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FINANCIAL LEVERAGE AND FINANCIAL PERFORMANCE IN EMERGING TOURISM ECONOMIES: EMPIRICAL EVIDENCE FROM SRI LANKA'S LISTED HOTEL SECTOR

Prashadi, D. A. K., Rajapakse, R. M. D. A. P. and Silva, N. K. L.

University of Kelaniya, Sri Lanka

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Abstract

Financial leverage plays a critical role in shaping a company's performance, particularly as businesses strive to reduce their overall cost of capital. Thus, this study investigates the relationship between financial leverage and financial performance among high market-capitalized hotels listed on the Colombo Stock Exchange (CSE) over the period of 2015–2024. Drawing on trade-off, pecking order, and agency theories, this study investigates the effect of two key financial leverage indicators, debt ratio and debt-to-equity ratio, on financial performance using measures such as return on assets (ROA) and return on equity (ROE) while using firm size as the control variable. Using panel data, the study covers 18 listed hotels and 180 firm-year observations and employs regression analysis. The findings reveal that the debt ratio has a significant positive effect on ROA, supporting the trade-off theory's notion that moderate debt enhances asset utilization and operational efficiency. Conversely, debt-to-equity ratio shows no significant impact on ROA. Regarding ROE, the debt-to-equity ratio and debt ratio demonstrate a significant positive effect, suggesting that higher leverage can improve shareholder returns under prudent management. The study enriches the limited empirical literature on capital structure within Sri Lanka's tourism sector and offers practical insights for hotel managers, investors, and policymakers seeking to optimize capital structures in volatile, tourism-dependent emerging economies. Limitations include the study's sectoral focus and reliance on secondary data. Future research could extend the scope to other sectors listed in the CSE, apply alternative non-financial performance measures, or conduct cross-country analyses to deepen the understanding of leverage dynamics in emerging markets.

Keywords: Debt ratio, Debt-to-equity ratio, financial leverage, financial performance, return on assets, return on equity

1 Introduction

The composition of a firm's capital structure has long been renowned as a crucial element in financial decision-making, as it affects not only profitability and growth but also risk exposure and long-term sustainability (Myers, 1984). Within this structure, financial leverage, which is the use of debt capital to finance a firm's assets, plays a pivotal role. Leverage allows firms to intensify returns on equity by benefiting from tax-deductible interest payments, thereby potentially enhancing shareholder value (Modigliani & Miller,

1963). However, this advantage must be weighed against the increased financial risk arising from fixed interest obligations and the heightened potential for insolvency under conditions of declining revenue or economic instability (Jensen & Meckling, 1976). Thus, the dual nature of financial leverage, including its capacity to both enhance and hinder financial performance of firms, has made it a central focus in corporate finance, particularly in industries that are capital-intensive and vulnerable to external shocks. Accordingly, the hotel sector, within the broader tourism industry, exemplifies this scenario as hotels typically require large upfront investments in infrastructure and amenities, and rely on sustained occupancy and tourist inflows to remain profitable. Given this cost structure, many hotels are compelled to leverage debt to finance asset acquisition and operational expansion (Demiraj et al., 2022).

In Sri Lanka, the tourism industry is recognized as a key economic driver that contributes significantly to GDP, employment, and foreign exchange earnings. Thus, the hotel segment within this industry has undergone rapid transformation over the past decade, driven by post-war growth, increased foreign investment, and government-led tourism promotion initiatives (SLTDA, 2023 and Ekanayake & Long, 2012). Despite extensive research on capital structure and firm performance, the leverage–performance relationship remains theoretically ambiguous and empirically context-dependent, particularly in asset-intensive and demand-sensitive industries such as hotels (Myers, 1984; Arhinful & Radmehr, 2023). Unlike manufacturing or diversified firms, hotels operate with high fixed assets, limited operational flexibility, and strong exposure to external demand shocks (Demiraj et al., 2022; Kaluarachchi et al., 2021). These characteristics intensify both the potential benefits of leverage: through tax shields and financing discipline, and the costs of financial distress during downturns (Jensen & Meckling, 1976; Myers, 2001). Accordingly, leverage decisions in the hotel sector involve an inherent trade-off between value enhancement and survival risk. This dilemma is especially critical in emerging tourism economies such as Sri Lanka, where exogenous shocks, including Easter attack in 2019 and the COVID-19 pandemic, severely disrupted cash flows and heightened financial vulnerability (Kaluarachchi et al., 2021; Central Bank of Sri Lanka, 2024). Under these conditions, capital structure decisions, precisely, the optimal balance between debt and equity, have become more important in the current context. While debt financing can offer short-term liquidity and support growth during recovery phases, it also increases the risk of financial distress, especially in periods of revenue uncertainty.

Empirical evidence from emerging economies supports both positive and negative relationships between financial leverage and financial performance where Aljundi et al. (2024) and Awogbemi et al. (2024) reported that careful use of debt improves profitability by aligning with the trade-off theory's assertion that moderate leverage enhances value. Conversely, Mutumanikam et al. (2024), higilight that excessive leverage deteriorates a firm's financial performance, highlighting the importance of debt discipline for a firm's success. In South Asian economies like India and Pakistan, the discourse is similarly mixed. Senan et al. (2021) found that profitability indicators such as return of equity (ROE) and return on capital employed were significantly affected by leverage decisions in Indian listed firms, while Yasmin and Hassan (2021) argued exists of a negative correlation between leverage and firm value, yet sectoral characteristics and macroeconomic volatility significantly mediate leverage- firm value. Despite this growing global literature, there is a dearth of empirical studies in Sri Lanka, and they often concentrate on broader industrial sectors such as manufacturing, investment trusts, or diversified holdings (Randika, 2022). These studies offer valuable insights but overlook the capital structure dynamics of the tourism sector, particularly hotels, which face unique financial challenges due to seasonal revenue cycles, high fixed costs, and sensitivity to external shocks.

