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Article

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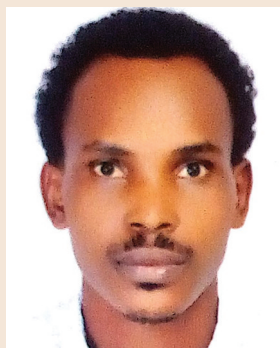
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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Revisiting the relationship between board structure and bank performance in Ethiopian commercial banks

Dereje Fedasa Hordofa^{1*}

Abstract: This study examines the relationship between board structure and the performance of 15 Ethiopian commercial banks from 2010 to 2022. Using panel data analysis, the study assesses the impact of board size and gender diversity on performance, measured by return on equity (ROE) and net interest margin (NIM). The results indicate that board size does not significantly affect performance, while higher gender diversity is positively associated with higher ROE. Moreover, economic growth positively influences ROE, while remittances exhibit a negative correlation. After controlling for endogeneity, macroeconomic factors impact ROE but not NIM. The findings shed light on the complex governance-performance dynamics in developing banking systems, contributing valuable empirical evidence from multiple theoretical perspectives. The study suggests selective board size expansion and leveraging diversity. However, limitations include the exclusive



Dereje Fedasa Hordofa

ABOUT THE AUTHOR

Dereje Fedasa Hordofa is a Lecturer at Dire Dawa University, Ethiopia. He is an esteemed member of the Ethiopian Economic Association (EEA), reflecting his dedication to contributing to the field of economics. Before his role as a Lecturer, Dereje gained valuable experience as a Customer Service Officer at Bank of Abyssinia (BOA) from 2017 to 2018, where he honed his skills in the financial sector. Currently, Dereje's research interests revolve around crucial areas such as Income Inequality, Financial Development, Development Economics, and Bank Performances. His dedication to these topics showcases his commitment to understanding and addressing key economic issues that can impact society and contribute to its development. As a researcher and lecturer, Dereje aims to bring valuable insights to the academic community and policymakers, fostering positive change and progress in the economic landscape of Ethiopia and beyond.

PUBLIC INTEREST STATEMENT

What makes for an effective bank board? As customers, we want banks to be profitable yet prudent, balancing performance and risk management. This research examines how board size and gender diversity affect financial outcomes at Ethiopian commercial banks from 2010-2022. Contrary to common wisdom, we find banks with larger boards did not perform better - more directors can lead to inefficiencies. However, greater gender diversity improved return on equity, suggesting varied perspectives strengthen oversight. Our study highlights the need for nuanced governance tailored to local contexts, rather than one-size-fits-all policies. As regulators push for lean, independent boards, they should consider potential costs of overly prescriptive requirements. The right board mix could fortify banks against instability while responsibly serving customers and communities. With insights from Ethiopia's fast-growing banking sector, this research illuminates important governance considerations for banks worldwide seeking the elusive formula to thrive in turbulent times.

focus on commercial banks and the relatively short timeframe. Overall, this analysis enhances our understanding of the study's focus on board structure-performance connections within the Ethiopian banking sector, emphasizing the need for context-specific research in this domain.

Subjects: Economics; Finance; Business, Management and Accounting; Industry & Industrial Studies;

Keywords: panel model; board structures; performance of commercial banks; fixed effects; random effect; Ethiopia

1. Introduction

Scholars and practitioners alike have widely acknowledged the significance of financial performance (Elgadi & Ghardallou, 2022; Liang et al., 2013; Ntim & Soobaroyen, 2013; Pathan & Faff, 2013; Ur Rehman et al., 2022). It plays a crucial role in maximizing firm profits, ensuring sustainable returns, and preserving shareholder investments (Kowoon et al., 2022; Lu et al., 2022; Pathan & Faff, 2013). In light of this, the present study aims to explore the relationship between board structure and bank performance in Ethiopian commercial banks.

In terms of theoretical motivation, several key theories underpin the study and offer perspectives on boards' governance roles. Agency theory highlights the board's monitoring function in aligning managerial interests with shareholders (Alhossini et al., 2021; Jensen & Meckling, 1976; Ntim, 2013; Quoc Trung, 2022). Resource dependence theory emphasizes the board's role in garnering critical resources through directors' expertise and networks (Salancik & Pfeffer, 1978). Stewardship theory posits that directors act as stewards, prioritizing organizational interests over personal motivations (Donaldson & Davis, 1991). These theories suggest board structure in terms of size and composition can significantly impact governance effectiveness and, thereby, organizational outcomes (Nicholson & Kiel, 2007). However, the actual relationship remains contingent on institutional and firm-specific factors (Filatotchev et al., 2007). Most previous studies on the board structure-performance relationship have predominantly relied on singular traditional theories like agency, resource dependence, or stewardship theory, warranting an integrated multi-theoretical lens to provide a nuanced understanding (Lu et al., 2022; Ntim, 2013).

Building on the recent systematic literature review by Lu et al. (2022), this study investigates the relationship between board structure and bank performance in Ethiopian commercial banks. It adopts an integrated, multi-theoretical approach to provide a comprehensive understanding of this relationship. Firstly, agency theory highlights the board's monitoring role in mitigating agency conflicts (Jensen & Meckling, 1976). Board size and composition affect oversight capabilities and agency costs. This theory connects board size and gender diversity to bank performance measures. Secondly, resource dependence theory emphasizes the board's role in providing expertise and networks (Hillman & Dalziel, 2003). Larger, more diverse boards offer greater resources, linking board structure to performance. Additionally, behavioral theory reinforces diversity's role in broadening perspectives (Carter et al., 2003). Furthermore, critical mass theory suggests female representation can influence decision-making once a threshold is reached (Joecks et al., 2013). Moreover, social role theory posits that gender roles shape behaviors and outcomes (Lange et al., 2011). Together, these relate gender diversity to performance.

Finally, contingency theory highlights that optimal governance depends on context (Donaldson, 2001; Elmagrhi et al., 2018). The structure-performance relationship may vary across countries and industries based on internal and external factors. This theory connects moderating factors like bank size, lending rate, liquidity ratio, and macroeconomic conditions such as economic growth, inflation, and remittances to the association among board structure and bank performance. By integrating these theories suggested by Lu et al. (2022) review, this study aims to provide

a comprehensive understanding of the complex dynamics between board structure and bank performance within the Ethiopian banking context.

On the empirical front, extant empirical evidence on the board structure-performance relationship remains equivocal. While some studies demonstrate a negative association amid board size and firm performance (Eisenberg et al., 1998; Ntim et al., 2013; Yermack, 1996), others show a negligible or even positive link (Dalton et al., 1999). The impact of gender diversity also varies across contexts, with critical mass theory positing a positive effect once a diversity threshold is attained (Joecks et al., 2013). These mixed findings suggest the relationship is complex and merits examination across diverse institutional settings (van Essen et al., 2011). However, most studies focus on developed countries, with limited evidence from emerging Sub-Saharan African economies facing distinct governance challenges (Tshipa et al., 2018). As such, this study addresses this geographical gap by providing novel empirical evidence from the under-researched Ethiopian banking context during a crucial period of reform and development.

In Ethiopia, conflicting evidence regarding the association between board structure and bank performance has been found in previous studies conducted by Fanta et al. (2013) and Berhe (2023). Fanta et al. (2013) reported a negative and significant impact of board size and the presence of an audit committee on bank performance, while Berhe's study revealed positive and significant effects of board composition (BCOMP) and board gender diversity (FDIRS) on bank performance. The relationship between board structure and bank performance has been the subject of numerous studies over the past few decades, with mixed and inconclusive results. This study aims to revisit this relationship in Ethiopian commercial banks and provide empirical evidence on the impact of board structure on bank performance. Specifically, the study addresses two key questions: What is the impact of board size on the financial performance of Ethiopian commercial banks? And how does board gender diversity influence their financial performance? By addressing these objectives the study aimed to unravel the complex links between board structure and performance while accounting for contextual factors unique to the Ethiopian banking system.

Consequently, the current paper seeks to make the following contributions to the existing literature: First, building on the recent systematic literature review conducted by Lu et al. (2022), it adopts an integrated multi-theoretical approach, departing from the predominant reliance on single traditional theories, to provide a comprehensive understanding of the relationship between board structure and bank performance. Second, by revisiting this relationship, the study incorporates theoretical frameworks and utilizes alternative performance measurements, namely Return on Equity (ROE) and net interest margin (NIM), to offer a more comprehensive assessment beyond the commonly used Tobin's Q ratio (Berhe, 2023). Third, employing panel data analysis enhances the study's robustness and reliability, allowing for variations across different periods and banks. Fourth, it accounts for diverse internal and external performance factors to isolate the effect of board structure. Fifth, this study addresses the issue of endogeneity in panel data analysis by utilizing robust estimation techniques, including the system Generalized Method of Moments (GMM) and instrumental variables Generalized Method of Moments (IV-GMM), to ensure the reliability and validity of the findings. Through these contributions, this research aimed to advance knowledge in the fields of corporate governance and banking, benefiting both academics and practitioners alike.

The paper was structured into seven main sections, as follows: The first section was the Introduction, which was present the research objectives, questions, and motivations. The second section provides Background on the Ethiopian banking sector, corporate governance and performance issues, and the need for the study. The third section covers the Theoretical Literature Review, analyzing relevant theories like agency, resource dependence, behavioral, critical mass, social role, and contingency theories. The fourth section was the Empirical Literature Review and Hypothesis Development, summarizing prior evidence on board size and diversity, identifying research gaps, and developing testable hypotheses. The fifth section details the Research design,

with the sample and data, variable operationalization, analytical model specification, and endogeneity issues. The sixth part presents the Empirical Results and Discussion, covering the statistical analysis and findings, robustness checks, and discussion of implications. Finally, the seventh section was the Conclusion, summarizing the study, key findings, contributions, limitations, future research, and theoretical and practical implications.

