as the most prevailing one in explaining firms' financing behaviour and their prosperity. Most empirical studies supporting the pecking order notion conclude that capital structure and profitability are negatively correlated (Friend & Lang, 1988). However, inconsistent with the pecking order theory, some studies have indicated that there exists a positive correlation between corporate leverage and business profitability (Oyakhilome & Felicia, 2017). Therefore, the following hypothesis will be investigated in order to provide an additional understanding of the relationship between capital structure and profitability.

Hypothesis 1: In the context of the United Kingdom market, there is a negative relationship between leverage and firm performance

2.5.2.2. Profitability and Firm Size

Many studies consistently show a correlation between the size of a firm and its profitability. Larger companies tend to enjoy greater profitability compared to smaller ones, owing to factors such as economies of scale, increased market share, and stronger negotiating power with suppliers and customers (Porter, 1979). Larger firms are able to reduce fixed costs more effectively, leading to improved efficiency and higher profit margins. Additionally, their well-established presence in the market and brand recognition often give them a competitive edge, allowing them to charge a premium on their products and consequently, generate higher revenues. Moreover, larger firms usually have access to greater resources and expertise, enabling them to pursue strategic initiatives such as research and development, and campaign expansion into new markets. Overall, the positive correlation between firm size and profitability emphasizes the significance of scale and market dominance in driving financial success in today's competitive business environment. Thus, the following hypothesis is constructed in accordance with several findings, including that of Papadogonas (2007).

Hypothesis 2: In the context of the United Kingdom market, there is a positive relationship between profitability and firm size

2.5.2.3. Profitability and Industry

The influence of capital structure on company performance differs significantly across industries due to sector-specific factors. Each industry possesses distinct characteristics, market dynamics, and capital requirements that shape how decisions regarding capital structure impact company performance. For example, industries with high capital intensity, such as manufacturing or infrastructure, may find increased debt levels beneficial for financing investments in equipment, plants or facilities, potentially improving profitability through cost efficiencies. Conversely, industries characterized by rapid technological advancements or intense competition, such as the technology sector, may prioritize equity financing to preserve flexibility and adaptability in response to market changes. According to Akoto & Awunyo-Vitor (2014), nonmanufacturing firms exhibit a negative correlation between debt ratio and sales growth rates. Considering these insights and empirical findings, the subsequent hypothesis is formulated.

Hypothesis 3: In the context of the United Kingdom market, the firm performance varies among industries

CHAPTER 3: DATA AND METHODOLOGY

3.1 Data

In this study, the main purpose is to examine the correlation between capital structure and the firm's performance of 138 listed companies on the London Stock Exchange (LSE) market. The data is collected from audited reports which ensures the reliability and credibility of the financial information. Besides, the company is classified between non-manufacturing and manufacturing depending on its main activities and operations. The reason for this classification lies behind the fact that manufacturing companies have represented a significant portion of the companies listed on the LSE. In addition, firms operating in industrial sectors are likely to have a higher level of debt compared to other sectors.

3.1.1 Data Collection

Before collecting detailed data, more than 300 companies are randomly selected from the list of FTSE All-Share index's constituents on the London Stock Exchange website. After that, the financial data for chosen companies is collected from WRDS (Wharton Research Data Services) websites through 4 main steps. Initially, the date range of data is filled in with the start date as Jan of 2015 and the end date as Dec of 2022. In the second step, for collecting data, company codes are needed. There are different types of formats for company codes and this research chooses the Global Company Key (gvkey), which is the distinct company code with 6 numbers. With the list of randomly selected companies, firms' names are entered in WRDS and then automated Global Company Key codes are shown. In the next step, based on the components of dependent and independent variables, query variables are selected from a list of items in the financial statements. In this research, the data items needed are Company Name; GIC Industry; Data Year; Assets-Total; Debt in Current Liabilities; Long-term Debt; Property, Plant and Equipment; Revenue; Interest and Related Expense; Stockholders Equity and Net Income. Lastly, selecting the desired format of the output is required. For the convenience of the calculation afterwards, the Excel spreadsheet and date format with "DD/MM/YYYY" are chosen. After having the data Excel file from WRDS, all companies with missing data from 2015 to 2022 are excluded from the sample and ultimately, there are 138 companies in the final sample.