Moreover, extant studies in Sri Lanka often treat financial leverage as a singular construct without disaggregating it into its components such as debt ratio and debt-to-equity ratio or analyzing their differentiated impacts on distinct measures of financial performance like return on assets (ROA) and ROE. While ROA reflects a firm's operational efficiency and ability to generate earnings from its asset base, ROE captures shareholder value creation and is influenced by both leverage and profit margins. Understanding these relationships is essential to reveal how various forms of leverage influence different aspects of financial performance (Arhinful & Radmehr, 2023). Based on these theoretical debates and empirical gaps, the present study reframes financial leverage not merely as a financing choice, but as a strategic risk–return mechanism whose performance implications are uniquely shaped by the structural and cyclical nature of the hotel industry. Specifically, the study analyzes how debt ratio and debt-to-equity ratio influence ROA and ROE in high market-capitalized hotels. The period under review is particularly relevant, as it captures pre- and post-crisis leverage decisions and performance outcomes, thereby offering a comprehensive view of capital structure responses to external shocks. By drawing on trade-off theory (Myers, 1984), pecking order theory (Myers & Majluf, 1984), and agency theory (Jensen &

Meckling, 1976), this study contributes to the limited literature on capital structure in Sri Lanka's tourism sector and offers evidence-based insights for corporate managers aiming to optimize debt usage, guides investors to evaluate financial health and risk exposure, and supports policymakers striving to enhance sectoral resilience. Thus, this study addresses a significant gap by situating financial leverage within the operational realities of an emerging, tourism-dependent economy.

The remainder of this article is structured as follows: Section 2 reviews the theoretical and empirical literature; Section 3 describes the research methodology; Section 4 presents the results; Section 5 discusses findings in the context of theory and prior studies; and Section 6 concludes with implications, limitations, and suggestions for future research.

2 Literature Review and Theoretical Framework

Understanding the relationship between financial leverage and firm performance requires a foundation in corporate finance theories and a critical examination of global and local empirical evidence. Thus, the following section synthesizes theoretical frameworks and empirical studies to highlight the research gap this study seeks to address.

2.1 Theoretical Perspectives on Financial Leverage

The role of financial leverage in influencing firm performance has long been debated in corporate finance literature. Three primary theoretical perspectives, such as trade-off theory, pecking order theory, and agency theory, offer insights into why firms might choose particular capital structures and how these decisions may impact the profitability of the firm.

The trade-off theory, articulated by Myers (1984), proposes that firms balance the tax benefits of debt against the costs of financial distress to arrive at an optimal leverage level. Thus, as per this theory, debt provides tax shields that can enhance a firm's profitability, but excessive reliance on debt increases bankruptcy risk and distress costs, ultimately harming the value of a firm. Accordingly, in capital-intensive sectors like tourism, where stable revenue streams can support moderate debt levels, trade-off theory suggests that carefully managed leverage should improve operational efficiency and asset utilization. In contrast, the pecking order theory introduced by Myers and Majluf (1984) highlights information asymmetry between managers and external investors. Thus, based on this theory, firms prefer internal financing and if external financing is necessary, they choose debt over equity because issuing new equity may signal overvaluation and lead to stock price declines.

Accordingly, firms with strong internal cash flows tend to use less debt, while those with limited profitability may increase leverage, potentially weakening performance (Frank & Goyal, 2003; Myers, 2001).

The agency theory, advanced by Jensen and Meckling (1976), highlights conflicts of interest between managers and shareholders and suggests that debt can serve as a disciplinary mechanism, forcing managers to act in shareholders' best interests due to the obligation to make regular interest payments. However, high leverage can also create agency conflicts between debt holders and shareholders, particularly when management engages in riskier projects that benefit shareholders at the expense of creditors. Collectively, these theories provide a better understanding of why leverage can both enhance and diminish financial performance, depending on how it is structured and managed.

Importantly, these theories imply differentiated effects of alternative leverage measures on performance indicators. The debt ratio captures the extent to which assets are financed through debt and is therefore more closely associated with operational efficiency, as reflected in ROA (Arhinful & Radmehr, 2023). In contrast, the debt-to-equity ratio reflects the degree of financial risk borne by shareholders and is theoretically more relevant for explaining variations in ROE. Distinguishing between these leverage proxies enables a more nuanced evaluation of how capital structure mechanisms operate through different performance channels, as emphasized in prior empirical and theoretical studies (Myers, 1984; Jensen & Meckling, 1976; Arhinful & Radmehr, 2023).

2.2 Empirical Evidence: Global Context

Extant literature examines the financial leverage- financial performance relationship across different contexts have produced mixed results, often influenced by macroeconomic environments, industry characteristics, and firm-specific factors. Empirical findings on the financial leverage and performance relationship reveal a nuanced rather than a uniform effect. For example, Aljundi et al. (2024) and Awogbemi et al. (2024) demonstrate that debt ratios and debt-to-equity ratios positively influence profitability measures such as ROA and ROE in Jordanian and Nigerian industrial firms. Similarly, Arhinful and Radmehr (2023) further confirmed that leverage, particularly the debt to equity ratio, improves ROE, suggesting that debt can amplify shareholder returns when managed prudently. Collectively, these studies align with the trade-off theory, indicating that optimal or moderate debt levels can enhance firm value through tax advantages and financial discipline.

