

THE IMPACT OF FINANCIAL LEVERAGE ON FIRM PROFITABILITY: AN EMPIRICAL STUDY OF SRI LANKAN HEALTHCARE EQUIPMENT AND SERVICES COMPANIES DURING AND POST-COVID-19 ERA (2020-2024)

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Abstract

This research examines the impact of financial leverage on the profitability of healthcare and equipment companies listed on the Colombo Stock Exchange (CSE) from 2020 to 2024. This study specifically examines how Sri Lankan healthcare firms modified their capital structure through financing decisions during and after the COVID-19 pandemic and evaluates the impact of these decisions on their profitability. The study analyses financial data using panel data techniques, considering both fixed effects and random effects models. Four proxy variables were used to capture financial leverage and profitability. Debt-to-Equity Ratio (D/E) and Interest Coverage Ratio (ICR) represent financial leverage, while Return on Assets (ROA) and Return on Equity (ROE) represent profitability. Firm size was used as a control variable in the analysis, measured by the total assets of the companies. The empirical results show several important relationships between financial leverage and profitability. A higher D/E ratio lowers ROA and ROE, indicating that excessive debt reduces financial performance and increases risk for healthcare companies. In contrast, a higher ICR contributes to increased profitability because of the positive relationship between ICR and profitability. These results highlight the significance of capital structure decisions in Sri Lanka's healthcare sector during a pivotal economic period. Future research could extend to other sectors to compare leverage effects on profitability and incorporate qualitative methods to capture managerial perspectives. This is crucial for gaining a deeper understanding of how financial leverage affects firm profitability across various industries.

Keywords: Capital structure, firm profitability, healthcare equipment and services companies, post-COVID-19 era, Sri Lanka

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Introduction

Finance is fundamental for ensuring smooth business operations by providing necessary funds at crucial times (Wachtel, 2001). Companies consistently face the critical decision of how to fund their operations in a manner that not only maintains continuity but also maximises profitability and enhances shareholder value. This decision focuses on the selection of appropriate funding options between debt and equity financing. These two financing paths offer different cost structures, levels of risk and impacts on ownership and control (Frank & Goyal, 2009). Debt financing involves borrowing through loans or bonds and offers tax-deductible interest payments, which reduce taxable income and the overall cost of capital (Myers, 2001). It also allows business owners to retain full control, as debt holders do not gain ownership. However, it increases financial risk due to fixed repayment obligations. In contrast, equity financing raises capital by issuing shares. It provides more flexibility during financial stress, improves creditworthiness and avoids mandatory repayment. But it may dilute ownership and impose long-term pressures to deliver shareholder returns (Frank & Goyal, 2009).

The strategic choice between debt and equity shapes a firm's capital structure. This capital structure represents the mix of financing used to support operations, investment and growth. A key component of this structure is financial leverage, which reflects the degree to which a company relies on debt relative to equity (Brigham & Daves, 2007). An optimal balance of debt and equity can minimise financing costs and improve profitability, supporting long-term growth and sustainability (Jensen, 1986). The health care system in Sri Lanka mainly depends on the healthcare equipment and services industry, which provides hospitals and clinics with sophisticated medical equipment, simple diagnostic instruments. However, the COVID-19 pandemic caused significant increases in import prices and disrupted global supply chains. In the face of scarce resources and growing worldwide demand, local healthcare firms had to deal with significant financial strains to acquire necessary equipment (Govindaraj & Navaratne, 2014). These challenges highlighted the need for cautious leverage decisions and revealed the financial vulnerabilities of the industry.