The sample comprises 138 companies that are listed on the London Stock Exchange (LSE) over the period from 2015 to 2022 (1104 observations). These companies are in 11 sectors following the Global Industry Classification Standard (GICS), including healthcare, energy, financials, consumer staples, materials, industrials, utilities, consumer discretionary, communication services, technology information, and real estate. To classify between manufacturing and non-manufacturing entities, the sectors are analyzed based on their predominant characteristics. Specifically, sectors namely

financials, healthcare, utilities, communication services, information technology, and real estate are categorized as non-manufacturing, while the remaining sectors namely energy, consumer staples, materials, industrials, consumer discretionary and real estate are classified as manufacturing. Within the sample, 86 of 138 companies (688 observations) are identified as belonging to manufacturing fields, highlighting the significant representation of diverse industries within the dataset.

Table 1: Summary of classification

Code	Sector	Num of firms	N
Non-manufacturing			
40	Financials	23	184
35	Healthcare	8	64
55	Utilities	5	40
50	Communication services	8	64
45	Information Technology	8	64
Manufacturing			
30	Consumer staples	11	88
10	Energy	4	32
15	Materials	14	112
20	Industrials	35	280
25	Consumer discretionary	21	168
60	Real estate	1	8

3.1.2 Data Descriptive

The descriptive statistics are presented in Table 3 and the correlation between variables is in Table 4. Looking at Table 3, the mean value of ROA is 4.12%. The ratio is greater than 0 during the observed period which implies that on average, the companies selected in the sample are generating positive returns relative to their assets and equity invested capital. This suggests that these companies are profitable and effectively utilising their assets and equity capital to generate earnings. It is also shown through the coverage ratio with a mean value of 12.23. A high coverage ratio expresses a strong financial position and great ability for these companies to meet their financial obligations. With regard to the ratio of debt/equity and debt/tangible assets, the mean values are 0.89 and 10.10 respectively.

These ratios imply that on average, companies within the sample are relying more on their equity rather than debt to fund their operations.

Table 2: Descriptive Statistics

	Mean	SD	Min	Max
ROA	4.12%	0.07	-31.18%	44.74%
Debt/Equity	0.89	2.59	-28.74	35.16
Debt/Tangible assets	10.10	69.93	0.00	1829.15
Interest coverage	12.23	59.69	-229.19	1032.00
Ln(revenue)	7.78	1.94	0.00	12.86
Observations		1104		

The table shows descriptive data for variables included in the model. Raw data is collected from the WRDS database and then calculated based on known formula. The data includes 138 companies during the 8-year period from 2015 to 2022 listed on the London Stock Exchange (LSE). In total, there are 1104 observations in the study.

Looking at Table 4, it is evident that the correlation of debt/equity (TDE) with ROA is negative with a value of -0.05. The negative correlation implies that a high level of debt compared to equity is likely to put pressure on the firm's profitability. Similarly, the correlation between Debt/Tangible Assets (TDTA) and profitability ratio is negative with values of -0.04. In contrast, the correlation between Coverage ratio (CR) is 0.28 with ROA which indicates that firms with a high coverage ratio are profitable. A positive value is also seen in the correlation of Firm Size (FS) with ROA (0.07). This positive correlation is in line with the conclusion made by Hall and Weiss (1967) that large firms tend to generate a higher level of return.

