



# The Impact of Capital Structure on the Financial Performance of Financial Institutions in Ghana

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**Abstract:** The study aimed to discover how capital structures (capitalization ratios and debt-to-EBITDA ratios) affect the financial performance of Ghanaian financial institutions. The study selected 15 financial institutions in Ghana using a purposive sampling strategy. Ten (10) financial organizations are listed on the Ghana Stock Exchange, while the remaining five (5) are not. The data was gathered from their audited annual report. The Stata software analyzed the data into fixed and random effects. The Hausman specification test was used to determine the appropriate method to present the study results. The random effect was considered the appropriate method to present the study's findings. We discovered that the capitalization ratio has a negative effect on the net interest margin, loan-to-asset ratio, and return on assets. The debt-to-EBITDA ratio was discovered to have a negative effect on net interest margin and return on an asset but a positive effect on the loan-to-asset ratio. The debt-to-EBITDA ratio was discovered to have a statistically significant effect on net interest margin and return on assets. We also found that financial institutions that are listed on Ghana's stock exchange have a statistically significant effect on net interest margin. In contrast, financial institutions that are not listed do not. The use of debt financing was found to have a statistically significant impact on the performance of financial institutions compared to equity financing. The use of debt financing gives managers a chance to take advantage of the tax shield by lowering the amount of tax they have to pay to the government. The use of debt financing helps maximize the wealth of shareholders.

**Keywords:** Capital Structure, Capitalization Ratio, Financial Institutions, Ghana, Net Interest Margin

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## 1. Introduction

No nation, whether developing or developed, can function without a robust banking sector. The financial system helps economies flourish. Savings can be invested wisely to achieve this growth. Banks play a crucial role in keeping the economy running smoothly, and it is widely acknowledged that healthy banking is necessary for long-term growth. Dikau & Volz [17]. Financial intermediation and economic acceleration through the banking sector's conversion of deposits into productive investments are other significant economic functions. Clark [15]. Financial institutions such as banks play an essential role as stable sources of capital. There has been a dramatic increase in reliance on capital markets due to the proliferation of investment and financing

opportunities made possible by the globalization of economic policy and financial markets [19]. Start-up costs and ongoing working capital requirements are essential considerations for every corporation. Generally speaking, debt and equity capital make up the two most significant chunks of available funding options. Nasimi [39]. A company's capital structure can be defined as the ratio of equity to debt in its total capital. Both debt and equity capital can be used to fund an organization's assets. Thus, the capital structure equals the total of the firm's net value, preferred stock, and long-term debt (Namalathasan [38]). The capital structure of a company is its unique combination of debt (both short- and long-term) and equity financing (Mudany, Letting & Gituro; Usman [37, 57]). Organizations may also enter these markets by issuing bonds and other hybrid securities. Kim, Oh, & Kiymaz [28]. The hybrid securities include elements of equity and debt

instruments.

The organization's capital structure is difficult to ascertain. Managers of financial resources often struggle with settling on a definitive capital structure. An optimal capital structure has the lowest weighted average cost of capital Akeem *et al.* [2]. To function, a firm will use several different financing mechanisms. To attain an optimal capital structure, banks must pick and tweak their strategic financing mix to optimize value and prevent being too or under-g geared. The choice of a suitable financial structure is crucial for any company. This choice is significant because it affects an organization's responsiveness to external competitive pressures and the requirement to optimize returns to different organizational constituents. Managers have a critical problem deciding how much debt and equity to use to establish the optimal capital structure, which reduces the firm's cost of capital and maximizes the return to the business's owners. Managers of a company's financial resources will go to great lengths to find the best way to combine these factors to increase profits and stock prices.

Awunyo-Vitor and Badu [3] researched financial institutions in Ghana to determine the appropriate capital structure for financial institutions and how it can affect their performance. The ratio of total debt to total capital was found to have a negative and statistically significant impact on return on investment. Musah [28] also analyzed how the capital structure affected Ghana's financial institutions. The study found that short-term and total debt has a negative and statistically significant effect on ROA. In contrast, the total debt-to-asset ratio positively and significantly influences ROA. However, other methods of funding company operations include capitalization ratios and debt-to-EBITDA ratios. However, researchers in Ghana have yet to delve further into those variables. To the best of our knowledge, research has yet to be conducted on how these variables (capitalization and debt-to-EBITDA ratios) contribute to enhancing business or financial performance by financial institutions. The study's goal is to shed light on the relationship between capital structure decisions and the performance of Ghana's financial institutions, with a particular emphasis on the capitalization ratio and debt to EBITDA as a capital structure variable.

The capital structure choice is crucial because of the necessity to optimize the returns of the firms and the impact such a selection has on the firm's ability to deal with its competitive environment. There are a variety of capital structure options available to businesses. Indeed, the capital structure choice is the most critical one a company must make. To achieve a company's primary objective of maximizing the value of its shareholders' investment, its leaders must possess a thorough understanding of the financial management of businesses. Such a choice would also affect a company's resilience in intense competition. A company's capital structure is crucial in determining its financial health. Increased profits are one of many reasons to think about a company's capital structure; how it is set up also affects its ability to

handle competitive pressures.