Expanding upon this background, this research specifically looks at the impact of financial leverage on the profitability of healthcare equipment and services firms that were listed on the Colombo Stock Exchange (CSE) during the crucial COVID-19 period. While previous research studies in Sri Lanka have focused exclusively on the period before the COVID-19 pandemic, they have not considered the unique financial challenges and market conditions that arose during and after the pandemic (Senarathne & Perera, 2021). This research critically examines the underexplored impact of financial leverage on the profitability of listed healthcare equipment and services firms in Sri Lanka during the COVID-19 crisis. Prior studies have mainly focused on general sectors or pre-pandemic periods, leaving limited evidence on how leverage decisions affected firm performance under extreme financial stress. The healthcare sector was selected due to its vital role during the pandemic, which created unique financial pressures and operational challenges. This study examines whether higher debt levels improved or reduced profitability in Sri Lankan healthcare firms. It offers insights for managers and policymakers to navigate volatile economic conditions.

Literature Review

There is no universally ideal theory for capital structure, but several prominent frameworks offer valuable insights into how firms make financing decisions. The Trade-Off Theory proposes that firms pursue an optimal capital structure by weighing the tax advantages of debt against the costs of financial distress (Tarek, 2013). In contrast, the Pecking-Order Theory proposes that firms prefer internal financing first, followed by debt and lastly equity, based on funding costs and availability (Myers & Majluf, 2013). Meanwhile, the Agency Cost Theory highlights that debt enhances managerial discipline by mandating interest obligations, although excessive borrowing can generate conflicts between shareholders and creditors over investment risk preferences. (Moez, 2018). These theories are frequently evaluated by researchers using financial indicators such as Return on Assets (ROA), Return on Equity (ROE) and Earnings Per Share (EPS). These metrics examine how effectively companies use their resources and generate returns for shareholders (Bachtiar & Haizam, 2020).

The relationship between capital structure and profitability varies by industry, depending on the unique characteristics and conditions. Researchers found that debt can improve profits through tax benefits along with best management practices (Margaritis & Psillaki, 2010). However, Khan & Kaleem (2012) show that too much debt can increase financial risks and lower profits. Government-owned companies often have high debt but lower profits due to inefficient operations (Dewenter & Malatesta, 2001). The IT industry successfully uses debt for technological growth (Murugesu & Subramaniam, 2013), while Olaoye & Adesina (2022) find manufacturing companies struggle with long-term debt. Companies in France and Germany benefit from debt, while Italian companies face challenges with debt financing (Weill, 2007). Empirical evidence from Nwoha & Duru (2024) found that excessive debt levels can negatively impact healthcare organisations, particularly when these companies struggle to produce sufficient cash flows. In Sri Lanka, most research focuses on the manufacturing,

banking, and tourism sectors. Manufacturing companies' high debt levels reduce profits due to financial risks (Murugesu & Subramaniam, 2013). Banks heavily rely on debt, with 89% of their assets funded through borrowing, which generally stresses their profitability (Velampy & Niresh, 2012). The tourism sector has no significant impact of debt on profits (Balasundaram, 2010), so it focuses on long-term investments. Sri Lanka's healthcare industry needs a large amount of capital for growth, especially for improving services and adopting new technologies. However, only one study has examined the impact of financial leverage on the profitability of healthcare companies in the country during the period 2013 – 2019. Senarathne & Perera (2021) found that companies with high debt levels struggle to stay profitable because loan repayments reduce the money available for upgrades and new investments.

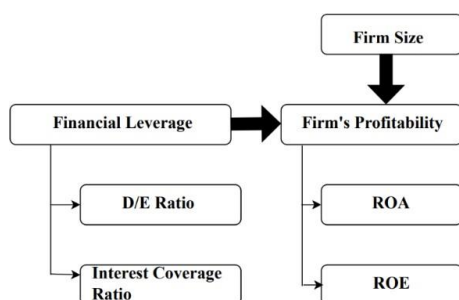
Despite extensive research on capital structure and profitability, few studies examine how Sri Lankan healthcare firms manage debt and equity decisions. The healthcare sector was chosen due to its pivotal role during the COVID-19 pandemic, which created unprecedented financial pressures and market disruptions. This situation forced firms to urgently invest in critical equipment while managing severe cash flow constraints. The study addresses this gap by analysing the impact of financial leverage on profitability in Sri Lanka's listed healthcare companies, providing sector-specific insights where financing choices directly influenced operational resilience and performance during a crisis.

