The Impact of Capital Structure Characteristics on Company Financial Performance: Applied on the Real Estate Sector

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ABSTRACT

This study examines how capital structure affects Egyptian commercial enterprises in the building and construction industry's financial performance between 2017 and 2021. In particular, it looks at the relationships between key financial performance indicators including Return on Equity (ROE), Return on Assets (ROA), and Earnings Per Share (EPS) and total debt, long-term debt, and short-term debt ratios. The study, which employs panel data analysis and regression techniques, reveals a range of relationships between capital structure components and performance indicators. It highlights the notable detrimental effects of short-term debt on EPS in certain firms, as well as the inconsistent outcomes for long-term debt and total debt on ROA and ROE, respectively. For investors, financial managers, and legislators, the findings offer insightful information on how to maximize capital structure in order to improve company financial health and shareholder value.

KEYWORDS

Capital Structure - Financial Performance - Return on Assets - Return on Equity - Earnings Per Share - Total Debt - Long-Term Debt - Short-Term Debt

1- INTRODUCTION

This mixture of securities is known as the corporate capital structure. Generally, capital structure emphasizes a combination of debt and equity to finance a firm. The various financing decisions are vital for the financial welfare of the firm. A false decision about the capital structure may lead to financial distress and eventually to bankruptcy. The management of a firm sets its capital structure in a way that maximizes the firm's value (Akintoye, 2016).

In the process of financial decision-making, capital structure plays a vital role in a Firm to maximize its overall performance. It encompasses various combinations of funding utilized by a firm to support its operations. The capital structure refers to the combination of multiple sources of securities that a firm practices to finance its capital investments and operations. The sources contain the combination of (Debt, preferred or common stocks). Firms do not use a constant capital structure; each firm uses a capital structure in its financial decisions. Managers can generate more profits, minimize costs, and risk using an optimal capital structure (Gambo et al., 2016).

A company's capital structure, which is a combination of hybrid securities and debt financing or equity financing, enables firms to utilize various resources to finance their assets. If the firm goes for debt financing, it should give a sum from its earned profits to settle the loan. If the firm chooses equity, then the net profit is distributed among stockholders after subtracting tax, or a certain amount is set aside as a reserve to meet upcoming requirements (Vernimmen et al., 2022).

The relationship between capital structure and company financial performance is a fundamental aspect of corporate finance. Capital structure, defined by the proportions of debt and equity financing, influences a company's risk and return profile. A higher level of debt may enhance financial performance through the tax shield effect, but it also increases financial risk and potential insolvency during downturns. Conversely, an equity-heavy capital structure can provide stability and reduce risk but may lead to higher costs of capital and diluted returns for shareholders. Understanding this interplay allows companies to make strategic financing decisions that align with their performance goals and risk tolerance.

In this paper, we will assess the influence of capital structure, measured by short-term debt to total assets, long-term debt to total assets, and total debt to total assets, on the firm's performance measured by ROE, ROA, and EPS.

2- RESEARCH IMPORTANCE

This study is important because it empirically investigates how different aspects of capital structure—specifically, short-term debt, long-term debt, and total debt ratios—impact a firm's financial performance. By assessing performance through key indicators such as ROE, ROA, and EPS, the research provides insights into the positive or negative effects of financing decisions on profitability. For financial managers and policymakers, understanding these effects is crucial for making informed capital structure decisions that optimize returns while mitigating risks.

Furthermore, the findings contribute to the broader academic and practical finance literature by addressing variations in the impact of capital structure across different business environments and industries. The study's results may inform corporate finance strategies, investment decisions, and regulatory policies aimed at enhancing firm stability and growth. Ultimately, this research supports the goal of identifying the optimal debt-equity balance that maximizes firm value and financial sustainability in diverse economic contexts.

3- RESEARCH PROBLEM

Choosing the best capital structure is one of the most important financial decisions that investors, governments, and company managers must make. Different debt and equity mixes are adopted by businesses globally, depending on a variety of factors, including sector characteristics, legal frameworks, market situations, and firm-specific considerations. Even though theoretical models like the Pecking Order Theory and Modigliani and Miller's capital structure irrelevance theory offer frameworks for comprehending financing behavior, empirical data on how these choices affect financial performance is still equivocal, particularly in emerging markets. Finding out how different amounts of short-, long-, and total debt impact business profitability and value as determined by Return on Equity, Return on Assets, and Earnings Per Share for Egyptian enterprises is the main issue this study attempts to solve. In order to help stakeholders make well-informed financing and investment decisions within the particular economic context of Egypt's commercial sector, this involves determining the positive or negative effects of capital structure components on financial outcomes.

4- LITERATURE REVIEW

4.1 The Independent Variable (Capital Structure)

Capital structure refers to the mix (or proportion) of a firm's permanent long-term financing, represented by debt, preferred stock, and common stock equity. He considers debt and equity financing as major components of capital structure.

Every business enterprise seeks to maximize its value, which can be achieved by reducing costs and identifying sources of funding that can most effectively support this goal. The sources of financing are mainly external, through short- and long-term debts, and internal sources, such as the owner's capital. Capital structure refers to the choices made by a company's management regarding how to finance its current expenditures, investments, and assets. It involves how a company's management combines its internal funds from returns, debt, and equity to cover its financial requirements (Singh & Bagga, 2019).

The management of the commercial company should always strive to maintain an optimal degree of capital structure to operate their business at the desired level of efficiency. On the other hand, to assess how much a commercial company has increased in value or developed over the years, its financial performance is shown through the use of capital assets and income generation (Aggarwal & Padhan, 2017).

All firms, therefore, must choose between debt and equity capital to finance their operations. Generally, a mixture of debt and equity financing in a business's capital structure is the best route to long-term stability and success. Firms need to manage their capital structure to maximize firm value by minimizing the cost of capital. It is essential to identify the optimal combination of internal and external funds that best suits the company in a particular market system.

Every day, investors, capital analysts, corporate officers, and other stakeholders in corporate operations engage in discussions about capital structure. Due to its influence on the state of an economy and the performance of businesses within it, capital structure is a crucial concept in the business sector. The capital structure adopted by firm management is essential to the firm's financial performance. It influences the company's ability to achieve its short-term and long-term objectives of growth and profitability improvements (Abdullah & Tursoy, 2021).