Table 3: Correlation

	ROA	TDE	TDTA	CR	FS
ROA	1.00				
TDE	-0.05	1.00			
TDTA	-0.04	0.08	1.00		
CR	0.28	-0.05	-0.01	1.00	
FS	0.07	0.09	-0.10	-0.04	1.00

The table shows correlations among explanatory variables included in the model during the sample period from 2015 to 2022. The values close to 0 represent a negligible correlation between variables, meanwhile, the values close to 1 or -1 indicate a perfect positive or negative correlation respectively.

3.2. Measurements

3.2.1. Dependent Variables

The ability of a business to produce earnings higher than its costs is known as profitability. It is an essential component of financial performance that shows how well a business is running its operations and using its resources to produce profits for its investors and shareholders (Evans, 2014). Managers and shareholders put their focus on profitability metrics since it is a key determinant of the company's strategy and policies. Financial indicators such as net income, gross profit margin, operational profit margin, return on invested capital (ROIC), return on equity (ROE), and return on assets (ROA) can all be used to evaluate profitability (Rutkowska-Ziarko, 2015). Among these financial ratios, ROA is the most popular and essential metric for assessing profit capacity since it is a valuable indicator for measuring asset efficiency and profitability.

3.2.1.1. Return On Assets (ROA)

According to Jewell & Mankin (2011), return on assets (ROA) is one of the most widely used and practical to evaluate a firm’s financial position, performance, and future prospects. A high level of profitability is shown by a high value of ROA, which shows that the business is making more money per dollar of assets. Investors, analysts, and managers frequently use return on assets (ROA) to assess a company's profitability in relation to its asset base and compare it to other businesses in the same industry. It helps the evaluation process of management's ability to deploy assets and create value for shareholders. However, it is crucial to understand ROA in the context of industry standards, capital intensity, and business models since variances in these elements might affect how ROA is interpreted and what effect it has on profitability.

Return On Assets (ROA) = Net Income / Total Assets

3.2.2. Independent Variables

The combination of securities and funding sources that firms utilize to fund actual investments is known as their capital structure (Myers, 2001). The funding structure represents how a company chooses to raise financial resources to support its activities and strike the balance between ownership and debt obligations. A business can optimize its capital structure to minimize expenses, reduce risks to the finances, and maximize shareholder value. To assess a company's capital structure and financial health, the debt-to-equity (TDE) ratio, interest coverage (CR) ratio, and debt-to-tangible assets (TDTA) ratio are three key financial metrics.

3.2.2.1. Debt To Equity

A mixture of equity and debt that a company uses to fund its operations is known as its capital structure (Shubita & Alsawalhah, 2012). The most vital ratio used to evaluate financial leverage is the debt-to-equity ratio (D/E). It calculates the percentage of debt funding a business raises in comparison to its equity (Nissim & Penman, 2001). Given the company's increased reliance on debt financing, a high D/E ratio is indicative of rising financial leverage. Higher leverage can enhance equity returns, but it also raises financial risk due to debt commitments and interest payments. On the other hand, a low debt-to-equity ratio (D/E) indicates a more conservative capital structure. The D/E ratio is a tool used by analysts and investors to evaluate a company's capacity to pay off debt, control financial risk, and produce profits for its shareholders.

Debt to Equity (TDE) = Total Debt / Equity

3.2.2.2. Interest Coverage

Trade-off theory suggests that the increase of debt in capital structure leads to the rise of bankruptcy's cost as a company takes on more debt, the likelihood of bankruptcy may increase due to the burden of paying back debt obligations. An essential financial indicator for assessing a company's capacity to pay interest on outstanding debt is the interest coverage ratio. The relation between capital structure and interest coverage is studied by many researchers, such as Thompson (1972); and Eriotis, Vasiliou and Ventoura-Neokosmidi (2007). A high interest coverage ratio suggests less financial risk because the business makes excessive operational income to comfortably pay its interest. On the other hand, a lower interest coverage ratio could be a warning of increased financial risk and issues with paying interest. The interest coverage ratio is a common tool used by investors and lenders to evaluate a company's solvency, liquidity, and debt servicing capacity. A strong interest coverage ratio not only reflects the company's ability to manage its debt obligations effectively but also assures stakeholders of its financial stability and resilience.