In contrast, another body of evidence emphasizes the detrimental effects of excessive leverage. Mutumanikam et al. (2024), in a cross-country analysis of emerging markets, report that high leverage reduces firm performance, particularly where firms may already operate near their optimal capital structure, while Yasmin and Hassan (2021) highlighted the heightened risk of financial distress especially among those with weak equity buffers. Senan et al. (2021) reasoned that debt may boost shareholder returns but does not necessarily lead to improvement in operational efficiency.

These mixed results highlight that the effect of leverage on financial performance is context-dependent, influenced by economic stability, sector-specific characteristics, and management strategies. The divergence in empirical findings across countries and industries suggests that the leverage–performance relationship is not uniform but contingent upon institutional, macroeconomic, and sectoral conditions. In relatively stable environments with developed capital markets, moderate leverage may enhance performance through tax efficiency and financial discipline. In contrast, in emerging economies characterized by macroeconomic volatility and constrained financing options, excessive reliance on debt can amplify financial distress, particularly in cyclical and capital-intensive sectors such as tourism. High fixed operating costs, demand seasonality, and sensitivity to external shocks can weaken the effectiveness of leverage during downturns, leading to heterogeneous performance outcomes across studies (Demiraj et al., 2022; Kaluarachchi et al., 2021; Mutumanikam et al., 2024).

2.3 Empirical Evidence: Sri Lankan Context

Compared to global research, there is a dearth of empirical studies in the Sri Lankan context, and they often focus on broader industries such as manufacturing or diversified holdings rather than sector-specific analyses. Kaluarachchi et al. (2021) found an positive leverage – performance effect in Sri Lankan manufacturing firms, suggesting that moderate debt usage improves profitability, consistent with trade-off theory. While Peiris (2019), in a cross-sectoral study in Sri Lanka, emphasized that shareholder returns respond more sensitively to capital structure decisions. In contrast Randika (2022), concludes that industry-specific dynamics may influence leverage outcomes in accordance with agency theory.

Nevertheless, a notable gap persists in the literature specifically targeting Sri Lanka's hotel sector, despite its strategic role in tourism and its heavy reliance on debt to finance

expansions and renovations. Moreover, the limited existing studies rarely distinguish between different forms of leverage or their specific effects on operational efficiency and shareholder returns, particularly in the context of economic disruptions like the Easter attacks and the COVID-19 pandemic.

2.4 Research Gap and Justification

The review of theoretical and empirical literature reveals several gaps that the current study aims to address. While global studies have offered mixed results on the financial leverage-financial performance nexus, sector-specific evidence from Sri Lanka's hotel industry remains scarce. The hotel sector, characterized by capital intensity and demand seasonality, may exhibit different leverage dynamics compared to manufacturing or diversified firms. Moreover, previous studies have rarely surveyed the differential impact of debt ratio and debt-to-equity ratio on ROA and ROE within the same study. ROA, reflecting operational efficiency, may be influenced differently by leverage compared to ROE, which focuses on shareholder returns. Further, there is limited evidence covering recent years from 2015 to 2024 that includes significant external shocks affecting the tourism industry. This period offers a unique opportunity to assess whether leverage strategies helped firms navigate crises or exacerbated financial vulnerabilities. By focusing on high market-capitalized hotels listed on the CSE and investigating the impact of two leverage measures on two profitability indicators, this study aims to fill these gaps and provide actionable insights for managers, investors, and policymakers in emerging tourism economies.

3 Methodology

This study adopts a quantitative, explanatory research design to examine the impact of financial leverage on financial performance among high market-capitalized hotels listed on CSE. Guided by a post-positivist paradigm, the study employs a deductive approach in which hypotheses derived from established capital structure theories are empirically tested using firm-level financial data observed over time (Creswell & Creswell, 2018). Panel regression techniques are applied to exploit both cross-sectional and temporal variation in the data while controlling for unobserved, time-invariant firm-specific characteristics. This approach is well established in corporate finance research, as it enhances estimation efficiency and reduces omitted variable bias relative to purely cross-sectional or time-series

methods (Baltagi, 2021; Wooldridge, 2013). Accordingly, the methodological framework supports consistent and robust inference regarding the leverage–performance relationship in Sri Lanka's listed hotel sector.

3.1 Data Collection, Population and Sample

The study uses secondary data extracted from audited annual reports of hotels listed on the Colombo Stock Exchange over the period of 2015 to 2024. Thus, the target population includes all hotel companies under the "Hotels and Travels" sector listed on the CSE. A purposive sampling method was applied to select firms with consistent data availability over the ten-year period. The final sample consists of 18 high-market-capitalized hotels, resulting in 180 firm-year observations. Focusing on firms with the highest market capitalizations enhances the relevance of findings for industry stakeholders, as these firms typically have greater access to external financing and more complex capital structures.

