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A Comparative Analysis of the Effect of Financial Leverage on the Profitability of Listed Ghanaian and Foreign Banks on the Ghana Stock Exchange.

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Abstract: Earlier empirical studies carried out on the effect of leverage on banks' profitability all employed a static model in their estimation and the case of Ghana, no study had looked at the inverted u-shaped relationship between leverage and profitability. However, this study looked at both the effect of leverage on banks' profitability and the inverted u-shaped relationship between leverage and banks' profitability. Also, the study employed a panel dynamic estimation technique for 8 banks enlisted on the Ghana Stock Exchange using annual data spanning from 2017 to 2021. The system generalized method of moment (GMM) was the main estimation technique used in this study. The results revealed a significant positive relationship between leverage and banks' profitability. Also, there was evidence of a significant positive relationship between a bank's size and profitability. The study further showed an inverted u-shaped relationship between leverage and a bank's profitability. Again, the study revealed that the previous profit of banks positively affects their current profit levels. The findings highlight the role leverage play in affecting the profit of banks enlisted on the Ghana Stock Exchange. Hence, the study recommends Considering the impact of leverage on profitability and the non-linear relationship that exists between them, the study recommends that managers of banks should strive to identify the optimal level of leverage associated with their banks and also maintain it since it represents the point where the market value of the bank or the bank's profit is maximized.

Keywords: Profitabilty, Leverage,Stock, Exchange,Significant.

1. Introduction

A well-established and productive banking system is one of the most important factors in economic progress. A nation's robust economic growth may be attributable to several variables, including objective capital structure decisions. However, empirical evidence of banking industry growth in Ghana as a result of capital structure decisions appears to be lacking because the majority of literature focuses on industrial industries and overseas firms. According to Guru (2008), banks can be categorized based on their functions. They are established with profit maximization as their primary purpose. The performance (profitability) of a company defines its ability to meet the needs of its stockholders and

other stakeholders, and a thorough examination of an institution's financial statement exposes its success or failure, and hence its viability.

Financial leverage refers to the extent to which a bank uses borrowed funds in the context of this study (Gill,2011). One of the most important criteria for the growth and development of banks is their capacity to devise appropriate financial policies that create investment opportunities (Hung,2012). Adopting a debt policy and a capital structure decision policy is regarded as a significant decision that affects the value of the bank. According to Hung (2012), the choice of a bank's capital structure incorporates multiple aspects, such as risk and profitability, and hence is a complex decision. Moreover, he noted that this decision becomes even more challenging when the economic climate in which the bank operates is highly unstable.The capital structure decision is extremely important since it influences the financial performance of banks and businesses. Capital structure, according to Abor (2005), is the unique combination of debt and equity that a company utilizes to finance its activities. A business organization's capital structure decision is crucial due to the necessity to maximize return for all stakeholders and the decision's significant impact on the firm's ability to compete in a highly competitive market. The capital structure may be dictated by financial leverage; hence, the decision for financial institutions to fund with debt rather than equity may be driven by need rather than preference, as they may not have the same access to capital as larger public corporations (Abor,2005).

Banks grow their assets to produce more profits by utilizing leverage, and one sort of leverage that they utilize is debt financing; as a result, they are listed on the Ghana Stock Exchange to enable them to borrow to finance their operations or throughout their activities. Bank management faces the subject of appropriate debt levels numerous times throughout their careers. When debt is used to develop a corporation by acquiring additional operational assets, it can generate additional cash flows, which is anticipated to boost the return on equity ratio (Brigham and Ehrhardt, 2005). Even though enterprises typically have an option over how to combine debt and equity, managers seek to determine a certain combination that will optimize the firm's profitability and market value. Therefore, the purpose of this study is to examine the impact of financial leverage on the profitability of banks listed on the Ghana Stock Exchange.

Statement of the Problem

Multiple studies have demonstrated that increasing leverage increases the chance of bank failure, resulting in poor operational performance. There have been some empirical studies on the effect of leverage on the profitability of organizations, including banks, but the conclusions have been equivocal and contradictory. Haung and Song (2006) discovered an inverse link between leverage and performance (earnings before interest and tax to total assets in China firms). In addition, Onaolapo (2010) analyzed the effect of capital structure on the financial performance of thirty companies. He discovered that the debt ratio had a detrimental effect on the firm's financial indicators and performance. However, Sarkar and Zapatero (2003) discovered a favourable correlation between leverage and profitability. In addition, Salawu and Agboola (2008) discovered a correlation between the profitability and capital structure of large non-financial enterprises in Nigeria. While some studies believe that capital structure impacts both company performance or profitability and riskiness (Bos and Fetherston, 1993; Miller and Modigliani, 1963; and Titman and Wessel, 1988), others believe that leverage does not affect business profitability (Tang & Jang, 2007; Philip &Sipahioglu, 2004).

In Ghana, Abor (2005) found a substantial positive correlation between the ratio of short-term debt to total assets and profitability, but a significant negative correlation between the ratio of long-term debt to total assets and profitability of companies listed on the Ghana Stock Exchange. Arthur (2019) investigated the impact of capital structure on the profitability of Ghana's manufacturing sector. Arthur (2019) found that both short-term and long-term debt negatively impacted productivity, whereas equity positively impacted profitability. Addae et al. (2013) also evaluated the impact of capital structure on the profitability of Ghanaian publicly traded companies. The results demonstrated a statistically significant positive correlation between profitability and short-term debt and a statistically significant negative correlation between profitability and long-term debt. In contrast to Abor's (2005) findings, the data demonstrated a statistically negative correlation between profitability and overall debt. Anafo et al. (2015) also investigated the effect of capital structure on the profitability of Ghana Stock Exchange-listed banks. The research demonstrated that financial leverage, as measured by the ratio of short-term debt to total assets (STDTA), has a substantial positive link with profitability, as assessed by return on assets (ROA), return on equity (ROE), and profits per share (EPS) (EPS). LTDTA had a substantial positive association with ROA and ROE, but a negative and insignificant relationship with EPS.

It is evident from the preceding talks that the outcomes of examinations examining the relationship between leverage and company performance are inconclusive. To the author's knowledge, only one empirical study has been conducted in Ghana on the topic of leverage and profitability, focusing on banks listed on the Ghana Stock Exchange. As the previous study adopted a static model for analysis, it is necessary to reexamine the impact of leverage on the profitability of banks listed on the Ghana Stock Exchange. The distinction is that this study applies a dynamic panel model for its analyses. Again, Jang and Tang (2009) discovered an inverted U-shaped association between financial leverage and profitability in their examination of hotel enterprises. Kang (2011) also discovered a U-shaped inversion between debt ratio and profitability. The empirical problem discovered in the studies of Kang (2009) was the presence of methodological problems. Consequently, the model formulation for this empirical study did not account for the inclusion of control variables. Consequently, the validity of his conclusions is unclear. In addition, neither study investigated the turning point associated with the nonlinear connection. Therefore, additional research is required to reexamine the inverted U-shaped relationship between leverage and profitability by utilizing suitable approaches. No research has examined the inverted U-shaped link between leverage and company profitability in Ghana. Based on the preceding, the current study fills in these gaps in our understanding of the relationship between leverage and company profitability in Ghana.