2. Background of the study

The gender diversity issue in the global banking landscape has gained significant attention due to its impact on organizational performance and inclusivity. While many studies have examined board structure and bank performance in Ethiopia (Berhe, 2023; Ferede, 2012), the impact of board of gender diversity on bank performance, particularly in commercial banks, has been relatively underexplored. This study aims to revisit the relationship between board structure and performance by focusing specifically on gender diversity within boards and its effects (Weis et al., 2022).

Ethiopia's banking sector is still in the early stages of development. The state-owned Commercial Bank of Ethiopia holds the majority (60%) of banking assets, while private banks have expanded rapidly and now represent 40% of the national branch network (NBE National Bank of Ethiopia, 2021). Efforts have been made to address the gender gap in financial inclusion, with various banks offering tailored services and preferential rates for female customers. However, among all Ethiopian banks, women hold only 11% of senior management positions and 15% of board seats (Weis et al., 2022).

The lack of gender diversity and parity in leadership likely impacts Ethiopian banks' performance on metrics like profitability and return on equity. Yet the exact nature of this relationship, particularly for commercial banks, remains unclear. The National Bank of Ethiopia (NBE) has strengthened Ethiopia's banking sector through reforms aimed at improving stability, efficiency, and inclusion. However, though progress has been made in addressing the gender gap, challenges persist (Weis et al., 2022).

By analyzing how board gender diversity and size impact Ethiopian commercial banks' performance, this study seeks to provide new insights (Weis et al., 2022). The results can help identify changes to board composition, policies, and practices that banks can adopt to both enhance gender diversity and improve performance, efficiency, and profitability (Weis et al., 2022). Several studies have investigated the impact of board structure on bank performance in Ethiopia, exploring variables like board gender diversity and board size (Berhe, 2023; Dato et al., 2018; Eldaia et al., 2022; Ferede, 2012). When examining determinants of bank performance, studies have analyzed factors like average lending rates (Birhanu et al., 2021; Malede, 2014) and liquidity ratios (Isayas, 2022). Though some Ethiopian commercial banks have made progress in promoting gender diversity, many still struggle with issues that likely impact performance. Many lack gender parity in leadership positions and have disparities in access to credit for women (Weis et al., 2022). These problems related to board gender diversity and structure likely influence key performance metrics like profitability and return on equity, yet the exact nature of this relationship within commercial banks remains unclear (Weis et al., 2022).

The findings and recommendations may be valuable for commercial banks grappling with gender disparities and performance issues linked to their lack of gender diversity and ineffective board structures. By optimizing board structures and developing strategies to address gaps in gender equality, banks may be able to boost their competitiveness (Bekana, 2019; Weis et al., 2022). Bank size has been found to be an important control variable in analyzing the performance of private commercial banks (Berhe, 2023; Teshome et al., 2018). Economic growth (Berhe, 2023; Isayas, 2022; Lelissa, 2014; Msomi, 2023; Teshome et al., 2018); remittances (Chacko & Gebre, 2017; Dame Tafa & Tessema Worku, 2022; Lelissa, 2014); and inflation (Abate & Mesfin, 2019; Bono, 2020; Lelissa, 2014; Tewodros & Gedion, 2019) have also been studied as control variables in

the context of bank performance in Ethiopia. Researchers aim to develop a comprehensive understanding of the factors shaping bank performance by considering these control variables (Berhe, 2023; Ferede, 2012).

However, there is still scope for more research focusing specifically on the impact of board gender diversity on bank performance, representing an area that needs further exploration (Weis et al., 2022). Existing research has examined various aspects of board structure and bank performance in Ethiopia, but the specific effect of board gender diversity on performance, especially when controlling for other relevant factors, has been relatively underexplored (Weis et al., 2022).

By considering these control variables and their relationships with bank performance, researchers aim to develop a comprehensive understanding of the determinants shaping bank performance in Ethiopia. These studies provide valuable insights for policymakers, practitioners, and researchers in the Ethiopian banking sector, informing decision-making processes and contributing to the development of effective strategies for enhancing bank performance and overall financial stability.

3. Theoretical literature review

In this manuscript, the study delves into the rich literature on corporate governance, drawing insights from the seminal work of Lu et al. (2022). The study's theoretical review section takes a comprehensive approach, examining the Economic and Governance Perspective (Agency Theory) and the Resource-oriented Perspective. With a focus on board size and structure as well as the crucial role of board gender diversity, it explores various theoretical lenses such as behavioral theory, critical mass theory, social role theory, and contingency theory. By synthesizing these perspectives, we aimed to provide a comprehensive understanding of the intricate dynamics between board structure and bank performance. Therefore, this study employs a multi-theoretical approach to understand the relationships between board structure and bank performance. The study integrates insights from agency theory, resource dependence theory, behavioral theory, critical mass theory, social role theory, and contingency theory (Lu et al., 2022). Agency theory suggests that conflicts can arise between managers (agents) and shareholders (principals) due to information asymmetries (Jensen & Meckling, 1976). Boards serve to monitor managers and align their interests with those of shareholders' (Fama & Jensen, 1983). Prior research shows that board size and gender diversity influence monitoring effectiveness and thereby impact firm performance (Campbell & Mínguez-Vera, 2008; Dalton et al., 1999). Larger boards may have more resources but face coordination issues, while gender diversity brings varied skills and perspectives (Coles et al., 2008; Post & Byron, 2015).

Resource dependence theory posits that boards help secure critical resources and reduce environmental uncertainty (Salancik & Pfeffer, 1978). Board size influences how organizations utilize resources, with studies finding board size affects intellectual capital disclosure, governance quality, and performance outcomes (Abeysekera, 2010; Sarhan et al., 2019). Behavioral theory highlights the role of cultural and contextual factors in shaping the impact of gender diversity on organizational performance (Ali et al., 2011). Critical mass theory suggests that achieving a critical mass of female leaders yields benefits like improved social responsibility and financial performance (Lee & Yang, 2021). Social role theory examines how gender norms and roles shape organizational dynamics and outcomes (Al-Bassam et al., 2015; Gangestad et al., 2006; Nguyen et al., 2020).

Contingency theory stresses the need for adaptable governance given various situational contingencies (internal and external), especially regarding board gender diversity (Wu et al., 2021). The effectiveness of board structures depends on factors like bank size, lending rates, liquidity ratios, economic growth conditions, and more (Hilal & Tantawy, 2022; Niemand et al., 2021). These diverse yet complementary theories collectively help conceptualize the complex relationships between board structure, gender diversity, and bank performance. While agency theory provides a useful starting

point, integrating insights from the multi-theoretical approach enriches the analysis and better reflects the realities of corporate governance. The complementary lenses help develop testable hypotheses regarding the influences of board size, gender diversity, and other factors within banks. A stronger theoretical foundation grounded in multiple theories yet cognizant of their limitations can yield meaningful insights to guide decision-making and improve governance practices.

Therefore, this study aims to fill this research gap and provide a comprehensive understanding of the relationship between board structures and bank performance in Ethiopia. Relevant studies justify the theoretical choices. Lu et al. (2022) review highlights the importance of studying board attributes and outcomes. Alhossini et al. (2021) review also emphasizes examining board committees and outcomes. Nguyen et al. (2020) research finds that women on boards impact performance. These works provide empirical support for examining how board structures impact bank performance using an integrated theoretical framework drawing from key governance theories. In conclusion, a multi-theoretical foundation that recognizes the limitations of individual theories has the potential to yield valuable insights to guide decision-making and improve governance practices. The studies cited bolster the appropriateness of this study integrated approach for investigating how board structure relates to bank performance.

4. Empirical literature review and hypotheses development

4.1. Using return on equity (ROE) and net interest margin ratio (NIM) to measure bank performance

Return on Equity is a widely used metric to evaluate the financial performance of banks. This review focuses on scholarly articles that used ROE as the dependent variable to analyze the performance of banks in different contexts. Elgadi and Ghardallou (2022) found a positive association between gender diversity and ROE, while a negative relationship existed between board size and ROE. Bian and Deng (2017) showed a negative relationship between ownership dispersion and ROE. Abaenewe et al. (2013) revealed a positive relationship between electronic banking and ROE. Jaouad and Lahsen (2018) emphasized the importance of bank size, liquidity, profitability, and credit risk in influencing ROE. Ur Rehman et al. (2022) reported a positive association between intellectual capital efficiency and ROE in Islamic banks. In summary, Return on Equity is an important indicator of a bank's financial performance, and various factors such as gender diversity, board size, ownership dispersion, electronic banking, bank size, liquidity, profitability, credit risk, and intellectual capital efficiency can influence it.

Additionally, Net interest margin (NIM) is a vital financial indicator that measures a bank's profitability by assessing the difference between interest income and interest expenses. This review examined scholarly articles that utilize NIM as a dependent variable to investigate various factors that affect bank performance. Kwoon et al. (2022) demonstrated NIM's significance in influencing the valuation of banks and its interplay with other financial performance indicators. Nguyen et al. (2020) revealed a negative relationship between excess liquidity and NIM, highlighting the challenges faced by banks in managing liquidity and maintaining a favorable NIM. Chaudron et al. (2023) provided insights into the determinants of NIM, shedding light on how banks manage their balance sheets and allocate interest income across different sources. Hodula (2023) investigated the potential impact of Fintech and big tech credit providers on bank interest margins, contributing to the study understanding of the challenges faced by banks in a rapidly evolving financial landscape.