## 2. Literature Reviews

### Theoretical review

#### The idea of capital competence

Capital competency is a relatively new concept that is still being investigated. Sjögren and Zackrisson [51] argued that capital competence is the management of the composition of debt and equity. This concept has been established based on the need to have an optimal level of capital that will position firms, especially banks, in a better position to earn huge profits, avoid bankruptcy, and grow shortly. People who support knowledge management do a lot to improve how a company works and what it does every day. This makes knowledge management an essential part of any successful business.

#### Modigliani and Miller Theory (M-M Theory)

Modigliani and Miller [35] formulated two assertions that explain optimal capital structure variations and establish the relationship between capital competencies, which they called optimal capital structure. The M&M 1 states that a firm's cost of capital is constant regardless of its leverage level, suggesting that there is no such thing as an optimal capital structure or level of capital competence at either the firm or industry level. The average cost of capital stays the same regardless of how much leverage a bank takes, meaning that capital competency (optimal capital structure) has no bearing on profitability. Modigliani & Miller [35]. This point of view assumes a bond between the principal owners of the property and the agent or steward chosen to take care of specific tasks (Saeed and Hamawandy [45]).

#### The pecking order theory perception of capital structure

Examining the various approaches used to fund banking operations is essential for gaining insight into the impact that capital has on the financial performance of banks. This theory stems from the observation that various forms of financing have varying impacts on business success. Commercial exchanges and FDI are crucial cogs in the economic growth machinery of any nation (Sokhanvar & Jenkins [53]). It demonstrates that progress on a wide range of developmental concerns is inadequate in developing nations. The core tenet of the limitation's theory is that successful businesses seek out profit both now and in the future. This is crucial for providing insights into the dynamics of the connection between capital structure and financial results. Accordingly, the study used the pecking order theory to shed light on how capital affects the financial performance of banks in Ghana.

#### Empirical review

Niresh [40] explored the relationship between capital structure and profitability using banks in Sri Lanka as his subject. According to the study, the debt-to-equity ratio significantly impacts the net interest margin.

Saeed, Gull, and Rasheed [44] investigated the influence that a capital structure has on the performance of the banking industry in Pakistan. They discovered that the ratio of short-

term debt to total capital significantly positively affects ROA. However, the ratio of long-term debt to total capital significantly negatively affects ROA.

Goyal [20] researched to investigate the effect of India's listed public sector banks' capital structures on their overall performance. According to the study's findings, ROA is negatively impacted by both long-term debt and overall debt to assets. In contrast, ROA is positively impacted by short-term debt to total assets and the size of financial institutions.

Hailu [22] investigated how the capital structures of commercial banks in Ethiopia affected the profitability of those institutions. According to the study's findings, the ratio of total debt to assets has a statistically significant negative effect on the net interest margin. In contrast, the size of commercial banks in Ethiopia has a statistically significant and positive effect on the net interest margin. Both of these findings are supported by statistical evidence.

Haryanto [23] performed an analysis of the factors that have an effect on profitability in the banking business. These factors included credit, bank capital, capital structure, efficiency, and risk. According to the study's findings, the debt-to-equity ratio has a favorable and significantly positive impact on ROA.

Zafar, Zeeshan, and Ahmed [60] investigate how the capital structures of 25 banks listed on the Pakistan stock market affect the banks' overall performance. They concluded that a positive association exists between ROA and short-term debt to total assets, long-term debt to total assets, and total debt to total assets; nevertheless, a negative relationship exists between ROA and debt to equity. In addition, they discovered that both short-term and long-term debt has a positive and statistically significant influence on ROA. However, the overall debt-to-asset ratio and the debt-to-equity ratio both had a negative effect on ROA.

Siddik, Kabiraj, and Joghee [49] investigated the effects of capital structure on the performance of banks in developing economies by employing financial institutions in Bangladesh as their research subjects. They concluded that a negative link exists between ROA and short, long, and total debt-to-asset ratios. They also observed that short, long, and total debt-to-asset ratios had a negative effect that is statistically significant on ROA.

Sivalingam and Kengatharan [50] investigated Sri Lanka's commercial banks to analyze the country's capital structure and financial performance. They concluded that ROA is negatively impacted by overall, short-term, and long-term debt. However, ROA is positively impacted by the size of the financial institutions. In addition, it was discovered that both long-term debt and the total debt-to-asset ratio had a statistically significant effect on ROA.

Smoking and Ratanak [52] investigated Cambodia's domestic and commercial banks to better understand their capital structure, growth, and profitability. They concluded that the debt-to-equity ratio had a statistically significant negative effect on ROA.

