



Structuring Success: The Impact of Capital Structure on Financial Performance of Listed Manufacturing Firms in South Asia

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Abstract

This study investigates the impact of capital structure on the financial performance of manufacturing firms in South Asia from 2019 to 2023. Using a quantitative approach involving panel data regression analysis over the period 2019–2023, data from 37 publicly listed manufacturing companies were examined, offering insights into the listed segment of South Asia's manufacturing sector. The findings reveal a statistically significant negative relationship between capital structure, measured by debt-to-equity and debt-to-asset ratios, and firm performance, as captured by Return on Equity (ROE). The study suggests that excessive debt adversely affects financial performance, emphasizing the need for an optimal capital structure to enhance firm profitability and mitigate financial risk. The results offer valuable observations for managers and investors, emphasizing the significance of capital structure in strategic decision-making and investment evaluation within emerging markets. For managers, the study highlights the importance of maintaining an optimal mix of debt and equity to enhance financial performance and reduce risks associated with high debt levels. For investors, it emphasizes the need to consider a firm's capital structure when evaluating investment opportunities, as it impacts the financial stability and performance of the organizations. This research contributes to the growing literature on capital structure in emerging markets and offers a region-specific analysis that addresses a notable gap in prior empirical studies.

Keywords: *Capital structure, Emerging markets, Financial performance, Manufacturing sector, Return on Equity (ROE), South Asia*

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Introduction

In today's highly dynamic and competitive business environment, effective management of capital structure (CS) has emerged as a critical determinant of corporate success and long-term sustainability. Capital structure is the proportionate mix of debt and equity that constitutes total operating capital of a business which fundamentally shapes how businesses finance their operations and pursue growth opportunities (Mukaddam & Sibindi, 2020). Thus, the significance of capital structure decisions is paramount, as they serve as a primary source of risk in modern business operations (Akomeah et al., 2018; Essel, 2024; Kamal, 2024) and have complex, far-reaching implications for organizational success (Aramvalathan et al., 2018; Mukaddam & Sibindi, 2020). Although financial performance is a primary focus for all economic entities, the relationship between capital structure and financial performance remains a topic of debate, with studies yielding diverse and sometimes contradictory findings (Dinh & Pham, 2020; Bhandari & Subedi, 2024).

Moreover, extant literature has extensively explored the concept of optimal capital structure, revealing several key insights. Empirical evidence suggests that highly profitable firms typically exhibit lower dependence on debt financing compared to their less profitable counterparts. Furthermore, firms experiencing rapid growth often maintain higher debt-to-equity ratios. Additionally, bankruptcy costs have emerged as a significant factor influencing decisions regarding capital structure (Kraus & Litzenberger, 1973; Dao & Ta, 2020; Essel, 2024). These observations highlight the intricate link between a firm's financial characteristics

and the chosen capital structure. Furthermore, the risk implications of capital structure decisions manifest primarily through fixed costs, whether in production processes or financial obligations. Thus, the management faces the challenging task of determining appropriate debt levels, particularly in uncertain business environments where excessive fixed costs can threaten organizational stability. Therefore, the decision-making process involves balancing various financing sources, including equity financing through share issuance or retained earnings and debt financing through market borrowing. The resulting financial structure reflects the overall composition of these financing sources, while capital structure specifically denotes the relationship between debt and equity, including paid-up capital, share premiums, and accumulated reserves (Zeitun & Tian, 2007).

Theoretical frameworks provide valuable insights into capital structure decisions. As Myers (2001) notes, while no universal theory fully explains debt-to-equity choices, several theoretical perspectives offer complementary insights. The trade-off theory suggests that firms seek optimal debt levels by balancing tax advantages against potential financial distress costs. The pecking order theory proposes that when a firm's internal cash flow is inadequate to finance capital expenditures, it opts for borrowing rather than issuing equity (Myers, 2001). Meanwhile, the free cash flow theory suggests that high debt levels can enhance firm value, even amid financial distress risks, when operating cash flows substantially exceed profitable investment opportunities.

According to World Bank (2023), manufacturing accounts for around 14% of South Asia's GDP, reflecting its

economic significance. Despite this importance, limited empirical research has examined how debt-to-equity (DE) and debt-to-asset (DA) ratios affect financial performance, measured by ROE. Thus, this study addresses a significant gap in extant literature by examining the link between capital structure and financial performance specifically within South Asia's manufacturing sector. While previous research has produced conflicting findings regarding this relationship, studies focused on the South Asian manufacturing context remain notably scarce. Thus, the central research problem addressed in this study is the inconsistent and often contradictory findings in the literature regarding how capital structure affects financial performance in the rapidly growing South Asian manufacturing sector. Therefore, this research distinguishes itself through its regional focus, enabling cross-country comparisons that transcend the limitations of single-nation studies that have characterized much of the existing literature. Accordingly, the primary objective of this study is to determine the effect of capital structure on the financial performance of manufacturing companies across South Asia. This study focuses on Return on Equity (ROE) as the primary measure of financial performance due to its widespread acceptance as a key indicator of shareholder value and profitability (Berger & Bonaccorsi di Patti, 2006; Ichسانی & Suhardi, 2015). While other metrics such as ROA or EPS could provide additional insights, ROE was selected for its relevance in assessing capital structure efficiency from an equity investor's perspective (Soumadi & Hayajneh, 2012). This broader geographical scope, combined with a focused examination of the

manufacturing sector, promises to yield valuable insights for both theoretical understanding and practical application. The study employs carefully selected independent and dependent variables to examine this relationship, addressing the empirical gap in the existing literature related to the impact of capital structure on listed manufacturing companies in the South Asian context.

