


## Capital structure and financial performance of listed non-financial firms in Ghana

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### ABSTRACT

Capital structure and its impact on firm performance is a key issue in finance, and there are a number of theories and empirical papers that explain this relationship. Using secondary data from listed companies that have traded on the Ghana Stock Exchange (GSE) from 2016 to 2020, the study specifically examines the effect of short-term debt, long-term debt, and total debts on the operational efficiency of listed non-financial companies in Ghana. The study shows that a firm's return on assets decreases as its amount of debt accumulation rises. Also, some firm-specific variables have small but significant impacts on enterprises' profitability. The study recommends that, to ensure that there is adequate cash available for the company's ongoing operations, corporate finance managers should ensure working capital is managed properly and responsibly. Also, in the extreme case where a short-term borrower facility is unavoidably required and must be acquired, the study advises administrators to make sure that the total amount of short-term obligations taken on as a percentage of the capital structure is less than the sum of non-current liabilities and equity in total assets.

**Contribution/Originality:** This study examines the effect of short-term, long-term and total debts on operational efficiency of listed non-financial companies in Ghana. The results shows that a firm's return on assets decreases as its amount of debt accumulation rises. Also, some firm-specific variables have small but significant impacts on enterprises' profitability.

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## 1. INTRODUCTION

Capital decisions have always attracted the attention of scholars and practitioners because they are an essential element of corporate finance. It plays a key role in the company's decision-making process as it helps financial managers decide whether to seek financing and how to meet their investment needs (Al Muhairi & Nobanee, 2019; Mensah & Amenuvor, 2022). The capital decision represents the various financing strategies that a company can use to raise the money needed for its investing activities in a way that is consistent with its primary goals. It involves a design process

that is primarily concerned with finding an appropriate capital structure to maximize shareholder value and reduce the cost of capital (Akomeah, Benti, & Musah, 2018; Musah, 2018).

Capital structure represents how a company combines the multiple sources of funding it uses to fund its operations and investment projects (Al Muhairi & Nobanee, 2019; Pratiwi, 2020). These resources include using equity financing, which consists of preferred stock and common stock, or using long-term and short-term loans, collectively known as debt financing. This study attempts to examine the impact of capital structure on the financial performance of listed non-financial companies in Ghana. It specifically examines the effect of short-term, long-term and total debts on operational efficiency of listed non-financial companies in Ghana.

The debate over the impact of capital structure on firm performance has led to divergent opinions among academics and practitioners over the past few decades. Modigliani and Miller (1958) assume a perfect market environment in which taxes, transaction costs, and the absence of other frictions exist, and argue that capital structure is irrelevant to a firm's profitability. They concluded that debt, equity, or a combination of both does not maximize wealth or shareholder value. However, considering imperfect market conditions, other theories such as trade-off theory, pecking order theory, agency cost theory, and others have demonstrated the relevance of capital structure to firm performance. However, each of these theories has different implications for capital structure and business performance.

Empirically, studies conducted to confirm whether market conditions favor the relevant theories are inconclusive (Abdullah & Tursoy, 2021; Akomeah et al., 2018; Pratiwi, 2020). This is because the practices observed in the real market are quite sophisticated and influenced by many factors. According to the results, each study remains fragmented and contradictory. Therefore, an overall conclusion is required. In addition, most studies have focused on the impact of capital structure on corporate profitability indicators, particularly return on investment, to the detriment of other key financial performance indicators such as financial efficiency. Again, most studies have focused on the impact of capital structure on the performance of financial institutions such as banks, while some have focused on non-financial firms. This study therefore attempts to fill this gap by complementing the existing debate on the impact of capital structure on the operational efficiency of listed non-financial companies in Ghana, with a particular focus on operational efficiency.

## 2. LITERATURE REVIEW

### 2.1. Theoretical Literature

Capital structure and its impact on organizational performance is a key issue in finance, and there are several theories that explain this connection. The Modigliani-Miller (MM) theory (Modigliani & Miller, 1958), which is considered the fundamental theory in this debate, assumes that the value of a company is not influenced by its capital structure. However, this theory is based on restrictive assumptions of the perfect capital market that do not exist in the real world. Modigliani and Miller (1963) later presented an alternative proposal that took advantage of tax-deductible expenses, arguing that interest accrual resulted in lower tax payments improves the firm's overall cash flow. In fact, the two economists also found that enterprise value is now positively related to debt, meaning that companies are perfectly capable of maximizing their value by increasing their debt.

In an imperfect market situation, three main theories have been proposed as alternatives to MM theory: trade-off theory, pecking order theory, and agency theory. The trade-off theory states that a company weighs the costs and benefits of debt and equity to maximize shareholder value (Kim, 1978; Kraus & Litzenberger, 1973). Pecking order theory holds that funding follows a hierarchy: internal funds are used first, then debt is issued, and equity is issued when debt is no longer available (Myers & Majluf, 1984; Ross, 1977). Agency theory developed by Jensen and Meckling (1976); Jensen (1986) and Hart and Moore (1994) argue that the optimal capital structure for maximizing enterprise value must be one that minimizes conflicts of interest between stakeholders.

There is also the signalling theory proposed by Ross (1977), in which the choice of debt-to-equity ratio is independent of the optimal concept and rather is expressed by the firm's willingness to send specific messages to investors. Profitable companies may seek to inflate stock prices by increasing debt beyond optimal levels and fooling the market into believing their future growth potential. Indeed, they believe that the additional cost of issuing debt will discourage less profitable companies from reaping the benefits of having higher levels of debt relative to better-performing companies, despite managers' attempts to mislead the public. In addition, Myers and Majluf (1984) have identified a tendency in which managers are reluctant to issue stocks when they are perceived to be undervalued; As a result, investors tend to perceive stock issuance as a negative signal, assuming managers will only offer stocks to the public when the price is fair or overvalued.