3.2 Conceptual Framework

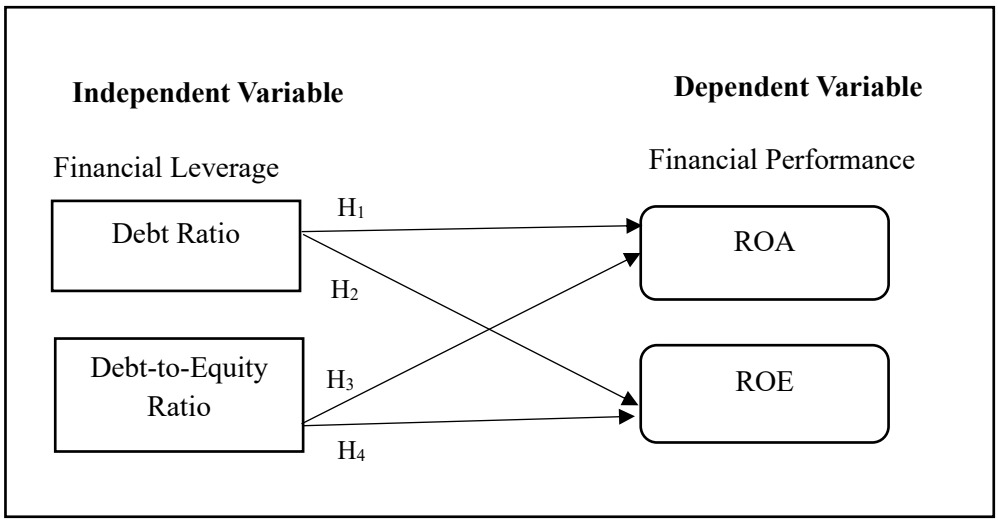
The conceptual framework of this study is grounded in the core propositions of trade-off theory (Myers, 1984), pecking order theory (Myers & Majluf, 1984), and agency theory (Jensen & Meckling, 1976), which collectively form the dominant theoretical foundations for examining the relationship between financial leverage and firm performance in corporate finance literature. These theories posit that capital structure decisions are shaped by a combination of tax advantages, information asymmetry between managers and investors, and agency-related conflicts, all of which influence firms' financing behavior and performance outcomes. Prior studies suggest that these mechanisms are particularly salient in capital-intensive and volatile industries, where fixed operating costs and demand uncertainty amplify both the benefits and risks associated with debt financing (Frank & Goyal, 2003; Demiraj et al., 2022).

Within this framework, financial leverage is treated as the independent variable and is operationalized using two widely adopted measures: the debt ratio and the debt-to-equity ratio. Although these indicators are conceptually related, they capture distinct dimensions of leverage. The debt ratio reflects the proportion of a firm's assets financed through debt and is therefore closely associated with operational risk, asset utilization, and efficiency. In contrast, the debt-to-equity ratio represents the extent of financial risk borne by shareholders and captures the leverage-induced amplification of returns on equity. Prior empirical

research demonstrates that these leverage measures may exert differentiated effects on return on assets and return on equity, particularly in asset-heavy sectors, thereby justifying their simultaneous inclusion for a more comprehensive assessment of leverage dynamics (Arhinful & Radmehr, 2023; Awogbemi et al., 2024).

Financial performance is measured using ROA and ROE, which are among the most frequently employed profitability indicators in capital structure research. ROA reflects a firm's efficiency in utilizing its asset base to generate earnings, while ROE captures the returns accruing to shareholders after accounting for financing decisions and leverage effects (Aljundi et al., 2024). To control firm-specific heterogeneity, firm size is included as the control variable, consistent with a substantial body of empirical literature identifying size as one of the most robust and commonly used determinants influencing both leverage decisions and performance outcomes (Senan et al., 2021; Frank & Goyal, 2003). Given the sector-specific focus and sample size, the use of firm size as a parsimonious control variable helps preserve estimation efficiency while accounting for scale-related differences in access to financing and operational diversification. Accordingly, the conceptual framework presented in Figure 1 assumes that financial leverage affects ROA and ROE differently, and this differential effect may inform optimal capital structure strategies for hotels operating in emerging tourism economies.

Figure 1: Conceptual Framework



Source: Author Constructed

3.3 Hypotheses Development

Drawing on trade-off theory, pecking order theory, and agency theory, as well as previous empirical findings, this study develops four hypotheses.

The trade-off theory suggests that firms balance the tax advantages of debt against financial distress costs, implying that moderate levels of debt can enhance operational efficiency (Myers, 1984). Prior studies by Aljundi et al. (2024) and Kaluarachchi et al. (2021) found that debt ratio positively affects return on assets (ROA), as firms utilize debt to finance productive assets, improving asset utilization. Moreover, Awogbemi et al. (2024) confirmed that there is a significant relationship exists between debt ratio and the financial performance of quoted industrial goods firms in Nigeria. Thus, the first hypothesis is formulated as below.

H_1: Debt ratio has a significant impact on ROA of hotels listed in CSE

The debt-to-equity ratio represents the extent to which firms rely on debt relative to equity. While trade-off theory implies potential benefits, empirical evidence shows mixed outcomes. Randika (2022) found no significant effect in Sri Lanka's investment trust sector, whereas Awogbemi et al. (2024) observed significant positive effects in Nigeria. Given this mixed evidence, the second hypothesis tests its impact on operational performance as follows.

H_2: Debt-to-equity ratio has a significant impact on ROA of hotels listed in CSE

The agency theory introduced by Jensen and Meckling (1976) posits that debt can discipline managers, aligning their actions with shareholder interests, potentially increasing ROE. Arhinful and Radmehr (2023) found that the debt-to-equity ratio positively influenced ROE in Japanese firms, while Peiris (2019) reported similar results in Sri Lankan diversified firms. Thus, the study proposes the third hypothesis as follows.

H_3: Debt ratio has a significant impact on ROE of hotels listed in CSE

Randika (2022) opined that financial leverage is insignificant on profitability or performance. Moreover, in the study conducted by Yasmin and Hassan (2021), they reveal that there is a significant negative impact of leverage on performance. Further, Alabri (2021) stated that financial leverage features importantly affect the performance of the companies. Thus, the study proposes the fourth hypothesis as below.

H_4: Debt-to-equity ratio has a significant impact on ROE of hotels listed in CSE

By formulating these hypotheses, the study seeks to identify whether financial leverage affects financial performance in terms of operational efficiency and shareholder returns differently in Sri Lanka's hotel sector.

