The Effect of Gender Diversity and Ownership Structures on Bank Stability in Ghana

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Abstract: This research was driven by an exploration of the aftermath of the recent financial sector crisis in Ghana and its widespread impact on not just the financial sector but also the broader economy and public confidence in commercial banks. Specifically, the study investigated the effects of various factors, including female representation on commercial bank boards, the presence of female CEOs, and ownership structures such as foreign ownership, government ownership, and managerial ownership on the stability of banks in Ghana. A sample of 15 commercial banks was examined over a decade, spanning from 2012 to 2021. To analyse the data, the study employed a combination of descriptive statistics, correlation analysis, and generalised least square panel regression after addressing various methodological challenges. Notably, the findings revealed a robust positive relationship between foreign ownership and bank stability in Ghana. On the other hand, government ownership and managerial ownership exhibited a negative association with bank stability, although these relationships were statistically insignificant. Female representation on boards and the presence of female CEOs were both linked to increased bank stability in Ghana. Overall, the results of this study align closely with the expectations of agency theory, particularly in the context of gender diversity and its influence on bank stability. This research sheds light on the nuanced dynamics within the Ghanaian banking sector, offering valuable insights for stakeholders and policymakers concerned with enhancing the stability and resilience of financial institutions in the aftermath of a crisis.

Keywords: Gender diversity, ownership structures, bank stability, panel data, Ghana.

JEL Classification: G01, G18, G21, G34.

INTRODUCTION

The banking sector stands as a cornerstone, if not the linchpin, of every economy, serving as intermediaries between those with surplus funds and those in need of financing for their endeavours (Musah, Padi & Ahmed., 2022; Otero et al., 2019; Felicio *et al.*, 2018; Arouri *et al*., 2014). The robustness of a nation's financial system is pivotal in fostering growth and development across various sectors, ultimately influencing the well-being of its populace. Recognising the pivotal role of banks, extensive academic research has been dedicated to understanding their central function within the financial system and ensuring their optimal operation for the benefit of all stakeholders (Moussa, 2019; Musah *et al.*, 2019; Kusi *et al*., 2018).

In recent years, the banking sector in Ghana has grappled with significant crises, primarily attributed to governance deficiencies, weak ownership structures, and inadequate regulations (Musah, Padi & Ahmed, 2022; Affum, 2020; Torku & Laryea, 2021). It remains unclear which ownership structures specifically impacted bank stability and whether such effects were positive or negative. In response to these challenges, substantial reforms have been implemented, aiming to fortify the stability of banks and prevent a recurrence of financial sector crises in Ghana (Musah *et al.*, 2021). Some of these reforms are still underway, geared towards bolstering the sector's resilience and instilling confidence among the public. Furthermore, the financial sector clean-up initiative, while addressing vulnerabilities, has also led to a loss of confidence in the banking sector, necessitating concerted efforts by regulatory authorities to rebuild trust (Affum, 2020). As the reforms continue, the sector aims not only for robustness and stability but also to regain public confidence, crucial for sustaining a healthy and thriving banking environment in Ghana.

Studies conducted in recent centuries underscore the significance of financial sector reforms, particularly those influencing the risk-taking behaviour and stability of banks. These investigations aim to unravel the complexities surrounding how diverse governance structures, firm characteristics, and regulations impact the risk profiles of banks (Kirkpatrick, 2009; Laeven and Levine, 2009; Iannotta *et al*., 2007; Pathan, 2009; Bopkin, 2016; Felicio *et al*., 2018; Moussa, 2019). Notably, the findings from these studies have often yielded conflicting results, reflecting variations in corporate governance regulations, capital structure regula-

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tions, banking laws, and ownership structures. The body of research spanning centuries emphasizes the dynamic nature of financial systems and the evolving role of regulatory frameworks in shaping the behaviour of banks. These studies provide valuable insights into the multifaceted interplay of factors influencing risk-taking behaviours and overall stability within the banking sector. As regulatory landscapes continue to evolve, understanding the nuanced relationships between governance structures, regulations, and banking outcomes becomes increasingly crucial for informed policy-making and the sustained resilience of financial institutions.

An integral facet of corporate governance that has been linked to the financial stability of banks is gender diversity, whether at the board level or within management ranks (Musah *et al.*, 2021; Faccio *et al*., 2016; Gneezy *et al*., 2009). These studies, along with others, posit that significant variations in risk-taking behaviour exist among management based on gender (Silla et al., 2016; Berger *et al.*, 2014; Cain and McKeon, 2016; Faccio et al., 2016; Adams and Ragunathan, 2013), thereby impacting the stability of firms. However, the results from these studies present a somewhat contradictory picture. For instance, while Adams and Ragunathan (2013) and Berger *et al.* (2014) found that an increased presence of women on boards is associated with higher risk-taking by banks, Faccio *et al.* (2016), in a study conducted in the United States, reported lower risk-taking behaviour when women were in management roles compared to their male counterparts. This discrepancy underscores the complexity of the relationship between gender diversity and risk-taking behaviour within financial institutions. Furthermore, there is a notable scarcity of evidence concerning the influence of gender on the risk-taking behaviour of banks in the Ghanaian context and, consequently, on bank stability. This scarcity enhances the relevance and importance of the current study, as it endeavours to contribute valuable insights into a nuanced and underexplored area, shedding light on the impact of gender diversity on risk-taking behaviours and, consequently, the stability of banks in Ghana.