4.2. Board size and bank (firm) performance

This study utilized two measures of board structure, namely board size and gender diversity, as previous studies have done (Boachie, 2021; Liang et al., 2013; Pathan & Faff, 2013). Board size was measured by the total number of directors on the board, while gender diversity was measured by the proportion of females on the board of directors. In recent research, board size has been extensively examined in relation to firm or bank performance, challenging the notion that larger

boards are more effective. Guest (2009) found a negative association between board size and firm performance, while Larmou and Vafeas (2010) highlighted the benefits of smaller boards in improving performance. Cheng et al. (2008) explored the moderating role of the market for corporate control, emphasizing the impact of board size on firm performance. Pucheta-Martínez and Gallego-Álvarez (2020) provided an international perspective, and Le et al. (2023) focused on CEO duality and board size in Vietnam, highlighting the significance of board structure for organizational outcomes. These studies underline the need for further investigation to enhance corporate governance practices regarding board size. Based on the literature review provided, the following hypothesis was proposed: Therefore, based on the thorough literature review, the study developed the following hypothesis regarding board size and its impact on bank performance in Ethiopian commercial banks:

H1: Board size has a negative and significant effect on the ROE;

H1: Board size has a negative and significant effect on NIM. Specifically, larger board sizes are associated with lower bank performance.

4.3. Board gender diversity and bank (firm) performance

Board gender diversity is measured using a percentage variable that represents the number of female directors on a board divided by the total number of board members. This approach ensures a more accurate and comparable measurement, considering the varying sizes of boards. Research has shown that board gender diversity can improve a company's performance by providing new insights and perspectives. Studies conducted by Adeabah et al. (2019) and Shakil et al. (2020) suggest that female board members bring diverse viewpoints to the boardroom that are not possible with an all-male board. Therefore, it can be inferred that board gender diversity is considered a positive factor in improving company performance (Al-Jaifi, 2020; Galletta et al., 2021). Based on the insights gained from these discussions, the following hypothesis is formulated:

H2: Board gender diversity has a positive and significant effect on the ROE;

H2: Board gender diversity has a positive and significant effect on the NIM. Specifically, higher levels of gender diversity are associated with better bank performance.

4.4. Exploring the factors that impact bank performance: a study of internal and external variables

A Study of Internal and External Variables Bank performance is a crucial indicator of the success and sustainability of any financial institution (Haralayya & Aithal, 2021). In this study, the study explore a range of factors that influence bank performance, including variables related to bank management, policies, and operations, as well as those that are external and beyond a bank's control. One significant factor that influences bank performance is bank size. Previous research has indicated that larger banks tend to exhibit a positive relationship with bank performance, as evidenced by lower risk ratios (Gupta et al., 2020; Terraza, 2015). Another factor that impacts bank performance is liquidity ratios, with higher liquidity ratios enhancing firm performance (Ahmad et al., 2023). External factors also play a significant role in shaping bank performance. For instance, factors such as real GDP growth, personal remittances, and inflation have been shown to influence bank performance. Well-capitalized and efficiently managed banks contribute positively to economic growth (Haralayya & Aithal, 2021), while personal remittances positively contribute to macroeconomic stability, potentially impacting the banking sector through increased deposits and lending opportunities (Akeerebari, 2022). Inflation indirectly impacts bank performance by affecting interest rates, asset quality, and overall economic conditions (Gupta et al., 2020).

4.4.1. Bank size and bank performance

Bank size is measured as the natural logarithm of total assets and is used to assess if a bank's size is related to its performance. The relationship between bank size and bank performance has been the subject of extensive research. Terraza (2015) found that larger banks tend to exhibit a positive relationship with bank performance, as evidenced by lower risk ratios. Similarly, Gupta et al. (2020) focused on Indian banks and reported a positive association between bank size and performance, particularly in terms of capitalization.

4.4.2. Liquidity ratio and bank performance

Numerous studies have examined the relationship between bank performance and liquidity ratios, revealing valuable insights into their connection. Ahmad et al. (2023) found a positive relationship, indicating that higher liquidity ratios enhance firm performance. In contrast, Siddique et al. (2021) identified a negative relationship, suggesting that excessive liquidity ratios can negatively impact bank profitability. These findings underscore the significance of liquidity ratios in influencing bank performance and highlight the need for effective liquidity management practices.

4.4.3. Economic growth and bank performance

The relationship between bank performance and economic growth has been extensively studied, revealing important insights. Well-capitalized and efficiently managed banks contribute positively to economic growth (Haralayya & Aithal, 2021). Financially secure banks play a vital role in promoting fiscal growth by facilitating efficient resource allocation (Burkhanov, 2020). These findings highlight the significance of bank performance in driving sustainable economic growth, necessitating sound management strategies and policy interventions.

4.4.4. Personal remittances and bank performance

The relationship between bank performance and personal remittances has been explored in several studies, shedding light on their interconnectedness. Interest rate spreads play a role in determining bank profitability and efficiency, indirectly affected by factors such as remittance inflows (Li et al., 2021). Diaspora cash remittances positively contribute to macroeconomic stability, potentially impacting the banking sector through increased deposits and lending opportunities (Akeerebari, 2022). Factors influencing bank deposits, including personal remittances, provide valuable insights into the relationship between remittances and bank performance (Çekrezi, 2022). Understanding this relationship is crucial for banks to effectively manage liquidity and maintain stable performance.

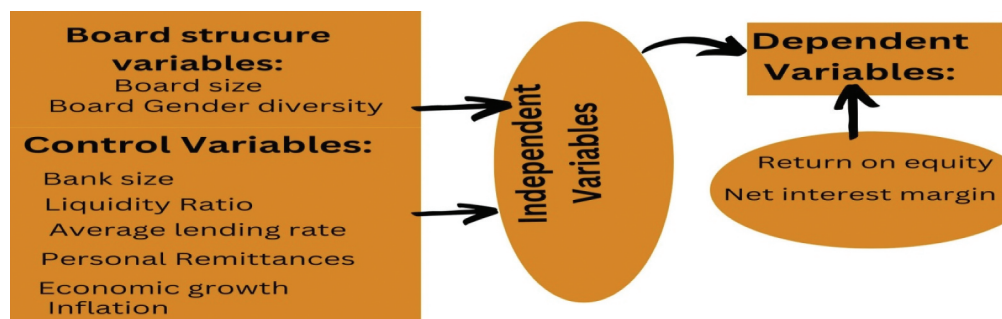
4.4.5. Inflation and bank performance

The relationship between bank performance and inflation has been extensively studied, revealing the influence of inflation on the banking sector. Factors such as inflation indirectly impact bank performance by affecting interest rates, asset quality, and overall economic conditions (Gupta et al., 2020). Studies have also explored the connection between liquidity creation by banks, their performance, and inflation, as inflation can influence banks' ability to effectively manage liquidity (Sahyouni & Wang, 2019). Additionally, research examining various factors influencing bank performance, including economic conditions influenced by inflation, contributes to our understanding of the relationship between bank performance and inflation (Istan & Fahlevi, 2020).

These studies underscore the importance of comprehending the dynamics between inflation and bank performance for effectively managing inflationary pressures and ensuring a stable and thriving banking sector. Overall, in exploring the factors that impact bank performance, this study focuses on several internal and external variables, including bank size, liquidity ratio, economic growth, personal remittances, and inflation (Figure 1). Addressing these knowledge gaps and deficiencies can help enhance the study understanding of the dynamics of the banking sector and inform the development of effective policies and strategies for promoting sustainable growth and stability.

Figure 1. Conceptual framework.

Source: Author Survey from Literatures



5. Research design

5.1. Sample and data

This study examined the relationship between board structure and bank performance in 15 Ethiopian commercial banks from 2010 to 2022. The sampling method employed was purposive sampling, based on predetermined criteria set by commercial banks that regularly release annual reports for the period. Data was collected from the annual financial reports of individual commercial banks and the World Bank's World Development Indicators. Two banks were excluded due to missing or unavailable data, resulting in a final sample of 15 commercial banks with complete financial reports. Ethiopia had a total of 17 operating commercial banks in 2019, with one publicly owned and the others privately owned. The study provides insights into the relationship between board structure and bank performance in Ethiopian commercial banks with 195 bank-year observations. The list of banks selected is shown in Table 1.

5.2. Variables and measurement

In this study, the performance of banks was measured using return on equity (ROE) and net interest margin (NIM) as dependent variables. ROE, measured as net income divided by total equity, indicates the profitability of banks and how efficiently they generate profits from shareholders' equity. Previous research has commonly used ROE as a dependent variable to assess bank performance (Bian & Deng, 2017; Elgadi & Ghardallou, 2022; Ur Rehman et al., 2022). Additionally, other studies have considered NIM as a dependent variable while analyzing the impact of excess liquidity, balance sheet management, and Fintech/big tech credit providers (Chaudron et al., 2023; Hodula, 2023; Nguyen et al., 2020). NIM, calculated as the difference between interest income and interest expense divided by average earning assets, represents the core profitability of banks' lending and investing activities.