In short, the relationship between leverage and firm performance is considered positive according to signalling theory. Only the MM and signalling theories support a positive relationship between leverage and firm performance, while the other three theories (agency theory, pecking order theory and trade-off theory) support a negative relationship.

### 2.2. Empirical Literature

Empirical evidence linking capital structure and firm performance has yielded inconclusive results. Some empirical work indicates a positive relationship between capital structure and firm performance (Abor, 2005; Berger & Di Patti, 2006; Ezeani et al., 2023; Gill, Biger, & Mathur, 2011; Khatib, Abdullah, Hendrawaty, & Yahaya, 2020). Using data from the US banking sector, Berger and Di Patti (2006) suggested that higher leverage ratios are associated with higher firm performance, as measured by profit efficiency. Specifically, a 1% increase in leverage results in a 6% increase in profit efficiency. Even when leverage is very high, there is still a clearly positive correlation between leverage and company performance. They argued that using more leverage can lower the cost of capital or encourage managers to act more in the interest of shareholders, which in turn increases shareholder value.

Abor (2005) uses correlation and regression analysis to examine the relationship between capital structure and profitability of companies listed on the Ghana Stock Exchange over the five years from 1998 to 2002 and argues that there is a significant positive effect of leverage as measured by the ratio of short-term debt to Total Assets and Total Debt to Total Assets on firm performance. Using the same method as Abor (2005) and Gill et al. (2011) showed that there is a significant positive relationship between capital structure as measured by total debt to total assets, short-term debt to total assets, and long-term debt to total assets and firm performance. Khatib et al. (2020) also concluded that firm size is positively related to the leverage.

Other studies have also found a negative association between capital structure and firm performance (Akomeah et al., 2018; Chang, Wang, Lee, & La, 2014; Ramadan & Ramadan, 2015; Vijayakumaran & Vijayakumaran, 2019). Vijayakumaran and Vijayakumaran (2019) state that a company should employ more leverage to prevent insider equity dilution and to ensure better oversight by creditors. This can result in an increase in shareholder value by reducing the agency's cost of capital. Using the ordinary least square (OLS) regression technique, Ramadan and Ramadan (2015) examined the impact of capital structure on the performance of 72 companies listed on the Amman Stock Exchange from 2005 to 2013. The authors used return on asset (ROA) as a measure of profitability and long-term debt-debt ratios. The authors found that debt ratios are negatively associated with performance. This result follows the pecking order theory. Akomeah et al. (2018) also conducted a study on the impact of capital structure decisions on the financial performance of listed non-financial institutions in Ghana and Nigeria. The study used 425 cross-sectional samples of corporate years from companies in Ghana and Nigeria from 2014 to 2019 and found a significant negative association between capital structure and financial performance.

In addition, some studies have found a non-linear relationship between capital structure and firm performance; that is, capital structure has both positive and negative effects on company performance. In particular, the positive effect of debt is that paying it off obliges managers to manage cash flows, thereby reducing overinvestment. A negative effect of debt is that debt repayments can reduce cash flow or the funds available for profitable investments, thereby exacerbating the problem of underinvestment. Lin, Chang, and Powers (2009) studied the relationship between the debt ratio and firm performance using an advanced panel regression threshold model to test whether there is a debt threshold. The study used data from 196 Taiwanese listed companies over 13 years (1993–2005) and measured company performance using Tobin's K. They argued that there are two marginal effects between the debt ratio and company performance. If the leverage ratio is less than 9.86%, a 1% increase in the leverage ratio results in a 0.0546% increase in Tobin's K (an approximation of enterprise value). If the leverage ratio is between 9.86% and 33.33%, Tobin's K increases by 0.0057% for a 1% increase in the leverage ratio. If the leverage ratio is greater than 33.33%, there is no correlation between the leverage ratio and the company's value.

Margaritis and Psillaki (2010) examined the relationship between capital structure and firm performance in French manufacturing firms. They used a quadratic function form that included leverage and leverage squared to allow the relationship between capital structure and profit efficiency to be non-monotonic and reverse sign when leverage is high. They found a positive relationship between leverage and firm performance as measured by X-inefficiency; however, this relationship is shifting from positive to negative with high leverage in some industries.

### 3. METHODS

#### 3.1. Data

The study relied on secondary data from listed companies that have traded on the Ghana Stock Exchange (GSE) from 2016 to 2020. These companies were selected for the study based on data availability and authenticity. Therefore, the companies included in the study should be listed continuously within the period under study and should have published audited financial statements for all five year period examined. This is to ensure that all companies examined are fully operational and that their data is reliable for this study. As such, data was acquired from eight (8) institutions such as Aluworks Limited, Enterprise Group Public Limited Company (PLC), Fan Milk Limited, Guinness Ghana Breweries Plc, Unilever Ghana PLC, Benso Oil Palm Plantation Limited, Camelot Ghana Limited, and Cocoa Processing Company.

#### 3.2. Study Variables

The variables in this study are divided into three categories: dependent, independent, and control variables, as indicated below:

#### 3.3. Dependent Variable

The performance of the listed non-financial institutions, as measured by return on assets (ROA), served as the study's primary dependent variable.