3.4 Operationalization of Variables

To clarify how key variables are measured, Table 1 summarizes the operational definitions used in the study.

Table 1: Operationalization of Variables

Variable	Definition	Measurement	Variable Type	Supporting Literature
Return on Assets (ROA)	ROA indicates how profitable a company is relative to its total assets	Net income / Average total assets	Dependent	Aljundi et al. (2024); Kaluarachchi et al. (2021)
Return on Equity (ROE)	ROE measures the ability of a firm to use equity for the purpose of generating profits	Net income / Shareholders' equity	Dependent	Arhinful and Radmehr (2023); Peiris, M. S. (2019)
Debt Ratio (DR)	The proportion of a company's total assets that are financed by debt	Total debt / Total assets	Independent	Aljundi et al. (2024); Kaluarachchi et al. (2021)
Debt-to-Equity Ratio (D/E)	Compares a company's total liabilities to its shareholders' equity	Total debt / Shareholders' equity	Independent	Randika (2022); Awogbemi et al. (2024)
Firm Size (FS)	The scale or magnitude of a business	Natural log of total assets	Control	Senan et al. (2021)

Source: Author compiled

The above Table 1 aligns the study's variables with prior literature, strengthening the theoretical and empirical foundation of the research.

3.5 Research Model

The study uses two models to identify the impact of financial leverage on the financial performance of hotels listed in CSE.

Model 01

$$ROA_{it} = \beta_0+\beta_1 DR_{it}+\beta_2 D/E_{it}+\beta_3 FS_{it}+\varepsilon \quad (1)$$

Model 02

$$ROE_{it} = \beta_0+\beta_1 DR_{it}+\beta_2 D/E_{it}+\beta_3 FS_{it}+\varepsilon \quad (2)$$

Both empirical models are specified consistently with the study's hypotheses and operational definitions. Model 01 evaluates the effect of leverage on operational efficiency (ROA), while Model 02 examines shareholder-oriented performance (ROE). The inclusion of debt ratio and debt-to-equity ratio in both models allows for differentiated interpretation of leverage effects on asset utilization versus equity returns. All variables are measured uniformly across models, and the estimations correspond directly to the definitions provided in Table 1, ensuring internal consistency between theory, measurement, and empirical testing.

3.6 Data Analysis Strategies

The study employs a multi-stage data analysis procedure using EViews software. Descriptive statistics are used to summarize the central tendencies and dispersion of the study variables, while Pearson correlation analysis is applied to examine the direction and strength of linear associations and to obtain preliminary insights into potential multicollinearity. To test the study hypotheses, panel regression techniques are employed, with both fixed effects and random effects models estimated to account for unobserved firm-specific heterogeneity. The Hausman specification test is used to determine the most appropriate estimator by assessing the correlation between individual effects and the regressors. Diagnostic tests are conducted to evaluate key econometric assumptions: the Jarque–Bera test assesses the distributional properties of residuals, and Variance Inflation

Factors (VIF) are used to confirm the absence of multicollinearity among explanatory variables. Given the presence of non-normality in the data, the use of panel estimators enhances robustness by reducing sensitivity to strict normality assumptions, consistent with econometric best practice (Gujarati & Porter, 2009). Collectively, these procedures strengthen the reliability and inferential validity of the empirical results, enabling robust conclusions regarding the leverage–performance relationship in Sri Lanka's listed hotel sector over a period characterized by significant economic shocks and recovery phases.

4 Results

This section presents the empirical findings derived from panel data analysis of 18 highest market-capitalized hotels listed on the Colombo Stock Exchange over the period from 2015 to 2024. The analysis proceeds sequentially, beginning with descriptive statistics, followed by diagnostic tests, correlation analysis, , and finally, the regression results, which test the study's hypotheses.

4.1 Descriptive Data Analysis

Descriptive statistics were computed for the key variables in the study, including debt ratio, debt-to-equity ratio, return on assets, return on equity and firm size based on 180 firm-year observations from hotels listed on the Colombo Stock Exchange during the period from 2015 to 2024. As per Table 2, the average debt ratio for the sample suggests that approximately 37% of total assets are financed through debt on average. Similarly, the mean of debt-to-equity ratio is 0.4216, with values spanning from 0.0124 to 0.9871, reflecting different capital structure preferences among the firms. The mean of firm size, measured as the natural logarithm of total assets is 10.03 and exhibits a standard deviation of 0.40, with values ranging from 9.44 to 10.92, indicating moderate dispersion among the high market-capitalized hotels. In terms of financial performance, the average of ROA is 0.2565 (25.65%), with a maximum of 0.6440 and a minimum of 0.0170, suggesting that some firms achieved relatively high operational efficiency, while others operated at lower asset productivity levels. The mean of ROE is 0.3075 (30.75%), with considerable variation from 0.0124 to 0.9871, indicating notable disparities in shareholder return across firms. This average performance in the sample is due to the inclusion of large, financially resilient hotels listed on the Colombo Stock Exchange and the study period (2015–2024), which captures post-COVID recovery, during which tourism firms saw significant profitability

improvements (Central Bank of Sri Lanka, 2024). Skewness values for all variables lie between -0.50 and 0.82, indicating mild departures from symmetry. Debt ratio displays a slight left skew, while ROE exhibits moderate right skewness. The kurtosis values range between 1.74 and 2.31, all of which fall below the benchmark value of 3 for normal distribution, indicating light-tailed distributions.