Coverage Ratio (CR) = Net income / Interest Expenses

3.2.2.3. Debt To Tangible Assets

The debt-to-tangible asset ratio is also an important financial metric that provides valuable insights into a company's capital structure, leverage, and financial risk. It is found that the debt/tangible assets ratio is associated with capital structure and overall business performance (Xu, 2020). Tangible assets are physical assets such as property, plant, and equipment. Unlike intangible assets, such as goodwill, patents and brand recognition, tangible assets are easy to measure and monitor. As stated by Hall (2012), fixed assets are used to attract more debts since these types of assets are liquid and play a role

as collaterals for creditors in the event of bankruptcy. Therefore, it is crucial to investigate the relationship between capital structure and tangible assets. According to Booth et al., (2001), there exists an inverse relationship between the ratio of tangible assets and the creditor's financial risk. The risk of default would be lower when the proportion of physical assets was higher, and vice versa. Total Debt to Tangible Assets (TDTA), which is calculated by total debt over tangible assets, is utilized in this study to reflect the capital structure.

Debt to Tangible Assets (TDTA) = Total Debt / Tangible Assets

3.2.3. Control and Dummy Variables

3.2.3.1. Control Variable

According to Gill, Biger & Mathur (2011), control variables such as firm size and sales growth should be included as these factors play as determinants of a firm's profitability. This research incorporates firm size as a control variable since it is recognized to have an impact on the firm's performance, therefore supporting the investigation. As stated by Negasa (2016), a significant positive correlation exists between a firm's size and profitability. Large companies are typically more profitable than smaller firms due to economies of scale, larger market shares, and better brand recognition. In fact, large companies can boost their operational efficiency and profit margins by allocating fixed costs over a wider revenue base. In addition, owing to their scale and creditworthiness, larger businesses are able to obtain debt financing more easily and at lower interest rates, which decreases the cost of debt and boosts profitability even more. Conversely, due to a smaller operational scope and limited access to financial resources, smaller firms frequently struggle to realize economies of scale, which makes it difficult for them to negotiate favourable borrowing terms. All of these factors can seriously impede their ability to increase profitability and competitiveness in the market. Therefore, in this study, the natural logarithm of revenue is used as a proxy for firm size (Gill et al., 2011)

Firm Size (FS) = LN (Revenue)

3.2.3.2. Dummy Variables

In order to have a better understanding of the capital structure and profitability among industries, this research includes the industry dummy variable (INDUM) in the regression. The incorporation of a dummy variable that represents different industries into the regression analysis allows us to account for industry-specific factors that could potentially confound the correlation between capital structure and profitability. As mentioned by Jay et al., (2014), firm returns are different among the industry. For instance, manufacturing companies often encounter unique challenges and opportunities, namely fluctuations in inputs, and complexities in supply chain or regulation, which have an immediate

impact on their bottom line. The effects of manufacturing-related factors on capital structure and profitability can be isolated and analyzed by adding a dummy variable to the regression analysis that represents the manufacturing industry.

Table 4: Summary of variables

Variables	Category	Measurement
ROA	Dependent variable	Net Income / Total Assets
TDE	Independent variable	Total Debt / Equity
CR	Independent variable	EBIT / Interest expenses
TDTA	Independent variable	Total Debt / Tangible Assets
FS	Control variable	LN (Revenue)
INDUM	Dummy variable	INDUM = 1 for manufacturing INDUM = 0 for non-manufacturing