The rest of this paper is organized as follows: Section 2 provides a comprehensive review of relevant literature and theoretical foundations; Section 3 details the research methodology, including population and sample selection; Section 4 provides data analysis and discussion of findings; and Section 5 concludes with implications and recommendations for future research.

Literature Review

Capital Structure

The capital structure of a company refers to the mix of debt and equity financing employed to fund its operations and growth (Essel, 2024). According to Inanga and Ajayi (1999), capital structure can be categorized into three categories: equity capital, preference capital, and long-term debt capital. This classification highlights the importance of preference shares within the capital structure. Firms differ in their willingness to use debt or equity capital for funding, with each option offering distinct advantages and drawbacks. Pandey (1999) suggests that the financial structure is a broader concept than capital structure, encompassing various sources of funds, including short-term debts and other liabilities. In contrast, capital structure specifically focuses on the link between long-term debt and equity.

Determining the optimal mix of debt and equity remains one of the most challenging aspects of corporate finance. Firms must consider factors such as business risk, flexibility, management preferences and cost of capital when determining their capital structure. Although modern financial techniques help managers optimize the balance between debt and equity, many companies still lack an optimal capital structure, often due to insufficient incentives to maximize performance (Essel, 2024).

Financial Performance

Financial performance is commonly measured by assessing how much the shareholders are better off by the end of the period compared to the beginning, often using financial ratios derived from income statements, balance sheets, or stock market prices (Berger & Bonaccorsi di Patti, 2006). These ratios indicate whether the firm's objectives have been met, particularly in terms of increasing shareholder wealth. According to Charreaux (1997), the primary objective of shareholders is wealth maximization, and a firm's financial performance has to be evaluated to assess whether this goal is achieved. Moreover, financial performance is influenced by various financial decisions, including capital structure, which is considered a key decision in this regard (Mwangi et al., 2014). Champion (1999) and Leibenstein (1996) suggest that debt's capacity to enhance firm productivity can improve financial performance by reducing bankruptcy risk. As a result, many companies rely on debt to improve their financial performance (Tharmila & Arulvel, 2013). These financial decisions are typically aligned with long-term goals, with businesses

seeking an appropriate combination of debt and equity to manage business risk effectively.

Theoretical Framework

This section reviews the key theoretical perspectives that underpin the relationship between capital structure and financial performance where theories provide a conceptual foundation in understanding how capital structure influences financial performance.

Modigliani and Miller's Theory

The link between capital structure and firm performance gained prominence following the work of Modigliani and Miller (1958), who proposed that capital structure is irrelevant to a company's market valuation in a perfectly competitive market. However, they later revised their theory in 1963, acknowledging that the value of a firm increases with higher debt due to the tax shield created by interest payments. Modigliani and Miller (1963) demonstrated that the value of a firm and its performance are positively correlated with leverage, as debt interest is tax-deductible at the corporate level.

Agency Cost Theory

Agency Cost Theory, introduced by Jensen and Meckling (1976) and Myers (1977), explains the link between capital structure and firm value through agency costs, which arise from conflicts of interest between shareholders and managers, or between shareholders and bondholders. According to Addae et al. (2013), managers often prioritize their own interests, whereas shareholders expect managers to maximize the value of their investments. The theory suggests that these conflicting interests

influence the capital structure decisions and the optimal capital structure.

Pecking Order Theory

The Pecking Order Theory, presented by Myers and Majluf (1984), posits a negative link between firm value and the level of debt in a firm's capital structure. This theory argues that firms have a preference hierarchy for financing, with internal funds being preferred over debt, and debt being preferred over equity. As a result, highly profitable firms rely less on debt. According to this theory, a rise in debt is correlated with lower performance.

Trade-Off Theory

The Trade-Off Theory, as articulated by Myers (1977), suggests that firms strive to attain an optimal capital structure where the marginal benefit of debt (such as tax shields) equals the marginal cost (such as bankruptcy risk). Fama and French (2005); Harris and Raviv (1991) and Pratheepan and Weerakon Banda (2016) support this notion, arguing that companies can achieve an optimal capital structure by effectively balancing these benefits and costs. The Dynamic Trade-Off Theory further elaborates this idea, suggesting that companies can adjust their leverage targets by weighing the benefits of adjusting capital structure against the costs of such adjustments (Brennan & Schwartz, 1978; Dudley, 2007; Leland, 1994; Ovtchinnikov, 2010).

Review of Empirical Studies

A significant body of empirical literature has sought to investigate the link between capital structure and financial performance. While there is no consensus, empirical studies generally

examine how different aspects of capital structure, such as debt levels and equity financing, impact financial performance. These studies offer mixed results, where some researchers suggest a positive relationship between debt and performance, while others point to a negative correlation.