4.1.1 Capital Structure Theories

1. Modigliani and Miller (M&M theory)

The development of modern financial theory is based on the study of the financial structure of two Nobel Prizewinning economists, Modigliani and Miller (M&M theory). The theory of modern capital structure originated with the 1958 paper by Modigliani and Miller. According to the M&M theory, the choice between equity and debt is not related to the value of enterprises. The optimal capital structure is the one that balances risk and profit, thereby maximizing the company's share price. Initially, in the study in 1958, without considering the impact of corporate income tax, the M&M theory said that there is no optimal capital structure for businesses. In a follow-up study in 1963, when considering corporate income tax, Modigliani and Miller (1963) showed that the value of the company with debt is greater than the value of the company without debt by the tax rate multiplied by the value of debt, so the M&M theory says that increasing the use of financial leverage will enhance the value of businesses.

The Theory of Modigliani & Miller (1958) proposed that the cost of obtaining capital is not linked to the type of funds that a company uses, and there is no existence of an optimal capital structure; hence, the capital structure of a firm is not relevant or does not influence the value of a firm. However, Modigliani & Miller (1963) amended their earlier model of capital structure irrelevance theory in relation to their acceptance of the existence of corporate tax and the tax deductibility of interest payments (Al-Nasrawi & Thabit, 2020).

Based on this assertion, firms could replace equity with debt. However, Brigham and Gapenski (1996) disagreed with the MM model, as it is not held in practice due to the existence of bankruptcy costs, which increase as a result of the trade-off between equity and debt. They agreed that firms' value will improve, and costs linked to capital will reduce when debt is used, due to the tax deductibility of interest (Thabit & Raewf, 2017).

2. The Pecking Order Theory

Myers and Majluf (1984) state that there is no optimal capital structure for a company and explain the priority between internal capital and borrowed capital when enterprises raise capital. They classify funding into internal capital (retained earnings) and external capital (equity and debt issues). The decision on capital structure is not based on the optimal debt-to-total assets ratio, but on the priority of capital use in the following order: internal financial resources (especially retained earnings), followed by debt, and finally, equity capital. This theory is based on the problem of information asymmetry between managers, investors, and creditors. Compared to investors outside the enterprise, managers have a deeper understanding of the real value and risks associated with enterprises.

According to Pecking Order Theory, Myers & Majluf (1984) noted that internal finance is preferred over external finance by firms since information asymmetry creates a problem between the firm's agent and the owner. Hence, firms that are profitable and generate better earnings will use less debt capital compared to those that don't generate high earnings (Thabit & Solaimanzadah, 2018).

This theory also suggests that internal resources are often preferred over loans, as using internal funds minimizes enterprises' dependence on third parties, enhances financial control, and reduces the potential for information leaks (Nguyen & Nguyen, 2020).

Myers & Majluf (1984) noted that, when supporting new investments, firms tend to favor internal funds over external funds. If a case arises where the internal funds are insufficient for a particular investment opportunity, a firm may seek alternative options, such as an external fund. If it does, they will pick among the numerous outside funds in such a way as to ensure that they don't incur any additional costs regarding asymmetric information (Thabit & Jasim, 2017).

4.2 The Dependent Variable (Financial Performance)

According to Ariansya and Isynuwardhana (2020), financial performance is defined as a concept comprising two key aspects, namely efficiency and effectiveness. While efficiency is the ratio of input to output, effectiveness is the degree to which an organization achieves its goals. Financial performance refers to the economic results that a company achieves through its activities at a specific point in time. In addition, whether the company's financial condition is healthy or not, net profit is one key component in measuring the company's financial performance. The financial performance of a company can be measured by examining changes in the company's financial condition and its ability to manage assets effectively, as reflected in financial ratios. The ability to generate profits by utilizing the resources owned will enable the company to achieve corporate goals both in the short and long term.

The increasingly fierce competition conditions require companies to improve their performance to compete effectively in their respective industries. The company's performance reflects the effectiveness and efficiency of its management in utilizing all its resources to carry out its activities, company performance shows the efficient use of company resources by managers (Nini et al., 2020).

One of the measurements of the company's financial performance is the company's ability to generate profits. The intended profit can be in the form of gross profit, operations, or net income from activities carried out. The ability of a company to generate profits can also be related to the assets used to generate those profits or the sources of funds used. One of the factors that affects the company's financial performance is its capital structure. A company's financial performance and value can be impacted by its decision to select a strong capital structure, while an unwise choice could put the business at risk of financial trouble and insolvency (Rehman, 2016; Tifow & Sayilir, 2015).

Management should measure business performance over time according to financial measures to demonstrate a company's fiscal strength or weakness. A company's financial performance is evaluated based on financial measures calculated using standard accounting principles. Financial performance must be theoretically and measurably separated from the organizational performance of success. Thus, financial performance is measured using accounting metrics like return on assets (ROA), return on investment (ROI), and return on equity (ROE) (Ali, 2024).

4.3 The Effect of Capital Structure on Financial Performance

This study is significant as it examines how different debt ratios—short-term, long-term, and total debt—impact financial performance measures, including Return on Equity (ROE), Return on Assets (ROA), and Earnings Per Share (EPS). Various empirical studies provide mixed evidence on these relationships. For instance, Ajibola et al. (2018), found a significant positive relationship between long-term and total debt ratios and ROE but an insignificant negative link with ROA. Similarly, Birru (2016), observed a significant negative correlation between the debt ratio and ROA, emphasizing the impact of leverage on asset returns.

Nguyen and Nguyen (2020) reported a statistically significant negative relationship between capital structure and firm performance, while Nassar (2016) found an insignificant negative effect of debt on ROA. Afroze and Khan (2022) identified a positive association between EPS and short-term debt, but a negative relationship between ROA and capital structure, with no clear connection to ROE. Gharaibeh (2015) also documented statistically significant negative effects of leverage on profitability indicators.

Hossain (2016) revealed a negative relationship between debt variables and ROA, but contrasting results for ROE. Regional differences are evident in Ramli et al. (2019) study, which found a positive link between leverage and performance in Malaysia but not Indonesia. Le and Phan (2017) highlighted the adverse effects of increased debt on the financial performance of developing economies. Other studies, including those by Rahman et al. (2020) and Riaz (2015), have confirmed strong inverse relationships between leverage and profitability.

Research in Kenya by Ikapel and Kajirwa (2017) suggested a negative but statistically insignificant relationship between long-term debt and ROA, attributed to preferences for internal funding among profitable firms. Salamba (2015) and Ariansya and Isynuwardhana (2020) found negative impacts of capital structure on SME profitability, linking higher debt levels to increased financial risk and reduced profits.