The key independent variables are board size and gender diversity. Board size was measured as the total number of directors on the bank's board. This test determines whether board capacity impacts bank performance (Boachie, 2021; Liang et al., 2013; Pathan & Faff, 2013). Gender diversity was measured as the proportion of female directors on the board and examined to determine whether gender composition affects profitability (Adeabah et al., 2019). Previous studies have highlighted the negative association between board size and performance as well as the benefits of smaller boards in improving performance (Guest, 2009; Larmou & Vafeas, 2010). Moreover, studies have found that gender diversity on bank boards positively influences performance, efficiency, sustainability, and risk management (Adeabah et al., 2019; Shakil et al., 2020; Al-Jaifi, 2020; Galletta et al., 2021).

To control for other factors, the study included several control variables that could impact bank performance. Bank size was measured using the natural logarithm of total assets, and previous research has found a positive relationship between bank size and performance (Terraza, 2015; Gupta & Mahakud, 2020). The study also considered liquidity ratio as an independent variable, which has been widely studied in relation to bank performance (Ahmad et al., 2023; Siddique et al.,

Table 1. List of Banks in Ethiopia along with their data availability

S.N.	Bank Name	Type	Branches	Established Year	Data Availability During study period
1	Abay Bank	Private	544	2010	Available
2	Addis International Bank	Private	150	2011	Available
3	Awash International Bank	Private	394	1994	Available
4	Bank of Abyssinia	Private	473	1996	Available
5	Berhan International Bank	Private	263	2010	Available
6	Bunna International Bank	Private	242	2009	Available
7	Cooperative Bank of Ethiopia	Private	1,200	2005	Available
8	Commercial Bank of Ethiopia	Public	1,500+	1963	Available
9	Dashen Bank	Private	570	2003	Available
10	Debub Global Bank	Private	180	2012	Available
11	Enat Bank	Private	173	2012	Available
12	Developmental Bank of Ethiopia	Public	100	1996	Not Available
13	Hibret Bank	Private	220	2004	Available
14	Lion International Bank	Private	270	2006	Not Available
15	Nib International Bank	Private	280	1999	Available
16	Oromia International Bank	Private	350	2008	Available
17	United Bank	Private	170	1998	Not Available
18	Wegagen Bank	Private	350	1997	Available
19	Zemen Bank	Private	300	2009	Available

Note: The banks with Not Available data during study period are those that aren't included in the study.

Source Own survey, 2023

2021). Additionally, real GDP growth, personal remittances, and inflation were included as independent variables, with previous research highlighting their impact on bank performance (Akeerebari, 2022; Gupta et al., 2020; Haralayya & Aithal, 2021; Istan & Fahlevi, 2020; Sahyouni & Wang, 2019). The variable measurements for the study are presented in Table 2.

5.3. Analytical model specification

In this study, we used the Levin-Lin-Chu (LLC) model to test for unit roots in panel data. This model can accommodate fixed effects, individual deterministic trends, and heterogeneous serially correlated errors, making it more powerful than individual unit root tests for this purpose (Levin et al.,

Table 2. Description of study variables

Variable	Measurement	Acronym	Expected sign
	Net income to total equity	ROE	Not applicable
Dependent			
Variables	(Interest income-interest expense)/Ave.Earning Assets	NIM	Not applicable
	The proportion of females having sittings on the board of directors	GD	Positive
Independent			
Variables	:The number of directors on the board	BSize	Positive
	Liquid assets/Total customer deposit	LR	Negative(positive)
	Average lending rate	ALR	positive
Control	GDP growth (annual %)	GDPg	positive
Variables	Personal remittances, received (% of GDP)	REM	positive
	Inflation, consumer prices (annual %)	INF	Negative

Note: GDPg, REM, and INF are sourced from WB, World Bank; WDI is world development indicators while others are from annual banks report.

2002). Since the variables in this study were larger than 7, the study used the Kao cointegration test, which utilizes the DF and ADF tests in its panel cointegration test (Kao, 1999; Asteriou & Hall, 2021 expressed as:

$$Y_{it} = \alpha_i + \beta X_{it} + u_{it} \quad (1)$$

H_0 =No cointegration for all cross-sections H_1 = There is cointegration for all cross-sections

The study aimed to identify the relationship between board structures and bank performance using econometric models. To account for unobserved heterogeneity across banks, the study used panel data regression models such as fixed effects and random effects models (Amini et al., 2012), and the study utilized techniques such as the Hausman test and the Kao cointegration test to select the most appropriate model for our analysis. The study proposed two models to investigate the effect of board size and gender diversity on bank performance, with ROE and NIM as the dependent variables.

These models incorporated variables commonly used in prior studies investigating the impact of board structure on bank performance (Liang et al., 2013; Nguyen et al., 2020; Pathan & Faff, 2013), as well as control variables to account for the effect of other factors that may influence bank performance (Andres & Vallelado, 2008; Singh & Gaur, 2009). To determine the appropriate model for this panel data analysis, the study conducted a Hausman specification test. The results of the test indicated that the fixed-effects model was appropriate for ROE, while the random-effects model was appropriate for NIM. This finding suggests that the effect of board size and gender diversity on bank performance varies depending on the specific performance measure being analyzed. Overall, this study employed rigorous econometric models and techniques to provide valuable insights into the impact of board structures on bank performance. Specifically, two models are proposed: Model 1: The effect of board size and gender diversity on bank performance when ROE is dependent variable:

$$ROE_{it} = \beta_0 + \beta_1 BSize_{it} + \beta_2 GD_{it} + \beta_3 BnS_{it} + \beta_4 LR_{it} + \beta_5 ALR_{it} + \beta_6 GDPg_{it} + \beta_7 REM_{it} + \beta_7 INF_{it} + \varepsilon_{it} \quad (2)$$

Where ROE is the dependent variable, BS is the total number of directors on the board, BnS is the natural logarithm of the bank's total assets, GDPg is the percentage growth rate of GDP, and ε is the error term.

Model 2: The effect of board size and gender diversity on bank performance when NIM is dependent variable:

$$NIM_{it} = \beta_0 + \beta_1 BSize_{it} + \beta_2 GD_{it} + \beta_3 BnS_{it} + \beta_4 LR_{it} + \beta_5 ALR_{it} + \beta_6 GDPg_{it} + \beta_7 REM_{it} + \beta_7 INF_{it} + \varepsilon_{it} \quad (3)$$

Where NIM is the net interest margin and the remaining variables are the same as in Model 1. These variables are chosen because they are commonly used in prior studies investigating the impact of board structure on bank performance (see, for example, Liang et al., 2013; Nguyen et al., 2020; Pathan & Faff, 2013). Additionally, the control variables REM, LR, ALR, INF, BnS, and GDPg are included to control for the effect of other factors that may influence bank performance (see, for example, Andres & Vallelado, 2008; Akeerebari, 2022; Istan & Fahlevi, 2020).

5.4. Endogeneity issues

Endogeneity is a common issue in panel data studies that can lead to biased estimates and misleading results (Barkat et al., 2023; Li et al., 2021; Ullah et al., 2021). In this study, the study aimed to address potential issues of endogeneity that could arise due to dynamic endogeneity between the independent variables and the dependent variables (bank performance). To address these issues, the study used two robust estimation techniques: the system Generalized Method of Moments (GMM) and the instrumental variables Generalized Method of Moments (IV-GMM) (Blundell & Bond, 1998; Lewbel, 2012).

The system GMM estimator took into account potential endogeneity problems caused by reverse causality and dynamic endogeneity. The IV-GMM estimator was used as a robustness check to deal with potential problems caused by omitted variable bias and measurement error. Additionally, to demonstrate the sensitivity of the study results to alternative measures and estimations, the study explored different ways of measuring the dependent variable, bank performance. Specifically, the study used two different measures of bank performance: return on equity (ROE) and net interest margin (NIM). To address potential endogeneity issues, the study employed lagged structures and instrumental variable estimation. The study presented the two-step system GMM model for equations 2 and 3, which incorporate lagged dependent variables as explanatory variables in the study GMM estimation.

$$ROE_{it} = ROE_{i,t-1} + \beta_1 BSize_{it} + \beta_2 GD_{it} + \beta_3 BnS_{it} + \beta_4 LR_{it} + \beta_5 ALR_{it} + \beta_6 GDPg_{it} + \beta_7 REM_{it} + \beta_7 INF_{it} + u_i + \varepsilon_{it} \quad (4)$$

$$NIM_{it} = NIM_{i,t-1} + \beta_1 BSize_{it} + \beta_2 GD_{it} + \beta_3 BnS_{it} + \beta_4 LR_{it} + \beta_5 ALR_{it} + \beta_6 GDPg_{it} + \beta_7 REM_{it} + \beta_7 INF_{it} + u_i + \varepsilon_{it} \quad (5)$$

Whereas, $ROE_{i,t-1}$, indicates one lag of the dependent variable ROE (previous year performance), and $NIM_{i,t-1}$ denotes second lag of the dependent variable (NIM), representing performance in the year before previous year. All explanatory variable definitions are presented in Table 2. By using these robust estimation techniques and exploring different measures of bank performance, the study aimed to address potential endogeneity issues and provide reliable and valid results that align with prior research on the topic.

5.5. Model diagnosis

In this study, I wanted to ensure to the reliability and validity of the study models, so we conducted diagnostic tests for the Fixed Effects model for Return on Equity (ROE) and the OLS model for Net Interest Margin (NIM). The study carried out these tests to identify potential issues with the models, such as heteroscedasticity, omitted variables, multicollinearity, and normality

(Hair et al., 2006). To present the results of these diagnostic tests, the study used Table 7 for the Fixed Effects model for ROE and Table 8 for the OLS model for NIM.