Methodology

The study focuses on healthcare equipment and services companies listed on the Colombo Stock Exchange (CSE) during and after the COVID-19 pandemic (2020–2024). There are only eight companies in this sector. Therefore, all eight were included in the study, and this ensures complete industry coverage. The companies included are Nawaloka Hospitals PLC, Asiri Hospitals PLC, Lanka Hospitals PLC, Asiri Surgical PLC, Singhe Hospitals PLC, E-Channelling PLC, Muller and Phipps (Ceylon) PLC and Ceylon Hospitals PLC. This dataset was created by extracting relevant financial data from each company's published annual reports and organising it into an Excel sheet. The resulting dataset is classified as panel data because it tracks multiple companies (cross-sectional units) across multiple years (time series), allowing for analysis of both firm-specific trends over time and differences across firms.

The conceptual framework for this study is developed based on an extensive analysis of the literature (refer Figure 1). It examines how financial leverage affects firm profitability in Sri Lankan healthcare equipment and services companies. To examine the relationship between financial leverage and firm profitability, this study employs a systematic approach using proxy variables that accurately represent the key concepts being investigated. Financial leverage refers to the extent to which a firm uses debt in its capital structure to finance its activities. This is measured using two selected proxy variables: the Debt-to-Equity Ratio (D/E) and the Interest Coverage Ratio (ICR), which serve as independent variables. A firm's profitability reflects the ability of a company to generate earnings through its core operations. In this study, Return on Assets (ROA) and Return on Equity (ROE) serve as dependent variables that act as proxies for measuring the firm's profitability. The framework includes Total Assets as a control variable to represent firm size. By controlling the firm size, the study can accurately reflect the impact of financial leverage on profitability regardless of company size.

Figure 1
Conceptual framework



Model specifications

This study investigates the impact of financial leverage on firm profitability using panel data methods. Traditional pooled OLS is limited because it assumes all firms behave the same across time. This ignores important differences between firms and can lead to misleading results if these differences are correlated to the explanatory variables. To address this, the study applies fixed effects and random effects models. Fixed effects models control for factors that do not change over time within each firm. They assume these factors may be related to the variables being studied. Random effects models assume firm-specific factors are random and not related to the variables. This allows random effects to use both changes within firms and between firms. It also includes factors that stay the same over time. The Hausman test is used to choose the suitable model (Amini & Delgado, 2012). This approach is crucial for producing robust and unbiased results as firm-specific factors play a key role in influencing profitability.

Hypothesis of the study

Empirical studies show that financial leverage significantly impacts firm profitability (Nwoha & Duru, 2024; Murugesu & Subramaniam, 2013). Based on this evidence, the following alternative hypothesis is formulated and provides a clear direction for the study.

H1: *There is a significant impact of financial leverage on the profitability of listed healthcare equipment and services companies in Sri Lanka.*

Models for the study

To assess the impact of financial leverage on firm profitability, two panel regression models are constructed.

$$ROA_{it} = \beta_0 + \beta_1 D/E_{it} + \beta_2 ICR_{it} + \beta_3 Assets_{it} + \alpha_i + \epsilon_{it} \dots\dots\dots (1)$$

$$ROE_{it} = \beta_0 + \beta_1 D/E_{it} + \beta_2 ICR_{it} + \beta_3 Assets_{it} + \alpha_i + \epsilon_{it} \dots\dots\dots (2)$$

The abbreviations ROA, ROE, D/E, ICR, Assets and ϵ represent Return on Assets, Return on Equity, Debt-to-Equity Ratio, Interest Coverage Ratio, Total Assets (used as a control variable for firm size) and the error term, respectively. α_i are the unobserved, time-invariant firm fixed effects. All variables are measured across multiple firms and over the time period 2020-2024, where i represents individual firms and t denotes time periods.