A relatively understudied but crucial aspect concerning bank stability is the impact of ownership structures (Bopkin, 2016; Dong *et al*., 2014). Ownership structures play a pivotal role in shaping critical decision-making processes within banks, particularly in areas such as risk management, which significantly influences the level of financial stability (Musah *et al.*, 2022; Otero *et al.*, 2019). In the specific context of Ghana, the recent banking sector crisis, resulting in the collapse of over seven banks and more than 200 non-bank financial institutions, was partially attributed to bank owners who, in acting as management, overrode credit policies and exposed the banks to excessive risk (Musah *et al*., 2021). The pertinent question of which ownership structures influence bank stability and in what direction remains largely unanswered in developing countries such as Ghana. Additionally, ownership structures of banks vary from one country to another, making it imperative to examine how the ownership structure of banks in Ghana influences their stability. This examination not only helps fill gaps in the existing literature but also provides essential context to the findings of the study. Against this backdrop, the present study aims to address these discrepancies in the literature by scrutinizing the influence of both gender diversity and ownership structure on bank stability, particularly the risk-taking behaviour of banks, within the Ghanaian context. By doing so, the study seeks to contribute valuable insights into the multifaceted dynamics that underpin the stability of banks, offering a nuanced understanding of the roles played by gender diversity and ownership structures in influencing risk management decisions and, consequently, overall financial stability.

The study holds significant implications for the existing body of literature on ownership structure and gender diversity and firm outcomes in Ghana and across Africa. Furthermore, it contributes valuable insights that can inform policy reforms related to bank stability within the banking sector in Ghana. Firstly, the study stands out as one of the few that holistically examines the combined influence of ownership structures and gender diversity in both board and management positions on stability of banks. This comprehensive analysis provides a nuanced understanding of how these factors collectively impact the financial stability of banks, offering empirical evidence that enriches the literature in this domain. Secondly, the study sheds light on the often-overlooked aspect of board gender diversity and its influence on bank stability within the Ghanaian context. This contribution is particularly significant as it addresses a gap in the literature and provides empirical evidence specific to the Ghanaian banking sector. Perhaps most importantly, the results of the study carry practical implications for regulatory bodies, such as the Bank of Ghana and the government. By offering empirical evidence on the relationship between ownership structures, gender diversity, and bank stability, the study provides a basis for informed policy decisions. Specifically, the findings can guide corporate governance reforms and ownership structure adjustments aimed at curbing excessive risk-taking by commercial banks in Ghana, ultimately enhancing their financial stability. In this way, the study serves as a valuable resource for policymakers, regulators, and industry stakeholders seeking to foster a more stable and resilient banking sector in Ghana.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Foreign Ownership and Bank Stability

Foreign ownership is widely recognised for its potential impact on firm outcomes, and this extends to the stability of banks (Musah *et al.*, 2021). The presence of foreign ownership introduces a distinctive risk-taking behaviour, as these banks adhere to credit policies from their parent institutions, often characterized by high international standards, especially in comparison to local banks, particularly in developing countries (Bopkin, 2016; Musah, Okyere, Boye & Dodor, 2022). Existing research has consistently highlighted that foreign-owned banks tend to exhibit greater efficiency and profitability than their local counterparts (Charmler *et al*., 2018; Arouri *et al.*, 2014; Musah *et al*., 2021). Arouri *et al.* (2014) suggest that private investors often prefer foreign-owned banks due to their established track record and superior governance frameworks. However, empirical studies exploring the relationship between foreign ownership and bank stability have produced conflicting results. Arouri *et al.* (2014) found a negative association between foreign ownership and bank risk-taking behaviour, indicating a potential

stabilizing effect. Conversely, Solanko (2008) reported a positive association, suggesting that foreign-owned banks might engage in higher levels of risk-taking. It can be argued that foreign-owned banks may possess superior governance systems and effective credit risk management policies, mitigating their exposure to unnecessary risks. Additionally, the oversight and monitoring of managers by the parent bank could act as a deterrent against excessive risk taking, ultimately contributing to the stability of these banks. The observation that none of the foreign-owned banks were affected by the financial sector clean-up exercise in Ghana further supports the notion that they are financially more stable. In light of these considerations, the study posits a hypothesis that aligns with the idea that foreign ownership contributes positively to the stability of banks.

H1: There is a positive relationship between foreign ownership and bank stability in Ghana.