Noreen [41] investigated how the capital structures of

Islamic banks in Pakistan compare to conventional banks in terms of their profitability. The study's results show that the ratio of conventional banks' debt to assets positively affects ROA. However, the ratio of conventional banks' debt to equity and the size of conventional banks has statistically significant negative effects on ROA. They concluded that the ratios of debt to assets and debt to equity have a detrimental impact on the ROA of Islamic banks in Pakistan, and this effect is statistically significant. ROA is positively impacted when there are more Islamic banks.

Bhatt and Jain [7] researched the profitability of commercial banks in Nepal and assessed their capital structures. They concluded that ROE has a positive association with long-term debt and the size of the financial institution. On the other hand, ROE has a negative relationship with short-term debt. They concluded that the size of the financial institution and long-term debt both positively affect ROE, whereas short-term debt has a negative effect on ROE.

Zaman, Ullah, and Ali's [62] study investigated the relationship between the capital structure and profitability of conventional and Islamic banks listed on the Karachi Stock Exchange. It was found that the size of the financial institution had a statistically significant positive effect on ROA. In contrast, the debt-to-equity ratio had a statistically significant negative effect on ROA.

### 3. Methodology

Sampling techniques and process of data gathering

A study can only focus on specific countries, organizations, or people. The study examined how capital structures affect performance using financial institutions in Ghana. The study employed a purposive sampling strategy to choose the financial institutions that would be included in the study. Purposive sampling was utilized because the study included both listed and non-listed banking institutions in Ghana. The investigation excluded financial organizations whose financial statements had not been audited. Also, financial organizations that needed to have up-to-date data in their annual reports, from which the data was taken, were left out.

The study included fifteen financial institutions in all. Ten (10) of the listed financial firms were listed on the Ghana stock exchange, while five (5) were not. The annual reports of the chosen financial firms were obtained from their respective websites. The data was collected over 10 years, from 2011 to 2020. The study used 150 firm years of observation.

Measurement of the dependent and independent variables.

The study used three dependent, four independent, and three control variables. The definitions of the variables are outlined in Table 1.

The research models

The study used three models to investigate the impact of capital structure on the financial performance of Ghanaian financial institutions.

Model 1:

$$NIM = \beta_0 + \beta_1 CAPRATIO + \beta_2 DEBTTDA + \beta_3 DEASSET + \beta_4 DEBEQUITY + \beta_6 REVUWGROW + \beta_7 LISTED + \beta_8 SIZE + \varepsilon$$

Model 2:

$$LOANASSET = \beta_0 + \beta_1 CAPRATIO + \beta_2 DEBTTDA + \beta_3 DEASSET + \beta_4 DEBEQUITY + \beta_6 REVUWGROW + \beta_7 LISTED + \beta_8 SIZE + \varepsilon$$

Model 3:

$$ROA = \beta_0 + \beta_1 CAPRATIO + \beta_2 DEBTTDA + \beta_3 DEASSET + \beta_4 DEBEQUITY + \beta_6 REVUWGROW + \beta_7 LISTED + \beta_8 SIZE + \varepsilon$$

#### Data analysis

The fixed effect model and the random effect model were used to present the results of the data analysis. If the null hypothesis for the Hausman specification test fails to be rejected, then the random effect model is considered to be better than the fixed effect model. If the alternative

hypothesis for the Hausman specification test is accepted, then the fixed effect model is considered to be better than the random effect model. The Stata software was used to analyze the data into the fixed effect model and the random effect model. The Hausman specification test was used to decide which model is considered to be appropriate.

**Table 1.** Definitions and formulas for the variables.

| Variable                               | Acronyms  | Formulae   | Authors   |
|--|-----------|--|---|
| Dependent variable                     |           |  |   |
| Net interest margin                    | NIM       | (Interest revenue – interest) expense / average earning asset  | Niresh; Menicucci, & Paolucci [40, 34]                      |
| Loan to assets ratio                   | LOANASSET | Total loans advance to corporate and individuals / total earning assets  | Bhattarai; Prabowo et al [8, 42]                            |
| Return on asset                        | ROA       | Net income after tax / total asset *100  | Siddik, Kabiraj & Joghee; Sivalingam & Kengatharan [49, 50] |
| Independent variables                  |           |  |   |
| Capitalization ratio                   | CAPRATIO  | Total debt / (total debt + total shareholders' equity)   | Arnold; Brigham, E. F., & Houston [1, 10]                   |
| Debt to EBITDA ratio                   | DEBTTDA   | Total debt/ earnings before interest and tax and depreciation  | Bender; Brigham & Daves, [6, 9]                             |
| Total leverage ratio                   | DEASSET   | Total debt / total asset   | Noreen; Bhatt & Jain [41, 7]                                |
| Debt to equity ratio                   | DEBEQUITY | Total debt / total equity  | Sokang, & Ratanak, Zaman, Ullah & Ali [52, 62]              |
| Controlling variables                  |           |  |   |
| Revenue growth                         | REVUWGROW | (Current years revenue – previous years revenue)/ previous year revenue *100   | Shehzad, De Haan & Scholtens.; Lele [47, 30]                |
| Listed                                 | LISTED    | If the financial institutions are listed in Ghana's stock market<br>If the financial institutions are not listed in Ghana's stock market = 0 | Composed by the authors                                     |
| The size of the financial institutions | SIZE      | Natural log of total asset   | Marandu & Sibindi; Mehzabin et al. [32, 33]                 |