Dinh and Pham (2020) examined how capital structure influences the financial performance of pharmaceutical firms listed on the stock market of Vietnam. Their findings revealed a positive relationship between financial leverage (LR), long-term asset ratio (LAR), and debt-to-assets ratio (DR) with firm performance. However, self-financing (E/C) was found to have a negative effect on return on equity (ROE). The study suggested that pharmaceutical firms should adopt a more balanced capital structure with a higher debt proportion than equity, diversify loan mobilization channels issuing long-term bonds, and appropriately expand their scale to sustain growth and debt repayment capacity. Rabab'ah (2022) examined the effect of capital structure on the financial performance of basic materials companies listed on the Saudi Stock Exchange from 2014 to 2021. The study has used various independent variables, including the ratio of total debt to total assets, total debt to equity, and long-term debt to total assets, with ROE as the dependent variable in measuring financial performance. Forty-two companies from the basic materials sector were included in the sample. The results revealed a positive and statistically significant effect of the total debt-to-equity ratio on financial performance, while no significant effect was found for total debt to total assets or long-term debt to total assets. The study suggested that Saudi companies should use a combination of short-term and long-term debt to fund their operations,

as it positively affects financial performance. Le (2017) focused on 219 listed industrial firms in Vietnam from 2010 to 2015, applying correlation and regression analysis. The findings demonstrated that capital structure positively influences ROE across production groups, suggesting that firms with higher leverage could achieve better performance. Moreover, Taub (1975), investigated the debt-equity ratio for US firms and found a statistically significant positive relationship between debt and profitability, especially for firms in industries with stable cash flows. San and Heng (2011) examined the link between capital structure and the corporate performance of Malaysian construction companies over a four-year period from 2005 to 2008 and revealed that there is an association between a firm's capital structure and its overall performance. Berger and Bonaccorsi di Patti (2006) analyzed 695 companies in the US banking industry over six years and concluded that financial leverage had a significant positive impact on firm performance. This finding is in line with Margaritis and Psillaki (2010), who examined a sample of French firms from both low-growth and high-growth sectors and found that leverage positively influenced firm efficiency across the entire sample. Moreover, utilizing data from 257 South African firms, Fosu (2013) found a positive and statistically significant association between financial leverage and performance. This was particularly evident in industries where firms were able to utilize leverage to achieve growth and improve profitability. Further, studies have reinforced these findings in emerging markets. Accordingly, Ramezani et al. (2013) explored the link between capital structure and firm performance in

Tehran's stock exchange, identifying a significant positive link between the two. This suggests that companies in emerging economies may benefit from higher leverage as it allows them to scale their operations more effectively.

Moreover, several studies have found a negative relationship between debt and financial performance, suggesting that higher debt levels may reduce profitability or increase financial distress. Hajisaaid (2020) examined the link between capital structure and profitability in eight companies within the basic materials sector in Saudi Arabia from 2009 to 2018 and found that there is a negative link between short-term debt to total assets (SDA) and profitability and long-term debt (LDA) and profitability. Further, the study has identified a positive link between total debt (DA) and profitability. Binh and Phuong (2018) explored financing decisions and found that bigger firms prefer debt financing due to greater flexibility and liquidity management, while smaller firms are more risk-averse and avoid debt due to repayment concerns. Accordingly, Gill et al. (2011) investigated how capital structure influences profitability, focusing on 272 service and manufacturing firms listed on the New York Stock Exchange from 2005 to 2007. Based on their findings, there is a positive link between debt and ROE, while long-term debt is inversely associated with ROE. Essel (2024) examined the impact of capital structure on firm performance in Ghana's emerging capital market. The results indicated that total-debt-to-total-equity, total-debt-to-total-assets, long-term debt, and financial risk are negatively correlated with firm performance. In contrast, total equity-to-total assets, short-term debt, cash conversion cycle, asset turnover, tangibility, sales growth, firm size, and firm age are positively

correlated with performance. The study suggested that firms with high leverage are prone to insolvency risks driven by increased debt-financing costs, exacerbated by uncertainty in the economy and vulnerability to economic shocks. Tretiakova et al. (2021) analysed the link between key performance indicators (ROA, ROIC, change in market capitalization, and price-to-book ratio) and capital structure in the pharmaceutical industry in the UK from 2009 to 2019 and found that equity negatively affected the price-to-book ratio and ROA, while it positively affected the change in market capitalization. Moreover, long-term debt was positively related to both the price-to-book ratio and the change in market capitalization. Conversely, short-term debt negatively affected the change in market capitalization, ROA, and ROIC. Furthermore, Dao and Ta (2020) employed a meta-analysis and confirmed a negative link between capital structure and firm performance, supporting the trade-off model with agency costs and pecking order theory. Le and Phan (2017) investigated the effect of capital structure on firm performance in Vietnam, using return on assets (ROA) as the primary performance measure. The study employed unbalanced panel data analysis from all non-financial listed firms during the period 2007-2012 and concluded that all debt ratios had a significantly negative relationship with firm performance. These findings align with earlier empirical evidence provided by Zeitun and Tian (2007), who documented a negative impact of debt on corporate performance in Jordan using panel data from 167 companies. Similarly, Pham (2020) investigated how capital structure influences the financial performance of firms listed on the Hanoi Stock Exchange, using panel