Managerial Ownership and Bank Risk-Taking Behaviour

From the standpoint of agency theory, managerial ownership emerges as a mechanism designed to align the interests of managers and shareholders within an organization (Otero *et al.*, 2019; Himaj, 2014). The presence of managerial ownership introduces a nuanced dimension to risk-taking behaviour in banks, as directors with shareholdings may exhibit different risk appetites compared to those without shares (Gursory & Aydogan, 2002). This difference in risk appetite among directors with varying levels of managerial ownership is posited to influence the overall risk-taking behaviour of banks, consequently impacting their stability. Despite being a potent corporate governance mechanism for mitigating agency problems, managerial ownership has received relatively little attention in corporate governance and ownership structure studies. Existing research suggests that shareholders generally exhibit a higher risk appetite than managers, stemming from their ability to diversify their capital and the potential for greater gains if their higher risk-taking behaviour pays off (Otero *et al*., 2019; Bopkin, 2016). Conversely, managers, whose returns are tied to the performance of the entity they manage, tend to prefer lower risk. This preference is rooted in the desire to safeguard the company from financial distress and bankruptcy, as any mistakes in taking higher risks could jeopardise the company and its job security (Gursory & Aydogan, 2002).

Directors who possess shares find themselves navigating between these two extremes of risk appetite. Empirically, the direction of the risk appetite of such directors is not clear. However, considering the lack of evidence supporting a clear direction in the relationship between these two variables, coupled with the influential role that directors with shares often play in major decision-making processes within a bank, it is inferred that they are more likely to behave in line with shareholders than as managers. Therefore, directors with significant managerial ownership are hypothesized to have a higher risk appetite. In summary, Thus, the study posits a hypothesis based on the notion that managerial ownership, as a governance mechanism, influences the stability of banks, with directors holding substantial shares likely to exhibit a risk appetite more aligned with shareholders than with managers.

H2: There is a negative and statistically significant association between managerial ownership and bank stability

Government Ownership and Bank Stability

The literature consistently suggests that high government control in banks can lead to unnecessary bureaucracy and inefficiencies, potentially impacting the financial performance of such banks (Musah *et al*., 2020; Bopkin, 2016; Gursory & Aydogan, 2002). Despite these potential drawbacks, government ownership continues to dominate the banking sector in certain countries, particularly in developing nations, prompting the need for further research to comprehend how such ownership affects the risk-taking behaviour and stability of these banks (Arouri *et al*., 2014). Government ownership introduces a unique dynamic, as managers of government-owned banks may face political pressures to make decisions they would not typically take. This aspect adds a different dimension to the discussion of risk appetite between shareholders and managers (Bopkin, 2016). Research indicates that government-owned banks might be compelled to provide financing to government projects that may not be inherently profitable, exposing these banks to unnecessary risks (Otero *et al*., 2019; Iannotta *et al*., 2007). Additionally, state-owned banks are often found to have suboptimal credit risk management systems, particularly concerning government projects, compared to other banks (Cornnett *et al*., 2010; Berger *et al*., 2005).

Empirical evidence on the relationship between state ownership and risk-taking behaviour supports the notion that higher government control is associated with increased risk-taking. Fungacova & Solanko (2008) reported a positive association between state ownership and excessive risk-taking behaviour, while Zribi & Boujelbene (2011) found that banks with higher government control exhibit higher risk-taking behaviour, elevating the risk of bankruptcy. Based on these arguments and empirical findings, the study posits a hypothesis that explores the potential impact of state ownership on the risk-taking behaviour of banks, suggesting that higher government control is associated with increased risk-taking behaviour and, consequently, a higher risk of financial instability

H3: There is a negative and statistically significant association between government ownership and bank stability

Board Gender Diversity and Bank Stability

Gender diversity on corporate boards has garnered significant attention in recent times as part of a global push for equitable women participation in decision making (Musah, Okyere, Boye & Dodor, 2022; Silla *et al.*, 2016; Musah *et al.*, 2019). Studies exploring the link between gender diversity and firm outcomes have yielded mixed results, often attributed to environmental factors influencing the observed differences (Silla *et al*., 2016). Research indicates that men and women exhibit distinct risk appetites in the corporate environment (Berger *et al.*, 2014; Faccio *et al*., 2016). Women are generally perceived as less overconfident, leading to a tendency to avoid unnecessary risks (Deaves *et al.*, 2009).

However, when women actively pursue career advancement, the element of risk aversion may diminish, potentially leading to increased risk-taking behaviour (Adams and Funk, 2012).