Conversely, some recent studies present more nuanced findings. Priyan, Nyabakora, and Rwezimula (2023) reported positive effects of both short- and long-term debts on ROA and a mixed impact on ROE. Bui, Nguyen, and Pham (2023) found that the debt ratio had a positive influence on firm value, although long-term debt showed an insignificant effect. Natsir and Yusbardini (2019) confirmed a negative impact of capital structure on profitability but also identified profitability as mediating the effect on firm value. Domnick (2018) concluded that capital structure positively affects ROA and ROE, highlighting industry-specific variations.

Overall, these studies highlight the complex, context-dependent relationships between capital structure and firm performance, underscoring the importance of carefully managing debt levels to optimize financial outcomes.

5- RESEARCH HYPOTHESIS

H1: There is a positive relationship between short-term debt and EPS.

Empirical studies indicate a positive relationship between short-term debt and earnings per share (EPS). Research shows that firms using short-term debt effectively can enhance their EPS due to the lower cost of short-term financing and the better matching of short-term liabilities with current assets, which supports operational efficiency and growth in profitability. For example, studies have found significant positive correlations between short-term debt and growth in EPS, confirming that increased short-term borrowing can positively influence shareholder returns.

H2: There is a negative relationship between long-term debt and ROA.

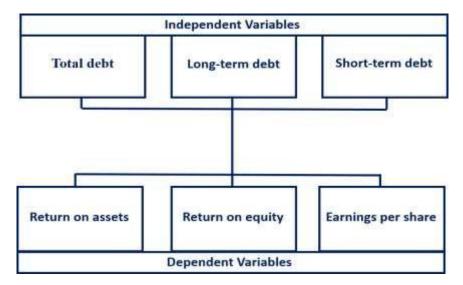
Numerous studies have reported a negative correlation between long-term debt and return on assets (ROA). Long-term debt often imposes fixed interest obligations that can reduce net income relative to assets, lowering asset profitability. Research has found that higher long-term debt ratios are significantly associated with decreased ROA, reflecting the increased financial burden and risk from long-term liabilities that affect a firm's ability to generate returns from its assets.

H3: There is a negative relationship between the total debt ratio and ROE.

The total debt ratio generally shows a negative impact on return on equity (ROE). Higher leverage increases financial risk and interest costs, which can reduce net income available to equity holders and dilute their returns. Multiple studies reveal a statistically significant negative correlation between total debt levels and ROE, emphasizing the potential downside of excessive debt on shareholder profitability despite the benefits of debt tax shields.

6- RESEARCH MODEL

Figure 1: Conceptual Framework



7- RESEARCH METHODOLOGY

The impact of capital structure on the financial performance of an aspect of Egyptian building and construction enterprises is examined in this study using a hybrid qualitative and quantitative methodology. In order to preserve industry coherence and prevent sectoral financial distortions, the focus is on five publicly traded companies from the EGX100 index, notably avoiding financial institutions like banks and insurance providers.

To maintain continuity and data integrity, companies listed on the EGX100 from 2017 to 2021 that have not undergone mergers or liquidations during the study period are included in the sample selection criteria. Key participants in Egypt's building and real estate sectors, Arabian Cement, Palm Hills, Madinet Masr, SODIC, and TMG, have been selected.

Sources and Data Collection

A comprehensive review of the sampled firms' annual reports, audited financial statements, corporate governance reports, and other pertinent disclosures made accessible to the public is how qualitative data is obtained. Textual analysis of market analyses, industry reports, and expert opinions taken from academic publications, market research reports, and case studies centered on Egypt's construction and real estate industries are added to this collection. To increase the data's reliability and trustworthiness, several data sources are triangulated, and cross-verification is used to guarantee accuracy and consistency.

The Analytical Method

The study quantitatively investigates the relationships between financial performance indicators, such as Return on Equity (ROE), Return on Assets (ROA), and Earnings Per Share (EPS), and capital structure variables, such as the total debt ratio, long-term debt ratio, and short-term debt ratio, using panel data analysis techniques. In order to contextualize how governance may mediate or influence these financial linkages, textual and qualitative information regarding board composition and corporate governance frameworks are also incorporated.

Regression analysis, correlation matrices, and descriptive statistics are among the statistical tests used to find patterns, directions, and strengths of relationships in the data. A detailed knowledge of the effects of capital structure in the Egyptian setting is provided by paying particular attention to the changing macroeconomic conditions and industry-specific difficulties during that time.

Table 1: Measurement of Variables

Independent Variables	Label	Measurement	Definition				
Capital Structure							
Debt Ratio	DR	Total Debt / Total Assets	The ratio of total debt to total assets, either as a percentage or a decimal. It can be thought of as the percentage of a business's assets that are funded by debt.				
Long-term Debt Ratio	LTD	Long-term Debt / Total Assets	The percentage of a company's assets is financed by long-term debt, which includes loans or other financial commitments that last longer than a year.				
Short-term Debt Ratio	STD	Short-term Debt / Total Assets	Debt obligations that must be paid off within the next 12 months or during a company's current fiscal year.				
Dependent Variable	Label	Measurement	Definition				
	Fi	nancial Performance					
Return on Assets	ROA	Net Income / Total Assets	One profitability statistic that assesses how well a business makes profit from of all of its assets.				
Return on equity	ROE	Net Income / Shareholders' Equity	A financial performance ratio shows how a company uses the equity of its shareholders to produce net income.				
Earnings Per Share	EPS	Net Income / Number of Outstanding Shares	The percentage of a company's profit given to each share of its common stock.				