Table 2: Descriptive Statistics

	Debt Ratio	**Debt to Equity Ratio**	**Firm Size**	**ROA**	**ROE**
Mean	0.37458	0.42161	10.03451	0.25651	0.30747
Median	0.41364	0.41500	9.97620	0.22460	0.14000
Maximum	0.65000	0.98710	10.92300	0.64400	0.98710
Minimum	0.01700	0.01236	9.44220	0.01700	0.01236
Std. Dev.	0.15507	0.27384	0.40357	0.18147	0.28457
Skewness	-0.50057	0.21526	0.41976	0.32152	0.82393
Kurtosis	2.16050	1.90018	2.09458	1.74867	2.31378
Jarque-Bera	12.80275	10.46200	11.43434	14.84508	23.89738
P-value	0.00166	0.00535	0.00329	0.00060	0.00001

Source: Author Constructed

4.2 Inferential Data Analysis

The correlation analysis was conducted to examine the strength and direction of linear relationships between the study variables including debt ratio, debt-to-equity ratio, ROA, ROE and firm size. According to Table 3 debt ratio shows a positive correlation with ROA ($r = 0.3793$), indicating that firms with a higher proportion of debt relative to total assets tend to exhibit better operational performance. This finding suggests that moderate levels of leverage may be effectively utilized to enhance asset productivity in the hotel sector,

consistent with the trade-off theory's emphasis on the benefits of tax shields from debt financing.

Table 3: Correlation Analysis

	Debt Ratio	**Debt to Equity Ratio**	**Firm Size**	**ROA**	**ROE**
Debt Ratio	1.00000				
Debt to Equity Ratio	0.19963	1.00000			
Firm Size	0.40103	0.12528	1.00000		
ROA	0.37930	0.09029	-0.24930	1.00000	
ROE	-0.14359	0.63758	-0.22977	0.32557	1.00000

Source: Author Constructed

Conversely, the correlation between debt ratio and ROE is negative (r = -0.1436), indicating that higher debt levels are not necessarily associated with higher shareholder returns. This may reflect the increased cost of debt or financial distress risks that offset potential gains to equity holders, especially in a sector vulnerable to external shocks like hotels. The debt-to-equity ratio shows a strong positive correlation with ROE (r = 0.6376), implying that hotels with greater reliance on debt relative to equity tend to deliver higher returns to shareholders. This finding aligns with agency theory, which argues that debt can serve as a mechanism to discipline management and enhance value for shareholders. Nevertheless, its relationship with ROA is relatively weak (r = 0.0903), suggesting a limited association between capital composition and operational efficiency. Firm size, measured by the natural logarithm of total assets, shows a negative correlation with both ROA (r = -0.2493) and ROE (r = -0.2298), indicating that larger hotels do not necessarily outperform smaller firms in terms of profitability. This may be attributed to the operational complexities and fixed cost burdens typically associated with larger establishments in the sector. The moderate positive correlation between ROA and ROE (r = 0.3256) suggests that firms generating higher operational efficiency also tend to deliver better shareholder returns, although the

relationship is not overly strong, reflecting the influence of financial structure and external factors on ROE. Overall, the correlation matrix indicates the absence of multicollinearity among the independent variables, as none of the coefficients exceed the critical threshold of 0.80. This validates the appropriateness of proceeding with panel regression analysis for hypothesis testing.

Variance Inflation Factor (VIF) was used to detect multicollinearity in both models: ROA and ROE. As shown in Table 4 below, all centered VIF values are significantly below the commonly accepted threshold of 10 (Salmerón et al., 2016), indicating that multicollinearity is not a concern in either model.

Table 4: Multicollinearity Test Results – ROA and ROE Models

Variable	**ROA Model (VIF)**	**ROE Model (VIF)**
Debt Ratio	1.2247	1.2247
Debt-to-Equity Ratio	1.0442	1.0442
Firm Size	1.1947	1.1947

Source: Author Constructed

To assess normality, the Jarque-Bera test was conducted. The test statistics and corresponding p-values indicate that none of the variables follow a normal distribution at the 5% significance level. Specifically, ROE and ROA exhibit significant departures from normality, with Jarque-Bera statistics of 23.90 ($p = 0.00001$) and 14.84 ($p = 0.00060$), respectively. Similar results are observed for debt ratio, debt-to-equity ratio, and firm size, all of which yielded p-values less than 0.05, leading to the rejection of the null hypothesis of normality.

4.2.1 Model Selection

To determine whether a fixed effects or random effects panel regression model was more appropriate, the Hausman specification test was conducted. The Hausman test for ROA model comparing the cross-section fixed and random effects models yielded $\chi^2 = 11.311850$, $p = 0.0102$, indicating that firm-specific effects are correlated with the regressors. Therefore, the fixed effects model was preferred for subsequent analysis. For the ROE model, the cross-section fixed and random effects shows $\chi^2 = 11.311850$ with a p-value of 0.1504, exceeding

the 5% significance threshold. Therefore, the null hypothesis was retained, and the random effects model was deemed appropriate for analyzing ROE.

The Breusch-Pagan LM test for cross-sectional dependence yielded a statistic for ROA model of 523.41 with a p-value of 0.000 and 218.7343 with a p-value of 0.0004 for ROE Model, indicating significant correlation of residuals across firms. This violates the standard assumption of independent errors in panel regression models and can lead to biased standard errors and misleading inference. To address this issue, the White two-way cluster robust standard errors with degrees-of-freedom correction was used, which adjusts the standard errors for potential correlations across both firms and time periods.