Findings and Discussion

The key financial relationships among ROA, ROE, D/E, Interest Coverage Ratio and Total Assets are presented in the correlation matrix given by Table 1. The results show that ROA and ROE had a strong positive relationship with a correlation of 0.95. This means firms that use their assets efficiently also tend to provide higher returns to shareholders. However, the D/E ratio had a clear negative relationship with ROA (-0.61) and ROE (-0.62). This suggests that higher debt levels reduce profitability and increase financial risk. In addition, the Interest Coverage Ratio had a positive relationship with ROA (0.57) and ROE (0.41), meaning more profitable firms handle debt better. Finally, Total Assets showed a weak positive relationship with ROA (0.18) and ROE (0.33), suggesting that larger firm size may have a positive impact on profitability.

Table 1

Results of Correlation Analysis

	Total Assets	Interest Coverage Ratio	D/E Ratio	ROE	ROA
Total Assets	1				
Interest Coverage Ratio	-0.17	1			
D/E Ratio	0.14	-0.28	1		
ROE	0.33	0.41	-0.62	1	
ROA	0.18	0.57	-0.61	0.95	1

Model selection

The Hausman test was used to decide between the fixed effects model and the random effects model. This test checks whether the individual-specific errors (α_i) are correlated with the explanatory variables. The null hypothesis assumes no correlation, suggesting that the random effects model is appropriate, while the alternative hypothesis supports the fixed effects model. As shown in Table 2, the test produced a Chi-Square statistic of 1.2666 with 4 degrees of freedom and a p-value of 0.8670. Since the p-value was much greater than the significance level of 0.05, the null hypothesis was not rejected. Based on the Hausman test results, the random effects model was preferred as it provided efficient and consistent estimates when the null hypothesis held true. Moreover, the balanced panel dataset of eight companies over five years indicates that unobserved firm-specific effects are likely independent of the explanatory variables. The inclusion of total assets as a control reduces omitted variable bias, and financial leverage precedes profitability, limiting reverse causality concerns. These data characteristics justify the use of the random effects model and support obtaining robust and consistent estimates.

Table 2
Test Summary of the Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob
Cross-sectional random effects	1.2666	4	0.8670

(Source: Authors' Compilation)

Model fit and performance

Table 3 shows that financial leverage, measured by the Debt-to-Equity Ratio (D/E) and the Interest Coverage Ratio (ICR), had a strong impact on firm profitability. This relationship was observed in both models after controlling for firm size. Model 1 examined the impact of financial leverage on Return on Assets (ROA) and achieved an R-squared of 0.6579. This means that the debt-to-equity ratio (D/E) and Interest coverage ratio (ICR) explained about 66% of the variation in ROA while controlling for the firm size through total assets. The F-statistic of 19.257 demonstrated strong overall model significance, while the p-value of 0.0000 confirmed **statistical significance** at the **0.05 significance level**. Model 2 examined the impact of financial leverage on Return on Equity (ROE). According to the Model 2 results, R-squared was 0.6328, indicating that the same proxy variables for financial leverage explained about 63% of the variation in ROE. The F-statistic of 20.679 indicated robust model performance, and the p-value of 0.0000 established **statistical significance** at the **0.05 significance level**. These results highlighted that decisions regarding financial leverage had a significant impact on firm profitability. Effective management of debt influenced both the firm's ability to efficiently use its assets and the returns generated for shareholders.

Table 3
Model Fit Statistics

Model	R-squared	F-statistic	P-value
Model (1)	0.6579	19.257	0.0000
Model (2)	0.6328	20.679	0.0000

(Source: Authors' Compilation)

Regression results for models

Table 4 presents the estimated panel regression results for Model 01 and Model 02. Model 01 examined the impact of financial leverage on Return on Assets (ROA). As shown in Table 3, the coefficient of -3.7240 and t-statistic of -2.6159 show that the Debt-to-Equity (D/E) ratio had a significant negative effect on ROA. According to the results, having more debt lowers profitability because it increases interest costs and financial risk. With a coefficient of 3.4179 and a t-statistic of 5.3075, the Interest Coverage Ratio also demonstrated a positive impact on ROA. According to these results, companies that are more capable of covering interest payments typically have higher returns on their assets. A positive correlation between ROA and total assets was demonstrated by the t-statistic of 3.6945 and the coefficient of 2.3658. Thus, an increase in the firm's assets is positively correlated with ROA. Model 02 focused on the relationship between financial leverage and Return on Equity (ROE). The D/E