## 4. Results and Discussion

**Table 2.** Descriptive Statistics.

| Variable             | Obs | Mean   | Std. Dev. | Min    | Max    |
|----------------------|-----|--------|-----------|--------|--------|
| ROA                  | 150 | 2.576  | 1.871     | -3.7   | 6.96   |
| Net interest margin  | 150 | 7.293  | 2.059     | .96    | 15.7   |
| Loan to asset ratio  | 150 | .421   | .248      | .1     | 2.97   |
| Capitalization ratio | 150 | .954   | .26       | .691   | 4.08   |
| Debt to EBITDA       | 150 | 29.28  | 47.84     | 2.37   | 256.23 |
| Debt total asset     | 150 | .858   | .042      | .65    | .95    |
| Debt to equity       | 150 | 6.96   | 5.069     | .13    | 60.67  |
| Revenue Growth       | 150 | 25.28  | 38.86     | -47.04 | 404.53 |
| Listed               | 150 | .667   | .473      | 0      | 1      |
| Firm size            | 150 | 21.407 | 1.489     | 16.658 | 23.488 |

Table 2 shows the descriptive statistics for the variables used for the three models. The minimum ROA of the

financial institutions was-3.7%, the highest ROA was 6.96%, and the average ROA was 2.58%. The minimum net interest

margin was 0.96%, with the highest averages of 15.7% and 7.29%, respectively. The minimum loan-to-asset ratio of the financial institutions was 0.1; the maximum was 2.97, and the average was 0.41. The average capitalization ratio was 0.954, the minimum was 0.691, and the highest was 4.08. The average debt to EBITDA of the financial institutions was 29.28. The minimum was 2.37, and the maximum was 256.23. The minimum debt to total assets was 0.65, the highest was 0.95, and the average was 0.856. The minimum debt to equity of the financial institutions was 0.13, and the

average and the highest were 6.96 and 60.67. The worst revenue growth by the financial institution was -47.04%, with an average and highest revenue growth of 25.28% and 404.45%, respectively. Suppose the financial institution is listed on the Ghana stock market. In that case, it is marked 1, but 0 represents the financial institutions included in the study but not listed in the Ghana stock market. The financial institutions listed on Ghana's stock market constituted 68% of the total, while the non-listed financial institutions comprised 32%.

**Table 3.** Matrix of correlations.

| Variables                | (1)    | (2)    | (3)    | (4)    | (5)    | (6)    | (7)    | (8)    | (9)    | (10)  |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| (1) ROA                  | 1.000  |        |        |        |        |        |        |        |        |       |
| (2) Net interest margin  | 0.379  | 1.000  |        |        |        |        |        |        |        |       |
| (3) Loan to asset ratio  | -0.189 | -0.020 | 1.000  |        |        |        |        |        |        |       |
| (4) Capitalization ratio | 0.010  | 0.005  | -0.019 | 1.000  |        |        |        |        |        |       |
| (5) Debt to EBITDA       | -0.550 | -0.279 | 0.172  | -0.039 | 1.000  |        |        |        |        |       |
| (6) Debt to total asset  | -0.317 | -0.276 | -0.029 | 0.038  | 0.235  | 1.000  |        |        |        |       |
| (7) Debt to equity       | -0.193 | -0.181 | -0.052 | -0.006 | 0.107  | 0.418  | 1.000  |        |        |       |
| (8) Revenue Growth       | 0.246  | 0.036  | 0.008  | -0.038 | -0.168 | -0.125 | -0.062 | 1.000  |        |       |
| (9) Listed               | 0.110  | 0.144  | 0.058  | 0.076  | -0.106 | -0.072 | -0.002 | -0.097 | 1.000  |       |
| (10) Firm size           | 0.297  | 0.429  | -0.207 | 0.079  | -0.270 | -0.146 | -0.049 | -0.065 | -0.056 | 1.000 |

The matrix correlation analysis shows the relationship between the independent variables (ROA, net interest margin, and loan-to-asset ratio), the independent variables (capitalization ratio, debt to EBITDA, debt to total assets, and equity to debt ratio), and the controlling variables (growth, listing, and firm size). The results show that the capitalization ratio of the financial institutions has a weakly positive relationship with ROA and net interest margin but a negative relationship with the loan-to-asset ratio. Financial institutions' debt-to-EBITDA ratio has a negative relationship with ROA and net interest margin but a weakly positive relationship with loan-to-asset ratio.