3.3. Method

3.3.1. Panel Data

To investigate the relationship between capital structure and profitability, in this study, empirical regression models are constructed using panel data analysis. In econometrics analysis, panel data is advantageous by offering improvements in the control over individual-specific features, capturing dynamics over time, taking into account correlation within the data, and allowing model specification flexibility (Moffatt, 2018). This type of data allows researchers to better understand how variables change over time, conduct more accurate and efficient analyses, and tackle challenging research issues that require incorporating together individual and time effects. The panel data regression model is given as follows:

$$\mathbf{Y_{it} = \alpha + \beta * X_{it} + \varepsilon_{it}}$$

Where:

Y_{it} = dependent variables belonging to firm i at time t

X_{it} = independent variables belonging to firm i at time t

i = individual cross-sectional dimension

t = time dimension

α = constant number

β = coefficients between X_{it} and Y_{it}

εit = residual error of firm i observed at time t

3.3.2. Performance Measures

Profitability stands as the cornerstone indicator of a company's performance, as emphasized by Keramidou et al., (2014) and corroborated in various studies across the field of finance and economics. In this study, profitability is assessed through Return On Assets (ROA) as the proxy. Besides profitability, capital structure is also the central of this study and it is measured through total debt-to-equity ratio, interest coverage and total debt-to-tangible assets ratio. In addition to investigating the effect of capital structure on profitability (Model 1), this research also takes into consideration the impact of controlling variables namely firm size (Model 2) and dummy variables industry (Model 3) as these two variables have profound impacts on profitability level.

Model 1:

$$ROA_{it} = \beta_0 + \beta_1 * TDE_{it} + + \beta_2 * TDTA_{it} + \beta_3 * CR_{it} + \varepsilon_{it}$$

Model 2:

$$ROA_{it} = \beta_0 + \beta_1 * TDE_{it} + \beta_2 * TDTA_{it} + \beta_3 * CR_{it} + \beta_4 * FS_{it} + \varepsilon_{it}$$

Model 3:

$$ROA_{it} = \beta_0 + \beta_1 * TDE_{it} + \beta_2 * TDTA_{it} + \beta_3 * CR_{it} + \beta_5 * INDUM_{it} + \varepsilon_{it}$$

In these three models, β_0 is the intercept of the regression line with the y-axis, whereas β_1 to β_3 is the coefficient of independent variables. The control variable's coefficient is β_4 and that of the dummy variable is β_5.

3.3.3. Model Estimation

This research estimates the relationship between capital structure and profitability through fixed and random effects models. In the fixed effects (FE) analysis, we estimate under the assumption that certain characteristics of each individual might affect the predictors and then the outcome. Therefore,

it is essential to control these characteristics. It is also the underlying rationale behind the correlation between predictors and error terms. By using the fixed effects model, we effectively eliminate the impact of these time-invariant characteristics, allowing us to evaluate the true impact of the predictors on the outcome variable. Furthermore, it is assumed that the characteristics which remain constant over time are distinct to each individual and should not be correlated with other individual characteristics. In the fixed effects model, the estimated intercept captures the combined influence of all time-invariant variables on the outcome variable across individuals. Therefore, if the estimated model incorporates dummy variables when running the fixed effects model, it will be omitted. Meanwhile, in the random effects model, the differences observed among entities are considered random and uncorrelated with the independent variables. In other words, the error term, representing unobserved factors affecting each entity, is assumed to be uncorrelated with the independent variables in the model. A benefit of the random effects approach is that it is able to incorporate the time-invariant variables in the model.

Hausman model is used to determine the most appropriate model between the random effects model and the fixed effects model. The primary difference between these two models is that whereas the fixed model accounts for time-invariant unobserved variables that may be associated with the observed independent variables, the random model presumes no correlation. The Hausman test is performed to evaluate which model is more efficient. The following represents the Hausman Test hypothesis (Hausman, Abrevaya & ScottMorton, 1998).

The null hypothesis (H_0): The random effects model is preferred

The alternative hypothesis (H_1): The fixed effects model is preferred

CHAPTER 4: RESULTS

In order to evaluate the effect of capital structure on the fim profitability, first, a regression with fixed effects and random effects model is performed for all 3 models. The data for the models is tested for stationary before being used as input. Then, the Hausman test is used to determine which model is more appropriate to assess the relationship between dependent and independent variables. After that, this section ends with checking the robustness of the three models.