##### a. Return on Asset (ROA)

The return on assets of listed non-financial firms is one of the primary dependent variables in this study. This is determined by comparing the nonbanking institutions' profitability to their total assets. The ROA is shown in this research as:

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}}$$

3.4. Independent Variables

Capital structure indicators, including short-term debts, long-term debt, and total debts, are the key independent variables in this study. Short-term debts are represented by the natural log of current debts. The operationalization of these variables are as follows:

Short-term debts (STD): The total of all current liabilities with a one-year maturity is known as short-term debt. The company's responsibility for its current debt is represented by this amount. The natural log of the current debt is employed as a representation of the short-term debts in this investigation.

$$STD = \text{Ln}(\sum \text{Current Liabilities})$$

Long-term debts (LTD): The total of all loans having maturities of more than one year is known as long-term debts. This is operationalized in this study as the natural logarithm of the total long-term liabilities.

$$LTD = \text{Ln}(\sum \text{Long term liabilities})$$

Total Debts (TD): This is a measure of a non-banking financial institution's whole debt load, including both short- and long-term obligations. The term is operationalized in this study as the total of the firm's short- and long-term liabilities, expressed as the natural logarithm.

$$TD = \text{Ln}(\sum \text{Long - term debts} + \text{Short - term debts})$$

3.5. Control Variables

- a. Return on Equity (ROE): is the ratio of the firm's net income to total capital. ROE is a measure of a firm's profitability and how efficiently it generates those profits. The higher the ROE, the better the firm is able to convert equity financing into profit:

$$ROE = \frac{\text{Net Profit}}{\text{Total Equity}}$$

- b. Firm Size (FIRMSZ): The natural logarithm of the total assets of a certain non-banking financial institution is used to calculate this metric. This is measured in this study as follows:

$$FIRMSZ = \text{Ln}(\text{Total Assets})$$

- c. Liquidity (LIQ) ratios evaluate a bank's ability to satisfy its financial obligations as well as its margin of safety by measuring indicators like the current ratio. This is calculated in this study as follows:

$$LQ = \frac{\text{Liquid Assets}}{\text{Total Assets}}$$

3.6. Model Specification

The estimation of the associations between the capital structure and the financial performances of the listed non-financial firms in Ghana was done using the model specified by Köksal and Orman (2015) as shown in Equation 1.

$$Perf_{i,t} = \beta_0 + \sum_k \beta_k F_{k,i,t} + U_i + t_i + \varepsilon_{i,t} \quad (1)$$

From Equation 1,  $Perf_{i,t}$  is the performance of listed non-financial institutions  $i$  in year  $t$ ;  $F$  is the vector of factors influencing the performance of the listed non-financial firms;  $U_i$  are the time-invariant unobservable company-specific effects;  $t_i$  is time fixed effect and  $\varepsilon$  is the error term. Based on model in Equation 1 we estimate the following empirical models.

$$ROA_{i,t} = \beta_0 + \beta_1 STD_{i,t} + \beta_2 FIRMSZ_{i,t} + \beta_3 ROE_{i,t} + \beta_4 LIQ_{i,t} + f_i + t_i + \gamma_{i,t} \quad (2)$$

$$ROA_{i,t} = \alpha_0 + \alpha_1 LTD_{i,t} + \alpha_2 FIRMSZ_{i,t} + \alpha_3 ROE_{i,t} + \alpha_4 LIQ_{i,t} + f_i + t_i + \gamma_{i,t} \quad (3)$$

$$ROA_{i,t} = \gamma_0 + \gamma_1 TD_{i,t} + \gamma_2 FIRMSZ_{i,t} + \gamma_3 ROE_{i,t} + \gamma_4 LIQ_{i,t} + f_i + t_i + \gamma_{i,t} \quad (4)$$

From the empirical models, Equation 2 presents the effect of short-term debt (STD) on return on asset (ROA), Equation 3 estimates the effect of long-term debt (LTD) on return on asset (ROA) while Equation 4 estimates the effect of total debt (TD) on return on asset (ROA). From Equations 2,3, and 4 FIRMSZ is the firm size, ROE is return on equity and LIQ is liquidity ratio.  $f_i$  is the time invariant unobservable company specific effects,  $t_i$  is time fixed effect and  $\gamma$  is the error term. Moreover, based on the theories adopted for the purpose of this study, i.e., the trade-off theory, and the pecking order theory, the expected signs of this study variables with non-financial firms' performances are shown in Table 1.

Table 1. Descriptions of variables used in the study.

Variables	Abbreviations	Pecking-order theory	Trade- off theory
Firm size	FIRMZ	- (Negative)	+ (Positive)
Return on equity	ROE	+ (Positive)	+ (Positive)
Short-term debts	STD	+ (Positive)	- (Negative)
Long-term debts	LTD	+ (Positive)	- (Negative)
Total debts	TD	- (Negative)	+ (Positive)
Liquidity	LIQ	+ (Positive)	- (Negative)

## 4. RESULT AND DISCUSSION

### 4.1. Summary Statistics

Table 2 displays the descriptive statistics in detail. A total of seven (7) variables are considered, which include long-term debts, short-term debts, and total debts as independent variables; firm size, return on equity, and liquidity as control variables; and return on assets as the dependent variable. The typical non-financial company taken into account in this analysis had a decent return on assets. As a result, the average company has a ROA of 6.3%, which is greater than the required 5% to be regarded as good. Throughout the period, the selected firms' return on assets metric ranged from 42.17 percent at the highest level to -9.8 percent at the lowest level. The return on assets of an institution measures how well management makes use of all available resources to generate profits. The simplest method for calculating ROA is to take net income that has been recorded for a period and divide it by total assets. This shows how profitable firms are based on such firms' assets.