At the corporate board level, gender diversity has been associated with improved decision-making and monitoring quality. However, its impact on firm stability behaviour remains unclear in the existing literature. Some studies, such as Berger et al. (2012) and Gregory-Smith *et al.* (2014), suggest that increasing female representation on boards is linked to higher risk-taking behaviour and lower stability. Contrarily, other research, including studies by Silla et al. (2016), Harjoto *et al.* (2014), and Moussa (2019), argues that female representation on the board of banks reduces risk-taking behaviour and enhances firm stability. Farag and Mallin (2015) contend that firms with a higher proportion of women on their boards, exceeding 20%, have a lower probability of experiencing financial distress and bankruptcy. However, Bellucci *et al.* (2010) did not find a significant relationship between gender diversity and bank risk-taking behaviour. In summary, a majority of studies suggest that women tend to take less risk compared to men and contribute to good governance practices on boards. Given these varied perspectives, the study posits a hypothesis that explores the relationship between gender diversity on boards and risk-taking behaviour, suggesting that increased female representation is associated with lower risk-taking behaviour and improved firm stability.

H4: There is a positive and statistically significant association between board gender diversity and bank stability in Ghana.

Gender of CEO and Bank Stability

Despite the acknowledged benefits of gender diversity, particularly the introduction of creativity and diverse perspectives in organisations, previous studies suggest that the impact of female CEOs goes beyond being part of the board, with substantial influence in terms of driving change (Musah *et al.*, 2019). Research indicates that organisations led by female CEOs exhibit lower profit volatility, reduced leverage, and a lower likelihood of financial catastrophe or insolvency (Faccio *et al*., 2016). Furthermore, studies find that a change in leadership from male to female CEOs significantly reduces the company's risk-taking behaviour. Female CEOs are believed to influence organisational risk-taking by advocating for lower-risk investments and policies, or employing creative strategies to effectively reduce overall risk. A consensus in the literature points to gender differences in risk aversion, with the majority of studies concluding that female executives are generally less prone to taking risks compared to their male counterparts (Booth and Nolen, 2012; Bertrand and Pan, 2013; Croson and Gneezy, 2009; Faccio *et al.*, 2016). Despite these investigations into gender roles in corporate decision-making, there is a notable gap in the literature regarding the impact of female top executives, particularly CEOs, on firm outcomes, including stability. Sila et al. (2016), when considering the endogeneity of gender selection choices, found evidence of reduced risk-taking by organisations. Studies by Huang & Kisgen (2013) and Cole (2013) further support the notion that organisations with female CEOs or CFOs tend to exhibit less risk-taking behaviour. Huang and Kisgen (2013) suggested that enterprises with female CEOs or CFOs are less likely to engage in acquisitions, attributing this to the perceived risk aversion of female leaders. Similarly, Cole (2013) found evidence of reduced leverage in female-owned enterprises compared to male-owned firms, indicating a more conservative approach to risk-taking by female CEOs. Based on the presented information and reasoning, the study posits a hypothesis that explores the relationship between female CEOs and risk-taking behaviour, suggesting that organisations led by female CEOs are associated with lower risk-taking and, consequently, enhanced firm stability.

H5: There is a positive and statistically significant relationship between female CEOs and bank stability in Ghana.

METHODOLOGY

The study employed a quantitative research design for several reasons. Firstly, it relied on secondary data sourced from the financial statements of commercial banks in Ghana, measured in numerical terms. Secondly, the study employed statistical tools like descriptive statistics, correlation analysis, and panel regression analyses, which are specific to quantitative research. Thirdly, the research aimed to investigate the impact of gender diversity and ownership structures on bank stability, a task best suited for a quantitative approach. Finally, the quantitative research design aligns with the positivist research philosophy and is consistent with approaches used in previous studies (Musah, Padi & Ahmed 2022; Musah *et al*., 2021; Bopkin, 2016).

The primary data source for the study was secondary, drawn from financial statements of selected commercial banks in Ghana. Currently, there are 24 licensed commercial banks in Ghana according to data from the Bank of Ghana. The study employed a 10-year sample frame of balanced data, covering the period from 2012 to 2021, in line with similar studies (Musah *et al*., 2019; Bopkin, 2016). The selection criteria for banks included in the study were as follows: the bank should have been in operation in Ghana for the last 10 years, i.e., incorporated on or before 2012, and its financial statements, including annual reports with notes, should be accessible either on the bank's website or on other public data platforms such as annualreportghana.com. Based on these criteria, 15 out of the 24 banks met the selection criteria and were included in the study. The study extracted gender diversity variables, ownership structure variables, and control variables from the financial statements.

ECONOMETRIC SPECIFICATION

The study used the following panel econometric model to examine the effect of gender diversity and ownership structures on bank risk-taking behaviour in Ghana. The dependent variable is bank stability which is proxied by the z-scores of the bank. The gender diversity variables include female representation on the board and female CEO while the ownership variables include managerial ownership, government ownership, and foreign ownership. The study also included variables such as profitability of banks, bank liquidity, and bank size as control variables in line with previous studies' predictions that they influence bank stability.

$$Zscores_{it} = \beta_0 + \beta_1 FOWN_{it} + \beta_2 GOWN_{it} + \beta_3 MANOWN_{it} + \beta_4 FRB_{it} + \beta_5 GDCEO_{it} + \beta_6 ROA_{it} + \beta_7 BANKSIZE_{it} + \beta_{18} BANKLIQUID_{it} + \varepsilon_{it}$$

Where ε_{it} is the idiosyncratic error term; β_0 is the constant term; β_1, $\beta_{2....}$ B_3 are unknown parameters to be estimated to establish the empirical relationship between the dependent variable and the respective individual explanatory variables. The definition and measurement of the variables are summarised in Table **1**.