The objective of the Study

The primary purpose of this study is to assess the impact of financial leverage on the profitability of banks listed on the Ghana Stock Exchange. The specific objectives are:

i. To examine the impact of total debt to total assets (leverage) on the profitability of Ghana Stock Exchange-listed banks.
ii. To test for an inverted U-shaped relationship between the ratio of total debt to total assets (leverage) and the profitability of banks.
iii. To determine the best ratio of total debt to total assets (leverage) for banks listed on the Ghana Stock Exchange.

Research Hypotheses

1. H_0: Total debt to total asset ratio does not affect the profitability of banks listed on the Ghana Stock Exchange.
   H_1: Total debt to total asset ratio affects the profitability of banks listed on the Ghana Stock Exchange.

2. H_0: There is no inverted U-shaped relationship between total debt to total asset ratio and banks' profitability.
   H_1: There is an inverted U-shaped relationship between total debt to total asset ratio and banks' profitability.

3. H_0: No optimal level of leverage exists for banks enlisted on the Ghana Stock Exchange.
   H_1: An optimal level of leverage exists for banks enlisted on the Ghana Stock Exchange.

Significance of the Study

The study investigates the effect of financial leverage on the profitability of selected banks listed on the Ghana Stock Exchange. The study specifically examined the relationships between leverage and profitability of the banks listed on the Ghana Stock Exchange from 2017 to 2021. The findings of the study will be useful to policymakers in setting policies that ensure that enlisted firms maintain and implement an optimal structure that is less susceptible to financial risks. This will enable firms to exploit cheaper and more reliable sources of finances to enhance profitability. It will further give insights into how banks use debt and equity most efficiently. The banks enlisted on the Ghana Stock Exchange as well as other financial institutions and firms will be appropriately informed as to how to optimize their debts relative to the size of their equity and their total asset. The study will further serve as reference material for future researchers.

Literature Review

This chapter examines the research on financial leverage decision making and bank profitability. This chapter covers the principles of financial leverage, the factors that influence the financial leverage decisions of banks and small businesses, and the determinants of financial leverage and bank profitability.

Theoretical Framework

Tradeoff theory

According to trade-off theory, a company will prioritize trade-off benefits when deciding how much debt and equity to utilize for financing. The government taxes companies on their income, whereas interest is a tax-deductible expense. According to trade-off theory, a taxable corporation will grow its debt until the marginal value of tax shielding on extra debt is equal to the present value of the costs of financial trouble (Myers, 2001). Due to the deductibility of interest on debt, a higher leverage level would result in a greater tax benefit for corporate income. However, as the level of debt rises, the company's ability to meet its debt commitments will become more difficult, as it will incur a substantial amount of interest expenditure. Consequently, the company would experience default risk, resulting in increased debt financing costs and financial difficulties (Myers, 2001). Thus, an ideal debt-to-equity capital structure

can be achieved by striking a balance between the benefits (tax benefits) and drawbacks (financial distress) of debt.

Choice – pecking order theory of financing

The alternative view, explored by Meyers (1984), Myers and Majluf (1984), and Fama and French (2002), portrays a company's debt position as the result of prior investment and capital decisions. According to this idea, sometimes known as the "Pecking Order" theory, enterprises with positive net present value investments will finance new investments with internal funds first, then with safe debt, then with risky debt, and last with equity if there is no other option. Consequently, financing investments with internally generated funds may be the most cost-effective option, and a company's financial structure is the result of past cash flows and investment prospects. The conflict between shareholder and creditor benefits results in an increase in interest rates by creditors, an increase in monitoring costs, and a decline in investment. Consequently, this contradiction reveals that high leverage results in subpar performance (Williams, 1987).

This, according to Myers and Majluf (1984), leads investors' price of the stock to be understated. In a situation where information is asymmetric, corporations favour funding from internal sources overstock, and when internal sources are insufficient, they resort to borrowing. Therefore, asymmetric information serves as the foundation for the choice–pecking order theory of finance. According to the asymmetric information theories, there is a hierarchy of corporate preferences regarding the funding of their investments (Myers and Majluf, 1984). This preference hierarchy proposes that corporations finance their investments with internal money first, then with debt, and ultimately with external equity. Dimitrov and Jain (2003) developed an alternative perspective about the operational performance of firms. They reasoned that if managers have access to confidential information about potential operational performance deterioration, they will incur more debt. Therefore, increased leverage is a negative indicator of bad future performance. Larger corporations tend to give more information to outside investors than smaller ones, according to Rajan and Zingales (1995).

Larger organizations with fewer information asymmetries should, on average, have a greater proportion of equity to debt, resulting in reduced leverage. However, larger organizations are frequently more diversified and have more consistent cash flow; hence, the likelihood of bankruptcy is lower for larger firms than for smaller ones. The best capital structure of a company will require competing for theoretical ideas. Findings by Titman and Wessels (1988), Harris and Raviv (1991), and Rajan and Zingales (1995) corroborated Mayers' conclusion that an increase in debt will reduce profitability. In contrast to Mayers, Janson anticipates a positive association between financial leverage and profitability in an efficient market and a negative relationship in an inefficient market. Rajan and Zingales (1988) provided support for this view. By researching this notion, Cai and Zhang (2005) discovered that the inverse relationship between leverage changes and return on the stock is stronger in corporations with high leverage (Rajan& Zingales, 1995). According to Wald (1999), the relationship between profitability and the debt-asset ratio is positive and significant. Rajan and Zingales defined profitability as earnings before interest and taxes (EBIT) (1995).

Agency cost theory

According to the notion of agency costs, a higher amount of debt increases shareholder value due to its disciplining effect on manager conduct. This theory contains two sorts of inherent conflicts of interest:

(a) conflicts between managers and shareholders, and (b) conflicts between creditors and shareholders. In the first scenario, when debt levels rise, shareholders can compel managers to pay off the loan. Therefore, when the debt level rises, a greater proportion of free cash flow should be allocated to the debt service. In this instance, shareholders or boards of directors decrease the company's free cash flow and prevent managers from making suboptimal or excessive investments (Jang & Tang, 2009). If the managers fail to meet their debt obligations, they would also lose their substantial investments, leading to insolvency (Jensen &Meckling, 1976). The agency cost theory provides a further explanation for the association between high profitability and low debt ratio. In a profitable form, it is to the managers' advantage to maintain a low debt ratio, because (a) free cash flow is not committed to debt payment and can be used for management's purposes, and (b) managers are therefore relieved of the pressure to make debt payments. This decreases the value of a shareholder's stock and is known as "agency cost."