data from 383 firms between 2015 and 2019 and found a negative association between capital structure and financial performance, as measured by ROE, ROA, and EPS. Additionally, firm size positively impacted ROA and EPS, while growth opportunities and asset structure had a negative effect on ROE and ROA. Dawar (2014) conducted research on Indian listed companies and found a negative link between financial leverage and profitability. In line with Agency Theory, this study suggested that excessive debt may exacerbate agency costs and managerial inefficiency, ultimately harming performance. Similarly, Khan (2012) analyzed 36 Pakistani firms from 2003 to 2009 and reported that financial leverage negatively affects financial performance, including ROA, gross margin, and Tobin's Q. The study also found, firm size to have an insignificant impact on ROA and gross margin but a significant negative effect on Tobin's Q. Moreover, Zeitun and Tian (2007) examined the impact of capital structure on corporate performance employing panel data from 167 companies in Jordan between 1989 and 2003. The findings revealed a significantly negative association between capital structure and firm performance, through assessing both accounting and market indicators. However, short-term debt to total assets (STDTA) positively influences market performance, as measured by Tobin's Q. Their findings suggest that the optimal capital structure for organizations in developing markets may vary from that of organizations in developed economies, as firms with higher debt may face challenges related to default risk and high-interest payments, which negatively affect performance. Moreover, Krishnan and Moyer (1997) opined a significant negative association between the total

debt to total equity ratio (TD/TE) and return on equity (ROE). Similarly, Gleason et al. (2000) found that a firm's capital structure negatively impacts key performance measures, including return on assets (ROA), sales growth (Gsales), and pre-tax income (Ptax). These results reveal that the increased level of debt in a firm's capital structure tends to reduce its overall performance. Moreover, Kester (1986) and Rajan and Zingales (1995) also report negative relationships between leverage and profitability in nations such as the United States, Japan, and the G-7 nations. These studies argue that excessive reliance on debt financing increases the risk of bankruptcy and can lower firm performance, especially when firms face market uncertainties or cyclical downturns. Salim and Yadav, (2012) investigated the association between capital structure and firm performance using panel data from 237 Malaysian companies listed on the Bursa Malaysia Stock Exchange during 1995–2011. Their findings indicate that firm performance, measured by Return on Assets (ROA), Return on Equity (ROE), and Earnings Per Share (EPS), has an inverse relationship with short-term debt (STD), long-term debt (LTD), and total debt (TD). In contrast, growth shows a positive link with performance across all sectors analyzed. Tobin's Q further reveals a significant positive link with STD and LTD, while total debt (TD) exhibits a significant inverse association with firm performance.

Although several studies revealed both positive and inverse relationships, some studies have found no significant relationship between capital structure and financial performance. Hall et al. (2004) posit that the age of a firm positively affects long-term debt while it negatively affects short-term debt, suggesting that firm characteristics and market conditions can influence the

nature of the link between capital structure and performance. Additionally, Booth et al. (2001) observed that the link between tangibility (asset base) and leverage is context-dependent, with firms possessing high tangible assets more likely to leverage debt without facing significant performance drawbacks. Furthermore, Huang and Song (2006) discovered that corporations in developing economies, such as China, often exhibit an inverse link between tangibility and leverage, indicating that access to debt financing is constrained by asset liquidity. In contrast, firms in developed markets might utilize their tangible assets as collateral to acquire beneficial debt terms, leading to positive outcomes for firm performance.

Thus, empirical literature highlights a range of conclusions related to the impact of capital structure on the financial performance of corporations. Although some studies indicate that higher levels of debt can enhance profitability and performance, others contend that excessive amounts of debt may lead to financial distress, reducing firm value. The mixed results emphasize the intricacy of capital structure decisions, indicating that the optimal capital structure may be influenced by factors such as industry, market conditions, firm size, and growth opportunities. As such, future research may benefit from further exploring the contextual factors that influence this relationship, particularly in emerging markets like the South Asian region. Overall, this literature review highlights that while extensive research has examined the impact of capital structure on firm performance globally, limited empirical evidence is available for South Asia's manufacturing sector specifically. By focusing on this region, the study provides context-specific

insights that can inform academic debate and guide practical decision-making for firms operating in these emerging markets, where capital structure decisions and market conditions differ notably from developed economies.

Methodology

Development of Hypotheses

Drawing from the extant literature, two hypotheses were formulated for the study. The first hypothesis posits that the Debt-to-Equity (DE) ratio has a significant impact on Return on Equity (ROE). Recent studies provide robust evidence supporting this relationship. According to Lusy et al. (2018), an increase in the DE ratio can enhance ROE by leveraging debt to boost returns, provided the firm effectively manages its debt obligations. Similarly, Mande et al. (2012) demonstrated that firms with a higher DE ratio often experience higher ROE, particularly when they have access to low-cost debt, which amplifies equity returns. However, excessive leverage can lead to increased financial risk and potentially lower ROE if the firm's earnings are not sufficient to service the debt (Graham et al., 2022). These findings emphasize the critical behavior of capital structure when influencing financial performance and align with the broader literature highlighting the nuanced impact of debt on equity returns (Bhandari & Subedi, 2024). Despite existing findings, a significant disparity persists in the body of existing research on the impact of the DE ratio on ROE, specifically within the South Asian manufacturing sector. To address this gap, the following hypothesis is proposed:

H₁: The DE ratio has a statistically

significant impact on the ROE of South Asian manufacturing companies.

According to Hypothesis 2, the Debt-to-Assets (DA) ratio exhibits a statistically substantial impact on ROE. Extant research highlights the crucial part of the DA ratio that influences ROE. For instance, Atidhira and Yustina (2017) found that a higher DA ratio can significantly affect ROE by indicating the proportion of assets financed through debt, which can amplify or diminish returns depending on the capacity of the company to earn profit out of its assets. Additionally, Baby (2016) demonstrated that firms with higher DA ratios often experience variations in ROE, particularly in capital-intensive industries where leveraging assets through debt can either enhance financial performance or increase risk. This relationship highlights the importance of understanding how debt levels relative to assets impact profitability and financial returns, aligning with broader findings in the field (Kamal, 2024). Despite existing findings, a significant disparity persists in the extant literature related to the impact of the DA ratio on ROE specifically within the South Asian manufacturing sector. To address this gap, the following hypothesis is proposed:

H₂: The DA ratio has a statistically significant impact on the ROE of South Asian manufacturing companies.