Table 1. Measurement of Variables.

Variable	Definition	Measurement
Z-score	Bank stability	The quotient of the sum of ROA and equity-to-asset (CAR) to the standard deviation of ROA (see Equation 2).
MANOWN	Managerial ownership	Proportion of shares held by directors
GOWN	Government ownership	Measured as dummy where 1 represent banks with government control and 0 otherwise
FOWN	Foreign Ownership	Measured as dummy where 1 represent foreign controlled bank and 0 otherwise.
FRB	Female representation on Board	Proportion of female board members on the board
BANKSIZE	The size of banks	Measured as the natural logarithm of total assets of banks
BANKLIQUID	Bank liquidity	Measured as liquid assets of banks over total liabilities
ROA	Bank profitability	Represented by Return on assets which is measured as net income divided by total assets

Table 2. Descriptive Statistics of Variables.

Variable	Mean	Std. Deviation	Minimum	Maximum
Bank stability	13.88	0.1223	6.1346	16.3460
Foreign ownership	0.5533	0.498	0	1
Government ownership	0.16	0.3678	0	1
Managerial ownership	0.035	0.0616	0	1
Female representation on boards	0.2003	0.1715	0	0.428
Gender of CEO	0.06	0.238	0	1
Return on Assets	0.0365	0.0308	-0.035	0.18
Bank size	0.1328	0.4502	7.615	10.003
Bank liquidity	0.6955	0.4735	0.3	5.96

$$Zscore = \frac{ROA+CAR}{\sigma ROA} \quad (2)$$

Here, σROA denotes the standard deviation of ROA as a proxy for bank stability.

$$ROA = \frac{Net\ Income}{Total\ Assets} \quad (3)$$

$$CAR = \frac{Total\ Equity}{Total\ Assets} \quad (4)$$

ANALYSIS AND DISCUSSION OF FINDINGS

Descriptive Statistics

The descriptive statistics helps to establish the minimum score in each of the variables used, their maximum score and the mean score as well as the standard deviation. The results of the descriptive statistics are presented in Table **2** above.

The first descriptive statistics measured bank stability using the z-scores of the banks over the study period. The higher

Table 3. Correlation matrix.

Variable	Stability	FOWN	GOWN	Manown	Frb	GenCEO	ROA	Size	Liquidity
Stability	1.0000								
FOWN	0.5070	1.0000							
GOWN	-0.1843	-0.4858	1.0000						
Manown	-0.1489	-0.3226	-0.1308	1.0000					
Frb	0.1422	-0.2352	0.1109	0.0481	1.0000				
GenCEO	0.3205	0.1705	-0.1103	-0.1442	0.0539	1.0000			
ROA	0.2732	0.1449	0.0073	-0.1843	0.1310	0.2614	1.0000		
Size	0.5754	0.0141	0.2219	-0.1415	0.1525	0.2507	0.2029	1.0000	
Liquidity	0.4119	0.0233	-0.0533	-0.1573	-0.1195	0.0226	0.2043	-0.0120	1.0000

NOTE: Zscore = Stability; MANOWN = Manown; BANKSIZE = Size; BANKLIQUID = Liquidity.

the z-scores of a bank, the more financially stable the bank is, and vice versa. The results of the descriptive statistics show a mean score of 13.88 with a minimum of 6.13 and a maximum of 16.35. The second variable reflected the foreign ownership of Ghanaian banks. Foreign ownership accounts for approximately 55 percent of the sampled banks in the Ghanaian banking system, indicating that the majority of banks operating in Ghana are foreign-owned. The following Table **2** variable examined government ownership in the banking sector. The finding indicates that just 16 percent of the sampled banks are government-owned, while the remainder are privately owned. The results indicate that the majority of banks in Ghana are owned by individuals and investors from the private sector. The next variable in Table **2** measured the percentage of managerial ownership in the sampled banks of the study. Managerial ownership is one method for reducing agency conflict, as it ensures that key management staff own business stock. The conclusion of the investigation revealed that only 3.5% of the company's shares are owned by key management members. The next variable in Table 2 measured the percentage of women on the boards of the sampled banks. The descriptive analysis reveals that the average percentage of women serving on bank boards is 20%. Some banks had no female board members, which is why the minimum score is 0, while the bank with the most female board members had 43 percent female board members. The next variable measured the gender of the bank's chief executive officers, focusing on the proportion of banks with female CEOs. The finding indicates that female CEOs account for 6% of the total number of CEOs during the study period. The result indicates a low number of female bank CEO appointments over the past decade, indicating that men continue to dominate bank CEO posts. The average return on assets for the control variables for the study period is 3.6%, with the smallest return on assets being -3.5% and the maximum return on assets being 18%. The average size of banks, as measured by the natural logarithm of total assets, was 9.13, with a range of 7.61 to 10.03. For the period under investigation, the ratio of liquid assets to total assets, a measure of bank liquidity, averaged about 70 percent.