6. Empirical results and discussion

6.1. Descriptive results

Table 3 presents the descriptive statistics of variables analyzed in this study on the relationship between board structure and bank performance in Ethiopian commercial banks, based on 195 observations. The statistics reveal the range, mean, and standard deviation of variables such as Return on Equity (ROE), Net Interest Margin (NIM), board size (BSize), proportion of females on the board of directors (GD), number of directors (BnS), Liquidity Ratio (LR), Average Lending Rate (ALR), GDP growth rate (GDPg), personal remittances received relative to GDP (REM), and inflation rate (INF), providing a preliminary understanding of their distribution and variation.

6.2. Correlation analysis

In the study on the relationship between board structure and bank performance in Ethiopian commercial banks, a Pearson correlation coefficient matrix was used to analyze the variables. Results based on 195 observations show that Return on Equity (ROE) is positively correlated with the proportion of females on the board of directors (GD) and GDP growth rate (GDPg), while it is negatively correlated with the Liquidity Ratio (LR) and inflation rate (INF) (see Table 4). Board size (BSize), number of directors on the board (BnS), and average lending rate (ALR) have weak positive correlations with ROE, while personal remittance received relative to GDP (REM) has a weak positive correlation with ROE but is not statistically significant. Similarly, for Net Interest Margin (NIM), the results reveal weak positive correlations with board size (BSize), liquidity ratio (LR), and average lending rate (ALR), but these correlations are not significant. NIM also shows weak negative correlations with GDP growth rate (GDPg) and personal remittances received relative to GDP (REM), but these are not statistically significant (see Table 5). These findings suggest that factors beyond board structure and economic indicators may be more important in driving NIM in Ethiopian commercial banks.

6.2.1. Unit root test analysis

Table 6 displayed the results of panel unit root tests, which indicated that all variables had a unit root in their level form but became stationary in their first-difference form. This implies that the variables are integrated of order 1 and suitable for further econometric analysis. Specifically, ROE, NIM, board size (BSize), proportion of females on the board of directors (GD), number of directors on the board (BnS), liquidity ratio (LR), average lending rate (ALR), and personal remittances received relative to GDP (REM) were stationary in their first-difference form at a significance level of 1%. In contrast, the GDP growth rates (GDPg) and inflation rate

Table 3. Summary of descriptive analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
ROE	195	3.193	1.529	0.462	8.33
NIM	195	0.316	12.2	-24.95	166
BSize	195	8.359	2.75	2	15
GD	195	0.437	0.274	0.067	2.5
BnS	195	10.2	3.379	-13.82	13.2
LR	195	3.843	4.118	0.005	16.7
ALR	195	0.165	0.351	0	2.67
GDPg	195	8.94	2.048	5.637	12.6
REM	195	1.182	0.786	0.375	3.23
INF	195	16.38	9.057	6.628	33.3

Table 4. Pearson correlation coefficients matrix for ROE

Variables	ROE	BSize	GD	BnS	LR	ALR	GDPg	REM	INF
ROE	1.000								
(BSize	0.041	1.000							
	(0.566)								
GD	0.139	−0.565*	1.000						
	(0.053)	(0.000)							
BnS	−0.115	0.170*	0.108	1.000					
	(0.108)	(0.017)	(0.132)						
LR	−0.423*	−0.113	0.132	0.330*	1.000				
	(0.000)	(0.117)	(0.065)	(0.000)					
ALR	0.042	−0.009	−0.060	0.005	0.137	1.000			
	(0.562)	(0.899)	(0.408)	(0.948)	(0.057)				
GDPg	0.157*	−0.486*	0.187*	−0.244*	0.025	−0.125	1.000		
	(0.029)	(0.000)	(0.009)	(0.001)	(0.724)	(0.081)			
REM	0.052	−0.406*	0.133	−0.159*	0.040	−0.106	0.646*	1.000	
	(0.471)	(0.000)	(0.063)	(0.026)	(0.579)	(0.140)	(0.000)		
INF	−0.028	0.225*	−0.079	−0.014	−0.044	0.131	−0.456*	−0.313*	1.000
	(0.702)	(0.002)	(0.272)	(0.845)	(0.543)	(0.067)	(0.000)	(0.000)	

The statistical significance levels are indicated as follows: *** for $p < 0.01$, ** for $p < 0.05$, and * for $p < 0.1$. The analysis was conducted using Stata 17 by the researcher.

Table 5. Pearson correlation coefficients matrix for NIM

Variables	NIM	BSize	GD	BnS	LR	ALR	GDPg	REM	INF
NIM	1.000								
BSize	0.034	1.000							
	(0.638)								
GD	0.007	−0.565*	1.000						
	(0.924)	(0.000)							
BnS	0.004	0.170*	0.108	1.000					
	(0.958)	(0.017)	(0.132)						
LR	0.120	−0.113	0.132	0.330*	1.000				
	(0.095)	(0.117)	(0.065)	(0.000)					
ALR	0.122	−0.009	−0.060	0.005	0.137	1.000			
	(0.089)	(0.899)	(0.408)	(0.948)	(0.057)				
GDPg	0.111	−0.486*	0.187*	−0.244*	0.025	−0.125	1.000		
	(0.122)	(0.000)	(0.009)	(0.001)	(0.724)	(0.081)			
REM	0.019	−0.406*	0.133	−0.159*	0.040	−0.106	0.646*	1.000	
	(0.788)	(0.000)	(0.063)	(0.026)	(0.579)	(0.140)	(0.000)		
INF	−0.085	0.225*	−0.079	−0.014	−0.044	0.131	−0.456*	−0.313*	1.000
	(0.237)	(0.002)	(0.272)	(0.845)	(0.543)	(0.067)	(0.000)	(0.000)	

The statistical significance levels are indicated as follows: *** for $p < 0.01$, ** for $p < 0.05$, and * for $p < 0.1$. The analysis was conducted using Stata 17 by the researcher.

Table 6. Panel unit root test results

Variables	Level	1 st Difference
ROE	0.6250	-3.6941 ***
NIM	1.7517	-3.1345 ***
BSize	1.7456	-3.5555 * **
GD	-3.1017***	-4.7209***
BnS	2.2909	-2.6061 **
LR	2.1585	-3.0218 ***
ALR	0.5529	-3.4556 ***
GDPg	1.8066	-8.3181 ***
REM	0.5687	-3.1806***
INF	-1.9092**	-8.1633 ***

The statistical significance levels are indicated as follows: *** for $p < 0.01$, ** for $p < 0.05$, and * for $p < 0.1$. The analysis was conducted using Stata 17 by the researcher.

Table 7. Diagnostic tests ROE

Tests	Chi2(P-value),Z-stat	Results
Heteroskedasticity(Breusch-Pagan)	2.54(0.1108)	No Heteroskedasticity
Omitted variable test(Ramsey Reset)	2.18(0.0914)	No omitted variables
Multicollinearity test(Vif)	1.57	No Multicollinearity
Normality test(Shapiro wilk)	0.181(0.172)	No normality problem

Source: Researcher using Stata 17

(INF) were stationary in their first-difference form at a significance level of 5%. Overall, the study's findings suggest that board diversity and economic growth are positively related to bank performance, while liquidity and inflation are negatively related to bank performance.

6.3. Diagnostic tests

Table 7 presents the results of diagnostic tests for the Fixed Effects model for Return on Equity (ROE), while Table 8 presents the results of diagnostic tests for the OLS model for Net Interest Margin (NIM). The tests were conducted to identify potential issues with the models, such as heteroscedasticity, omitted variables, multicollinearity, and normality. The results of the tests indicate that there are no major issues with the models, and they are reliable for analysis. Specifically, there is no evidence of heteroscedasticity, omitted variables, multicollinearity, or normality problems in either model. Figures 2 and Figure 3 confirm the absence of normality problems. These findings enhance the validity and credibility of the results presented in the study.

Table 8. Diagnostic tests NIM

Tests	Chi2(P-value),Z-stat	Results
Heteroskedasticity(Breusch-Pagan)	1.09(0.2964)	No Heteroskedasticity
Omitted variable test(Ramsey Reset)	1.28(0.113)	No omitted variables
Multicollinearity test(Vif)	1.57	No Multicollinearity
Normality test(Shapiro wilk)	0.073(0.471)	No normality problem

Source: Researcher using Stata 17

6.4. Regression analysis and results

6.4.1. Kao test for cointegration

The Kao cointegration test was conducted to determine the long-run relationship between board structure and bank performance. The results showed a cointegration relationship between the two variables in the long run at a 5% significance level (see Table 9 and Table 10). Specifically, the statistics for Return on Equity (ROE) and Net Interest Margin (NIM) were statistically significant, indicating a cointegration relationship among the variables in the long run. The Kao cointegration test employed the Barlett-Kernel method, and the bandwidth was identified by the Newey-West method. The Augmented Dickey-Fuller (ADF) test was also used in the analysis. The findings suggest that board structure and bank performance are cointegrated and correlated in the long run, which will be discussed in detail in subsequent sections of the study. Additionally, the Kao cointegration test results indicate a cointegration relationship between board structure and bank performance in the long run, which will also be further explored later in the study.

6.4.2. Model selection by Hausman test for panel data

A Hausman test was conducted to determine the appropriate model for the panel data, with results indicating that the fixed-effects model was appropriate for Return on Equity (ROE) while the random-effects model was appropriate for Net Interest Margin (NIM) (Baltagi, 2013, p. 214). These findings were further discussed in subsequent sections of the study. The results of Hausman test was reported in Table 11.