Sample and Data

All the listed South Asian manufacturing firms constitute the population of this study. As the current study focuses on manufacturing companies across South Asia, the researchers divided the region into eight

clusters corresponding to its eight countries. Thus, the sampling technique, which involves selecting a portion of the population to represent the whole, was cluster sampling. For each country, five companies were selected based on the highest market capitalizations at the end of the year 2023. Out of the 40 manufacturing firms selected, three firms were omitted due to unavailability of data during the considered time period, 2019-2023. As a result, a total of 37 manufacturing firms were investigated employing data from their audited annual reports.

Data Collection Methods and Procedure

Data collection methods are techniques used to gather useful information for research. Thus, the current study utilized secondary data. Furthermore, panel data analysis is the most suitable approach for analysis given the specific requirements of the study (Hsiao, 2022), as it effectively handles large volumes of quantitative data within a short timeframe. Thus, the financial statements of 37 manufacturing enterprises in South Asia provided secondary data for this study. These data were retrieved from publicly available, audited annual reports published on the respective companies' official websites and verified stock exchange portals to ensure data accuracy and comparability. All data were cross-checked for consistency, and only firms with complete financial records from 2019 to 2023 were included. Since the study used publicly available data, no ethical clearance was required; however, the data were handled with academic integrity and confidentiality in mind.

Data Analysis Techniques

Both cross-sectional and time-series

analyses are used in this study, thus falling under the category of panel data analysis. Time-series analysis examines the internal structure of data points accumulated over time, while cross-sectional analysis focuses on data collected at one particular moment and compares firms within the same sector. Panel data, which combines these two dimensions by integrating data from multiple entities across time periods, is particularly suited for this analysis. It allows for a comprehensive evaluation of both the cross-sectional analysis and time-series analysis.

To evaluate how capital structure impacts financial performance, data analysis will be conducted using STATA, which will manage descriptive statistics, regression modelling, and correlation analysis over five years. Thus, the Hausman test will be used to evaluate two mathematical models: fixed effects and random effects. If the probability value is less than 0.05, the fixed effects model will be selected. A random effects model will be chosen if the probability value is higher than 0.05 (Park, 2011). In the latter part of the analysis, four diagnostic tests will be performed to identify issues with correlated variables. These tests will assess heteroskedasticity, serial correlation, and cross-sectional dependence. Serial correlation will evaluate the relationship between a variable and its lagged version over time, while cross-sectional dependence will check if residuals are correlated across entities (Park, 2011).

Conceptualization

This study examines how capital structure affects financial performance using the ROE ratio as the dependent variable. The debt-to-equity and debt-to-

asset ratios are independent variables, and firm size is the control variable. Figure 1 depicts the conceptual framework illustrating how capital structure affects financial performance.

Operationalization of Variables

Dependent Variable

The variable that depends on other variables for its existence and success is known as the dependent variable. Financial performance is therefore the study's dependent variable. Financial performance can vary depending on the capital structure, and understanding this variation can help identify the underlying reasons and offer recommendations. Consequently, a single, critical dependent variable was chosen for study to evaluate trends and their relationship with independent variables. As a result, financial performance is gauged using Return on Equity (ROE). ROE is a significant ratio for assessing financial performance as it indicates the return provided on shareholders' investments (Ichsani & Suhardi, 2015). ROE reflects how effectively management has utilized the capital invested by shareholders.

Independent Variable

The study's independent variable, capital structure, has two dimensions: debt capital and equity capital. The association between capital structure and financial performance has been examined in studies by Siro (2013) and Anojan and Velnampy (2014). Several ratios are used in this study to measure capital structure. The DE ratio is employed to gauge the organization's capital structure, as it is a critical indicator of how much debt is financed by shareholders' equity (Mujahid & Akhtar, 2014). This ratio evaluates the

percentage of total debt to equity. According to San and Heng (2011), the DA ratio is also used in evaluating the capital structure. By calculating the percentage of total debt to total assets, this ratio illustrates the extent to which the company's assets are financed by debt. A higher DA ratio suggests a greater percentage of the company's assets are funded by debt, which could have an effect on profitability.

Control Variable

In this study, the firm size is taken as the control variable. Many studies discuss how firm size affects business performance and indicate that firm size can have profound consequences on various aspects of business performance, including profitability, productivity, and growth. For example, larger organizations often take advantage of economies of scale, which can lead to higher profitability and efficiency (Coad et al., 2011). Additionally, firm size was found to be positively correlated with the capacity for innovation and market competitiveness (Bernstein, 2022). The natural log of the total assets can be used to calculate the Firm's size and determine how it affects financial performance.

Financial ratio analysis provides techniques for evaluating a firm's financial strengths and weaknesses according to information from its financial records. As such, it was chosen as a method for measuring and indicating financial performance. The operationalization of variables, guided by prior empirical research, is presented in Table 1. The ROE is a statistical metric used in this study to assess financial performance. The DE and DA ratios are the independent variables that are used to characterize the capital

structure and assess how it affects financial performance.