Correlation Analysis

Examining the linkage between the dependent variable and each of the explanatory variables, the study employed correlation analysis. The correlation analysis was also used to determine the perceived presence of multicollinearity amongst the independent variables. The correlation analysis results are provided in Table **3**.

The first variable in the model examined the relationship between foreign ownership and bank stability behaviour. The correlation matrix in Table **3** shows a positive and strong correlation between foreign ownership of banks and the level of bank stability. The next variable from the correlation matrix in Table 3 measured the relationship between government ownership and bank stability. The correlation analysis shows a weak negative correlation between government ownership and bank stability. The correlation analysis also revealed a negative correlation between managerial ownership and bank stability. The correlation result showed a positive correlation coefficient between female representation on the board and bank stability in Ghana. The result shows a direct positive correlation between female representation and bank stability in Ghana. The last independent variable focused on the gender of the Managing Director or Chief Executive Officer (CEO) of the bank and its impact on bank stability. The results of the correlation matrix showed positive correlation between female CEO and bank stability. The results of the correlation matrix showed a positive correlation between female CEO and bank stability. All the control variables had a positive correlation with stability with size and liquidity showing a strong correlation.

Diagnosis of Data

The study initiated the model selection process by employing the Hausman test, a statistical tool used to determine whether the fixed effect model or the random effect model is more suitable for the regression analysis. The Hausman test yielded a p-value of 0.3542, indicating statistical insignificance. Consequently, the null hypothesis, suggesting no difference between the two models, was rejected, leading to the

selection of the random effect model for conducting the regression analysis.

Furthermore, the study addressed the potential impact of heteroskedasticity on the regression model's outcomes. Heteroskedasticity, which refers to the unequal variance of regression errors based on the values of independent variables, was assessed using the Breusch-Pagan test. This test, developed by Adrian Pagan, is commonly employed in research studies to detect heteroscedasticity. The null hypothesis of the Breusch-Pagan test posits no heteroskedasticity, and its rejection occurs when the test statistic yields a p-value below the conventional 5% significance level. The subsequent analysis of the Breusch-Pagan/Cook-Weisberg test results is presented below.

Ho: Continuous variation

Variables: fitted z-score values

Variables: fitted values of z-scores

chi2(1) = 58.39

Prob > chi2 = 0.0000

The test results indicate that the model exhibits heteroskedasticity, as evidenced by the significant test statistic. To address this issue, the study opted to use heteroscedasticity-consistent standard errors or weighted least squares during the regression analysis.

In addition to addressing heteroskedasticity, the study considered the potential presence of multicollinearity among the independent variables. Multicollinearity arises when two or more independent variables in the model display a strong linear relationship. Coffie et al. (2018) suggested that a correlation coefficient of 0.8 or higher between two variables indicates a strong linear connection. The correlation matrix presented in Table **3** reveals no evidence of severe multicollinearity, as none of the correlation coefficients exceeded 0.5. As an additional precaution, the study used the variance inflation factor (VIF) to assess multicollinearity, and the results are presented in Table **4**.

Table 4. Multicollinearity test results.

Variable	VIF	1/VIF
Foreign Ownership	1.78	0.5615
Government Ownership	1.62	0.616
Managerial Ownership	1.35	0.7427
Female Representation on Board	1.35	0.8335
Gender of CEO	1.17	0.8549
ROA	1.15	0.8704
FRB	1.13	0.8835
Bank liquidity	1.06	0.9464
Mean VIF	1.31	

It is generally accepted that the variance inflation factor should not be greater than or equal to 4 when used to assess the presence of multicollinearity. It can be concluded from Table **4** that none of the independent variables had a VIF of greater than 4. Indeed, the highest reported VIF is 1.78, which implies that multicollinearity is not an issue for the analysis of the specified econometrical model (Equation 1). Hence, the estimated results are acquitted of spurious regression.

REGRESSION ANALYSIS

In estimating the equation for the regression analysis, we realized that the panel-corrected standard errors were more appropriate. The study, therefore, used PCSE which accounts for all cross-sectional interdependencies of the error. The results of the regression analysis are presented in Table **5**.

Table 5. Regression Results.