The debt-to-total-asset ratio of financial institutions is inversely related to ROA, net interest margin, and loan-to-asset ratio. The findings are consistent with those of Siddik, Kabiraj, Joghee, Sivalingam, and Kengatharan [49, 50], who discovered that total debt to assets has a negative connection with ROA. The findings of Zafar, Zeeshan, Ahmed, and Musah [60, 36] that total debt to total assets has a positive relationship with ROA are incongruent with the study findings. Furthermore, the debt-to-equity ratio of financial institutions is inversely related to ROA, net interest margin, and loan-to-asset ratio. The findings by Zafar, Zeeshan, and Ahmed [60] agree with the study's conclusion that the debt-to-equity ratio has a negative relationship with ROA. The table also shows that the revenue growth of financial institutions and financial institutions listed on the Ghana Stock Exchange has a positive relationship with ROA, net interest margin, and loan-to-asset ratio. ROA, net interest margin, and debt to total assets are all positively linked to the financial institution's size, whereas the loan-to-asset ratio is negatively related. Many scholars (Iacobucci et al.; Kalnins; Shrestha [24, 25, 48]) have used matrix correlation analysis to find multicollinearity between independent variables. According to Daoud [16], multicollinearity occurs when the

independent variables have a substantial correlation. According to Chakiso [14], if the coefficients of the independent variables are more significant than 0.80, there is multicollinearity. However, if the coefficients of the independent variables are less than 0.80, there is no multicollinearity. The results show no multicollinearity since the independent variables are not substantially correlated. Many scholars have utilized VIF to test for multicollinearity between independent variables (Shrestha; Senaviratna & Cooray; Kim [24, 46, 29]). According to Tsagris and Pandis [56], if the VIF for the independent variables is larger than 5, this indicates the presence of multicollinearity. The VIF for each independent variable is computed (see appendix for table 9). Each independent variable had a VIF of less than 5, and the mean VIF was 1.138. The VIF results also indicate that there is no multicollinearity.

**Table 4.** Diagnostic tests.

| Source   | chi2   | Df | P     |
|--|--------|----|-------|
| Heteroskedasticity   | 40.260 | 34 | 0.213 |
| Skewness   | 6.370  | 7  | 0.497 |
| Kurtosis   | 4.100  | 1  | 0.043 |
| Total  | 50.730 | 42 | 0.167 |
| White's test for Ho: homoskedasticity<br>against Ha: unrestricted heteroskedasticity<br>chi2(34) = 40.26<br>Prob > chi2 = 0.2127<br>Cameron & Trivedi's decomposition of IM-test |        |    |       |

Wooldridge [59] outlined some ordinary least square (OLS) assumptions that needed to be met. These assumptions include heteroskedasticity, normality, and multicollinearity. Wooldridge [59] advises that data should be homoscedastic rather than heteroscedastic. A Breusch-Pagan test was carried out to determine whether the data used for the study were homoscedastic or heteroscedastic. Garcia-Cerrutt [18]

highlighted heteroskedasticity occurs when the independent variables strongly correlate with the error term. The independent variables should not strongly correlate with the error term. The results from the Breusch-Pagan test suggest that the null hypothesis should be accepted since the probability value is greater than 5%. The results show that the data used is homoscedastic but not heteroscedastic. Another assumption Wooldridge [59] outlined is that the data should be normally distributed. Many researchers have used the Jarque-Bera test to determine whether data is normally

distributed or not. Brys, Hubert & Struyf; Sadat & Hasan; Khatun [12, 43, 26]. Also, another way to test whether the data used is normally distributed is to use skewness and kurtosis. Kim, Cain, Zhang, & Yuan [27, 13]. The null hypotheses for skewness and kurtosis are that the data is normally distributed, and the alternative hypotheses are that the data is not normally distributed. The null hypotheses for skewness and kurtosis are accepted; therefore, the results show that the data is normally distributed.

*Table 5. Regression results for the three models.*

|                        | Model 1 (Random effect) | Model 2 (Random effect) | Model 3 (Random effect) |
|------------------------|-------------------------|-------------------------|-------------------------|
| Capitalization ratio   | -.074 (.537)            | -.001 (.078)            | -.093 (.458)            |
| Debt to EBITDA         | -.006 (.004)            | .001 * (.001)           | -.018 *** (.003)        |
| Debt to total asset    | -9.367 ** (3.799)       | -.37 (.546)             | -6.988 ** (3.238)       |
| Debt to equity         | -.024 (.03)             | -.002 (.004)            | -.023 (.026)            |
| Revenue Growth         | .002 (.004)             | 0 (.001)                | .005 (.003)             |
| Listed                 | .63 ** (.294)           | .032 (.044)             | .307 (.251)             |
| Firm size              | .549 *** (.101)         | -.029 ** (.014)         | .245 *** (.086)         |
| Constant               | 3.556 (3.993)           | 1.313 ** (.583)         | 3.904 (3.407)           |
| Number of observations | 150                     | 150                     | 150                     |
| R-squared              | 0.272                   | 0.070                   | 0.389                   |
| F- tests               | 65.669                  | 10.747                  | 92.388                  |

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Table 5 summarizes the results of the three-regression model used for the study. Many researchers have presented their results using both fixed and random effects. (Guggenberger; Bell & Jones; Bell, Fairbrother & Jones [21, 4, 5]). According to Clark & Linzer [15], Hausman specification tests should be used to decide which method is appropriate to present results and whether to use the fixed or random effect. The null hypothesis for the Hausman specification states that the random effect is appropriate, and the alternative hypothesis states that the fixed effect is appropriate. To choose between the fixed effect and the random effect, Hausman specification tests were carried out for all three models (see the appendix for tables 6, 7, and 8). The null hypothesis for the three models was accepted. The results show that the random effect is more appropriate than the fixed effect. Therefore, the results of the three models were presented using random effects.