6.4.3. Empirical result on banks' performance measured by ROE and NIM

Table 12 reveals several key insights into the relationship between board structure and bank performance in Ethiopian commercial banks. Firstly, regarding the impact on return on equity

Figure 2. Normality test for ROE.

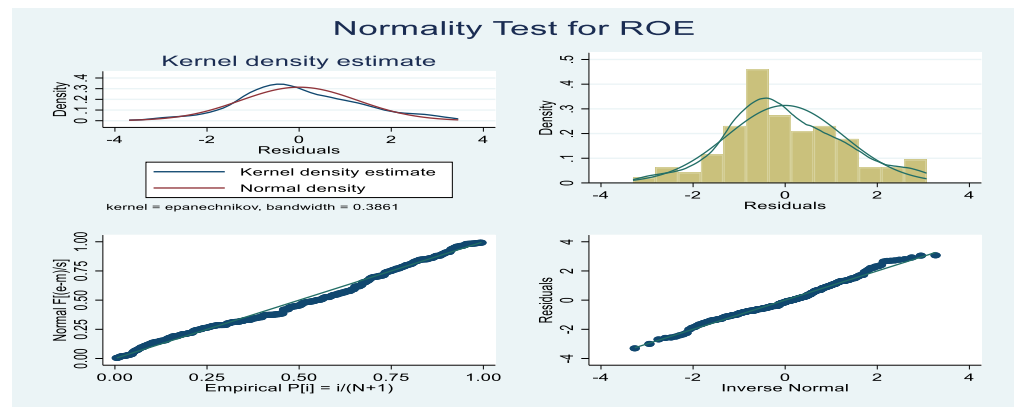


Figure 3. Normality test for NIM.

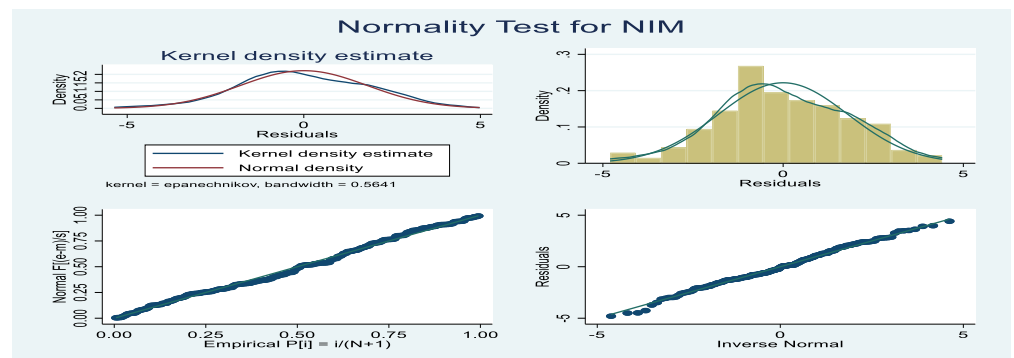


Table 9. Kao test for cointegration on ROE

Kao test for cointegration

H0: No cointegration

Number of panels = 15

Ha: All panels are cointegrated

Number of periods = 11

Panel specific	Statistic	p-value
Modified Dickey-Fuller t	2.4281	0.0076*
Dickey-Fuller t	2.1716	0.0149*
Augmented Dickey-Fuller t	3.2736	0.0005*
Unadjusted modified Dickey-Fuller t	0.5233	0.3004
Unadjusted Dickey-Fuller t	-0.079	0.4685

Shows 5% significance level. Bartlett-Kernel method was used in Kao cointegration test and the bandwidth was identified by Newey-West method. ADF: Augmented Dickey-Fuller

Researcher using Stata 17

Table 10. Kao test for cointegration on NIM

Kao test for cointegration

H0: No cointegration

Number of panels = 15

Ha: All panels are cointegrated

Number of periods = 11

Panel specific	Statistic	p-value
Modified Dickey-Fuller t	-3.0875	0.0010*
Dickey-Fuller t	-5.6754	0.0000*
Augmented Dickey-Fuller t	-20.4462	0.0000*
Unadjusted modified Dickey-Fuller t	-3.4512	0.0003*
Unadjusted Dickey-Fuller t	-5.8003	0.0000*

*Shows 5% significance level. Bartlett-Kernel method was used in Kao cointegration test and the bandwidth was identified by Newey-West method. ADF: Augmented Dickey-Fuller

Source: Researcher using Stata 17

Table 11. Hausman test for panel data

Dependent Variable	Chi-square	P-value	Decisions
ROE	16.25	0.0062	Fixed Effect
NIM	4.73	0.4492	Random Effect

Source: Researcher using Stata 17

(ROE), the table shows a negative but statistically insignificant association between board size and ROE. This aligns with the findings of Fanta et al. (2013), who also reported an insignificant negative link in the Ethiopian banking context. However, it contrasts with studies such as Yermack's (1996), which found a significant negative relationship in the US banking sector. This provides partial support for agency theory predictions on potential coordination issues in larger boards negatively affecting monitoring effectiveness. Hence, the results lend partial support to hypothesis H1 on the negative board size-ROE relationship.

Additionally, Table 12 indicates a positive and statistically significant relationship between gender diversity and ROE. This corroborates evidence from Adeabah et al. (2019), who found diversity improves Ghanaian bank returns. The finding also aligns with resource dependence and behavioral theories emphasizing the varied skills and perspectives offered by women

Table 12. Relationship of ROA and NIM to study variables

	(ROE)	(NIM)
Variables	Fixed Effect	Random Effect
BSize	−0.008(0.045)	0.981**(0.481)
GD	0.814**(0.343)	3.922(4.130)
BnS	0.013(0.026)	−0.129(0.305)
LR	0.023(0.038)	0.355(0.259)
ALR	0.0104(0.235)	5.477**(2.681)
GDPg	0.159*** (0.049)	1.302** (0.633)
REM	−0.176(0.107)	−0.883(1.445)
INF	0.01(0.008)	−0.0833(0.108)
Constant	1.310(0.879)	−19.78** (9.564)
Observations	195	195
R-squared	0.137	
Number of c_id	15	15

Note: Standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
Source: Researcher using Stata 17

directors. Thus, it validates hypothesis H2 on the positive association between gender diversity and ROE. However, the data shows an insignificant link between bank size and ROE, contrasting with Terraza (2015), who found larger banks exhibit higher returns. This aligns more with Berhe (2023), who also reported no major size-performance advantage in Ethiopian banks. Hence, there is no empirical support for hypothesis H1 on a positive bank size-ROE relationship. Shifting to the results for net interest margin (NIM) as the performance metric, Table 12 reveals a positive and significant relationship between board size and NIM. This contradicts Guest (2009), who found a negative association in the US banking sector.

The finding provides support for resource dependence theory by highlighting boards' role in providing access to resources. However, it contrasts with hypothesis H1 on a negative board size-performance link. Furthermore, the data shows an insignificant association between gender diversity and NIM. This finding does not align with evidence from Galletta et al. (2021), who reported a positive diversity-performance relationship. Hence, it does not validate hypothesis H2 on the positive impact of gender diversity. Lastly, a negative and significant relationship is observed between bank size and NIM in Table 12. This bolsters agency concerns regarding increased complexity in large banks but does not support hypothesis H3. In conclusion, the results showcase the complexities of the bank structure-performance relationship within the Ethiopian banking sector. While partial support for certain governance theories emerges, an integrated perspective combining multiple lenses provides greater insight into the nuances and helps reconcile conflicting findings across various contexts, performance measures, and structural attributes.

In summary, the study's multi-theoretical approach helps to explain the complex dynamics between board structure and different measures of bank performance, with implications for optimizing board governance to improve specific dimensions of financial performance. The findings reveal some novel relationships within the Ethiopian banking context while largely aligning with prior studies. The contingent relationship between board structure and performance depends on institutional context and contingent factors, as suggested by contingency theory (Donaldson, 2001).

6.4.4. Endogeneity issues

Table 13 presents the results of system GMM and IV-GMM estimations for the two bank performance measures (ROE and NIM). This aims to address potential endogeneity concerns in assessing the relationship between board structure and bank performance. The system GMM results for ROE indicate that GDP growth has a positive and significant association with ROE, aligning with prior evidence on the bank-growth linkage (Haralayya & Aithal, 2021). However, remittances display a negative effect on ROE, contrasting with other findings (Akeerebari, 2022). The results for board size, gender diversity, bank size, liquidity ratio, lending rate, and inflation are statistically insignificant. The IV-GMM estimates for ROE similarly show insignificant relationships for all board structure, bank-specific, and macroeconomic variables. This implies that addressing endogeneity does not substantially alter the finding on board size and diversity's lack of significant effects on shareholder returns.

For NIM as the performance gauge, the system GMM results reveal no statistically significant associations between the explanatory variables and NIM. The IV-GMM results reinforce this conclusion, with no significant relationships observed. The lack of significant links after accounting for endogeneity using robust estimators highlights that addressing potential reverse causality, omitted variables, or measurement errors does not change the nature of the relationships noted earlier. Overall, the GMM and IV-GMM results corroborate the findings of an insignificant or minimal association between board size, gender diversity, and bank performance. However, bank-specific and macroeconomic factors display some significant relationships, especially for ROE. Employing these estimators enhances the reliability and validity of the study's conclusions by mitigating endogeneity concerns. The findings showcase the complexities of governance-performance relationships and the need for nuanced analysis using varied techniques.