8- EMPIRICAL RESULTS

Table 2: Descriptive Statistics for Madinet Masr

	Debt Ratio	LTD Ratio	STD Ratio	ROA Ratio	ROE Ratio	EPS Ratio
Mean	0.7312	0.4892	0.2420	0.0640	0.2440	0.6078
Median	0.7289	0.5509	0.1952	0.0623	0.2298	0.6200
Maximum	0.7734	0.5948	0.5063	0.0948	0.3801	0.8400
Minimum	0.6873	0.1810	0.1207	0.0224	0.0717	0.1620
Std. Dev.	0.0329	0.1736	0.1516	0.0302	0.1173	0.2692
Skewness	-0.0639	-2.1509	1.9483	-0.3931	-0.5594	-1.4735
Kurtosis	-0.4696	4.7006	4.1248	-1.2170	0.3301	2.4209
Sum	3.6558	2.4458	1.2100	0.3200	1.2200	3.0390
Sum Sq. Dev.	0.0043	0.1206	0.0919	0.0036	0.0550	0.2898
Observations	5	5	5	5	5	5

Madinet Masr's financial analysis reveals that the company relies heavily on debt, with an average debt ratio of 73.12%, indicating that a substantial portion of its assets is financed through borrowed funds. This ratio shows relative stability, with limited variation and a slight tendency for values to cluster near the higher end. Long-term debt accounts for nearly half of the assets, although this ratio exhibits significant fluctuation and a skew towards higher values, suggesting occasional reliance on larger long-term borrowings. Short-term debt comprises a smaller, more variable share of financing, with many observations concentrated at the lower end, but occasional spikes raising the ratio substantially. The company's profitability metrics indicate moderate returns, with an average ROA of 6.4%, reflecting consistent asset efficiency, and a strong ROE of 24.4%, highlighting effective equity utilization despite notable variability. Earnings per share also show reasonable levels, but with considerable fluctuations and a concentration of higher earnings in most periods. Overall, these metrics indicate a firm that is moderately profitable, heavily leveraged, and exhibits variability in its debt composition and earnings, reflecting a complex financial structure that balances stability with occasional extremes.

Table 3: Descriptive Statistics for TMG

	Debt Ratio	LTD Ratio	STD Ratio	ROA Ratio	ROE Ratio	EPS Ratio
Mean	0.6873	0.1034	0.5663	0.0162	0.0537	0.6883
Median	0.6897	0.0988	0.5410	0.0177	0.0519	0.7347
Maximum	0.7474	0.2064	0.6426	0.0181	0.0601	0.8039
Minimum	0.6013	0.0471	0.5025	0.0127	0.0472	0.5215
Std. Dev.	0.0543	0.0617	0.0604	0.0025	0.0052	0.1102
Skewness	-1.0375	1.5278	0.4643	-0.7811	0.1249	-0.9199
Kurtosis	1.8317	2.7489	-2.3740	-2.2150	-1.5769	0.2235
Sum	3.4365	0.5172	2.8315	0.0808	0.2685	3.4416
Sum Sq. Dev.	0.0118	0.0152	0.0146	0.0000	0.0001	0.0486
Observations	5	5	5	5	5	5

Sum

Sum Sq. Dev.

Observations

3.1393

0.0001

5

Talaat Moustafa Group exhibits a debt ratio averaging 68.73%, indicating that most of its assets are financed through debt, with a relatively stable and slightly left-skewed distribution. The long-term debt ratio is considerably lower at 10.34%, indicating moderate variability and a positive skew, likely due to occasional higher long-term borrowings. In comparison, the short-term debt ratio dominates financing at 56.63%, with significant variation and a mild positive skew toward lower values. Profitability metrics reveal consistent but modest returns, with an average ROA of 1.62% and ROE of 5.37%, both showing low variability and relatively normal distributions. Earnings per share present a mean of 0.6883, with a concentration toward higher earnings, though variability is notable. Overall, the financial profile suggests a company with a heavy reliance on short-term debt financing, moderate profitability, and some variability in earnings and long-term debt utilization, highlighting areas for potential improvement in balance and stability.

Debt Ratio LTD Ratio **STD Ratio ROA Ratio ROE** Ratio **EPS Ratio** Mean 0.7305 0.2133 0.5378 0.0225 0.0900 0.2934 0.7498 0.0881 Median 0.2022 0.5476 0.0227 0.2720 0.7655 0.2494 0.0275 0.1113 0.3490 Maximum 0.5672 Minimum 0.6499 0.1982 0.5030 0.0187 0.0759 0.2330 Std. Dev. 0.0464 0.0214 0.0263 0.0034 0.0130 0.0502 -1.9287 -0.4453 0.65521.2896 0.1496 **Skewness** 1.7208 **Kurtosis** 3.8922 2.7707 -1.7289 0.2934 2.8063 -2.2889Sum 3.6527 1.0663 2.6890 0.1126 0.4500 1.4670 0.0086 0.0018 0.0028 0.0000 0.0007 0.0101 Sum Sq. Dev. **Observations** 5 5 5 5 5 5

Table 4: Descriptive Statistics for Palm Hills

Palm Hills exhibits a high debt ratio averaging 73.05%, indicating substantial reliance on debt to finance its assets, with values concentrated toward the higher end, reflecting consistent debt usage. Its long-term debt ratio is significantly lower, averaging 21.33%, with most financing coming from short-term debt, which accounts for approximately 53.78% of assets and exhibits moderate variability. Profitability metrics reveal modest but stable returns, with a return on assets (ROA) of 2.25% and a return on equity (ROE) of 9%, both exhibiting relatively symmetric distributions. Earnings per share (EPS) average 0.2934, showing some variability but generally concentrated at the lower range. Overall, Palm Hills' financial profile indicates a leveraged capital structure primarily supported by short-term debt, accompanied by moderate profitability and stable earnings performance.

Debt Ratio LTD Ratio **STD Ratio ROE** Ratio **EPS Ratio ROA Ratio** Mean 0.6279 0.2579 0.3700 0.0374 0.1007 0.1649 Median 0.6285 0.2683 0.3565 0.0407 0.1104 0.1534 0.2966 Maximum 0.6340 0.4337 0.0652 0.1755 0.3084 **Minimum** 0.6190 0.20020.33030.00930.02530.03580.0731 0.1304 Std. Dev. 0.0056 0.0359 0.0396 0.0272 -1.0328-1.1740 1.2653 -0.1432-0.15460.1257 **Skewness** -2.9895 **Kurtosis** 1.5413 2.0445 1.7959 -2.9887-2.9361

1.2896

0.0052

5

Table 5: Descriptive Statistics for ACC

1.8499

0.0063

5

0.1871

0.0030

5

0.5034

0.0214

5

0.8245

0.0680

5

ACC has a debt ratio mean of 62.79%, indicating that a significant majority of its assets are financed through debt, reflecting high financial leverage. The distribution is fairly stable and symmetrical, with minimal variability over time. Its long-term debt ratio averages 25.79%, suggesting a moderate reliance on long-term borrowing, with a slight skew toward higher values and moderate variability. Short-term debt finances about 37% of assets on average, with a somewhat right-skewed distribution and moderate fluctuations. Profitability metrics indicate a moderate return on assets (3.74%) and a relatively strong return on equity (10.07%). However, the latter exhibits greater volatility, with earnings per share averaging 0.1649, showing notable variability and a right-skewed distribution. Overall, ACC operates with considerable leverage, combining both long- and short-term debt, to achieve moderate profitability and stable asset returns, with some fluctuations in shareholder returns and earnings per share.