The mean total debts of the listed non-financial institutions across the year measuring period were elastic ( $M=14.05$ ;  $Std. Dev=0.761$ ). These statistics suggest that the overall debt data set has a normal distribution and is also significantly peaked. The ratio of total liabilities to total assets is known as the debt ratio. It determines what percentage of funding is provided by sources other than equity. Creditors favor low debt ratios because they provide more loss protection in the event of liquidation. The average for the current debts of the companies included in this study was elastic, suggesting that there is a greater propensity for the short-term debts of these companies to increase given any changes in their operations. This has effects on the chosen firms' credit management practices. The amount of debt a corporation owes influences the likelihood that it will breach its contractual debt commitments. Given that creditors' claims must be satisfied prior to earnings being distributed to shareholders, current and prospective shareholders keep a careful eye on the company's ability to pay off their debts. The next variable is the liquidity (LIQ) of these non-financial firms, which is a variable that describes how a company is better able to pay off its debt rapidly. The average level of liquidity for the companies throughout the period was 1.956. Table 2 shows that the average company size was 16.44 indicating that these firms have the ability to grow as shown by an elastic firms' size. The sizes of both the greatest ( $Max=18.228$ ) and the smallest ( $Min=14.643$ ) enterprises are elastic, indicating possibility for additional growth.

Table 2. Summary statistics of the study variable.

Indicator	ROA	LTD	STD	TD	ROE	LIQ	FIRMSZ
Mean	0.063	14.050	13.159	14.732	16.350	1.956	16.444
Median	0.051	14.091	13.322	14.799	16.323	1.488	16.442
Maximum	0.422	15.365	15.303	16.275	17.714	19.457	18.229
Minimum	-0.099	12.236	10.309	12.959	14.026	0.956	14.643
Std. dev.	0.061	0.762	0.960	0.728	0.732	2.346	0.918
Skewness	3.262	-0.280	-0.671	-0.232	0.796	7.088	-0.367
Kurtosis	22.275	2.310	3.448	2.537	4.460	53.394	2.152
Jarque-Bera	1035.3	1.973	4.910	1.074	11.659	6851.1	3.144
Probability	0.000	0.373	0.082	0.585	0.003	0.000	0.208
Sum	3.805	843.05	789.54	883.94	981.01	117.37	986.67
Sum sq.	0.218	34.238	54.397	31.254	31.628	324.69	49.677
Obs.	80	80	80	80	80	80	80

Note: ROA = Return on assets; TD = Natural logarithm of total debts; STD = Natural logarithm of current debts; LTD = Natural logarithm of long-term debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity ratio.

### 4.2. Correlational Analysis of the Study Variables

Table 3 presents the Pearson correlation matrix to investigate the presence of multicollinearity. The results show that all the variables are not highly correlated since none of them is above 50%. Except liquidity ratio (LIQ) which has a negative correlation with ROA, all the other variables were found to have a positive correlation with ROA. Also, the relationship between ROE and ROA were found not to be significant. However, all the other independent variables were found to have a significant relationship with ROA.

Table 3. Pearson correlation matrix of the study variables.

Variables	ROA	TD	STD	LTD	LIQ	FIRMSZ	ROE
ROA	1.0000						
TD	0.0464	1.0000					
STD	0.0557	0.8125	1.0000				
LTD	0.0212	0.9665	0.8679	1.0000			
LIQ	-0.0780	0.0401	0.0884	0.0362	1.0000		
FIRMSZ	0.1341	0.0396	0.2675	0.0458	0.3258	1.0000	
ROE	0.0163	-0.0532	-0.1228	-0.0336	-0.0777	0.0323	1.0000

Note: ROA = Return on assets; TD = Natural logarithm of total debts; STD = Natural logarithm of current debts; LTD = Natural logarithm of long-term debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity ratio.

#### 4.3. Impact of Long-term Debt (LTD) on Operational Efficiency (ROA) for listed non-financial institutions in Ghana

The study employed both a fixed effect and a random effect model to assess the impact of long-term debt on operational efficiency as measured by return on asset (ROA) of Ghana's listed non-financial institutions. To select the best suitable model for estimation, the study used the Hausman Specification Test, as shown in Table 4. The effect of long-term indebtedness on the return on assets of the listed non-financial firms in Ghana was estimated using a random effect model. The results of the Hausman Specification Test indicate that the random effect model is the best option for estimating ROA.

**Table 4.** Hausman specification on the effects of long-term debt on ROA.

Coefficients				
Variables	(b) FELTD	(B) RELTD	(b-B) Difference	S.E
LTD	-0.007	0.001	-0.008	0.013
LIQ	0.000	-0.004	0.004	0.003
FIRMSZ	-0.034	0.012	-0.046	0.049
ROE	-0.006	0.000	-0.006	0.010
Chi sq. = 1.91				
p-value = 0.752				

Note: LTD = Natural logarithm of long-term debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity.

Table 5 demonstrates that long-term debt negatively impacts the return on assets (ROA) of the selected non-financial enterprises (Coef. = 0.0291434; Std. Err. = 0.0118469; p-value = 0.007). This suggest that each proportional increase in long-term debt will reduce the operational efficiency of the chosen non-financial enterprises by more than 2.9%. This model's control variables—firm size and ROE—positively affected these enterprises' return on assets (Coef. = 0.0000428; Std. Err. = 0.0060535; p-value = 0.994). These firms' operational effectiveness and ROE are not statistically related. These indicate that ROE does not improve efficiency in this model. The firm's size score suggests a 1.2% improvement in return on assets. Liquidity at these firms decreases return on asset (ROA) by 0.3% at a 10% significance level (Coef. = -0.0035385; Std. Err. = 0.0020919; p-value = 0.091).