Signalling model

According to Yolanda et al. (2012), based on the signalling model, the financial leverage decisions of enterprises signal the firm's prospects to uninformed outside investors. The signalling model presupposes those enterprises with the highest earnings and growth prospects opt for high leverage. The signalling theory argues that a firm's growth may lead to an increase in its financial leverage since firms with high growth prospects will be reflected in the capital market. As a result, the share price increases with recognition by banks, which can reduce the cost of debt for the specific firm or small business (Titman and Wessels, 1988).

Financial leverage determinants of banks

Short-term debt, long-term debt, overall debt, size, credit risk, growth rate, tax and interest rates in the banking sector are the variables that impact the financial leverage of banks. According to the trade-off argument, firms with future growth prospects, a type of intangible assets, prefer to borrow less than firms with more tangible assets because growth opportunities cannot be collateralized (Chen, 2004). The growth rate may indicate the need for additional capital, which will influence the capital structure of the company. Deposits are a pillar of the bank, and the greater the deposit levels, the greater the impact on bank profitability. Deposits are the primary source of funding for banks and have the lowest cost. Alper and Anbar (2011) investigated the drivers of Turkish bank profitability. They discovered that the greater the ratio of deposits to loans, the greater the interest margin and profit. Consequently, deposits have a favourable effect on the profitability of banks. In contrast, increasing funding costs have a negative impact on bank profits.

Haron (2004) analyzed the effects of the factors that contribute to Islamic banks' profitability. He found that the more deposits placed by depositors with the bank, the more income is received by the bank influencing the profitability. The link between size and leverage is unclear from a theoretical standpoint. The trade-off model predicts that large enterprises will have a greater debt capacity and can be more highly leveraged. Large companies are more diverse and, thus, less susceptible to the danger of bankruptcy. Additionally, they may be able to lower the transaction costs connected with the issue of long-term debt. According to Chen (2004), the size of the company has been the deciding factor in capital structure decisions. According to Muradoglu and Sivaprasad (2009), small businesses have restricted access to capital; as a result, they are subject to a higher interest rate than larger businesses, which eventually affects their growth.

The correlation between the size of a bank and its profitability can be examined using economies of scale. Sufian and Chong (2008) analyzed the variables that affect the profitability of financial institutions in developing economies. They discovered that bank size is typically utilized to measure potential efficiencies or diseconomies of scale in the banking industry. Miller and Noulas (1997) analyzed the profitability of significant commercial banks to find the elements influencing profitability. They discovered that the bad performance of large banks was due to the deteriorating quality of their loan portfolios. However, real estate loans generally had a detrimental impact on the profitability of large banks, albeit not to a significant degree. In contrast, contraction and land development loans had a substantial beneficial impact on the profitability of these banks. Hassan and AL-Tamimi (2008) investigated the determinants of the performance of UEA commercial banks. They discovered that the most significant drivers of the performance of national banks were bank size and portfolio mix.

According to some experts, the tax provision influences the debt-equity ratio. Higher tax rates encourage profitable corporations to seek a high debt-to-equity ratio to secure a tax shelter. There are both theoretical and empirical arguments that the tax shield of debt financing promotes enterprises to acquire more debt to maximize their worth (Maleki et al, 2013). Miller (1977) and Fama and French (1988) found no evidence supporting the tax advantages of debt financing. Barclay and Smith (1995) and Graham (2000) discovered contradictory findings concerning the tax protection for debtors. Since Miller and Modigliani's 1958 foundational study, taxation has been a source of controversy. Taxation laws vary globally, and hence, their impacts will vary. Although fiscal issues are expected to exert a considerable influence on bank behaviour, little attention has been paid to the taxation of the financial industry (Caminal, 2003). The tax-deductibility of interest payments conceals the company's pre-tax revenue, thereby reducing its weighted average cost of capital (WACC). Additionally, the existence of taxes causes the cost of equity to rise with debt less quickly than it would in the absence of taxes (Brigham and Ehrhardt, 2008).

According to Albertazzi and Gambacorta (2010), the principal channel via which the corporate income tax may exert an impact on bank activities is the fact that this form of taxation bears upon bank equity holders and, consequently, interacts with prudential capital requirements. In their examination of the impact of corporate income tax on bank profitability, both from a theoretical and an empirical standpoint, the authors take a theoretical and an empirical approach. They conclude that the theoretical model highlights two primary mechanisms. First, corporate income taxation in the banking sector modifies the costs of bank equity, hence altering the capital requirements (so-called cost of equity effect). Secondly, a higher corporate income tax rate causes a decrease in corporate sector investments and a decline in demand for bank loans and other bank services (so-called market effect). According to empirical evidence, an increase in the corporate income tax rate has a positive effect on the interest rate required on loans and a negative effect on the volume of lending, while leaving the deposit market unchanged.

Internal determinants of profitability

Internal determinants of profitability include the degree of liquidity, variance in loan loss provisions, capital sufficiency, expense management, variation in capital and asset risk, operational efficiency, and market interest rates. These elements are mostly determined by the management actions and policy aims of a bank. Internal factors include financial statement variables and the income statement.

Management of the profit and loss statement is closely tied to the management of income and expenses or returns and costs (Sufian and Chong, 2008). Liquidity is one of the internal factors that determine profitability. The ease with which an asset can be changed into cash without suffering a loss in value is its liquidity. Frequently, banks keep liquid assets that are easily convertible to cash. Typically, liquid assets are associated with lower rates of return; hence, greater liquidity would be associated with less profitability (Bourke, 1989). The primary focus would be on managing interest rate sensitivity and margin, as well as allocating expenses. The efficient management of expenses by banks explains their high profitability, i.e., cutting expenses increases efficiency and, consequently, the profitability of a financial institution as the operating expenses ratio is lowered (Bourke, 1989).