Results

Descriptive Analysis

Descriptive statistics are the summary measures that provide a concise overview of a given data set, which may represent either an entire population or a sample. Measures of central tendency and measures of variability or spread are the two primary categories into which these statistics are usually separated. While the standard deviation or variance, the lowest and greatest values, kurtosis, and skewness are examples of measures of variability, the mean, median, and mode are examples of measures of central tendency.

The Stata results presented in Table 2 reveal that the ROE has a minimum value of -0.125 and a maximum value of 9.03, with an average value of 2.15 and a standard deviation of 2.80. The DA ratio ranges from 0.02 to 9.40, with a mean value of 1.79 and a standard deviation of 2.65. The DE ratio varies between -2.84 and 2.35, with a mean value of 0.25 and a standard deviation of 0.72. The arithmetic mean is considered the most crucial measure, because it stands for the center of distribution and the balance point (Azar, 2020). Thus, the mean value of the DA ratio in this study is significantly lower by approximately 10% when compared to similar research conducted by other scholars. Additionally, Table 2 gives a broader summary of the data gathered by displaying the mean, standard deviation, minimum, and maximum values for every variable. However, it is vital to conduct further analysis to draw more suggestive insights.

Correlation Analysis

The correlation and covariance between the selected variables have to be calculated to gain a deeper understanding of the sample. The associations between the variables are summarized in a correlation matrix. First, it helps determine whether a bivariate relationship is present between every dependent and independent variable pair. Secondly, it determines if the two variables have a statistically significant relationship. The direction and importance of the relationships between the variables are shown in the correlation matrix represented in Table 3. Important information about the connections between ROE and the relevant variables can be found in the correlation matrix. ROE shows a moderate negative correlation with DE (-0.3), indicating that higher reliance on equity over debt might improve profitability, as excessive debt can increase financial risk and reduce returns. There is a weak positive correlation between ROE and DA (0.15), suggesting that firms leveraging assets moderately through debt can achieve slight profitability gains. Additionally, Firm Size exhibits a modest positive correlation with ROE (0.25), implying that larger firms may benefit from economies of scale and better resource utilization, enhancing their financial performance. These relationships align with general capital structure theories, highlighting the balance firms must maintain between leverage and profitability.

Main Diagnostic Tests

Heteroskedasticity Test

According to Astivia and Zumbo (2019), it has generally been assumed that the

variance of the errors is constant, a condition known as homoscedasticity. When the errors do not exhibit constant variance, this is referred to as heteroscedasticity. To determine whether a model has heteroskedasticity, a number of statistical techniques can be applied, such as the White test and the Breusch-Pagan test. The Breusch-Pagan test was used in the current study to examine for heteroskedasticity. The test result yielded a significant p-value ($p < 0.05$), indicating the presence of heteroskedasticity in the model. Therefore, it can be concluded that heteroskedasticity is present in this study.

Serial Correlation Test

The relationship between a given variable and its lagged version over time is known as serial correlation (or autocorrelation). When serial correlation is present, it can lead to underestimated standard errors of the coefficients, which may cause incorrect statistical inferences. In the test conducted, the p-value was greater than 5% ($\text{Prob} > F = 0.7872$), indicating that serial correlation is not statistically significant in this study. Therefore, it is concluded that serial correlation is not a significant issue in the analysis.

Cross-sectional Dependence Test

When residuals are correlated across various entities, this is referred to as cross-sectional dependence. The presence of cross-sectional dependence can lead to biased test results. In this case, the inaccuracy is found to be insignificant, as the probability value of 0.4715 exceeds 5%.

Accordingly, in the current study, the first diagnostic error is significant, while both the second and third errors are

insignificant. Therefore, a robust test should be selected. To identify heteroskedasticity, Breusch-Pagan test, as we did with the fixed effects model. Based on the results, the null hypothesis is rejected, and heteroskedasticity is confirmed. To address this issue, the "Robust" option should be selected.

Regression Analysis

Regression analysis is used to examine the nature of these relationships and ascertain whether independent factors are related to the dependent variable. Under certain conditions, regression analysis can be used to establish the independent and dependent variables' causal relationships. Regression analysis is used in this study to investigate the impact of the capital structure on the financial performance of South Asian listed manufacturing companies.

The Significant level of the variables in the model is indicated by the p-value, which is based on the robust regression findings shown in Table 4. A 95% level of confidence is indicated by a p-value of 0.05. A p-value less than 0.05 indicates a high degree of confidence that the corresponding independent variable has a significant impact on the dependent variable. Thus, the two independent variables, debt to equity and debt to assets are significant as Tables 4 demonstrates, suggesting a strong influence on the dependent variable ($p\text{-value} < 0.05$). On the other hand, the firm's size cannot be regarded as statistically significant because its p-value of 0.071 falls below the 95% confidence level.

Testing of Hypothesis

The research hypotheses can be examined as follows in light of the findings shown in Table 4.

Hypothesis 1: The DE ratio has a statistically significant impact on the ROE of South Asian manufacturing companies.

The first hypothesis has been verified, demonstrating a statistically significant inverse relationship between return on equity and the DE ratio with a p-value below 5%. The results validate the alternative hypothesis (H_1), showing that the DE ratio and financial performance have a substantial negative relationship, as indicated by the negative coefficient value. This implies that the corporation's return on equity declines as the DE ratio rises. In particular, the return on equity drops by 0.1418 units for every unit rise in the DE ratio.