The above analysis and results support Nassar (2016) finding of a statistically significant adverse relationship between capital structure and operational efficiency. However, Chang et al. (2014) found a favorable and statistically significant relationship between insurance companies' financial success and capital structures. Successful insurance companies are likewise becoming more debt-dependent. Business size positively and significantly affects financial success. These findings contradict those of Adu (2016), who found through multiple regression that long-term debt and equity increase the value of listed non-financial enterprises. Borrowed capital has a greater impact on corporate value than shares. High gearing hurts Ghana Stock Exchange-listed banks, according to Awunyo-Vitor and Badu (2012). The report says listed banks have high gearing. The authors attributed the sampled enterprises' excessive short-term borrowing to the Bank of Ghana's high lending rate and minimal bond market activity. According to regression research, capital structure, a proxy measure of corporate assets compared to a firm's market value, was negatively correlated with the listed bank's return on equity and Tobin's q ratio.

Antwi, Mills, and Zhao (2012) examined all 34 Ghana Stock Exchange (GSE) businesses during 2010. This study uses ordinary least squares regression. The study found that equity capital, which is part of a company's capital structure, and long-term debt are the key predictors of a firm's value in emerging nations like Ghana. Mathanika, Vinothini, and Paviththira (2015) used a sample of Sri Lankan industrial enterprises registered on the Colombo Stock Exchange to test how capital structure affects the firm's value proposition. The debt-to-equity ratio affected the firm's worth, but debt to total assets did not.

**Table 5.** Effects of long-term debts on return on asset (ROA).

ROA	Coef.	Robust std. err.	Z	P>  z	(95% Conf. interval)	
LTD	-0.029	0.012	-2.46	0.007	-0.022	0.025
LIQ	-0.004	0.002	-1.69	0.091	-0.008	0.001
FIRMSZ	0.012	0.004	2.95	0.003	0.004	0.020
ROE	0.000	0.006	0.01	0.994	-0.012	0.012
_cons	-0.146	0.268	-0.55	0.585	-0.671	0.379
No. of obs.	60					
Wald chi <sup>2</sup>	22.93					
p-value	0.000					
R-sq. within	0.001					
Between	0.459					
Overall	0.035					

Note: ROA = Return on assets; LTD = Natural logarithm of long-term debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity.

#### 4.4. Impact of Short-Term Debt (STD) on Operational Efficiency (ROA) for Listed Non-Financial Institutions in Ghana

This section seeks to assess the influence of short-term debt on the operational efficiency of listed non-financial enterprises in Ghana. In order to assess how short-term debt affects listed non-financial organizations in Ghana's operational efficiency, which is determined by return on assets (ROA), the study used both a fixed effect and a random effect model. The Hausman specification test was employed in the study to determine the most appropriate model for the estimation, and Table 6 shows the anticipated result. From Table 6, the Hausman Specification Test shows that the Random Effect Model is better for evaluating how short-term debts affect return on assets (ROA) because the p-value of 0.8581 is higher than 0.05. Thus, a random effect model examined the impact of short-term borrowing on Ghanaian listed non-financial institutions' return on assets.

**Table 6.** Hausmann specification on the effects of short-term loans on ROA.

Coefficients				
Variable	(b) FEP1	(B) REP1	(b-B) Difference	S.E
STD	0.000	0.001	0.011	0.011
LIQ	0.000	-0.004	0.003	0.003
FIRMSZ	-0.039	0.011	-0.050	0.050
ROE	-0.006	0.000	-0.007	0.010
Chi Sq. = 1.32				
p-value = 0.858				

Table 7 shows that short-term indebtedness lowers the selected firms' return on assets (Coef. = -0.0272; Std. Err. = 0.00849; p-value = 0.001). These indicate that every increase in short-term indebtedness will decrease operational efficiency by 2.7% at the selected firms. Firm size and ROE favorably affected these firms' efficiency (Coef. = 0.0114; Std. Err. = 0.00437; p-value = 0.009). Thus, while ROE has no statistically significant effect on a firm's operational efficiency, size is predicted to enhance operational efficiency, evaluated in this study as return on asset, by 0.4%. Liquidity (Coef. = -0.003523; Std. Err. = 0.0021132; p-value = 0.096) only affects operating efficiency at a 10% significance level. Voulgaris, Asteriou, and Agiomirgianakis (2004) state that capital structure is essential for assessing growth and performance and deciding a firm's survival in extreme conditions. According to Pratheepkanth (2011) a company's capital structure includes reserves, surpluses, long-term financing, and equity investments. It shows how companies finance assets through debt, equity, or hybrid mechanisms (Saad, 2010). Schulz (2017) used panel data to assess how capital structure affected small and medium-sized Dutch enterprises between 2008 and 2015. Panel regression showed a modest relationship between capital structure and return on assets, supporting the pecking order idea (operational efficiency). Meero (2015) examined Gulf Company's performance and capital structure. He said Islamic banks had different capital structures and operating results. Musiega, Chitiavi, and Ve Alala (2013) evaluated how NSE-listed companies' capital structures affect financial performance. 30 NSE-listed firms were sampled from 2007 to 2011. Total firm assets positively correlate with long-term debt, the study found. Even small, long-term debt improves financial performance.