Molyneux and Thornton (1992) found that banks with greater pay and perks would need higher net interest margins to be profitable. When banks are unable to lower interest expenses subjectively and arbitrarily, they must increase the income received on loans by including riskier loans in their lending portfolio. Consequently, the net charge-offs may increase while the possibilities for profitability may diminish. This confirms the hypothesis that staff expenses and bank profits are inversely related. Market Interest rates also influence the profitability of banks. Flannery's (1981) empirical research of the effect of market interest rates on profitability concludes that banks "borrow short and lend long." This suggests that abrupt market interest rate rises may result in a substantial number of bank failures. Subsequent research by Guru et al. (2002) demonstrated that a high-interest ratio was associated with low bank profitability and that inflation had a direct impact on bank performance. Variations in capital and asset risk have a positive relationship with bank profitability (Bourke, 1989). Bourke addressed this by assuming that well-capitalized banks may have access to less expensive and riskier sources of finance and higher-quality asset markets. Alternately, the caution implied by high capital ratios may also be maintained in their asset portfolio decisions, resulting in a rise in loan loss provisions and an increase in profitability.

External determinants of banks' profitability

Several variables affect the success of financial institutions and banks, including the national economy, the structure of the financial market, and the legal and political framework in which they operate. Consequently, the external drivers of bank profitability are these factors that are external to banks and, therefore, outside the control of management but have an effect on profitability. According to Alfumi et al. (2003), market concentration is a significant element in determining profitability, as it stimulates collusion among market firms and generates monopoly profits. Because market concentration acts as a barrier to market entry, there is a negative impact on profits when domestic banks are heavily concentrated. Conversely, concentration may be positively associated with the profitability of foreign banks if the market structure of a less developed nation is dominated by foreign banks that have been determined to be more competent than domestic banks (Kosmidou et al., 2007). Competition among banks, including all possible competitors, also has a significant impact on determining bank profitability, given that new market entrants will enhance market competition.

The market is a crucial predictor of profitability, since the larger the market, the greater the firm's profit potential. A larger market share affects the market's profitability and growth, hence creating more chances for banks and increasing their earnings (Smirlock, 1985). Since it is considered that large banks benefit from economies of scale, they can generate their outputs or services more cheaply and efficiently than smaller banks. As a result, larger banks gain higher profit margins when entrance is restricted. The

inflation rate is a significant macroeconomic factor that may influence both the costs and revenues of banks.

Estimation of banks' profitability

Monthly, modern profitability software totals the revenues from each account and subtracts the bank's expenses. The costs include the cost of the money, a reserve for potential losses, administrative expenses, deposit insurance, and consumer use of bank services. Software for maximizing profits is still in its infancy. It presents a significant challenge for software developers to provide an exceptional solution. It will be especially beneficial for sophisticated data applications. The entire profitability of each customer must be determined by adding the profits or losses from each of his accounts. Bank performance is typically expressed as a function of internal and external drivers and is assessed by return on assets (ROA), return on equity (ROE), and/or net interest margins (NIM).

Returns on Equity and Return on Asset as Measures of Banks' Profitability

According to Brown et al., (2006), the Return on Equity (ROE) is a profitability ratio usually discussed in the context of financial statement analysis. The amount of net income returned as a percentage of shareholders' equity. Return on equity measures a Bank's profitability by revealing how much profit it generates with the money shareholders have invested. It is calculated as the net profit (before or after taxes) over the shareholders' (common stock) equity.

$$\textbf{ROE} = \frac{\text{Net Profit}}{\text{Shareholders' Equity}}$$

Return on the asset, on the other hand, is calculated as net profit divided by the total asset.

$$\textbf{ROA} = \frac{\text{Net Profit}}{\text{Total asset}}$$

Profit Margin Analysis

Profit margins are expressed as a ratio, with "profits" expressed as a proportion of sales. By expressing margins as a percentage, we may more easily compare the profitability of various businesses. Over time, margins enable investors to evaluate management's ability to control costs and generate profits. The profitability of a business is contingent on the success or failure of management. Gross Profit Margin, Operating Profit Margin, and Net Profit Margin are the variables utilized in profit margin analysis.

Operating Profit Margin

The Operating Profit Margin demonstrates the efficiency with which a bank or corporation generates profits through its operations. This ratio also indicates these managers' success rate. The decision rule is that the Operating Profit Margin should be as high as possible. This is because a greater Operating Profit Margin indicates the bank or business can keep expenditures under control (successful cost accounting). A greater Operating Profit Margin may also indicate that sales are growing faster than expenses and that the company is in a relatively liquid position. The distinction between Gross Profit Margin and Operating Profit Margin is that the former only accounts for the Cost of items sold,

whereas the latter accounts for both Cost of products sold and Administration/Selling expenses. The following is the calculation:

Operating profit margin =

[Sales – the cost of goods sold – selling, general and administrative (SG&A) costs] ÷ Sales
Operating Profit Margin, according to this study is given as Profit/ Total Asset

Net Profit Margin

The net profit is the profit made from all corporate operations, including interest and taxes. In talks on the profitability of a bank, the focus is primarily on the bottom line. The net profit margin is the ratio of net income to revenue. It reveals the specific performance of an organization's managers and activities. The Net Profit Margin compares the net profits of a company to its total sales. The net profit margin is computed as follows:

$$\text{Net profit margin} = \frac{\text{Net Income after Taxes}}{\text{Sales}}$$

Gross Profit Margin

The Gross Profit Margin represents the bank's profit after deducting its Cost components. Gross Profit Margin demonstrates the management's utilization of its people and assets in the production process. The criterion for selection is that banks or companies with a high gross profit margin are more liquid and, consequently, have more cash flow to spend on marketing, research and development, or investment. We avoid investing in companies with a deteriorating Gross Profit Margin over some time, such as five years. This ratio assesses the management's utilization of labour and raw materials during the production process and is computed as follows:

$$\text{Gross profit margin} = \frac{\text{(Sales – Cost of Goods Sold)}}{\text{Sales}}$$

Empirical literature

The relationship between financial leverage (debt financing option) in capital structure and enterprises' profitability has produced inconsistent research findings (performance). Abor (2005) evaluated the relationship between capital structure and profitability of enterprises listed on the Ghana Stock Exchange (GSE) for five years. He discovered that Short-term and Total Debt is favourably correlated with ROE, whereas Long-term Debt is adversely correlated with ROE. Then, in 2007, Abor's research on small and medium-sized businesses in Ghana and South Africa demonstrated once more that overall and long-term debt levels are negatively correlated with performance.

A study conducted by Ofek (1993) on the relationship between capital structure and a firm's reaction to short-term financial hardship revealed that high-leverage enterprises are more likely to react operationally to the short-term financial crisis than their less-leveraged counterparts. When performance deteriorates, the high-leverage corporations are also more likely to take personal actions such as restructuring assets and laying off personnel. In addition, a company with significant leverage will respond rapidly to a financial crisis by reducing dividends, restructuring debt, and declaring bankruptcy. Puwanenthiren (2011) found that the capital structure (debt-to-equity ratio) had a negative correlation

with the performance indicators when he examined the relationship between capital structure and financial performance using data from selected companies listed on the Colombo Stock Exchange, Sri Lanka, between 2005 and 2009.