ROE Ratio Debt Ratio LTD Ratio **STD Ratio ROA Ratio EPS Ratio** Mean 0.7949 0.1725 0.4682 0.02570.1244 1.9680 Median 0.8175 0.1849 0.4624 0.0243 0.1323 2.0600 0.8362 0.2923 0.7663 0.0334 0.1360 2.4200 Maximum Minimum 0.7463 0.00080.0919 1.3100 0.0455 0.0168 Std. Dev. 0.0413 0.12010.2920 0.0071 0.0185 0.4482 -0.0307**Skewness** -0.4880-0.1294-1.1628-2.0618-0.7661-2.9453 -2.9952 1.7612 -2.0339 4.3287 -0.4509 **Kurtosis** 3.9745 2.3408 0.1284 0.6222 9.8400 Sum 0.8626 0.0068 0.0577 0.3410 0.0002 0.0014 0.8035 Sum Sq. Dev. **Observations** 5 5 5 5 5 5

Table 6: Descriptive Statistics for Sodic

The debt ratio for Sodic averages 79.49%, indicating a high reliance on debt financing, with most observations skewed toward the upper range and narrow variability in debt usage. Long-term debt constitutes an average of 17.25% of assets, showing some variability, while short-term debt averages 46.82%, displaying significant fluctuations. The company posts modest returns on assets (2.57%) and a higher return on equity (12.44%), the latter skewed toward higher values despite limited variability. Earnings per share average 1.9680 with moderate variability, skewed toward higher earnings. Correlation analysis reveals a strong negative correlation between the overall debt ratio and long-term debt, suggesting that increased total debt is primarily driven by short-term borrowing. Rising total debt correlates with significantly reduced asset efficiency and moderately lower shareholder returns and EPS. However, long-term debt has a positive influence on asset returns, shareholder profitability, and EPS, highlighting its productive role. In contrast, short-term debt exhibits a slight positive effect on shareholder returns and EPS, but has a minimal impact on asset efficiency. Overall, Sodic exhibits a capital structure that relies heavily on short-term debt, which may compromise asset efficiency but still facilitates reasonable profitability and earnings.

a. Correlation Matrix

Table 7: Correlation Matrix for Madinet Masr

	Debt Ratio	LTD Ratio	STD Ratio	ROA Ratio	ROE Ratio	EPS Ratio
Debt Ratio	1.0000	0.755388568	-0.6493	0.392160815	0.550389609	0.643562331
LTD Ratio	0.755388568	1.0000	-0.9888	0.756984216	0.799413311	0.916522537
STD Ratio	-0.6493	-0.9888	1.0000	-0.7899	-0.8031	-0.9178
ROA Ratio	0.392160815	0.756984216	-0.7899	1.0000	0.980338928	0.947292236
ROE Ratio	0.550389609	0.799413311	-0.8031	0.980338928	1.0000	0.972463054
EPS Ratio	0.643562331	0.916522537	-0.9178	0.947292236	0.972463054	1.0000

The debt ratio for Madinet Masr exhibits strong correlations with various financial metrics. It shows a strong positive correlation (0.7554) with long-term debt, suggesting that as total debt increases, reliance on long-term borrowing also increases. At the same time, it is negatively correlated (-0.6493) with short-term debt, suggesting a shift away from short-term liabilities as overall debt grows. The debt ratio also exhibits a moderate positive correlation with return on assets (0.3922) and return on equity (0.5504), suggesting that higher debt levels may contribute somewhat to improved profitability. Additionally, earnings per share (EPS) exhibit a moderate positive correlation (0.6436) with the debt ratio, suggesting that leveraging debt may be associated with higher earnings per share. The long-term debt ratio exhibits a notably strong positive correlation with ROA (0.7570), ROE (0.7994), and EPS (0.9165), underscoring the importance of effective long-term financing in enhancing company performance. In contrast, short-term debt shows strong negative correlations with ROA (-0.7899), ROE (-0.8031), and EPS (-0.9178), reflecting its generally unfavorable impact on profitability. Return on assets and return on equity themselves are closely linked (0.9803), and both strongly relate to EPS, illustrating the interconnectedness of asset efficiency, shareholder returns, and earnings per share. Overall, these correlations highlight that while long-term debt appears to support better financial outcomes, short-term debt may detract from profitability, emphasizing the importance of managing the composition of debt financing.

Debt Ratio LTD Ratio **STD Ratio ROA Ratio ROE** Ratio **EPS Ratio Debt Ratio** 1.0000 0.4918 0.2339 -0.7369-0.0138 0.9573 LTD Ratio 0.49181.0000 -0.5447-0.7228-0.6785 0.4158 0.2339 -0.54471.0000 0.4665 0.9631 0.2995 **STD Ratio** -0.7369 -0.72280.4665 1.0000 0.6667 **ROA Ratio** -0.6616-0.0138-0.67850.9631 0.6667 1.0000 0.0335 **ROE Ratio EPS Ratio** 0.9573 0.4158 0.2995 -0.6616 0.0335 1.0000

Table 8: Correlation Matrix for TMG

The debt ratio is a key financial metric that measures the proportion of a company's total assets financed through debt. It provides insight into a company's leverage and financial risk. A debt ratio of around 0.6 (60%) or higher is generally considered high, indicating a significant reliance on debt financing, which can amplify risk if earnings decline or interest rates rise. However, what constitutes a "good" debt ratio varies by industry and company strategy. Capital-intensive sectors often maintain higher debt levels due to stable cash flows, while companies in more volatile industries typically have lower ratios to minimize risk. A ratio less than 1 indicates that the company has more assets than liabilities, suggesting relative financial stability. Conversely, a ratio greater than 1 indicates that liabilities exceed assets, signifying an increased risk of insolvency. Investors and creditors use the debt ratio to assess a firm's ability to meet its financial obligations and strike a balance between debt and equity, ensuring sustainable growth. Comparing the debt ratio to industry peers and historical performance helps contextualize a company's financial health and leverage position. Overall, the debt ratio is fundamental for assessing financial structure, risk, and long-term viability.