The capitalization ratio of financial institutions has a negative impact on ROA, net interest margin, and loan-to-asset ratio. Capitalization ratios measure a financial institution's debt to its capital base, which includes funds from lenders and stockholders. The use of too much debt by Ghanaian financial institutions compared to equity would negatively impact their performance. According to the trade-off theory, organizations should rely heavily on internal funding before contemplating an external investment. The superb strategy to increase organizational performance relies on internal findings. Zaied, Louati, & Affes [61]. The capitalization ratio is not thought to have a statistically significant impact on net interest margin, loan-to-asset ratio, or ROA. The reliance on the capitalization ratio would not help financial institutions; rather, it would undermine their financial performance. The study findings support the

findings of Awunyo-Vitor and Badu [3], who discovered that total debt to total capital negatively influenced ROA.

According to Brunnermeier and Krishnamurthy [11], debt to EBITDA reflects how long the company will be able to meet its obligations if all of its net cash flow is directed toward debt repayment. The higher the value of the indicator, the greater the degree of debt load and, hence, the risk of not being able to satisfy financial obligations. Financial institutions' debt-to-EBITDA ratio has a negative impact on net interest margin and ROA but a positive impact on net loan-to-asset ratio. The debt-to-EBITDA ratio is one of the covenants required by banks for corporate lending. To prevent having the entire loan come due at once, a corporation must maintain the agreed-upon level of debt at all times. At significance levels of 1% and 10%, debt to EBITDA is found to have a statistically significant impact on the loan-to-asset ratio and ROA. However, it has no statistically significant impact on the net interest margin. Debt EBITDA would improve Ghanaian financial institutions' financial performance, particularly by influencing their loan-to-asset ratio and ROA.

The debt-to-total-asset ratio of financial institutions has a negative impact on net interest margin, loan-to-asset ratio, and ROA. The debt-to-total-asset ratio of a financial institution has a statistically significant effect on its net interest margin and ROA at a 5% significance level but not on its loan-to-asset ratio. According to the findings of Saeed, Gull, and Rasheed [44], long-term debt to total capital has a negative effect on ROA. Goyal [20] discovered that long-term debt and overall debt to assets have a negative impact on ROA, which is supported by the study findings. A study by Zafar, Zeeshan, Ahmed and Siddik, Kabiraj, and Joghee [60, 49] discovered that total debt to the asset has a negative

influence on ROA, and their findings back up the study's conclusions. Hailu [22] discovered that the total debt-to-asset ratio has a negative and statistically significant influence on the net interest margin. The findings are exactly what the study found out. However, another researcher, Lim Noreen [31, 41], who investigated the impact of capital structure on financial institution performance, discovered that debt to total assets positively affects ROA, which contradicts the study's conclusions.

The debt-to-equity ratio of financial institutions has a negative impact on net interest margin, loan-to-asset ratio, and ROA. On the other hand, the debt-to-equity ratio has no statistically significant effect on the net interest margin, loan-to-asset ratio, or return on assets (ROA). Nireesh [40] discovered that the debt-to-equity ratio has a negative and significant effect on the net interest margin, which is consistent with the study's findings. The following researchers (Sokang and Ratanak; Noreen; Zaman, Ullah, and Ali [52, 41, 62]) discovered that financial institutions' debt to equity negatively influences ROA, and the study's findings back their conclusions. According to Haryanto [23], equity debt has a positive and statistically significant effect on ROA. The findings of Haryanto [23] contradict the findings of the study. According to Tripathy and Shaik [55], using the optimal debt-to-equity ratio would enhance business performance. Financial organizations were not using an optimal debt-to-equity ratio but instead used more debt than equity to support their operations, which contributed to their negative performance.

Financial institutions' revenue growth positively affects their net interest margin and ROA but does not affect their net loan-to-asset ratio. The revenue growth has no statistically significant impact on ROA, net interest margin, or loan-to-asset ratio. If the revenue growth of the financial institutions is increased by 1%, the net interest margin and ROA will increase by 0.002% and 0.005%, respectively. However, they would not affect the loan-to-asset ratio if all other variables were fixed. The financial institutions listed on Ghana's stock market positively affect net interest margin, loan-to-asset ratio, and ROA. At a 5% significance level, the financial institutions listed in Ghana's stock market have a statistically significant impact on net interest margin. However, they do not have a statistically significant influence on the loan-to-asset ratio and ROA. The financial institutions not listed in Ghana's stock market also positively affect interest margin, loan-to-asset ratio, and ROA. At a 5% significance level, the financial institutions not listed in Ghana's stock market have a statistically significant impact on loan-to-asset ratios. However, they do not have a statistically significant influence on the net interest margin and ROA.