In this study, Hyun Oh Kang's (2009) research on the Impact of Financial Leverage on Profitability in Lodging Companies revealed that there was no correlation between debt ratio and growth opportunities. According to the findings of the study, the relationship between long-term debt ratio and profitability was negative (ROA). The majority of lodging businesses reported a decline in total revenue throughout the time. However, interest expense on long-term debt remained unchanged because it was deemed a fixed cost. As a result of having to service their long-term debt, companies with a high debt ratio may have low profitability. The research revealed a U-shaped link reversed between debt ratio and profitability. The inverted U-shaped relationship between debt ratio and profitability suggested that there is an optimal debt ratio and that enterprises with a debt ratio greater than the optimal level do not increase their value or profitability. The results of the study suggested that when the debt ratio surpasses the ideal ratio, it may have an impact on the profitability of enterprises in the lodging industry.

Tang and Jang (2007) discovered that the degree of long-term debt was positively associated with the level of fixed assets and growth potential for U.S. hotel enterprises. However, they were unable to establish a link between leverage ratio and earnings volatility, company size, profitability, or free cash flow. According to the study, there was a substantial association between all variables for software companies but not for hotel companies. This could be explained by the disparities between this industry and the highly specialized accommodation industry (Tang & Jang, 2007). Impact of Financial Leverage on Profitability in Lodging Companies: An Analysis of Revenue per Available Room, was the topic of Kang's 2011 study (RevPAR). This study found a negative relationship between the long-term debt ratio and profitability (ROA). The majority of lodging businesses reported a decline in total revenue throughout the time. However, interest costs on long-term debt remained unchanged because it was deemed a fixed cost. As a result of having to service their long-term debt, companies with a high debt ratio may have low profitability. This analysis revealed a U-shaped link reversed between debt ratio and profitability. This inverted U-shaped link between debt ratio and profitability may suggest that there is an optimal debt ratio and that enterprises with a debt ratio that exceeds the optimal level are not successful in boosting a firm's value or profitability. This study's findings may suggest that when the debt ratio surpasses the ideal ratio, this may affect the profitability of hotel industry enterprises.

Arthur (2019) found that both short-term and long-term debt negatively impacted productivity, whereas equity positively impacted profitability. Addae et al. (2013) also evaluated the impact of capital structure on the profitability of Ghanaian publicly traded companies. The results demonstrated a statistically significant positive correlation between profitability and short-term debt and a statistically significant negative correlation between profitability and long-term debt. In contrast to Abor's (2005) findings, the data demonstrated a statistically negative correlation between profitability and overall debt. Anafo et al. (2015) investigated the effect of capital structure on the profitability of Ghana Stock Exchange-listed banks. The research demonstrated that financial leverage, as measured by the ratio of short-term debt to total assets (STDTA), has a substantial positive link with profitability, as assessed by return on assets (ROA), return on equity (ROE), and profits per share (EPS) (EPS). LTDTA had a substantial positive association with ROA and ROE, but a negative and insignificant relationship with EPS.

The findings of Kyereboah-Coleman (2007) also demonstrated that highly leveraged microfinance organizations performed better than those with low leverage. Ali et al. (2011) examined the profitability of Islamic banks in Pakistan by considering bank-specific and macroeconomic factors. They discovered that the elevated credit risk and capitalization led to a lower return on assets (ROA) (ROA). Additionally, as evaluated by return on equity, operating efficiency tends to demonstrate a greater profitability level (ROE). The underlying distinction between ROA and ROE is the financial leverage multiplier; optimal utilization of debt indicates operational efficiency, and a greater ROA does not necessarily translate to a higher ROE. Flaminin et al. (2009) studied the drivers of bank profitability using a sample of 389 banks from 41 sub-Saharan African nations. In addition to credit risk, they discovered that larger bank size, activity diversity, and private ownership are related to higher asset returns. Bank returns are influenced by macroeconomic variables, indicating that macroeconomic policies that favour low inflation and stable production growth stimulate loan growth. South Africa's central bank has an inflation-targeting strategy, and the REPO rate is modified by inflation.

2. Method

Design of the Study

To examine the impact of leverage on the profitability of Ghana Stock Exchange-listed banks, a quantitative study design was chosen. Specifically, to test the study's research hypothesis, the quantitative research method was established and employed. The entire investigation would be conducted by the positivist concept that forms the basis of the quantitative technique. According to Antwi and Hamza (2015), positivists think that reality is gained objectively and is measurable using attributes that are independent of the researcher. They employ reliability, validity, accuracy, objectivity, and generalizability to evaluate the rigour of quantitative research designed to explain, predict, and verify empirical relationships in relatively controlled environments.

Model Specification

To estimate the effect of leverage on banks' profitability, based on theoretical and earlier empirical considerations, the following model is estimated:

$$\boldsymbol{ROA_{it} = \beta_1 + \beta_2 LEV_{it} + \beta_3 SIZE_{it}} \quad (1)$$

Where $\boldsymbol{ROA_{it}}$denotes return on asset for a bank *I* at time *t*.$\boldsymbol{ROA_{it}}$is a proxy for banks' profitability and it is measured as a ratio of net profit over the total asset. $TDTA_{it}$, $SDTA_{it}$and $LDTA_{it}$are total, short-term and long-term debt to total ratiorespectively. The study considers $TDTA_{it}$, $SDTA_{it}$ and $LDTA_{it}$ as proxies for banks' financial leverage ($\boldsymbol{LEV_{it}}$). $\boldsymbol{SIZE_{it}}$represents the size of the bank *I* at time *t*.$\boldsymbol{SIZE_{it}}$ is measured as the logarithm of total assets. Including an error term to equation 1 yields an estimable equation 2 below as;

$$\boldsymbol{ROA_{it} = \beta_1 + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \varepsilon_{it}} \quad (2)$$

where β2 to β3 are parameters to be estimated; β_1 and εit are intercepts and error terms respectively.

Empirical model specification

To empirically assess the impact of financial leverage on bank profitability, the System Generalized Method of Moment (GMM) regression model (Arellano &Bover, 1995) was applied.

$$\boldsymbol{ROA_{it} = \beta_1 + \beta_2 ROA_{it-1} + \beta_3 LEV_{it} + \beta_4 SIZE_{it} + \epsilon_i + \mu_t + \varepsilon_{it}} \quad (3)$$

where ROA_{it-1} is the lag of Return on Asset; ϵ_i is the unobserved bank-specific effect; μ_t is the time effect and ε_{it} is the idiosyncratic error term.