**Table 7.** Effects of short-term debts on ROA.

ROA	Coef.	Robust std. err.	Z	P>  z	(95% Conf. interval)	
STD	-0.027	0.008	3.21	0.001	-0.015	0.0180
LIQ	-0.004	0.002	-1.67	0.096	-0.008	0.000
FIRMSZ	0.011	0.004	2.61	0.009	0.003	0.020
ROE	0.000	0.006	0.03	0.972	0.013	0.013
_cons	-0.140	0.208	-0.67	0.502	-0.547	0.268
No. of obs.	60					
Wald chi <sup>2</sup>	23.65					
p-value	0.000					
R-sq. within	0.002					
Between	0.441					
Overall	0.035					

Note: STD = Natural logarithm of current debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity.

**Table 8.** Hausmann specification of the effects of total debts on ROA.

Coefficients				
Variables	(b) FETD	(B) RETD	(b-B) Difference	S.E
LTD	-0.003	0.003	-0.006	0.012
LIQ	0.000	-0.003	0.003	0.003
FIRMSZ	-0.036	0.011	-0.048	0.049
ROE	-0.006	0.0001	-0.006	0.010
Chi Sq. = 1.83				
p-value = 0.766				

Note: ROA= Return on assets; LTD= Natural logarithm of total debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity.

#### 4.5. Impact of Total Debt (TD) on Operational Efficiency (ROA) for Listed Non-Financial Institutions in Ghana

This section evaluates the influence of total debt on the operational efficiency of listed non-financial firms in Ghana. Table 8 shows the study's Hausman specification test results for the best estimating model. The Hausman Specification Test shows that the random effect model is best for assessing the influence of total debts on return on assets because the fixed effect model's p-value (0.7661) is higher than 0.05. Thus, a random effect model was used to quantify the impact of short-term indebtedness on Ghana's listed non-financial institutions' ROA.

Table 9 shows that overall debt and liquidity negatively affect the operational efficiency of the non-financial firms under study. This implies that any increase in these enterprises' debt lowers their operating efficiency by 2%. Liquidity does not significantly affect asset returns. Firm size and ROE positively affect the return on assets of the selected institutions (Coef. = 0.00018; Std. Err. = 0.00612; p-value = 0.975) and are connected. These figures suggest that business size increases return on assets by 1.1%, which is significant at a statistical level of 10%.

According to Sohail, Iqbal, Tariq, and Mumtaz (2013) research on Karachi Stock Exchange companies, capital structure hurts financial performance. As debt accumulates, a company's capital structure decreases in market value and raises risk. Umar, Tanveer, Aslam, and Sajid (2012) also found that capital structure affected the financial performance of the top 100 Pakistani firms. The results show that current liabilities, long-term liabilities, and total liabilities all affect net profit margin. Ogbulu and Emeni (2012) used Nigerian stock exchange companies for a year. The study found that long-term debt predicts a firm's value in emerging countries like Nigeria, while equity capital does not. Ali (2011) investigated the capital structures of non-financial organisations registered on the Karachi Stock Exchange (Pakistan) between 2003 and 2008. The results show that size, profitability, inflation, and growth dividend have significant coefficients. The study confirmed the pecking order theory as indicated by the inverse links between profitability and leverage, growth and long-term debt, and dividends and total debt.

Mumtaz, Rauf, Ahmed, and Noreen (2013) found that capital structure decreases operational efficiency. As debt accumulates, a company's capital structure decreases in market value and raises risk. Akeem, Terer, Kiyanjui, and Kayode (2014) found that high debt ratios hurt firm performance. Their analysis showed that equity ratios improved business performance. Thus, they advise enterprises to use more stock than debt. Akinyomi (2013) used three random food and beverage firms for five years. He found via correlation analysis that company age, debt to capital, and the ratio of short-term debt to total debt are all considerably and favourably connected to return on asset and return on equity, but that long-term debt to capital is significantly and relatively related to both. The study found that capital structure and financial success are linked using return on asset and return on equity.

Table 9. Effects of total debts on return on asset (ROA).

ROA	Coef.	Robust std. err.	Z	P>	z	(95% Conf. interval)	
TD	-0.021	0.010	-2.13	0.017		-0.015	0.022
LIQ	-0.004	0.002	-1.73	0.084		-0.008	0.000
FIRMSZ	0.012	0.004	2.95	0.003		0.004	0.020
ROE	0.000	0.006	0.03	0.975		-0.012	0.012
_cons	-0.176	0.238	-0.74	0.459		-0.642	0.290
No. of obs.	60						
Wald chi <sup>2</sup>	23.65						
p-value	0.000						
R-sq. within	0.000						
Between	0.513						
Overall	0.037						

Note: ROA = Return on assets; TD = Natural logarithm of total debts; FIRMSZ = Firms size; ROE = Return on equity; LIQ = Liquidity.

## 5. DISCUSSION

Starting with the first objective, which was to assess the impact of long-term debt on the operational efficiency of listed non-financial companies in Ghana, the study found that long-term debt has a direct negative statistically significant effect on operational efficiency (return on asset). Similarly, firm size (FIRMSZ) was found to have a positive impact on the operational efficiency of non-financial firms in Ghana at a statistical level of 5% (Coef. = 0.0117779; p-value = 0.003). However, Liquidity (LIQ) was found to have a negative impact (Coef. = -0.00353; p-value = 0.091) on operational efficiency. The impact of ROE was found to have no statistically significant impact on the operational efficiency of these institutions. In relation to the second objective, which was to explore the effect of short-term debt on the operational efficiency of listed non-financial firms in Ghana, the study relied on the random effects model to investigate such relationships. The result showed that the short-term debt had a negative and significant effect on the operational efficiency of the non-financial firms (Coef. = -0.0272532; p-value = 0.001). Firm size had a positive and significant effect (Coef. = 0.0114258; p-value = 0.009), while liquidity had a negative and significant effect (Coef. = 0.0035223; p-value = 0.096), both of which were significant at a level of 5% and 10%, respectively. ROE was insignificant in its effect on the operational efficiency of these listed firms (Coef. = 0.00002342; p-value = 0.972).