Hypothesis 2: The DA ratio has a statistically significant impact on the ROE of South Asian manufacturing companies.

Hypothesis 2 exhibits a negative association with return on equity and is significant at the 5% level. With a p-value below 5%, the results show a statistically significant negative correlation between the DA ratio and financial performance, supporting the alternative hypothesis (H_2). This suggests that a higher DA ratio results in worse ROE. In particular, the return on equity drops by 0.2525 units for every unit rise in the DA ratio.

Accordingly, Table 5 summarizes the findings of the hypothesis test. To put it briefly, there is a negative association between capital structure and financial performance. At the 5% significance level, the statistical findings support the hypotheses of the research. Therefore, it may be said that a rise in debt causes a decrease in financial performance. The current study does not, however, support businesses taking on more debt to improve performance.

Discussion

The analysis of the study's findings based on the regression results indicates that the capital structure has a considerable impact on financial performance. Other studies have also emphasized the significance of capital structure in influencing financial performance (Vatavu, 2015; Arulvel & Ajanthan, 2013; Pratheepkanth, 2011). The lack of substantial correlations between ROE and the capital structure proxies, however, indicates that there is no meaningful relationship between the two. In contrast to the findings of several other studies, including those by Rajendran and Nimalthasan (2013), Arulvel and Ajanthan (2013), and Soumadi and Hayajneh (2012), which all found a significant correlation between capital structure and financial performance, this finding is in line with Rao et al. (2007).

This study evaluated the connection between capital structure and financial performance as well as how control variables affected financial performance. Larger companies enjoy economies of scale, which assist in reducing production costs and boosting profitability. According to the regression analysis depicted in Table 4, firm size has a considerable impact on financial performance. The findings of Abeyrathna and Priyadarshana (2019); Nireesh and Thirunavukkarasu (2014); and Doğan

(2013), who observed a closely aligned connection, are consistent with this positive association between business size and profitability.

Additionally, the study's findings align with the pecking order theory's predictions, which posit that there is a negative correlation between company

value and capital structure debt levels. The findings of trade-off theory and agency theory are in opposition to this viewpoint. In creating the pecking order theory, Myers and Majluf (1984) contended that businesses favor internal funding over external funding and choose debt over equity when external funding is required. Senan et al. (2021); Zeitun and Tian (2014); Pratheepkanth (2011); Zeitun and Tian (2007); and Kester (1986) all found that debt had a detrimental effect on business performance, and the results of this study support their suggestions.

Conclusion

The purpose of the study was to investigate how capital structure affects listed manufacturing companies' financial performance in South Asia. After a careful analysis of the extant literature, hypotheses were developed in investigating the aforesaid phenomenon. After choosing a sample, the study carried out the necessary analyses. Two hypotheses were supported after the statistical analysis. The results show that return on equity is negatively affected by the two independent variables, the debt-to-equity and debt-to-assets ratios, in a statistically significant way. Both independent variables were found to be significant and linked to negative coefficients when the two were compared. Thus, the analysis concludes that there is a statistically significant inverse association between financial performance and capital structure. Additionally, this study contributes to the theoretical understanding of capital structure by reinforcing the applicability of the pecking order theory in the context of emerging markets. The findings provide empirical evidence supporting the notion that higher debt levels negatively influence firm

performance, thereby aligning with theoretical perspectives that emphasize the risks of excessive leverage in volatile economic environments.

Implications and Contribution

According to this study, financial performance improves as the debt-to-equity (DE) ratio declines, indicating that lower reliance on debt leads to better financial outcomes. In particular, reducing organizational debt levels enhances profitability and overall financial health. Conversely, excessive debt burdens may strain cash flows and increase financial risk. Interestingly, financial performance also improves as the debt-to-asset (DA) ratio increases, suggesting that efficiently managed debt, relative to total assets, can be beneficial. The findings emphasize the importance of maintaining a balanced financial structure, where debt does not exceed equity, to ensure long-term sustainability. These results help identify the optimal DE ratio for publicly listed manufacturing firms. This research offers practical guidance for corporate decision-makers, highlighting the need to evaluate the cost of debt versus the return on investment when making capital structure decisions. By strategically adjusting the debt-equity mix, firms can enhance financial stability, reduce risk exposure, and improve stakeholder confidence. In addition to its practical significance for managers and policymakers, this study contributes to theory by empirically testing established capital structure frameworks like the trade-off theory and pecking order theory specifically within South Asia's manufacturing sector. This regional focus extends the literature by providing evidence from an emerging market context that has been largely underexplored.

Limitations and Future Research Directions

The researcher acknowledges several limitations in this study. The primary limitation is the small sample size, as only 37 manufacturing companies were included in the analysis. The emphasis on the manufacturing sector is another major limitation, given that South Asia is home to a wide variety of businesses, such as banking, trade, services, and plantations. Restricting the analysis to the manufacturing sector may limit a comprehensive understanding of the issue, as it does not fully capture the impact of capital structure on financial performance in other sectors. Additionally, the study relied solely on secondary data, which is another limitation. The data were sourced from audited annual reports of listed companies in South Asian nations. However, the research did not incorporate secretarial reports or other internally prepared reports from the companies, which could provide a more complete picture. Furthermore, different studies on capital structure and financial performance show that capital structure has varying implications on financial performance, indicating the need for more research to fully comprehend the topic. Moreover, this study is limited to ROE as the sole financial performance measure. Future research could expand the analysis by incorporating multiple financial performance indicators such as ROA, EPS, or Tobin's Q, or by examining how firm-specific characteristics or country-level differences moderate the capital structure-performance relationship. It is also challenging to draw firm suggestions about the long-term effects of capital structure on financial performance because this study only looked at the years 2019–2023. Thus,