Capturing Non-Linearity (Inverted U-Shaped Relationship)

To examine the validity of the inverted U-shaped link between banks' profitability and Leverage, the study inserted a quadratic term for leverage into equation 3 to produce the following equation 4:

$$\boldsymbol{ROA_{it} = \beta_1 + \beta_2 ROA_{it-1} + \beta_3 LEV_{it} + \beta_4 LEV_{it}^2 + \beta_5 SIZE_{it} + \epsilon_i + \mu_t + \varepsilon_{it}} \quad (4)$$

where LEV_{it}^2 is the square of LEV. All variables maintain their initial definitions.

To determine the net effect of **LEV**, equation 4 is differentiated to obtain equation 5 below;

$$\boldsymbol{\frac{\partial(ROA_{it})}{\partial(LEV_{it})} = \beta_3 + 2\beta_4 LEV_{it}} \quad (5)$$

where LEV_{it} is the mean of LEV**.?** Also, the turning point calculated from equation 5 is represented by equation 6 below;

$$\boldsymbol{\frac{\partial(ROA_{it})}{\partial(LEV_{it})} = \beta_3 + 2\beta_4 LDTA_{it} = 0}$$

$$\boldsymbol{\beta_3 = -2\beta_4 LEV_{it}}$$

$$\boldsymbol{LEV_{it} = \frac{\beta_3}{-2\beta_4}} \quad (6)$$

Justification of the econometric model

GMM is suitable when the number of periods is relatively modest compared to the number of cross-sectional observations (T < or = N). If not, asymptotic imprecision and biases may occur. As the panel data utilized in this study has 5 years and 8 banks as cross-sectional units, the GMM approach fit the data well. Thus, the issue of asymptotic imprecision and biases, which are likely to develop when employing other methods, is avoided. In addition, it is crucial to note that, when estimating Equations (3) and (4), approaches that can account for potential endogeneity are favoured due to the inclusion of the Return on Asset lag. The endogeneity concern arises since $\boldsymbol{ROA_{it-1}}$ depends on $\boldsymbol{\varepsilon_{it-1}}$, which is a function of the bank-specific effect $\boldsymbol{\epsilon_i}$. To the extent that the presence of endogeneity can bias the estimates, this is addressed by applying the system GMM technique.

Justification and Measurement of Variables

Profitability (ROA)

Following previous research, this study selected return on assets (ROA) as its profitability metric (Jang & Tang, 2009; Karadeniz, Kandir, Balcilar, &Onal, 2009; Kang, 2011; Abor, 2005). ROA is determined by dividing net profit by total assets. This study's primary profitability indicator was ROA. Return on equity was not selected as the primary profitability metric since it could be inflated by high leverage, which is conflicted with the impact of financial leverage on profitability (Simerly& Li, 2000). As a robustness check, ROE will be utilized as an alternate profitability metric.

Leverage

Total debt, short-term debt to total ratio, and long-term debt to total ratio were viewed as separate variables for measuring the effect of financial leverage. Long-term debt to total ratio was determined by dividing long-term debt by total assets, short-term debt to total ratio was determined by dividing short-term debt by total assets, and total debt was determined by dividing total debt by total assets. As an alternate measure of leverage, the debt-to-equity ratio, which is calculated as total debt divided by total equity, was also evaluated. These factors were utilized because they were supported by both theory and previous empirical research (Abor, 2005; Jang & Tang, 2009; Hovakimian, Opler, & Titman, 2001; Vatavu, 2015). In the regression models, only one of these independent variables will be employed at a time.

Size

Because larger enterprises are expected to receive more exposure and have better brand awareness, it is easier for them to generate a profit. According to Brown and Perry (1994), a company's profitability is also dependent on its reputation. In this study, the natural logarithm of total assets was used as a size control variable. The use of this measure as an independent variable is supported by several empirical investigations (Kang, 2011; Jang & Tang, 2009; Simerly& Li, 2000).

Sources of Data

The research employed secondary data in a panel format. The study utilized panel data comprising annual time series data from 2017 to 2021 for eight banks (Cal Bank, Ecobank, GCB, ADB Bank, SG – SSB, Standard Chartered Bank, Access Bank, and Republic Bank). All information regarding the study's variables was acquired from the financial reports of banks traded on the Ghana Stock Exchange (2021).

Data Analysis

The research employed both descriptive and quantitative methods. The descriptive analysis included graphs and tables for assistance. In addition, correlation analysis was performed to determine whether some of the variables were significantly associated. Again, the System GMM estimation technique was utilized to determine the impact of leverage on the profitability of banks. In addition, as a robustness check, ROE was utilized as an alternate profitability metric. As a last robustness check, the debt-to-equity ratio was utilized as an alternate measure of leverage. In this investigation, all estimations were accomplished using Stata version 13 and E-Views 10 software.

3. Findings and Discussions

This chapter looks at the presentation and discussion of the results of the study.

Descriptive Statistics

The study carried out descriptive statistics of all the variables used in the study. The descriptive statistics considered under this study were the mean, standard deviation, minimum and maximum values of the variables. These statistics are shown in Table 1 below;

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TDTA	40	.8260709	.1230846	.0807263	.8912051
SDTA	40	.7226014	.0695135	.5493307	.8274888
LDTA	40	.1203811	.0683821	.0338349	.3141783
SIZE	40	16.50519	2.222052	14.54744	22.4165
ROA	40	.0269561	.0129221	.0016423	.0593676
ROE	40	.175217	.0788059	.0092354	.3575652
TDTE	40	5.487707	1.330852	.4188167	8.19179

Source: Author's report (2022)

The descriptive statistics for all the variables used in the estimation are presented in Table 1. The estimation has 40 observations and it can be seen that all the variables had positive means. The mean value of 0.7226 for the ratio of SDTA is indicative of the fact that the listed banks on the average employed 72.26% of short-term debt in their financing. The ratio of LDTA, on the other hand, had an average of 12.04% which is relatively lower than the average of SDTA ratio. This means that banks rely more on short term debt than long term debt for their financing and it suggests that the financial market for long term debt financing in Ghana is somehow not well developed. However, should there be a deviation from the mean values of the ratios of SDTA and LDTA, it would be 0.0695 and 0.0683 respectively. This indicates less variability in the debt ratios of the banks. The variability of the ratio of TDTA was 0.1231 which is relatively higher than the deviations in the short-term and long-term debt ratios. On the average, the listed banks used a total debt ratio (TDTA) of about 82.21% in their financing. This suggests that the banks are greatly financed by leverage, with a larger percentage of the total debts being short-term debts. The Total Debt to Total Equity (TDTE) ratio, which is an alternative measure of leverage or debt used in this study, recorded a mean of 5.4877 and a standard deviation of 1.3309 over the study period.