The size of financial institutions affects net interest margin and ROA but has a negative impact on loan-to-asset ratio. At the 1% and 10% significance levels, the size of financial institutions has a statistically significant influence on net interest margin, loan-to-asset ratio, and ROA at the 1% and 10% significance levels. Large, financially adaptable, and

capable firms have easier access to the capital markets. Because of the greater value of large firms' assets, creditors have an easier time obtaining security from Vig [58]. As a firm grows, its resources to manage its day-to-day operations become increasingly limitless. Hailu [22] discovered that the size of commercial banks in Ethiopia has a positive and statistically significant effect on net interest margin, which is consistent with the study results. Menicucci and Paolucci [34] discovered that the size of financial institutions has a positive and significant effect on ROA and net interest margin. Marandu and Sibindi; Sivalingam and Kengatharan; and Mehzabin et al. [32, 50, 33] discovered that a financial institution's size positively affects ROA, which is consistent with the study's findings. The findings of Staikouras and Wood [54] contradict the investigation's conclusions. According to Staikouras and Wood [54], the size of financial institutions has a detrimental impact on the ROA of European banks.

It was observed from Model 1 that the independent variables (capitalization ratio, debt to EBITDA, debt to total assets, and debt to total assets) explain the net interest margin by 27.2%. In model 2, capitalization ratio, debt to EBITDA, debt to total assets, and debt to total assets explain loan to asset ratio by 7%, and in model 3, they explain ROA by 39%. The F-tests measured how jointly the capitalization ratio, debt to EBITDA, debt to total assets, and debt to equity ratio impact the dependent variables (net interest margin, loan to asset ratio, and ROA). In Model 1, the capitalization ratio, debt to EBITDA, debt to total assets, and debt to equity ratio all have a joint effect on the net interest margin. In model 2, the capitalization ratio, debt to EBITDA, debt to total assets, and debt to equity all jointly impact the loan-to-asset ratio. In model 3, they have a joint effect on ROA.

## 5. Conclusion

Many financial institutions are faced with difficulty determining which capital structure should be employed to improve their financial performance and maximize shareholder wealth. M & M Proposition I contend that optimum debt-to-equity capital financing maximizes a firm's worth. The study's goal is to determine how the capital structure affects the financial performance of Ghanaian financial institutions. The data for the study was gathered from listed and non-listed financial organizations on Ghana's stock exchanges. In total, 15 financial institutions were used, of which 10 are listed, and 5 are not listed on the Ghanaian stock exchange.

The study discovered a positive relationship between ROA, debt to EBITDA, debt to total assets, and debt to equity. There was a positive relationship between net interest margin, capitalization ratio, revenue growth, listed financial institutions, and financial institution size. Net interest margin, debt to EBITDA, debt to total assets, and debt to equity all had a negative relationship. There is a positive relationship between loan-to-asset ratio, debt-to-EBITDA, revenue growth of listed financial institutions, and financial

institution size. Furthermore, the loan-to-asset ratio was discovered to have a positive relationship with debt to EBITDA, revenue growth, and listed financial institutions. There was a negative relationship between the loan-to-asset ratio, capitalization ratio, debt to total assets, debt to equity, and the size of the financial institutions. The study discovered that the capitalization ratio, debt to EBITDA, debt to total assets, and debt to equity ratio have a negative effect on the net interest margin of Ghanaian financial institutions. Revenue growth, the number of financial institutions listed and unlisted on the Ghanaian stock exchange, and the size of the financial institutions all positively impact the net interest margin. The debt-to-total-asset ratio, financial institutions listed on stock exchanges, and the financial institution's size were found to have statistically significant effects on the net interest margin.

The capitalization ratio, debt to total assets, debt to equity, and size of financial institutions were shown to influence the loan-to-assets ratio negatively. In contrast, debt to EBITDA, financial institutions, and non-listed institutions in the Ghanaian stock market positively affected the loan-to-assets ratio. However, the financial institution's revenue growth did not influence the loan-to-asset ratio. The study found that the loan-to-asset ratio is affected by debt to EBITDA, size, and the number of non-listed financial institutions. The capitalization ratio, debt to EBITDA, debt to total assets, and debt to equity all negatively impact ROA. However, revenue growth, listed and non-listed financial institutions, and size positively impact ROA. ROA is affected by the size of the financial institution, the ratio of debt to EBITDA, the ratio of debt to total assets, and the ratio of total debt to total assets.