4.1. Capital Structure and Profitability (Model 1)

To avoid encountering spurious regression in the research, it is essential to assess the stationarity of the data before using it for regression models. The null hypothesis states that the panel data possess a unit root, indicating non-stationarity in the time series. Conversely, the alternative hypothesis suggests that the time series within the panels are stationary. Based on the results of the unit root test for the specific variables detailed in Table 5, it is evident that all panels exhibit stationarity. Each variable shows a p-value of 0.00, leading to the rejection of the null hypothesis which means that the data is stationary.

Table 5: Unit root test results

ROA	TDE	TDTA	CR	FS
-26.28	-43.92	-31.42	-38.70	-8.26
(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

The outcomes of the fixed effects and random effects models with return on assets (ROA) as the measurement for firm profitability are shown in Table 6 below. To select the most appropriate model, the Hausman (1978) method is performed afterwards. The result suggests that for model 1, the random effects model estimates are more precise, as evidenced by the p-value < 0.05 of the Hausman test. Examining the random effects models for model 1 in Table 6, the coefficients for the capital structure are -0.0010 for Debt/Equity, -0.0001 for Debt/Tangible Assets and 0.0003 for Interest Coverage. Except for Debt/Equity, the remaining two variables in the first model are statistically significant. These coefficients align with the pecking order theory, as observed in the studies by Banerjee (2017) that profitable firms are likely to have a low level of debt. In other words, a high level of debt within the firm's capital structure results in a low level of profitability. In conclusion, hypothesis 1 which states that the negative relationship between capital structure and profitability is accepted based on the results from the model. The conclusion for hypothesis 1 does not align with the expectation before conducting this research that leverage will turn into financial support for firms to

implement various investments. One possible reason is that a high level of debt within the capital structure makes firms more vulnerable to market risks, especially interest rate risk. In this changing dynamic world, when the government is making use of fiscal policy to implement strategic plans for the economy, interest rates are supposed to change unpredictably. Therefore, highly leveraged firms are subjected to more risks and liquidity issues which negatively affect their profitability.

Table 6: Regression results

Variables	Model 1 (Random model)	Model 2 (Fixed model)	Model 3 (Random model)
TDE	**-0.0010**	**-0.0011***	**-0.0009**
	(-1.49)	(-1.71)	(-1.42)
TDTA	**-0.0001****	**-0.0000***	**-0.0001****
	(-2.22)	(-1.76)	(-2.04)
CR	**0.0003*****	**0.0002*****	**0.0003*****
	(9.26)	(8.53)	(9.22)
FS		**0.0130*****	
		(6.31)	
INDUM			**0.0168****
			(2.18)
Constant	**0.0395*****	**-0.0610*****	**0.0290*****
	(10.26)	(-3.8)	(4.72)
Observations	1104	1104	1104
R^2	0.0799	0.1166	0.0798

*The table represents the coefficient estimates from fixed effects and random effects models with return on assets (ROA) as the dependent variable. T-values are in parentheses. p < 0.10; ** is p < 0.05 and *** is p < 0.01*

4.2. Profitability and Firm Size (Model 2)

In the second model, firm size is incorporated as the control variable in addition to capital variables to examine whether the firm's size has a positive impact on profitability. Unlike the first hypothesis, for the second hypothesis, the fixed effects model is more appropriate to show the underlying relationship between firm size and profitability. The results provide a robust and statistically significant positive coefficient of 0.013 between Return on Assets (ROA) and the fim size as presented through Ln(revenue) which indicates that larger companies tend to exhibit greater profitability than smaller firms. In this model, the result is slightly different compared to the first model. Although the magnitude of capital structure variables is similar to the first model, the Debt/Equity is statistically