Return of asset (ROA) has a mean value of 2.7% and a standard deviation of 1.29%. Again, from the minimum value of 0.0016 and maximum value of 0.0594, it is clear that profitability (ROA) varies widely among the banks listed on Ghana Stock Exchange. Return on Equity (ROE), on the other hand, recorded an average value of 17.52%. This means that return on equities in the banking sector is relatively higher than the return on asset over the study period of 2017 to 2022. The variability in the

mean value of ROE is really high compared to ROA as the standard deviation reported was7.88%. The minimum and maximum values recorded for ROE were 0.0092 and 0.3576 respectively. This further confirms the wide spread in the ROE ratio.Finally, the annual mean of SIZE is 16.5052with the minimum and maximum SIZE values being 14.5474 and 22.4165 respectively. The standard deviation of SIZE is2.2220 and this together with the range value indicates some level of fluctuation in the total assets of the banks.

Correlation test

A correlation investigation measures the strength that exists in a linear relationship between variables that are continuous. When multicollinearity exist, the variance and covariance of estimators will be large and thus, makes precise estimation difficult. One rule of thumb generally accepted is that when the pair-wise correlation coefficient between two regressors are on the higher side, that is, in excess of 0.8, then multicollinearity is considered a serious problem. Table 2 below shows the results of correlation for the variables.

Table 2: Correlation results for variables used in the model

	ROA	SDTA	LDTA	TDTE	TDTA	SIZE
ROA	1.0000					
SDTA	-0.0734	1.0000				
LDTA	-0.0298	-0.9296	1.0000			
TDTE	-0.3146	0.1755	0.1453	1.0000		
TDTA	-0.4106	0.0273	0.1208	0.7530	1.0000	
SIZE	0.1574	-0.2040	0.0616	-0.2607	-0.0067	1.0000

Source: Author's report (2022)

From table 2, it is clear that there is severe problem of multicollinearity between LDTA AND SDTA as the pair-wise correlation coefficient between them is above 0.8. Including these two variables in the regression will make precise estimation difficult as the standard errors would become large, thereby p-value being large. As a result, the coefficients will tend to be insignificant. Hence, the study excluded these variables and used TDTA, which is the sum of both the short- and long-term debt ratios, as the main leverage variable. Also, as a means of robustness check, an alternative measure of leverage which is TDTE was also employed.

System GMM results for the effect of leverage on banks profitability

The results of system GMM estimation techniques were presented and discussed in this section. Table 3 below shows the results.

Table 3: System GMM results for the effect of leverage on banks' profitability (Dependent var: ROA)

Variables	Coef.	Std. Err.	P>z
Roa (-1).	.5043558	.1837107	0.006***
Tdta	.2890666	.1614307	0.073*
Size	.0064159	.0033748	0.057*

_cons	-.3354464	.1717041	0.051*
Observations	32		
Banks	8		
Instruments	12		
Wald stat	10.03		0.0183**
Hansen P-value			0.3761

Source: Author's report (2022), ***p< 0.01, **p< 0.05, *p< 0.1

The results from the baseline model in table 3 show that all the variables employed by the study are significant. The study found out that total debt to total asset ratio(leverage), lagged value of return on asset and size promote profitability of banks listed on the Ghana Stock Exchange. The study showed that all things being equal, a 1% increase in lagged return on asset ratio (ROA (-1)) will increase current return on asset ratio (ROA) by 0.50%. This by implication means that banks' previous profits have the effect of driving up their current profit margins and the impact is relatively strong. This may be due to the fact that banks consider previous year's profits before making current decisions regarding investment, administrative and other relevant issues. For the variable of interest, the estimate shows that all other things being equal, for every 1% improvement in TDTA (leverage), ROA is enhanced by 0.29%. This empirical evidence provides support for the first hypothesis of the study and also, for the theorized claim that financial leverage helps firms to improve their profits. This claim holds true in the banking sector because deposits are the main source of banks funding and are the lowest cost of funds. Alper and Anbar (2011) found that the more deposits are transformed into loans, the higher the interest margin and profit. Therefore, deposits have positive impact on profitability of the banks. This empirical finding is consistent with earlier studies done by Addae et al. (2013) whose results for banks and pharmaceutical companies in Ghana were positive, Anafo et al. (2015) and Manrandu and Sibindi (2016). However, studies conducted by Singh &Baga (2019),Fama and French (1998), Kang (2011) and Tailab (2014) contradicts the findings of this studies.

Similarly, the results reveal a positive relationship between size of the bank and return on asset (ROA) ratio. The estimate shows that a 1% percent increase in the size of the bank will increase ROA by 0.01%, all things being equal. This means that if banks are able to enhance their size by way of acquiring more asset, their profitability (ROA) would improve. This is because larger firms are expected to receive more publicity and have greater name recognition, it is easier to make profit for large firms (Kang, 2011). Brown and Perry (1994) stated that a firm's profitability is also related to its reputation. This study is consistent with the findings of Anafo et al (2015), Manrandu and Sibindi (2016), and Kang (2011). The findings of Gichuhi (2016) contradicts this studies results.

Results of the test of inverted u-shaped relationship between ROA and TDTA (leverage)

The study also tested for non-linear (inverted U-shaped) relationship between ROA and TDTA. Table 4 below shows the findings.

Table 4: System GMM results of the test of inverted u-shaped relationship between ROA and TDTA (Dependent var: ROA)

Variables	Coef.	Robust Std. Err.	P>z
Roa (-1).	.4794166	.2146405	0.026**
Tdta	12.23776	2.812375	0.000***
Tdta^2	-7.132957	1.697515	0.000***
Size	.0039961	.0033706	0.236
cons	-5.295383	1.171036	0.000***
Observations	32		
Banks	8		
Instruments	13		
Wald stat	93.56		0.0000***

Source: Author's report (2022), ***p< 0.01, **p< 0.05, *p< 0.1

The results indicate a non-linear (inverted u-shaped) relationship between TDTA and ROA and this provides evidence in support of hypothesis two of the study. Also, all the variables in the previous estimate maintained their initial positive signs which shows how robust the estimate is. Consistent with expectation, the coefficient of TDTA is positive and that of the quadratic form of TDTA is negative.In interpreting the magnitude of the coefficient of TDTA, the net effect was computed. The net effect is (see computation below) 0.45310. This means that if TDTA is increased by 1%, ROA will increase approximately by 0.453%.