Variable	Coefficient	Std.Dev	Z
Foreign ownership	0.0393***	0.0168	2.3300
Government ownership	-0.0319	0.0284	-1.1200
Managerial ownership	-0.0169	0.0862	-0.2000
Female representation on boards	0.0996*	0.0544	1.8300
Gender of CEO	0.1066**	0.0497	2.1400
Return on Assets	0.7372***	0.2477	2.9800
Bank size	0.0354*	0.0213	1.6500
Bank liquidity	0.0394*	0.0234	1.6800
CONS	-0.1597	0.2126	-0.7500
Adjusted R-Squared	0.5367		
Wild Chi2 (8)	86.2400		
Prob>Chi2	0.0000		

***0.01 level of significance **0.05 level of significance *0.1 level of significance

The regression results had an adjusted R-square of 53.67% which suggests that the independent variables can explain approximately 54% of the variations in the dependent variable (bank stability). Furthermore, the probability of the model is statistically significant at 1% significance level which shows that the model has a good fit.

The initial variable examined in the model focused on the impact of foreign ownership on bank stability in Ghana. The regression results presented in Table **5** reveal a positive coefficient associated with foreign ownership, indicating a statistically significant positive relationship with bank stability at the 1% significance level. This suggests that foreign ownership is a substantial determinant of bank stability in the Ghanaian context. Moving on to the second variable, government ownership of banks displayed a negative relationship with

bank stability, although this negative association was statistically insignificant. While the statistical significance is not established, the negative coefficient suggests a potential influence of government ownership on decreasing bank stability in Ghana. Subsequently, the model explored the influence of managerial ownership on bank stability. The regression analysis identified a negative coefficient, indicating a negative relationship between managerial ownership and bank stability among commercial banks in Ghana. However, this negative association was statistically insignificant, suggesting that managerial ownership may not be a significant predictor of bank stability in the Ghanaian context. The study also delved into the impact of gender diversity on bank stability. The regression results demonstrated a positive and statistically significant coefficient at the 10% significance level, suggesting that increased gender diversity on the board contributes to improved bank stability. Finally, the gender of the CEO was considered in relation to bank stability. The regression analysis revealed a positive and statistically significant coefficient at the 5% significance level, indicating that having a female CEO is a significant determinant of bank stability in Ghana.

Regarding the control variables, the study found a positive coefficient between bank profit and the level of bank stability. The statistically significant positive association at the 10% significance level suggests that higher bank profits are indicative of greater financial stability. The second control variable investigated was the influence of bank size on bank stability. The regression analysis revealed a statistically significant positive coefficient at the 10% significance level, suggesting that larger banks tend to have higher levels of financial stability. The final control variable assessed was the impact of bank liquidity on the level of bank stability. The results indicated a positive relationship between bank liquidity and financial stability, with a statistically significant positive regression coefficient at the 10% significance level. This implies that bank liquidity is a significant predictor of the level of bank stability. Accordingly, the results of this study regarding these control variables underscore the importance of bank profitability, bank size, and bank liquidity in determining the stability of commercial banks in Ghana.

DISCUSSION OF FINDINGS

The study aimed to investigate the impact of gender diversity on the boards of directors on bank stability in Ghana. Both the panel regression analysis and the correlation matrix revealed a positive association between the gender diversity of the board and the stability of Ghanaian banks. This positive relationship was statistically significant at a 10% level, indicating that the proportion of women on bank boards serves as a meaningful indicator of the overall stability of the banking system in Ghana. This finding aligns with the predictions of agency theory, which advocates for diversity as a means to enhance board oversight and, consequently, improve bank stability. The empirical results support the initial hypothesis positing a connection between bank stability in Ghana and female participation on the board of directors. The outcome suggests that, compared to their male counterparts, women are often more risk-averse and inclined to take measured risks. This finding is consistent with previous results reported by Moussa (2019), Sila *et al.* (2016), and Harjoto et al. (2018), all of which found a direct link between female representation on bank boards and their z-scores. However, it contrasts with the findings of Berger *et al.* (2014) and Gregory-Gregory-Smith *et al.* (2014), who reported a negative relationship between female representation and the z-scores of banks. In effect, the results of this study lend support to the argument made by proponents of gender equality that women contribute to the stabilisation and growth of businesses, particularly in the banking sector, and should be provided with more opportunities in top-level banking management.

The second objective of the study focused on exploring the influence of managerial gender, specifically the gender of CEOs, on bank stability. The analysis delved into the correlation between having a female CEO and the stability of banks. The results indicated a positive correlation, and this association was not only statistically significant but also served as a robust predictor of bank stability. This outcome aligns with the *a priori* expectation of a positive relationship between having a female CEO and enhanced bank stability. The findings are consistent with prior research by Musah *et al.* (2021), who also reported a positive correlation between female CEOs and the z-scores of banks. The study suggests that female CEOs and CFOs tend to exhibit greater risk aversion compared to their male counterparts. As a result, they are less inclined to pursue inorganic growth strategies such as mergers and acquisitions. Another study by Cole (2013) found evidence of lower leverage for businesses led by women compared to those led by men. Additionally, Faccio *et al.* (2016) reported that companies with female CEOs use less loan capital, indicating lower financial risk compared to companies led by male CEOs. In effect, the findings of this study support the notion that the gender of CEOs, particularly having a female CEO, plays a significant role in predicting and contributing to the stability of banks. The risk-averse nature of female CEOs, as evidenced by lower leverage and financial risk, may contribute to the overall resilience and stability of the banking sector.