The Likelihood Ratio (LR) test was applied to assess the presence of heteroscedasticity in the ROA model. The LR statistics were 6851.56 with 18 degrees of freedom ($p < 0.001$) for ROA Model and 8458.066 with 18 degrees of freedom ($p < 0.000$) for ROE Model, indicating rejection of the null hypothesis of homoscedasticity. Therefore, the residuals exhibit heteroscedasticity and re-estimated the model with white cross sections

4.2.2 Regression Analysis

Regression analysis was employed to assess the impact of financial leverage, measured by debt ratio and debt-to-equity ratio, on financial performance as measured by ROA and ROE. The models included firm size as a control variable. The regression estimates for both models are presented in Table 5.

ROA Model

As per Table 5, the ROA model demonstrates strong explanatory power, with an R-squared value of 0. 7931, indicating that 79.3% of the variation in ROA is explained by the independent variables. The F-statistics are highly significant ($p = 0.0000$), confirming that the overall model is statistically valid. The debt ratio has a positive and statistically significant effect on ROA ($\beta = 0.8162$; $p = 0.0000$), supporting the trade-off theory that moderate debt enhances operational efficiency. Firm size demonstrated a significant negative effect ($\beta = -0.1397$: $p = 0.0000$). However, the debt-to-equity ratio is not statistically significant, implying a minimal influence on ROA within the observed period.

ROE Model

The ROE model, based on the random effects specification, explains approximately 53.24% of the variation in ROE. The model is statistically significant (p = 0.0000). The debt-to-equity ratio is the most influential variable, showing a strong positive and statistically significant effect on ROE (β = 0.7329; p = 0.0000). This supports agency theory, suggesting that leveraging equity capital enhances shareholder returns. Further, the debt ratio is significant and 1% level (p = 0.0013), and firm size exhibits a significant negative relationship with ROE (β = -0. 1715; p = 0.0000), possibly due to diseconomies of scale or capital inefficiencies in larger firms.

Table 5: Regression Results – ROA and ROE Models

Variable	**ROA Model (Fixed Effects)**			**ROE Model (Random Effects)**		
	Coefficient	**Std. Error**	**Prob. Value**	**Coefficient**	**Std. Error**	**Prob. Value**
C	1.3763	—	0.0000**	1.8477	—	0.0000**
Debt Ratio	0.8162	—	0.0000 **	-0.3429	—	0.0013*
Debt-to-Equity Ratio	-0.0045	—	0.7082	0.7329	—	0.0000 **
Firm Size	-0.1397	—	0.0000**	-0.1715	—	0.0000 **
R-squared	0.7931			0.5324		
F-statistics (Prob.)	224.883		0.0000 **	66.803		0.0000 **
Model Type	Fixed Effects			Random Effects		

*Notes: ** significant at the 5% level*
** significant at the 1% level*
Source: Author Constructed

To evaluate the impact of financial leverage on the financial performance of listed hotels, four hypotheses were developed and tested using panel regression analysis. Table 6 summarizes the findings, while the interpretation below provides further explanation.

Table 6: Summary of Hypotheses Testing Results

Hypothesis	**Result**
H_1: Debt ratio has a significant impact on ROA of hotels listed in CSE	Supported
H_2: Debt-to-equity ratio has a significant impact on ROA of hotels listed in CSE	Not Supported

H_3: Debt ratio has a significant impact on ROE of hotels listed in CSE	Supported
H_4: Debt-to-equity ratio has a significant impact on ROE of hotels listed in CSE	Supported

Source: Author constructed

As summarized in Table 6, H_1 is supported, indicating that a higher debt ratio is associated with improved operational performance (ROA). This supports the trade-off theory, which suggests that firms can benefit from debt up to an optimal level due to tax advantages. Moreover, H_2 is not supported, as the debt-to-equity ratio does not significantly impact ROA, suggesting that capital structure composition does not influence asset utilization. Further, H_3 is supported, indicating that total debt relative to assets significantly influence shareholder returns (ROE). Moreover, H_4 is supported, with a strong positive and significant effect of debt-to-equity ratio on ROE. This supports the agency theory, suggesting that leverage can align managerial incentives with shareholder interests and improve financial performance.

These results underline that financial leverage affects different dimensions of financial performance in different ways, and the choice of performance indicator (ROA vs. ROE) matters when assessing the effectiveness of capital structure decisions.

5 Discussion

The empirical findings of this study reveal a complex relationship between financial leverage and financial performance, indicating that the effects vary depending on how leverage is measured, and which aspect of performance is considered. By distinguishing between debt ratio and debt-to-equity ratio, and examining their separate impacts on ROA and ROE, the study provides valuable insights that contribute to both theory and practice. Rather than presenting purely descriptive associations, these findings provide econometric evidence derived from panel regression analysis, supporting the conditional relevance of capital structure theories within a crisis-sensitive and asset-intensive tourism context.

The significant positive effect of debt ratio on ROA suggests that in Sri Lanka's hotel sector, moderate borrowing helps firms improve operational efficiency. This aligns with the trade-off theory (Myers, 1984), which argues that firms benefit from tax shields provided by debt up to an optimal point, after which financial distress outweigh benefits. Hotels, being capital-intensive, often require large upfront investments in property and