## 6. Implications for Managers

The performance of an organization determines its success. Managers are preoccupied with how to improve their

performance. The views of shareholders and other external bodies on the organization's performance are pretty concerning. Organizational performance may inspire investor confidence, attracting additional investors to the firm. The goal of this study is to determine how the capital structures of Ghana's financial institutions affect their performance. Debt financing had a statistically significant impact on net interest margin, loan-to-asset ratio, and ROA. Managers and boards of directors should rely less on equity financing and more on debt to finance their business activities. This is because debt is tax deductible, and they can use a tax shield to decrease the taxes they pay to the government. Using debt financing rather than equity financing would provide a sufficient return from the firm's resources by giving a higher return to shareholders. Because the use of debt financing rather than equity financing would help to improve their performance, investors would see them as one of Ghana's best and fastest-growing financial institutions, attracting new investors. Furthermore, the size of financial institutions was found to have a statistically significant impact on their performance. Financial institutions can use their size to boost their performance by bringing more investors into their business and obtaining tax incentives from the government because their size is regarded as contributing significantly to Ghana's social and economic growth.

Debt financing by financial institutions significantly impacts the net interest margin compared to non-traded financial institutions. The net interest margin reflects the money generated by their commercial activities, such as interest on loans, commissions, and facility fees. Organizations that are publicly traded on a stock exchange may be seen as more creditworthy than non-traded financial firms. As revealed by the study findings, most individuals and corporate organizations may prefer to interact with them rather than non-listed financial institutions. As a result, financial institutions not publicly traded on the stock exchange should use the results to help them make better judgments and ensure that they participate in the stock market since it has benefits.

## Appendix

*Table 6. Hausman (1978) specification test for Net interest margin.*

| Variable             | (b) Fixed | (B) Random | (b-B) Difference | $\sqrt{\text{diag}(V_{b-V_B})}$ S. E |
|----------------------|-----------|------------|------------------|--------------------------------------|
| Capitalization ratio | -.008     | -.074      | .0656604         | .0811919                             |
| Debt to EBITDA       | -.006     | -.006      | 0                | 0                                    |
| Debt to total asset  | -10.204   | -9.367     | -.8371795        | .6695486                             |
| Debt to equity       | -.02      | -.024      | .0042234         | .0049911                             |
| Growth               | .002      | .002       | .0000327         | .0010513                             |
| Listed               | .623      | .63        | -.0066772        | .029998                              |
| Firm size            | .555      | .549       | .0060809         | .0216949                             |

Coef

Chi-square test value Prob>chi2 = 0.9275

*Table 7. Hausman (1978) specification test for Loan to assets ratio.*

| Variable             | (b) Fixed | (B) Random | (b-B) Difference | $\sqrt{\text{diag}(V_{b-V_B})}$ S. E |
|----------------------|-----------|------------|------------------|--------------------------------------|
| Capitalization ratio | .022      | -.001      | .0232794         | .0137842                             |
| Debt to EBITDA       | .001      | .001       | .0002455         | .0001355                             |
| Debt to total asset  | -.663     | -.37       | -.2927996        | .1330542                             |



| Variable       | (b) Fixed | (B) Random | (b-B) Difference | sqrt(diag(V_b-V_B)) S. E |
|----------------|-----------|------------|------------------|--------------------------|
| Debt to equity | 0         | -.002      | .0019841         | .0009649                 |
| Growth         | 0         | 0          | -.0003916        | .0002525                 |
| Listed         | .03       | .032       | -.0024369        |                          |
| Firm size      | -.022     | -.029      | .0067088         | .0048152                 |

Coef

Chi-square test value Prob&gt;chi2 = 0.0676

Table 8. Hausman (1978) specification test for Return on asset.

| Variable             | (b) Fixed | (B) Random | (b-B) Difference | sqrt(diag(V_b-V_B)) S. E |
|----------------------|-----------|------------|------------------|--------------------------|
| Capitalization ratio | -.078     | -.093      | .0148054         | .0816502                 |
| Debt to EBITDA       | -.018     | -.018      | .0004903         | .0006466                 |
| Debt to total asset  | -7.562    | -6.988     | -.573426         | .6608996                 |
| Debt to equity       | -.021     | -.023      | .0020814         | .004969                  |
| Growth               | .004      | .005       | -.0015866        | .0010065                 |
| Listed               | .298      | .307       | -.0094283        | .0323524                 |
| Firm size            | .261      | .245       | .0162081         | .0210467                 |

Coef

Chi-square test value Prob&gt;chi2 = 0.9093

Table 9. Variance inflation factor.

|                      | VIF   | 1/VIF |
|----------------------|-------|-------|
| Debt to total asset  | 1.301 | .769  |
| Debt to equity       | 1.214 | .824  |
| Debt to EBITDA       | 1.182 | .846  |
| Firm size            | 1.126 | .888  |
| Growth               | 1.074 | .931  |
| Listed               | 1.05  | .952  |
| Capitalization ratio | 1.018 | .982  |
| Mean VIF             | 1.138 | .     |

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