Finally, the study examined the impact of total debt on the operational efficiency of listed non-financial firms in Ghana. Total debts had a negative significant in affecting the operational efficiency of non-financial firms in Ghana (Coef. = -0.02053; p-value = 0.017). Liquidity had a negative impact (Coef. = -0.00355; p-value = 0.84), while firm size had a positive impact (Coef. = 0.01172; p-value), and both of these variables are significant. ROE was found to be insignificant (Coef. = 0.000188; p-value = 0.975).



## 6. CONCLUSIONS AND RECOMMENDATIONS

This study's main objective was to evaluate how capital structure affected listed non-banking financial enterprises' performance. Specifically, the study aims to evaluate the effects of long-term debt on listed manufacturing firms' financial performance, investigate the effects of short-term debt on financial performance, and investigate the effects of total debt on the financial performance of listed manufacturing firms in Ghana. The study employed panel data from these non-financial companies that covered the years 2010 to 2021. Based on the study's findings, the researchers draw the conclusion that capital structure of non-financial enterprises has a significant impact on their operational efficiency. The study comes to the additional conclusion that a firm's return on assets decreases as its amount of debt accumulation rises. Also, some firm-specific variables have small but significant impacts on enterprises' profitability.

Ultimately, on the basis of the findings, the study recommends that, to ensure that there is adequate cash available for the company's ongoing operations, it is advised that corporate finance managers ensure working capital is managed properly and responsibly. Also, in the extreme case where a short-term borrower facility is unavoidably required and must be acquired, the study advises administrators to make sure that the total amount of short-term obligations taken on as a percentage of the capital structure is less than the sum of non-current liabilities and equity in total assets. Because, despite their size, short-term liabilities may have a positive effect on operational efficiency that outweighs their negative effects, finally, although both types of debt have a considerable detrimental impact on the operational efficiency of non-financial companies, managers are advised to choose long-term debt as opposed to short-term debt because the effect is not as great.

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## REFERENCES

- Abdullah, H., & Tursoy, T. (2021). Capital structure and firm performance: Evidence of Germany under IFRS adoption. *Review of Managerial Science*, 15(2), 379-398. <https://doi.org/10.1007/s11846-019-00344-5>
- Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, 6(5), 438-445.
- Adu, G. O. (2016). *Effect of capital structure on firm value: A case study of listed manufacturing firms in Ghana*. Doctoral Dissertation, University of Cape Coast.
- Akeem, L. B., Terer, E., Kiyanjui, M. W., & Kayode, A. M. (2014). Effects of capital structure on firm's performance: Empirical study of manufacturing companies in Nigeria. *Journal of Finance and Investment Analysis*, 3(4), 39-57.
- Akiyomi, J. O. (2013). Effect of capital structure on firm performance: Evidence from Nigerian manufacturing industry. *International Journal of Innovative Research and Studies*, 2(9), 468-480.
- Akomeah, E., Bentil, P., & Musah, A. (2018). The Impact of capital structure decisions on firm performance: The case of listed non-financial institutions in Ghana. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 8(4), 1-15. <https://doi.org/10.6007/ijarafms/v8-i4/5050>
- Al Muhairi, M., & Nobanee, H. (2019). Sustainable financial management. Available at SSRN 3472417. <https://doi.org/10.2139/ssrn.3472417>
- Ali, I. (2011). Determinants of capital structure: Empirical evidence from Pakistan. Available at SSRN 1977024. <https://doi.org/10.2139/ssrn.1977024>
- Antwi, S., Mills, E. F. E. A., & Zhao, X. (2012). Capital structure and firm value: Empirical evidence from Ghana. *International Journal of Business and Social Science*, 3(22), 103-111.
- Awunyo-Vitor, D., & Badu, J. (2012). Capital structure and performance of listed banks in Ghana. *Global Journal of Human Social Science Research*, 12(5), 1-7.
- Berger, A. N., & Udell, P. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking & Finance*, 30(4), 1065-1102. <https://doi.org/10.1016/j.jbankfin.2005.05.015>
- Chang, F.-M., Wang, Y., Lee, N. R., & La, D. T. (2014). Capital structure decisions and firm performance of Vietnamese soes. *Asian Economic and Financial Review*, 4(11), 1545-1563.
- Ezeani, E., Kwabi, F., Salem, R., Usman, M., Alqatamin, R. M. H., & Kostov, P. (2023). Corporate board and dynamics of capital structure: Evidence from UK, France and Germany. *International Journal of Finance & Economics*, 28(3), 3281-3298. <https://doi.org/10.1002/ijfe.2593>
- Gill, A., Bigger, N., & Mathur, N. (2011). The effect of capital structure on profitability: Evidence from the United States. *International Journal of Management*, 28(4), 3-16.
- Hart, O., & Moore, J. (1994). A theory of debt based on the inalienability of human capital. *The Quarterly Journal of Economics*, 109(4), 841-879. <https://doi.org/10.2307/2118350>
- Jensen, M., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, Agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360. [https://doi.org/10.1016/0304-405x\(76\)90026-x](https://doi.org/10.1016/0304-405x(76)90026-x)

- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323-329.
- Khatib, S., Abdullah, D. F., Hendrawaty, E., & Yahaya, I. S. (2020). Corporate governance mechanisms and capital structure. *Journal of Critical Reviews*, 7(16), 463-471.
- Kim, E. H. (1978). A mean-variance theory of optimal capital structure and corporate debt capacity. *The Journal of Finance*, 33(1), 45-63. <https://doi.org/10.1111/j.1540-6261.1978.tb03388.x>
- Köksal, B., & Orman, C. (2015). Determinants of capital structure: Evidence from a major developing economy. *Small Business Economics*, 44(2), 255-282. <https://doi.org/10.1007/s11187-014-9597-x>
- Kraus, A., & Litzberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance*, 28(4), 911-922. <https://doi.org/10.1111/j.1540-6261.1973.tb01415.x>
- Lin, S. K., Chang, C. C., & Powers, M. R. (2009). The valuation of contingent capital with catastrophe risks. *Insurance: Mathematics and Economics*, 45(1), 65-73.
- Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance*, 34(3), 621-632. <https://doi.org/10.1016/j.jbankfin.2009.08.023>
- Mathanika, T., Vinothini, A. G., & Paviththira, R. (2015). *Impact of capital structure on firm value: Evidence from listed manufacturing companies on Colombo stock exchange (CSE) in Sri Lanka*. Paper presented at the Proceeding of International Conference on Contemporary Management.
- Meero, A. A. (2015). The relationship between capital structure and performance in Gulf countries banks: A comparative study between Islamic banks and conventional banks. *International Journal of Economics and Finance*, 7(12), 140-154. <https://doi.org/10.5539/ijef.v7n12p140>
- Mensah, K., & Amenuvor, F. E. (2022). The influence of marketing communications strategy on consumer purchasing behaviour in the financial services industry in an emerging economy. *Journal of Financial Services Marketing*, 27(3), 190-205. <https://doi.org/10.1057/s41264-021-00121-0>
- Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *The American Economic Review*, 48(3), 261-297.
- Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *The American Economic Review*, 53(3), 433-443.
- Mumtaz, R., Rauf, S. A., Ahmed, B., & Noreen, U. (2013). Capital structure and financial performance: Evidence from Pakistan (Kse 100 Index). *Journal of Basic and Applied Scientific Research*, 3(4), 113-119.
- Musah, A. (2018). The impact of capital structure on profitability of commercial banks in Ghana. *Asian Journal of Economic Modelling*, 6(1), 21-36. <https://doi.org/10.18488/journal.8.2018.61.21.36>
- Musiega, M. G., Chitiavi, M. S., & Ve Alala, B. O. (2013). Capital structure and performance: Evidence from listed nonfinancial firms on Nairobi Securities Exchange (NSE) Kenya. *International Journal for Management Science and Technology*, 1(2), 54-63.
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-221. [https://doi.org/10.1016/0304-405x\(84\)90023-0](https://doi.org/10.1016/0304-405x(84)90023-0)
- Nassar, S. (2016). The impact of capital structure on financial performance of the firms: Evidence from Borsa Istanbul. *Journal of Business & Financial Affairs*, 5(2), 1-4. <https://doi.org/10.4172/2167-0234.1000173>
- Ogbulu, O. M., & Emeni, F. K. (2012). Determinants of corporate capital structure in Nigeria. *International Journal of Economics and Management Sciences*, 1(10), 81-96.
- Pratheepkanth, P. (2011). Reward system and its impact on employee motivation in commercial bank of Sri Lanka plc, in Jaffna district. *Global Journal of Management and Business Research*, 11(4), 85-92.
- Pratiwi, R. D. (2020). Do capital structure, profitability, and firm size affect firm value? *Jurnal Penelitian Ekonomi Dan Bisnis*, 5(2), 194-202. <https://doi.org/10.33633/jpeb.v5i2.3717>
- Ramadan, Z. S., & Ramadan, I. Z. (2015). Capital structure and firm's performance of Jordanian manufacturing sector. *International Journal of Economics and Finance*, 7(6), 1-6. <https://doi.org/10.5539/ijef.v7n6p279>
- Ross, S. A. (1977). The determination of financial structure: The incentive-signalling approach. *The Bell Journal of Economics*, 8(1), 23-40. <https://doi.org/10.2307/3003485>
- Saad, N. M. (2010). Corporate governance compliance and the effects to capital structure in Malaysia. *International Journal of Economics and Finance*, 2(1), 105-114. <https://doi.org/10.5539/ijef.v2n1p105>
- Schulz, T. (2017). *The impact of capital structure on firm performance: An investigation of Dutch unlisted SMEs*. Bachelor's Thesis, University of Twente.
- Sohail, N., Iqbal, J., Tariq, H., & Mumtaz, R. (2013). Determinants of commercial banks profitability: Panel data evidence from Pakistan. *Research Journal of Finance and Accounting*, 4(10), 67-76.
- Umar, M., Tanveer, Z., Aslam, S., & Sajid, M. (2012). Impact of capital structure on firms' financial performance: Evidence from Pakistan. *Research Journal of Finance and Accounting*, 3(9), 1-12.
- Vijayakumaran, S., & Vijayakumaran, R. (2019). Corporate governance and capital structure decisions: Evidence from Chinese listed companies. *The Journal of Asian Finance, Economics and Business*, 6(3), 67-79.
- Voulgaris, F., Asteriou, D., & Agiomirgianakis, G. (2004). Size and determinants of capital structure in the Greek manufacturing sector. *International Review of Applied Economics*, 18(2), 247-262. <https://doi.org/10.1080/0269217042000186714>

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