Table 13. System GMM Estimator and IV-GMM for ROE and NIM

	Model(1)	Model(2)	Model(3)	Model(4)
VARIABLES	System GMM for ROE	IV- GMM estimation ROE	System GMM for NIM	IV- GMM estimation NIM
BSize	0.013(0.016)	-0.201(0.473)	0.020(0.018)	-0.492(5.398)
GD	-0.204(0.542)	-0.144(2.554)	0.113(0.120)	-2.809(29.23)
BnS	-0.0001(0.015)	0.064(0.117)	-0.027(0.027)	0.013(1.146)
LR	0.062(0.057)	-0.01636	0.016(0.033)	0.022(0.728)
ALR	-0.564 (0.407)	0.554(0.995)	-0.153(0.222)	-0.018(6.914)
GDPg	0.032**(0.015)	0.110(0.267)	-0.006(0.007)	-0.168(2.380)
REM	-0.136*** (0.041)	-0.235(0.543)	-0.016(0.027)	-0.303(5.181)
INF	8.440(0.004)	0.011(0.039)	-0.014(0.009)	-0.029(0.324)
L.ROE	0.884*** (0.161)		-0.011(0.019)	
Constant				
Observations	180	195	180	195
R-squared		-1.067		
Number of Banks	15		15	
AR(1)	0.061		0.358	
AR(2)	0.942		0.508	
Sargan test statistics	0.073		0.72	

Note: Standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 14. Robustness check for ROE and NIM with OLS

	(ROE)	(ROE)	(NIM)	(NIM)
VARIABLES	OLS No FE	OLS with FE	OLS No RE	OLS with RE
BSize	0.172***(0.05)	−0.008(0.134)	0.813(0.918)	1.629(1.535)
GD	1.839***(0.628)	0.814(0.543)	3.207(4.190)	6.181(6.194)
BnS	0.01(0.02)	0.013(0.023)	−0.128(0.120)	−0.077(0.155)
LR	−0.174***(0.026)	0.023(0.052)	0.351(0.301)	0.450***(0.204)
ALR	0.705***(0.166)	0.010(0.325)	4.836(4.974)	7.214(9.44)
GDPg	0.226***(0.071)	0.159***(0.0454)	1.226(1.428)	1.630(1.779)
REM	−0.032(0.147)	−0.176***(0.071)	−0.980(0.991)	−0.528(0.903)
INF	0.003(0.013)	0.01(0.01)	−0.081(0.058)	−0.0854(0.080)
Constant	−0.632(0.910)	−	−17.20(20.68)	−
Observations	195	195	195	195
R-squared	0.307	0.712	0.064	0.16

Notes: Robust standard errors in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Researcher using Stata 17

6.5 Robustness analyses

In order to ensure the reliability and accuracy of the study results, it perform several tests to confirm their consistency. Empirical research often faces a significant challenge in the form of outliers, which can have a disproportionate impact on the results even in just a few instances (Cousineau & Chartier, 2010). This can result in distorted research findings or incorrect acceptance or rejection of hypotheses (Moore et al., 2021). The study conducted several robustness and additional analyses to assess the reliability of the findings. Alternative measures were tested by using both return on equity (ROE) and net interest margin (NIM) as performance metrics (Table 14). For instances, the consistent positive association between board gender diversity and return on equity evidenced in the robustness checks presented in Table 14 lends credence to critical mass theory's postulation that exceeding a threshold percentage of women on corporate boards can enhance financial performance outcomes, as recently demonstrated in empirical studies by (Lee & Yang, 2021).

Various model estimations were utilized, including system GMM and instrumental variable GMM, to account for unobserved heterogeneity and endogeneity. The results consistently showed minimal board size impacts and positive gender diversity effects on ROE. This enhances confidence in the main conclusions despite variations in measurement and estimation approaches. The robustness analyses underscore the importance of multi-dimensional testing to ensure findings are not contingent on specific variable operationalizations or techniques. Exploring different methods provides fuller insights into the nuanced governance-performance relationships within the study context.

7. Summary and conclusion

This study examined the relationship between board structure and bank performance in the Ethiopian banking context. The findings reveal several notable insights. First, board size has an insignificant or minimal impact on both return on equity and net interest margin, implying that larger boards neither improve nor impede performance significantly. However, board gender diversity positively influences return on equity, highlighting the benefits of varied perspectives. Meanwhile, bank size does not demonstrate a robust and significant link with either performance measure, contrasting assertions of universal size-based advantages.

The results showcase the nuances and complexities of governance-performance relationships within the under-researched Ethiopian banking sector. They highlight the need for multi-

dimensional analysis using varied techniques to uncover valid links, given the method-contingent nature of the findings. The study suggests selective expansion of board size given minimal impacts, alongside greater gender diversity and the leverage of diverse skills. The lack of clear size-performance benefits implies optimal scale should be strategically determined rather than pursuing growth alone. The results also underscore the importance of accounting for economic factors and industry conditions given their overarching influence.

However, certain limitations should be noted. The sample comprises only commercial banks, omitting other financial institutions. The time period from 2010 to 2022 May not capture long-term trends. Additional governance attributes, like CEO duality, could be examined. Endogeneity may persist despite the use of robust estimators. Future studies can address these limitations and expand the discourse on governance's role within emerging country contexts. Avenues for further research include assessing bank governance reforms over longer periods, comparing different Ethiopian banking systems, and utilizing qualitative insights from directors and executives. Overall, this study enhances understanding of the contingent and nuanced links between board structures and performance within a rapidly evolving Ethiopian banking industry. It highlights the need to integrate multiple theoretical perspectives when examining corporate governance relationships. The findings provide pertinent insights for policymakers, bank executives, and researchers.

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Availability of data and materials

Upon request, the data and materials will be made available.

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References

- Abaenewe, Z. C., Ogbulu, O. M., & Ndugbu, M. O. (2013). Electronic banking and bank performance in Nigeria. *West African Journal of Industrial and Academic Research*, 6(1), 171–187.
- Abate, T. W., & Mesfin, E. A. (2019). Factors affecting profitability of commercial banks in Ethiopia. *International Journal of Research and Analytical Reviews*, 6(1), 881–891.
- Abeysekera, I. (2010). The influence of board size on intellectual capital disclosure by Kenyan listed firms. *Journal of Intellectual Capital*, 11(4), 504–518. <https://doi.org/10.1108/14691931011085650>
- Adeabah, D., Gyeke-Dako, A., & Andoh, C. (2019). Board gender diversity, corporate governance and bank efficiency in Ghana: A two stage data envelope analysis (DEA) approach. *Corporate Governance the International Journal of Business in Society*, 19(2), 299–320. <https://doi.org/10.1108/cg-08-2017-0171>
- Ahmad, N., Shah, F. N., Ijaz, F., & Ghouri, M. N. (2023). Corporate income tax, asset turnover and Tobin's Q as firm performance in Pakistan: Moderating role of liquidity ratio. *Cogent Business & Management*, 10(1). <https://doi.org/10.1080/23311975.2023.2167287>
- Akeerebari, T. J. (2022). Dynamic modelling of the influence of diaspora cash remittance on macroeconomic stability in Nigeria. *European Journal of Social Sciences Studies*, 7(2). <https://doi.org/10.46827/ejss.v7i2.1221>
- Al-Bassam, W. M., Ntim, C. G., Opong, K. K., & Downs, Y. (2015). Corporate boards and ownership structure as antecedents of corporate governance disclosure in Saudi Arabian publicly listed corporations. *Business & Society*, 57(2), 335–377. <https://doi.org/10.1177/0007650315610611>
- Alhossini, M. A., Ntim, C. G., & Zalata, A. M. (2021). Corporate board committees and corporate outcomes: An International systematic literature review and agenda for future research. *The International Journal of Accounting*, 56(1), 2150001. <https://doi.org/10.1142/s1094406021500013>
- Ali, K., Akhtar, M. F., & Ahmed, H. Z. (2011). Bank-specific and macroeconomic indicators of profitability-empirical evidence from the commercial banks of Pakistan. *International Journal of Business & Social Science*, 2(6), 235–242.
- Al-Jaifi, H. A. (2020). Board gender diversity and environmental, social and corporate governance performance: Evidence from ASEAN banks. *Asia-Pacific Journal of Business Administration*, 12(3/4), 269–281. ahead-of-print(ahead-of-print. <https://doi.org/10.1108/apjba-12-2018-0222>
- Amini, S., Delgado, M. S., Henderson, D. J., & Parmeter, C. F. (2012). Fixed vs Random: The Hausman test four decades later. *Essays in Honor of Jerry Hausman*, 479–513. [https://doi.org/10.1108/s0731-9053\(2012\)0000029021](https://doi.org/10.1108/s0731-9053(2012)0000029021)
- Andres, P. D., & Vallelado, E. (2008). Corporate governance in banking: The role of the board of directors. *Journal of Banking and Finance*, 32(12), 2570–2580. <https://doi.org/10.1016/j.jbankfin.2008.05.008>