LTD Ratio **STD Ratio Debt Ratio ROA Ratio ROE Ratio EPS Ratio Debt Ratio** 1.0000 0.4918 0.2339 -0.7369-0.0138 0.9573 1.0000 -0.5447 -0.6785 LTD Ratio 0.4918 -0.72280.4158 **STD Ratio** 0.2339 -0.54471.0000 0.46650.9631 0.2995 0.4665 1.0000 **ROA Ratio** -0.7369-0.72280.6667 -0.6616 -0.0138 -0.6785 0.9631 0.6667 1.0000 0.0335 **ROE Ratio** -0.6616 0.2995 0.0335 1.0000 **EPS Ratio** 0.9573 0.4158

Table 9: Correlation Matrix for Palm Hills

The debt ratio for Palm Hills indicates a significant reliance on debt financing, with approximately 73.05% of the company's assets being financed through debt. The strong negative correlation with the long-term debt ratio (-0.972) alongside a strong positive correlation with short-term debt (0.896) suggests that Palm Hills primarily utilizes short-term debt rather than long-term debt to fund its operations. This heavy reliance on short-term financing may expose the company to liquidity risks. The strong negative correlations of the debt ratio with return on assets (-0.971) and return on equity (-0.904) indicate that higher debt levels significantly reduce asset efficiency and shareholder returns, while a moderate negative correlation with earnings per share (-0.745) suggests that increased debt somewhat diminishes profitability per share. In contrast, long-term debt shows positive correlations with ROA (0.919), ROE (0.896), and EPS (0.861), highlighting its positive impact on profitability and shareholder value. Conversely, increasing short-term debt has a negative effect on ROA (-0.766), ROE (-0.724), and EPS (-0.841), reinforcing the notion that short-term debt may impair financial performance. Strong positive relationships exist among ROA, ROE, and EPS, underscoring the interconnectedness of asset utilization, shareholder returns, and per-share earnings. Overall, Palm Hills' capital structure strategy appears to favor short-term debt, which may have adverse effects on its profitability and efficiency compared to the more beneficial impacts of long-term debt.

Debt Ratio LTD Ratio **STD Ratio ROA Ratio ROE Ratio EPS Ratio Debt Ratio** 1.000 0.286 -0.458-0.508-0.379-0.4740.086 LTD Ratio 0.286 1.000 0.535 0.583 0.044 **STD Ratio** -0.4580.086 1.000 0.504 0.661 0.062 0.504**ROA Ratio** -0.5080.535 1.000 0.960 0.735 **ROE Ratio** -0.3790.583 0.661 0.960 1.000 0.594 **EPS Ratio** -0.4740.044 0.062 0.735 0.594 1.000

Table 10: Correlation Matrix for ACC

The debt ratio measures the proportion of a company's assets financed by debt and serves as a vital indicator of financial leverage and risk. Calculated by dividing total debt by total assets, it reflects the extent to which a company relies on borrowed funds for its operations and growth. A higher debt ratio signals greater financial leverage, which can amplify both returns and risks—especially if cash flows falter or interest rates rise. However, what constitutes a "risky" or "optimal" debt level varies by industry and company strategy. Capital-intensive sectors typically tolerate higher ratios due to stable cash flows, while companies in volatile markets prefer lower ratios to mitigate financial risk. Thus, the debt ratio should be interpreted in context, ideally alongside other financial metrics, such as the debt-to-equity ratio and interest coverage ratios, to assess a company's financial health, ability to service debt, and long-term sustainability. In short, the debt ratio helps stakeholders gauge the balance between debt and assets, understand risk exposure, and make informed decisions regarding the company's leverage structure.

Debt Ratio LTD Ratio **STD Ratio ROA Ratio ROE Ratio EPS Ratio** 1.0000 -0.8044 -0.9821 -0.4055 -0.7001 0.1075 **Debt Ratio** -0.80441.0000 0.1408 0.8970 0.6472 0.9296 LTD Ratio **STD Ratio** 0.1075 0.14081.0000 -0.02490.8158 0.4808-0.9821 0.8970 -0.02490.7984 1.0000 0.5151 **ROA Ratio ROE** Ratio -0.4055 0.6472 0.8158 0.5151 1.0000 0.8481 -0.70010.9296 0.4808 0.7984 0.8481 1.0000 **EPS Ratio**

Table 11: Correlation Matrix for Sodic

The data for Sodic indicates a high average debt ratio of 79.49%, showing substantial reliance on debt financing, with most values skewed toward higher ratios and little variability in its usage. Long-term debt constitutes about 17.25% of assets, with variability but a relatively symmetrical distribution, while short-term debt averages 46.82% and exhibits significant fluctuations. Statistical analysis reveals a strong negative correlation (-0.8044) between the total debt and long-term debt ratios, suggesting an increased reliance on short-term financing as total debt increases. The debt ratio is very strongly negatively correlated with return on assets (-0.9821), implying that higher debt levels significantly reduce asset efficiency. There are moderate negative correlations with return on equity (-0.4055) and earnings per share (-0.7001), indicating that higher debt burdens depress shareholder returns and profitability per share. Long-term debt correlates strongly positively with ROA (0.8970), ROE (0.6472), and EPS (0.9296), highlighting its role in enhancing profitability and shareholder value. Short-term debt has a minimal impact on asset efficiency but positively correlates with ROE (0.8158) and moderately with EPS (0.4808), suggesting that it can support shareholder returns, albeit less powerfully than long-term debt. Collectively, these findings depict a capital structure heavily dependent on short-term debt, which may diminish asset efficiency but still supports shareholder profitability to some extent through long-term financing.

b. Multiple Regression

	Model 1	Model 2	Model 3
	(STD on EPS)	(LTD on ROA)	(Debt ratio on ROE)
Pearson r	-0.9178	0.7570	0.5504
R Square	0.8423	0.5730	0.3029
Adjusted R Square	0.7897	0.4307	0.0706
Standard Error	0.0956	0.0177	0.0875
F-Value	16.0221	4.0262	1.3037
P value	0.0280	0.1384	0.3364

Table 12: Multiple Regression for Madinet Masr

Based on the models' results and supporting literature, short-term debt exhibits a strong negative correlation with earnings per share (EPS), with model statistics indicating that about 84% of EPS variation can be explained by short-term debt levels. This suggests that increases in short-term debt tend to significantly reduce EPS, indicating that reliance on short-term liabilities may have a detrimental effect on shareholder earnings. This finding aligns with several studies that have shown excessive short-term borrowing can strain profitability and reduce earnings per share.