$$\frac{\partial(ROA_{it})}{\partial(LEV_{it})} = \beta_3 + 2\beta_4 LEV_{it} = 0$$

$$TDTA_{it} = \frac{\beta_3}{-2\beta_4}$$

$$TDTA_{it} = \frac{12.2378}{14.2659}$$

$$TDTA_{it} = 0.856$$

The explanation of the inverted U-shaped relationship is that TDTA has a positive effect on ROA but only up to a threshold level or turning point, after this threshold level, increase in TDTA ratio (leverage) will decrease ROA (profitability). This means that the square leverage term suggests the existence of an optimal leverage at which profitability is maximized. The threshold level or turning point is estimated to be 0.858% (see computation below). This suggests that TDTA (leverage) positively affect ROA (profitability) until it reaches a turning point of 0.858%. After this turning point, additional TDTA (leverage) decreases ROA (profitability). This result is consistent with conventional capital structure theories, which state that in a world with "friction," such as tax and interest, there exists an optimal leverage where benefits and costs of carrying debt are balanced. When a firm begins to use debt, it enjoys a tax shelter created by the interest expense, and profitability thus improves. However, as the firm continues to increase its leverage, the debt obligation eventually exceeds the firm's debt-serving ability, resulting in high default risk. The costs of high default risk would then outweigh the tax

benefits. Consequently, these results indicate that managers should try to maintain an optimal leverage that balances the benefits and costs of debts. The finding of this study is consistent with the works of Kang (2011) and, Tang and Jang (2009).

$$\frac{\partial(ROA_{it})}{\partial(LEV_{it})} = \beta_3 + 2\beta_4 LEV_{it} = 0$$

$$TDTA_{it} = \frac{\beta_3}{-2\beta_4}$$

$$TDTA_{it} = \frac{12.2378}{14.2659}$$

$$TDTA_{it} = 0.856$$

Robustness check 1: Using Return on Equity (ROE) as dependent variable

Return on Equity ratio was employed as an alternative measure of profitability and the results is shown in table 5 below.

Table 5: Results for the effect of leverage on banks' profitability (Dependent var: ROE)

Variables	Coef.	Std. Err.	P>z
Roe (-1).	.4747535	.1690736	0.005***
Tdta	2.036051	.8162905	0.013**
Size	.0481534	.0236093	0.04**
_cons	-2.416271	.9617277	0.012**
Observations	32		
Banks	8		
Instruments	12		
Wald stat	12.47		0.0059***
Hansen P-value			0.6840

Source: Author's report (2022), ***p< 0.01, **p< 0.05, *p< 0.1

From table 5, the results show that all the variables are significant. The signs of the coefficients are consistent with the baseline results in table 3. This confirms the robustness of the baseline estimate. All other things being equal, for every 1% increase in TDTA and SIZE, ROE rises by 2.036 and 0.048 respectively.

Robustness check 2: Using Return on Equity (ROE) as dependent variable and Total Debt on Equity (TDTE) as independent variable

Return on Equity ratio and total debt to total equity were employed as alternative measures of profitability and leverage respectively. The result is shown in table 6 below.

Table 6: Results for the effect of leverage on banks' profitability (Dependent var: ROE)

Variables	Coef.	Std. Err.	P>z
Roe (-1).	.4931067	.1792821	0.006***
Tdte	0.044871	.0207266	0.030**
Size	.0499519	.0256259	0.51*
_cons	-.9794007	.506614	0.053*

Observations	32	
Banks	8	
Instruments	12	
Wald stat	11.13	0.0110**
Hansen P-value		0.7437

Source: Author's report (2022), ***p< 0.01, **p< 0.05, *p< 0.1

From table 6, the results show that all the variables are significant. The signs of the coefficients are consistent with the baseline results in table 3. This also confirms the robustness of the baseline estimate. All other things being equal, for every 1% increase in TDTE and SIZE, ROE rises by 0.045 and 0.050 respectively. Comparing the coefficient of TDTA in the baseline equation to the coefficient of TDTE, the impact of TDTA (0.289%) on profitability (ROA) is relatively stronger than the effect of TDTE (0.045) on profitability (ROE).

Robustness check 3: Using Return on Asset (ROA) as dependent variable and Total Debt on Equity (TDTE) as independent variable

Return on Asset ratio and total debt to total equity were employed as measures of profitability and leverage respectively. The result is shown in table 7 below.

Table 7: Results for the effect of leverage on banks' profitability (Dependent var: ROA)

Variables	Coef.	Std. Err.	P>z
Roe (-1).	.5007268	.191172	0.009***
Tdte	.0058902	.0040586	0.147
Size	.0063624	.0036207	0.079*
_cons	-.123179	.0756859	0.104
Observations	32		
Banks	8		
Instruments	12		
Wald stat	8.97		0.0297**
Hansen P-value			0.3810

Source: Author's report (2022), ***p< 0.01, **p< 0.05, *p< 0.1

The results of the estimate show that all the variables are significant except TDTE. The signs of the coefficients are consistent with the baseline results in table 3. This also goes to confirm the robustness of the baseline estimate.

Summary on the findings of the hypothesis test of the stud

Hypothesis one tested for the relationship between leverage and profitability of banks listed on the Ghana Stock Exchange. The null hypothesis of no effect between leverage (TDTA) and profitability (ROA) was rejected at 10% level of significance and hence, was concluded that there is relationship between leverage and profitability. Clearly, the finding of the first hypothesis suggests that leverage drives banks profitability.Hypothesis two also tested for the inverted u-shaped relationship between

leverage and banks profitability. The square of Leverage was positive and significant at 1% level of significance. This means that the null hypothesis of no u-shape relationship between leverage and banks' profitability was rejected. Therefore, it implies that there is a u-shape relationship between leverage and profitability. Hypothesis three tested for an optimal level of leverage for banks enlisted on the Ghana Stock Exchange and that was calculated to be 0.86%.

4. Conclusion

Based on the findings of the study, the following conclusions were drawn:

1. In the banking sector of Ghana, leverage is a relevant driver of banks' profitability.
2. A non-linear or inverted u-shape relationship exists between leverage and profitability.

An optimal level of leverage is needed by banks to maximize their profit and the study calculated it to be approximately 0.86%.

Recommendations

Based on the findings of the study, the following policy recommendations were made:

i. Considering the impact of leverage on profitability and the non-linear relationship that exist between them, the study recommends that managers of banks should strive to identify theoptimal level of leverage associated with their banks and also maintain it since it represents the point where the market value of the bank or the bank's profit is maximized.

ii. The government and policy makers in Ghana should implement policies that will help reduce the bottlenecks and develop the bond market so that banks, financial and non-financial firms can easily raise enough debt to finance their operational needs. Also, there should be prudent reforms in the financial market to help reduce the cost of debts for firms in Ghana. This will help the banks to increase their profit as leverage has a positive influence on banks' financial performance.

iii. With regards to size, the study found a positive relationship between firm size and banks' profitability. Hence, managers of banks should consider more cost effective and efficient ways of increasing their asset to the desired level so that profit can be increased.

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