significant in the second model which is not in the first model. In other words, after controlling for the firm's size, the debt/equity has more explanatory power over profitability. The inclusion of the firm size variable in the model also improves the explanatory power of the model which can be seen in the value of R^2 from 7.99% in the first model increases to 11.66% in the second model. These insightful findings reinforce the previous studies' results by Rajan and Zingales (1995) and Bevan and Jo Danbolt (2002). To conclude, we accept hypothesis 2 with the notion that larger companies have a higher level of profitability compared to smaller firms due to their advantages of economies of scale, higher bargaining power and market share.

4.3. Profitability and Industry (Model 3)

In the last model, the relationship between profitability and industry is investigated. The result shows that the random effects model is more appropriate to evaluate the correlation. Looking at the random effects model for hypothesis 3, a similar result for capital structure variables with hypothesis 1 is shown. The coefficient for the industry dummy variable is positive with a value of 0.0168 and statistically significant. This result indicates that manufacturing companies are likely to generate a higher return compared to non-manufacturing firms. In other words, firm performance varies among industries, higher for the manufacturing industry. However, the inclusion of the control variable for the industry does not improve the explanatory power of the model since the value of R^2 decreases slightly from 7.99% to 7.98% which implies that it is not meaningful when incorporating the industry dummy variable in the model. It might be that the intuition for a different level of debt among manufacturing and non-manufacturing companies does not hold in the current state as indicated in the study by Köksal & Orman (2015). To conclude, hypothesis 3 which states a difference in the firm performance among industries is accepted.

4.4 Robustness Check

To assess the robustness of the findings about the relationship between capital structure with the firm's performance in this research, non-manufacturing and manufacturing companies are tested separately. The original sample is divided into 2 sub-samples with sample 1 having 416 observations for non-manufacturing companies and sample 2 having 688 observations for manufacturing firms. The robustness check test follows the same method as the main research. First, a regression with fixed effects and random effects model is performed for models 1 and 2. Then the Hausman test is applied to find the most appropriate model. For hypothesis 3, if the coefficients between models 1 and 2 are different, hypothesis 3 is accepted with the notion that the firm's performance varies among industries. After running the regression, the fixed effects model generates more accurate results for both non-manufacturing and manufacturing companies. Looking at the results in Table 7, it is clear that the magnitude of capital structure and firm size variables is the same as in the main research

findings and coefficients for models with non-manufacturing and manufacturing firms are different. However, the significance of independent variables is different in terms of Debt/Equity and Debt/Tangible Assets. In the main research, the Debt/Tangible Assets variable is statistically significant, however, when the sample is divided, this variable is only statistically significant for manufacturing companies. One possible reason is that for manufacturing companies, tangible assets account for a large proportion of capital as they are the main revenue generation vehicle. Therefore, this variable is more meaningful for manufacturing firms. In contrast, in terms of the Debt/Equity variable, it is statistically significant for non-manufacturing companies. Based on the results from the robustness test, it is concluded that hypotheses 1, 2 and 3 are accepted. The conclusion from robustness check tests is aligned with the main research.

Table 7: Regression results for robustness check

	Non-manufacturing		**Manufacturing**	
Variables	**Model 1** (Fixed model)	**Model 2** (Fixed model)	**Model 1** (Fixed model)	**Model 2** (Fixed model)
TDE	**-0.0063***	**-0.0077****	**-0.0007**	**-0.0008**
	(-1.89)	(-2.37)	(-1.09)	(-1.23)
TDTA	**-0.0000**	**-0.0000**	**-0.0037****	**-0.0032***
	(-1.38)	(-0.85)	(-2.08)	(-1.80)
CR	**0.0009*****	**0.0009*****	**0.0002*****	**0.0002*****
	(10.23)	(10.13)	(5.78)	(5.74)
FS		**0.0109*****		**0.0293*****
		(5.12)		(3.96)
Constant	**0.0298*****	**-0.0508*****	**0.0516*****	**-0.1813*****
	(6.46)	(-3.11)	(17.76)	(-3.08)
Observations	416	416	688	688
R^2	0.2462	0.2974	0.0631	0.0870