infrastructure. Moderate debt allows these firms to fund renovations and maintain asset quality, thereby increasing occupancy rates and revenue per available room. These supports finding of Aljundi et al. (2024), and suggests that even in volatile tourism markets, debt can strategically enhance asset productivity. The finding that debt-to-equity ratio does not significantly influence ROA indicates that operational performance is less sensitive to the composition of financing. Instead, it may depend more on operational strategies, market positioning, service quality, and cost management. This is in line with the findings of Randika (2022) who highlights that while leverage provides the capital base, achieving higher ROA requires efficient resource use, strong branding, and effective revenue management strategies. Confirming the findings of Awogbemi et al. (2024) the debt ratio had significant effect on ROE in Sri Lankan firms. Sri Lankan hotels may deliberately maintain higher equity levels to mitigate risk exposure to external shocks such as the 2019 Easter attacks and the COVID-19 pandemic. The debt-to-equity ratio showed a significant positive impact on ROE, supporting agency theory (Jensen & Meckling, 1976). Higher leverage relative to equity appears to discipline management by creating pressure to generate returns sufficient to meet debt obligations. This finding is consistent with Arhinful and Radmehr (2023) and Peiris (2019), suggesting that in the hotel sector, higher debt-to-equity can translate into greater shareholder value, provided debt is managed carefully. These findings highlight the critical balance required in capital structure decisions. Excessive debt may increase vulnerability to interest rate changes and downturns in tourism demand, while too little debt might limit growth opportunities due to constrained internal financing. Thus, the study highlights that both the absolute level of debt (debt ratio) and its relation to equity (debt-to-equity ratio) play different roles: the former enhancing operational efficiency, and the latter enhancing shareholder returns.

The differentiated effects of leverage observed in this study should be interpreted within the context of Sri Lanka's crisis-affected tourism cycle. Prior research highlights that, during periods of stable demand, moderate leverage can enhance asset utilization by enabling firms to sustain infrastructure quality and service standards in capital-intensive industries such as hotels (Demiraj et al., 2022). Nevertheless, during periods of severe external shocks, including the 2019 Easter attacks and the COVID-19 pandemic, leverage may shift from a disciplinary mechanism to a financial distress amplifier, heightening exposure to cash flow disruptions and solvency risk (Kaluarachchi et al., 2021; Central Bank of Sri Lanka, 2024). In this context, the positive effect of the debt-to-equity ratio on ROE suggests that firms

capable of sustaining leverage through crisis periods may benefit from recovery-driven earnings rebounds, whereas firms with weaker equity buffers face constrained performance. This temporal interpretation highlights the importance of adaptive and context-sensitive leverage strategies in crisis-prone tourism economies.

Moreover, the sector context is key. Sri Lanka's hotel industry operates in a market with limited access to diversified financing options and significant exposure to geopolitical and macroeconomic volatility. The study period from 2015 to 2024 included major disruptions, yet firms maintaining moderate debt levels and balanced leverage ratios still achieved profitability. This suggests resilience rooted in cautious financial management. Overall, these results reinforce the need for hotel managers to align capital structure decisions not only with theoretical models but also with firm-specific factors and market realities. It also shows that adopting a uniform leverage strategy across all performance objectives may not be effective; instead, firms may need to fine-tune debt policies to optimize both operational efficiency and shareholder returns.

6 Conclusion

This study examined the impact of financial leverage on financial performance in the listed hotels of Sri Lanka, covering data from 2015 to 2024. Using debt ratio and debt-to-equity ratio as leverage measures, and ROA and ROE as performance indicators, the study provides evidence that financial leverage affects operational efficiency and shareholder returns differently. The findings partially validate the trade-off theory, showing that moderate debt levels (debt ratio) enhance operational efficiency (ROA). They also support agency theory, demonstrating that higher debt-to-equity ratios can discipline management to improve shareholder returns (ROE). Importantly, the study reveals that operational efficiency and shareholder returns respond differently to leverage measures, emphasizing the need for managers to adopt differentiated strategies. By focusing on the hotel sector, this research contributes new sector-specific evidence to the Sri Lankan context and to emerging market literature more broadly. It expands the debate on capital structure beyond manufacturing and diversified firms, highlighting how external shocks and tourism dependence influence leverage-performance dynamics.

6.1 Implications

The study contributes to theory in several ways as it empirically supports the trade-off theory in a tourism-dependent, emerging economy, confirming that moderate debt can enhance asset utilization. Moreover, it validates agency theory by showing that the debt-to-equity ratio significantly influences ROE and distinguishes between two leverage measures and two performance metrics. Further, the study provides valuable insights highlighting that capital structure effects are not uniform across all dimensions of firm performance. This adds depth to the existing body of literature, where many studies examine only a single leverage measure or focus solely on ROA or ROE.

Practically, the study provides valuable insights for managers, emphasizing that debt should be used strategically: moderate debt can boost operational efficiency, but relying too heavily on debt relative to equity could increase risk, especially in a volatile industry like tourism. Thus, managers should carefully monitor debt ratios and adjust financing strategies in response to market conditions. For investors, understanding the different impacts of the debt ratio and the debt-to-equity ratio can improve risk assessment when evaluating hotels, where higher debt-to-equity ratios might signal better potential shareholder returns but could also reflect higher financial risk. For policymakers, the findings provide signals indicating the need to deepen capital markets and diversify financing options, reducing hotels' dependence on traditional bank debt. Thus, facilitating access to equity and alternative funding could help firms balance leverage and resilience.

6.2 Limitations and Future Research Directions

The study is limited to high market-capitalized listed hotels, which may not reflect the broader hospitality industry, including medium and small-sized hotels. It uses only secondary data from financial statements, which may omit qualitative factors such as management quality or brand reputation that also affect performance. Additionally, the study focuses on Sri Lanka, limiting generalizability to other countries. Therefore, future studies could extend the analysis to smaller hotels or other tourism subsectors, such as travel agencies or resorts. Moreover, cross-country comparisons in South Asia or other emerging markets could identify whether similar leverage-performance relationships exist elsewhere. Incorporating additional variables like interest coverage ratio, liquidity ratios, or market-

based measures could also enrich the analysis. Finally, qualitative research exploring managerial perceptions of leverage could complement quantitative findings.

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