Conversely, the model assessing the impact of long-term debt on return on assets (ROA) shows a positive correlation, although statistically non-significant in this case, indicating that while greater long-term debt may support asset profitability, other factors also play important roles. This relationship is consistent with research suggesting that long-term debt, when utilized for productive investments, can enhance a firm's performance.

Finally, the total debt ratio's positive relationship with return on equity (ROE) is comparatively weak and statistically insignificant, implying limited explanatory power for shareholder profitability based solely on total debt levels. This suggests that more nuanced financial dynamics are at play beyond aggregate debt levels, requiring consideration of debt composition and the broader firm context.

Overall, these models highlight the significant impact difference between short-term and long-term debt on firm performance metrics, underscoring the importance of careful debt maturity structure management in optimizing profitability and shareholder returns.

Table 13: Multiple Regression for TMG

	Model 1 Model 2		Model 3	
	(STD on EPS)	(LTD on ROA)	(Debt ratio on ROE)	
Pearson r	0.2995	-0.7228	-0.0138	
R Square	0.0897	0.522410792	0.0002	
Adjusted R Square	-0.2138	0.363214389	-0.3331	
Standard Error	0.0930	0.0034	0.0049	
F-Value	0.295522388	3.281548975	0.0006	
P value	0.624498428	0.167738078	0.982422122	

The analysis of Model 1 reveals a weak positive correlation (Pearson r = 0.2995) between short-term debt and earnings per share (EPS), with the model accounting for only 8.97% of the variation in EPS. The lack of statistical significance (p-value = 0.6245) and a low F-value suggest that short-term debt does not meaningfully predict EPS in this context. This contrasts with some empirical research, which indicates a positive and significant effect of short-term debt on EPS, emphasizing that impacts may vary by firm and environment.

Model 2 reveals a moderate negative correlation (Pearson r = -0.7228) between long-term debt and return on assets (ROA), with approximately 52.24% of the variation in ROA explained by long-term debt. Although the relationship is not statistically significant (p-value = 0.1677), it suggests that increases in long-term debt may reduce asset profitability, consistent with the finding that long-term obligations can burden profit generation.

Model 3 presents almost no correlation (Pearson r = -0.0138) between the total debt ratio and return on equity (ROE), with negligible explanatory power and no statistical significance (p-value = 0.9824). This implies that total debt levels do not impact shareholder returns significantly on their own, indicating the importance of considering other financial factors or the composition of debt.

Overall, these models highlight the complexity of debt's impact on financial performance metrics, emphasizing that relationships vary by debt type and impact measure, necessitating tailored financial analysis.

Table 14: Multiple Regression for Palm Hills

	Model 1 Model 2		Model 3	
	(STD on EPS)	(LTD on ROA)	(Debt ratio on ROE)	
Pearson r	-0.8413	0.918558654	-0.9038	
R Square	0.707854169	0.8438	0.816924237	
Adjusted R Square	0.610472225	0.791666667	0.755898983	
Standard Error	0.024745457	0.0016	0.0042	
F-Value	7.268844115	16.2000	13.38665847	
P value	0.0740	0.027556464	0.035275189	

The analysis of Model 1 reveals a strong negative correlation (Pearson r = -0.8413) between short-term debt and earnings per share (EPS), accounting for approximately 70.79% of the variation in EPS. This indicates that increases in short-term debt are associated with decreases in EPS. Although the model is statistically significant overall, the relationship is not important at the 5% level (p-value = 0.0740). This aligns with findings from some empirical studies, which highlight that higher short-term debt may reduce profitability per share due to liquidity constraints and financing costs.

Model 2 reveals a strong positive correlation (Pearson r = 0.9186) between long-term debt and return on assets (ROA), with 84.38% of the variation in ROA explained by long-term debt. This relationship is statistically significant (p-value = 0.0276), supporting the notion that long-term debt can positively influence asset profitability by financing productive investments.

Model 3 reveals a strong negative correlation (Pearson r = -0.9038) between the total debt ratio and return on equity (ROE), accounting for 81.69% of the variation in ROE, which is statistically significant (p-value = 0.0353). This suggests that increased overall debt levels are significantly linked with lower shareholder returns, highlighting the potential drawbacks of excessive leverage on equity profitability.

These results emphasize the differentiated impact of debt maturity on firm performance, where long-term debt appears beneficial for asset returns, short-term debt has a detrimental but less statistically clear effect on earnings per share, and total leverage negatively affects shareholder returns.

Model 1 Model 2 Model 3 (STD on EPS) (LTD on ROA) (Debt ratio on ROE) Pearson r -0.3217 0.0987 0.2574 0.0087 0.3240 0.4430 R Square 0.09870.2574 Adjusted R Square -0.3217 1.5192 **Standard Error** 13.3410 0.9058 1.4379 0.0263 2.3862 F-Value 0.3166 0.2201 P value 0.8814

Table 15: Multiple Regression for ACC

The model analyzing short-term debt (STD) and earnings per share (EPS) reveals a weak negative correlation (Pearson r = -0.3217), with only 0.87% of EPS variation explained by short-term debt, indicating that short-term debt is not a significant predictor of EPS. The very high standard error and non-significant p-value (0.8814) further affirm the lack of a meaningful relationship. This contrasts with some empirical studies that find positive effects, but also aligns with others that report no significant impact.

The model examining long-term debt (LTD) and return on assets (ROA) reveals a nearly negligible positive correlation (Pearson r = 0.0987), accounting for 32.4% of the variation in ROA. However, it lacks statistical significance (p-value = 0.3166), suggesting that long-term debt has minimal explanatory power for asset profitability in this case.

Lastly, the model considering total debt ratio and return on equity (ROE) indicates a weak negative correlation (Pearson r = -0.2574), accounting for 44.3% of the variation in ROE. However, this relationship is statistically insignificant (p-value = 0.2201). This suggests that overall debt levels do not strongly predict shareholder returns here.

In summary, these models show weak and statistically insignificant relationships between different types of debt and firm performance metrics, highlighting the complex and context-dependent nature of debt's impact on profitability and shareholder returns.