*The table represents the coefficient estimates from fixed effects and random effects models with return on assets (ROA) as the dependent variable. T-values are in parentheses. p < 0.10; ** is p < 0.05 and *** is p < 0.01*

CHAPTER 5: CONCLUSION

5.1. Main Results

After examining the data of 138 firms listed on the London Stock Exchange (LSE) from 2015 to 2022, when it comes to the relationship between capital structure and the firm's performance, it turns out that having a high level of debt has a negative effect on profitability which is expected from pecking order theory. Although this result does not align with the expectation before conducting the research that firms with a high level of debt are likely to have a higher return as a result of financial leverage, it highlights the importance of not heavily relying on debt and identifying the balance in funding structure to take the most advantage of tax shield or leverage to enhance the company's profitability. By getting an understanding of how capital structure affects profits, businesses can come up with decisions on how they finance their operations in order to gain competitiveness and enhance their financial position.

Another finding in this research is that large companies tend to make more profit compared to smaller firms. This could be explained by the fact that larger firms can take advantage of cost savings from operating at a large scale, having a high share in the market, and gaining more strategic benefits coming with their size such as bargaining power over suppliers or customers (Porter, 1979). These benefits can lead to better profits for large companies proving evidence of the vital role of size and market position in achieving a company's success and staying ahead in this competitive market.

Looking at different types of industries, it is concluded from the research that manufacturing companies have a higher level of return compared to non-manufacturing firms. The result implies the importance of understanding industry-specific dynamics as they are the foundation for companies to come up with strategies, operations, and financial decisions that align with the unique challenges and opportunities in the industry landscape.

As shown from the research, the result slightly differs and depends on which variables are included in the model. When examining the relationship between capital structure and firm profitability, it is crucial for companies to take into consideration the decisions in selecting the most appropriate profitability and capital structure ratios as proxies based on companies' characteristics. While the most commonly used ratios such as return on assets (ROA) can provide valuable insights, they may not fully present firms' financial performance. These ratios can be affected by various factors beyond capital structure, such as the composition of assets, operational efficiency or industry-specific dynamics. Relying solely on some profitability or funding measures may lead to an incomplete or potentially misleading understanding of a company's financing decisions and its overall profitability. Therefore, it is essential for firms to consider a more comprehensive set of profitability and capital

structure indicators, including both accounting-based and market-based, long-term and short-term measures, to gain a comprehensive understanding of the effect of capital structure. If companies adopt a multi-approach assessment, they will be able to make more informed decisions according to their financing strategies and capital allocation, ultimately enhancing their long-term sustainability and value creation.

5.2. Limitations

This study uses a sample of 138 companies listed on the London Stock Exchange (LSE) market over 8 years from 2015 to 2022. A small sample size is not adequate to fully represent the entire United Kingdom industry. While it is ideal to include all the companies, listed and non-listed since it would provide a more comprehensive analysis of the relationship between capital structure and profitability, the collection of data might be challenging and costly, especially for non-listed companies. The data in this research originates from audited financial reports which ensure reliability and accuracy, although not all company information may be publicly available which then undermines the study's ability to effectively explore the capital structure and profitability relationship.

In this research, five predictors and one dependent variable were selected to investigate the impact of capital structure on profitability. These predictors may not include all relevant variables which should be used to evaluate the impact on profitability. The R-square results is just around 10% indicating that the chosen independent variables have insignificant power of explanation for profitability variation, suggesting the presence of additional factors that could improve the results for the analysis. Despite the study's limitations in variables' selection, the regression models' results provide support for the findings, offering valuable insights into the relationship between capital structure and profitability within the context of the United Kingdom market.

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