The final objective of this study explored the impact of ownership structure on bank stability, focusing on foreign ownership, government ownership, and managerial ownership. The first ownership structure variable, foreign ownership, revealed a positive correlation with bank stability in Ghana. The statistical significance of this positive association suggests that international banks operating in Ghana tend to take fewer risks compared to their domestic counterparts. The findings support the notion that banks with significant foreign ownership benefit from robust governance systems and effective credit risk management practices, minimising exposure to unnecessary risks. The positive relationship between foreign ownership and bank stability aligns with Musah, Okyere, Boye & Dodor (2022) findings and diverges from Bopkin's (2016) results, which showed a beneficial but statistically insignificant relationship.

The second ownership structure variable, government ownership, examined the impact of political influence on bank stability. The results indicated a negative association

between government ownership and bank stability, although this relationship was statistically insignificant. The absence of a significant relationship challenges the hypothesis predicting a significant negative link between government ownership and bank stability. This finding contrasts with Fungacova and Solanko's (2008) positive link between bank risk-taking behaviour and government ownership but aligns with Kwan (2004). The results also resonate with Musah, Okyere, Boye & Dodor (2022) findings of a negative but statistically insignificant relationship between government ownership and bank stability measured by z-scores. The study suggests that government-owned banks may perceive government bailout in times of distress as a potential rescue and safety net, leading to moral hazard effects and increased risk taking, which invariably contribute to financial instability.

The third ownership structure variable, managerial ownership, exhibited a negative coefficient with bank stability. The negative regression relationship implies that higher managerial ownership weakens bank stability in Ghana. However, the statistical insignificance of this association challenges the prediction of the agency theory that managerial ownership aligns the interests of management with shareholders' interests. The findings suggest that contrary to agency theory expectations, higher managerial ownership does not emerge as a significant predictor of bank stability.

CONCLUSION

The stability of the banking sector is a crucial factor for a resilient financial sector, macroeconomic policy effectiveness, accelerated economic growth, and sustainable development. Financially distressed banks may struggle to fulfill their role in financial intermediation, thereby impacting the growth of vital sectors of the economy. This study delved into the impact of various factors, including female representation on boards, female CEOs, and different ownership structures (foreign ownership, government ownership, and managerial ownership), on bank stability in Ghana. The findings of the study revealed a robust positive association between foreign ownership and bank stability in Ghana. Foreign ownership, by increasing the level of monitoring and supervision of management, acts as a preventive measure against unnecessary risks, thus contributing to the financial stability of banks. This aligns with the principles of the agency theory, emphasizing the importance of measures that enhance the monitoring of management to ensure improved financial performance and sustainability of banks.

On the other hand, the study found a negative but statistically insignificant association between both government ownership and managerial ownership with bank stability. While government-owned banks might perceive government support as a potential rescue, leading to moral hazard effects and increased risk taking, this relationship did not reach statistical significance. Similarly, the negative association between managerial ownership and bank stability could be interpreted through the lens of agency theory, where directors with significant shareholdings might be motivated to take higher risks to boost profits. However, this higher risk may have been counterproductive, contributing to a reduction in financial stability. The study also highlighted a positive association between female representation on boards and the presence of female CEOs with higher bank stability in Ghana. These findings are in line with the expectations of the agency theory, particularly in the realm of gender diversity's influence on bank stability. The study suggests that women in leadership positions contribute to stability, possibly due to risk-averse decision making. In conclusion, the results of this study underscore the intricate dynamics between ownership structures, gender diversity, and bank stability in the Ghanaian context. The findings provide valuable insights for policymakers, regulators, and industry stakeholders aiming to foster a stable and resilient banking sector.

RECOMMENDATIONS

In line with the findings of this study, the following recommendations are put forward. First, since the study found that female representation on the board increases the financial stability of commercial banks, it is hereby recommended that corporate governance codes should be revised to incorporate the inclusion of women on the boards of banks as a mandatory requirement to help improve their financial stability. Second, the study recommends that boards of banks should consider the appointment of women CEOs as this has the potential to improve the financial stability of commercial banks. Third, government ownership increases bank's risk-taking behaviour thereby reducing the stability of banks perhaps because of the perception of a possible bailout from the government should the bank go down. The government should desist from interfering in the management of banks it has control over and cease any form of guarantee to bail these banks out so that government-owned banks will not be exposed to unnecessary risk. Fourth, the study recommends that future research should focus on cross-country analysis of corporate governance variables, ownership structures, and gender influence on bank stability in Africa since this study is limited in geography (only Ghana).

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