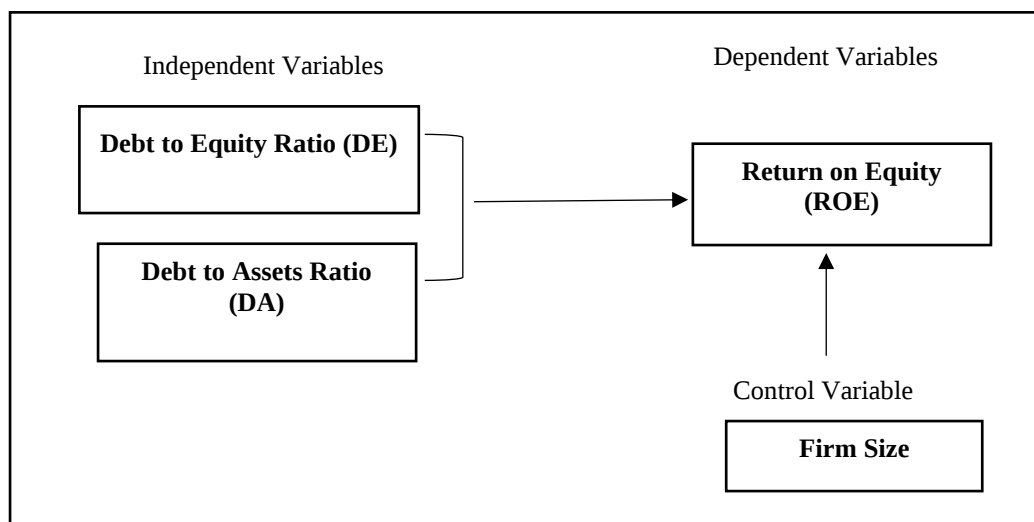
more thorough insights into this phenomenon might be obtained by extending the investigation over a longer time frame.

In conclusion, a number of limitations should be taken into account, even if this study offers insightful information about how capital structure affects the financial performance of manufacturing firms that are publicly traded. Future research could benefit from a larger and more diverse sample, including both listed and unlisted manufacturing companies across different regions, such as Asia, Europe, and Africa. Furthermore, researchers could incorporate both audited annual reports and secretarial reports from companies to gain a more comprehensive understanding. To enhance the analysis, future studies might also explore additional financial ratios and extend the observation period beyond five years. Finally, the use of advanced statistical software, beyond STATA, could provide more accurate and reliable results, offering a greater comprehension of the relationship between capital structure and financial performance. Further, future researchers could test the hypothesis by including other mediating or moderating variables. Moreover, the study has employed only a quantitative research method. In the future, researchers could incorporate qualitative insights to better understand managerial decision-making by conducting interviews with CFOs or finance managers, thereby exploring the rationale and strategic considerations behind capital structure choices in emerging markets.

Competing Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

Figures and Tables



Source: Authors compiled

Figure 1
Conceptual Framework

Table 1
Operationalization of Variables

Variable	Indicator	Measurement	Source
Dependent Variable	Return on Equity	Net income/Total equity	Dewasiri et al. (2019); Baker et al. (2019); Soumadi and Hayajneh (2012)
Independent Variable I	Debt to Assets Ratio	Total debt/Total assets	Dewasiri et al. (2019); Baker et al. (2019); Zeitun and Tian (2014)
Independent Variable II	Debt to Equity Ratio	Total debt/Total shareholders' equity	Dewasiri et al. (2019); Baker et al. (2019); Mujahid and Akhtar (2014)
Control Variable	Firm Size	Total assets	Bui et al. (2023); Le & Phan (2017); Dogan (2013)

Source: Authors compiled based on literature

Table 2
Descriptive Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Return on Equity	185	-0.13	9.03	2.16	2.81
Debt to Assets	185	0.02	9.40	1.79	2.66
Debt to Equity	185	-2.84	2.35	0.25	0.72
Firm Size	185	4.027	25.55	13.38	5.30

Source: Authors compiled based on Stata output

Table 3
Correlation Analysis

	Debt to Equity	Debt to Assets	Firm Size	ROE
Debt to Equity	1			
Debt to Assets	0.1463	1		
Firm Size	-0.0410	0.1760	1	
ROE	-0.3	0.15	0.25	1

Source: Authors compiled based on Stata output

Table 4
Robust Regression

	Coefficient	Standard Error	Z	Sig. Value
Debt to Equity Ratio	-0.1418	0.0703	-2.02	0.044*
Debt to Assets Ratio	-0.2526	0.1075	-2.35	0.019*
Firm Size	0.1016	0.0563	1.81	0.071
Constant	1.2864	0.7009	1.84	0.066

Source: Author compiled based on Stata output

Note: *significant at the 5% level

Table 5
Summary of Testing of Hypotheses

Hypotheses	Supported / Not supported
H ₁ : There is a statistically significant impact of DE ratio on ROE	Supported
H ₂ : There is a statistically significant impact of DA ratio on ROE	Supported

Source: Authors compiled based on the analysis

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