Table 16: Multiple Regression for Sodic

	Model 1 (STD on EPS)	Model 2 (LTD on ROA)	Model 3 (Debt ratio on ROE)
Pearson r	0.480795834	0.89703369	-0.4055
R Square	0.231164634	0.804669441	0.164427074
Adjusted R Square	-0.0251	0.739559254	-0.1141
Standard Error	0.351495047	0.0022	0.0159
F-Value	0.902005728	12.35857988	0.590350892
P value	0.412311103	0.0390	0.498226396

The model assessing the relationship between short-term debt (STD) and earnings per share (EPS) reveals a moderate positive correlation (Pearson r = 0.4808). Still, the model explains only about 23.12% of the variation in EPS and is not statistically significant (p-value = 0.4123). This suggests that while there is some association, short-term debt is not a strong predictor of EPS in this context. In contrast, the model evaluating long-term debt (LTD) and return on assets (ROA) shows a strong positive correlation (Pearson r = 0.8970) with 80.47% of ROA variation explained, and is statistically significant (p-value = 0.0390), indicating that higher long-term debt is strongly linked to better asset returns. The model testing the total debt ratio and return on equity (ROE) shows a weak negative correlation (Pearson r = -0.4055), with only 16.44% of the ROE variation explained, and is not statistically significant (p-value = 0.4982). This implies weak and inconclusive evidence that overall debt affects shareholder returns. These results highlight the differentiated impact of debt maturity on company performance, with long-term debt positively influencing asset efficiency, and short-term debt showing an inconclusive relationship with earnings per share.

9- LIMITATIONS

While the study offers valuable insights, it is important to acknowledge several limitations:

- 1. Type of Data: All data were derived from annual reports, i.e., secondary data, which may carry limitations in accuracy and reliability compared to primary data collection.
- 2. Industry Scope: The research focused solely on the Egyptian building and construction industry, which limits generalizability to other sectors or countries.
- 3. Sample Size and Scope: Only five companies were analyzed over a five-year period. The small sample size and limited time frame may not fully represent the dynamics of the entire sector. Additionally, banks, insurance firms, and non-listed companies were excluded, potentially omitting significant variability.
- 4. Measurement of Variables: Although standardized financial ratios were used, differences in accounting policies, management practices, or data interpretation may introduce inconsistencies or biases.
- 5. Listing Bias: The study only considered publicly listed firms on the EGX, which may differ in capital structure behavior from private firms.
- 6. Resource Constraints: The study faced time and financial constraints, particularly in retrieving older financial reports and ensuring data completeness, which affected the breadth and depth of the analysis.

Addressing these limitations in future studies could enhance the robustness and applicability of the findings.

10- CONCLUSION

The study's findings show that there is no direct correlation between capital structure and profitability in Egypt's building and construction sector. Although a number of hypotheses were tested, no consistent or significant effects were discovered among the organizations under investigation. The projected positive effect of short-term debt on earnings per share (EPS), for example, was not supported; just one firm had a negative and substantial link, while the rest did not. Likewise, the expectation that long-term debt would have a negative impact on return on assets (ROA) was debunked by notable positive outcomes in certain companies, suggesting a more intricate interaction than first thought. Additionally, although one firm's total debt to total assets (TDTA) and return on equity (ROE) had a negative connection, this result was not consistent across the sample.

These contradictory and firm-specific findings imply that unique firm characteristics and external environmental factors are necessary to fully explain how capital structure affects financial performance. The lack of a regular pattern suggests that choices on leverage and debt composition need to be customized for each company's particular situation. Financial results may also be greatly impacted by external factors like industry-specific risks, market dynamics, and the regulatory environment. In order to effectively maximize performance outcomes, financial decision-making in this sector should take a more complex approach that incorporates firm-level characteristics as well as the larger economic and industrial environment.

Finding H3: Total debt ratio & ROE H1: Short-term debt & EPS H2: Long-term debt & ROA Set Madiant Negative & statistically No significant relationship → No significant relationship Misr significant \rightarrow Rejected **Not Supported** \rightarrow Not Supported Moderately negative but not Very weak & not significant Not significant; low explanatory **TMG** power → Not Supported significant → Not Supported \rightarrow Not Supported Negative but not significant → Positive & significant → Negative & significant → Palm Hills Rejected (opposite) **Not Supported Supported** Weak negative, not Not significant \rightarrow **Not** Not significant; low explanatory ACC significant \rightarrow Not Supported $power \rightarrow Not Supported$ **Supported** Not significant \rightarrow **Not** Positive & significant → Weak & not significant → Sodic **Supported** Rejected Not Supported

Table 17: Summary of Hypotheses Testing

11- RECOMMENDATIONS

Based on the findings, it is recommended that companies avoid over-reliance on short-term debt, as its limited or negative correlation with earnings per share (EPS) suggests that excessive use may strain liquidity and reduce profitability. Firms should aim to gradually decrease their dependence on short-term liabilities, using such debt primarily to cover working capital needs rather than financing long-term investments. Careful evaluation of the cost and its impact on operational cash flows and earnings is essential to ensure that short-term borrowing supports, rather than hinders, financial performance.

Long-term debt, while initially perceived as potentially detrimental, can actually enhance return on assets (ROA) when employed strategically to finance productive, capital-intensive projects. Companies should align their long-term borrowing with investments that promise sustainable revenue generation, carefully balancing interest expenses, repayment terms, and expected returns. Nonetheless, managing long-term leverage prudently is imperative, as excessive borrowing without proper alignment to strategic goals can elevate financial risks and negatively affect firm stability.

Additionally, firms are encouraged to explore alternative financing options that do not jeopardize long-term profitability or financial health. Retained earnings offer an internally generated funding source ideal for mature companies with consistent cash flow, while equity financing may be advantageous when market conditions are favorable. Other possibilities include strategic alliances, joint ventures, or government-backed financing, which can provide capital for expansion and innovation with less risk of compromising the company's financial position.

Suggestion for Further Research

- 1. Further research should examine the relationship between the maturity structure of the firm's debt, its decisions, and performance; determine the joint impact of both capital structure and ownership structure on the firm's performance.
- 2. Further research should also be done to differentiate between the short- and long-term debt in terms of the source of financing and the use of financing as well, and evaluate the adjustment of either or both types of debt to the industry target debt ratio.
- 3. It would also seem appropriate that further research focus on the role played by the institutional framework, such as the impact of taxation and the relative importance of the various sources of credit (securitized debt vs. bank debt).
- 4. Examine how the firms make their financing decisions and determine the choice of the right timing for borrowing (in terms of timing the interest rate) as a critical factor for making sound debt financing decisions.
- 5. The same studies can be done for a longer period for the purpose of obtaining more improved and reliable findings. If possible, more firms from the sectors should be included in the sample to increase the reliability of the results.
- 6. Further research can be undertaken considering a bigger sample size to produce more reliable results.

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