ratio again showed a significant negative impact with a coefficient of -7.0451 and a t-statistic of -2.8646. These results suggest that high debt increases financial obligations and lowers shareholder returns. ROE had a favourable effect on the Interest Coverage Ratio, as indicated by a t-statistic of 4.4414 and a coefficient of 3.7405. These findings suggest that better equity returns are supported by efficient debt management. Furthermore, Total Assets continued to show a significant positive effect on ROE, with a coefficient of 5.4372 and a t-statistic of 4.9784. These findings show that an increase in firm size contributes to improved profitability for shareholders.

Table 4
Estimation results of models

Model	Variable	Coefficient	Std. Error	T-Statistic	P-value
Model 01 (Y=ROA)	D/E	-3.7240	1.4236	-2.6159	0.0129
	Interest coverage	3.4179	0.6440	5.3075	0.0000
	Assets	2.3658	0.6403	3.6945	0.0007
Model 02 (Y=ROE)	D/E	-7.0451	2.4593	-2.8646	0.0069
	Interest coverage	3.7405	0.8422	4.4414	0.0001
	Assets	5.4372	1.0922	4.9784	0.0000

(Source: Authors' Compilation)

Based on these findings, the alternative hypothesis (H1) that financial leverage has a significant impact on firm profitability is accepted. Moreover, this result is consistent with Pedige & Ishari (2016), Murugesu & Subramaniam (2013), which supports the validity of these findings. The findings reveal that high debt levels negatively impact profitability by increasing financial risk, while larger asset bases and higher interest coverage ratios mitigate this effect. This suggests excessive leverage costs outweigh benefits for Sri Lankan healthcare firms. Managers should maintain balanced capital structures by evaluating debt capacity based on asset quality and cash flow stability. Investors must assess firms' debt-servicing abilities alongside leverage ratios. Critically, policymakers should develop targeted financial policies for the healthcare sector, including regulatory frameworks that facilitate access to affordable long-term financing.

Conclusion

This study observed the impact of financial leverage on the profitability of Sri Lankan healthcare equipment and services companies listed on the Colombo Stock Exchange, addressing the period during COVID-19 and the post-pandemic period. This period involved significant disruptions, such as sudden changes in demand and supply chain problems, which required urgent investment in medical infrastructure. These factors emphasise the importance of financing decisions in managing such challenging situations.

The study considered both fixed and random effects regression models to deal with panel data. The Hausman test results accepted the random effects model. Financial leverage was evaluated using the Debt-to-Equity (D/E) ratio and the Interest Coverage Ratio (ICR), while profitability was measured using Return on Assets (ROA) and Return on Equity (ROE) as proxy variables. To clearly understand the impact of financial leverage on firm profitability, firm size was controlled and measured using total assets. The findings reveal a strong positive correlation between ROA and ROE, and this confirms that they are reliable measures of profitability. The D/E ratio was negatively correlated with profitability, indicating that higher debt risks harm performance. Conversely, ICR positively correlated with profitability, emphasising firms' ability to meet interest obligations. Regression results support accepting the alternative hypotheses and highlighting financial leverage as a key determinant of profitability. Policymakers should introduce clear leverage limits and leverage guidelines to prevent firms from taking on excessive debt. They should also implement policies that promote access to low-cost, long-term financing to support sustainable growth and financial stability in the healthcare sector. This study is limited because the data were taken only from listed healthcare firms, excluding non-listed companies that could provide a fuller industry perspective. It is also restricted to the COVID-19 period, which may reflect crisis-specific effects and limit generalizability. Future research should extend beyond the healthcare sector to critically assess how leverage influences profitability across different industries. It should also incorporate qualitative methods to capture managerial perspectives on financial strategies, while conducting robust checks to validate the consistency and reliability of empirical results.

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