- Asteriou, D., & Hall, S. G. (2021). *Applied econometrics*. Bloomsbury Publishing.
- Baltagi, B. H. (2013, January 1). Chapter 18 - Panel data forecasting (G. Elliott & A. Timmermann, Eds. Retrieved July 17, 2023: <https://www.sciencedirect.com/science/article/pii/B978044462731500018X>
- Barkat, K., Alsamara, M., & Mimouni, K. (2023). Can remittances alleviate energy poverty in developing countries? New evidence from panel data. *Energy Economics*, 119, 106527. <https://doi.org/10.1016/j.eneco.2023.106527>
- Bekana, D. M. (2019). Policies of gender equality in Ethiopia: The transformative perspective. *International Journal of Public Administration*, 43(4), 312–325. <https://doi.org/10.1080/01900692.2019.1628060>
- Berhe, A. G. (2023). Board structure and bank performance: Evidence from Ethiopia. *Cogent Business & Management*, 10(1). <https://doi.org/10.1080/23311975.2022.2163559>
- Bian, W., & Deng, C. (2017). Ownership dispersion and bank performance: Evidence from China. *Finance Research Letters*, 22, 49–52. <https://doi.org/10.1016/j.frl.2016.12.030>
- Birhanu, T., Bosho Deressa, S., Azadi, H., Viira, A.-H., Van Passel, S., & Witlox, F. (2021). Determinants of commercial bank loan and advance disbursement: The case of private Ethiopian commercial banks. *International Journal of Bank Marketing*, 39(7), 1227–1247. <https://doi.org/10.1108/ijbm-05-2021-0166>
- Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, 87(1), 115–143. [https://doi.org/10.1016/s0304-4076\(98\)00009-8](https://doi.org/10.1016/s0304-4076(98)00009-8)
- Boachie, C. (2021). Corporate governance and financial performance of banks in Ghana: The moderating role of ownership structure. *International Journal of Emerging Markets*, 18(3). <https://doi.org/10.1108/ijem-09-2020-1146>
- Bono, Z. B. (2020). Effect of credit risk on performance of commercial banks in Ethiopia. *International Journal of Trend in Research and Development*, 7(4), 292–298.
- Burkhanov, A. (2020). Indicators to assess financial security of the banks. *Архив научных исследований*, 27.
- Campbell, K., & Minguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics*, 83(3), 435–451. <https://doi.org/10.1007/s10551-007-9630-y>
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, 38(1), 33–53. <https://doi.org/10.1111/1540-6288.00034>
- Çekrezi, A. V. (2022). Determinants of bank deposits in Albania. *International Journal of Economics & Finance Studies*, 14(2), 101–121.
- Chacko, E., & Gebre, P. (2017). *Engaging the Ethiopian Diaspora: Policies, Practices and Performance*. https://doi.org/10.1007/978-3-319-50053-9_8
- Chaudron, R. F. D. D., de Haan, L., & Hoeberichts, M. (2023). Banks' net interest income from maturity transformation and other interest income: Communicating Vessels? *Journal of Financial Services Research*, 63(1), 35–62. <https://doi.org/10.1007/s10693-021-00375-8>
- Cheng, S., Evans, J. H., & Nagarajan, N. J. (2008). Board size and firm performance: The moderating effects of the market for corporate control. *Review of Quantitative Finance & Accounting*, 31(2), 121–145. <https://doi.org/10.1007/s11156-007-0074-3>
- Coles, J. L., Daniel, N. D., & Naveen, L. (2008). Boards: Does one size fit all? *Journal of Financial Economics*, 87(2), 329–356. <https://doi.org/10.1016/j.jfineco.2006.08.008>
- Cousineau, D., & Chartier, S. (2010). Outliers detection and treatment: A review. *International Journal of Psychological Research*, 3(1), 58–67. <https://doi.org/10.21500/20112084.844>
- Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. *Academy of Management Journal*, 42(6), 674–686. <https://doi.org/10.2307/256988>
- Dame Tafa, M., & Tessema Worku, S. (2022). Determinants of private commercial banks deposit in Ethiopia. *Cogent Economics & Finance*, 10(1), 2098608. <https://doi.org/10.1080/23322039.2022.2098608>
- Dato, M. H., Mersland, R., & Mori, N. (2018). Board committees and performance in microfinance institutions. *International Journal of Emerging Markets*, 13(2), 350–370. <https://doi.org/10.1108/ijem-08-2016-0216>
- Donaldson, L. (2001). The contingency theory of organizations. Google Books. SAGE. Retrieved from. <https://books.google.com/books?hl=en&lr=&id=hXroN8btsN8C&oi=fnd&pg=PR11&dq=Donaldson> <https://doi.org/10.4135/9781452229249>
- Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO Governance and shareholder returns. *Australian Journal of Management*, 16(1), 49–64. <https://doi.org/10.1177/031289629101600103>
- Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics*, 48(1), 35–54. [https://doi.org/10.1016/s0304-405x\(98\)00003-8](https://doi.org/10.1016/s0304-405x(98)00003-8)
- Eldaia, M., Hanefah, M., & Marzuki, A. (2022). Moderating role of Shariah committee quality on relationship between board of directors effectiveness and the performance of Malaysian Takaful. *Competitiveness Review: An International Business Journal*, 33(1), 62–84. <https://doi.org/10.1108/cr-09-2021-0123>
- Elgadi, E., & Ghardallou, W. (2022). Gender diversity, board of director's size and Islamic banks performance. *International Journal of Islamic & Middle Eastern Finance & Management*, 15(3), 664–680. <https://doi.org/10.1108/imefm-09-2019-0397>
- Elmagrhi, M. H., Ntim, C. G., Elamer, A. A., & Zhang, Q. (2018). A study of environmental policies and regulations, governance structures, and environmental performance: The role of female directors. *Business Strategy and the Environment*, 28(1), 206–220. <https://doi.org/10.1002/bse.2250>
- Fama, E. F., & Jensen, M. C. (1983). Separation of Ownership and Control. *The Journal of Law and Economics*, 26(2), 301–325. <https://doi.org/10.1086/467037>
- Fanta, A. B., Kemal, K. S., & Waka, Y. K. (2013). Corporate governance and impact on bank performance. *Journal of Finance and Accounting*, 1(1), 19–26. <https://doi.org/10.11648/j.jfa.20130101.12>
- Ferede, Y. (2012). The impact of corporate governance mechanisms on firm's financial performance: Evidence from commercial banks in Ethiopia. *International Journal of Global Economic Light*, 1.
- Filatovchev, I., Isachenkova, N., & Mickiewicz, T. (2007). Corporate governance, managers' independence, exporting, and performance of firms in transition economies. *Emerging Markets Finance and Trade*, 43(5), 62–77. <https://doi.org/10.2753/ree1540-496x430504>

- Galletta, S., Mazzù, S., Naciti, V., & Vermiglio, C. (2021). Gender diversity and sustainability performance in the banking industry. *Corporate Social Responsibility and Environmental Management*, 29(1), 161–174. <https://doi.org/10.1002/csr.2191>
- Gangestad, S., Haselton, M., & Buss, D. (2006). TARGET ARTICLE: Evolutionary foundations of cultural variation: evoked culture and mate preferences. *Psychological Inquiry*, 17(2), 75–95. https://doi.org/10.1207/s15327965pli1702_1
- Guest, P. M. (2009). The impact of board size on firm performance: Evidence from the UK. *European Journal of Finance*, 15(4), 385–404. <https://doi.org/10.1080/13518470802466121>
- Gupta, N., Mahakud, J., & McMillan, D. (2020). Ownership, bank size, capitalization and bank performance: Evidence from India. *Cogent Economics & Finance*, 8(1), 1808282. <https://doi.org/10.1080/23322039.2020.1808282>
- Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly*, 21(4), 431–454. <https://doi.org/10.1016/j.ecresq.2006.09.005>
- Haralayya, B., & Aithal, P. S. (2021). Analysis of bank performance using camel approach.
- Hilal, O. A., & Tantawy, A. A. (2022). Entrepreneurial marketing and bank performance in Egypt: is environmental turbulence a missing link?. *Journal of Entrepreneurship in Emerging Economies*, 14(2), 252–273. <https://doi.org/10.1108/jee-12-2020-0445>
- Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: integrating agency and resource dependence perspectives. *Academy of Management Review*, 28(3), 383–396. <https://doi.org/10.5465/amr.2003.10196729>
- Hodula, M. (2023). Fintech credit, big tech credit and income inequality. *Finance Research Letters*, 51, 103387. <https://doi.org/10.1016/j.frl.2022.103387>
- Isayas, Y. N. (2022). Determinants of banks' profitability: Empirical evidence from banks in Ethiopia. *Cogent Economics & Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2031433>
- Istan, M., & Fahlevi, M. (2020). The effect of external and internal factors on financial performance of Islamic banking. *Jurnal Ekonomi & Studi Pembangunan*, 21(1), 137–145. <https://doi.org/10.18196/jesp.21.1.5036>
- Jaouad, E., & Lahsen, O. (2018). Factors affecting bank performance: empirical evidence from Morocco. *European Scientific Journal, ESJ*, 14(34), 255–267. <https://doi.org/10.19044/esj.2018.v14n34p255>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360. Retrieved from. <https://www.sciencedirect.com/science/article/pii/0304405X7690026X>
- Joecks, J., Pull, K., & Vetter, K. (2013). Gender Diversity in the Boardroom and Firm Performance: What Exactly Constitutes a "Critical Mass?. *Journal of Business Ethics*, 118(1), 61–72. <https://doi.org/10.1007/s10551-012-1553-6>
- Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics*, 90(1), 1–44. [https://doi.org/10.1016/s0304-4076\(98\)00023-2](https://doi.org/10.1016/s0304-4076(98)00023-2)
- Kwoon, Y., Sembel, R., & Malau, M. (2022). The Effect of Return on Equity, Net Interest Margin, Loan to Deposit Ratio, Total Assets Turnover, and Assets to Equity on Price Earnings Ratio in Top Five Banks of Indonesia and Korea: A Moderating Effect of Interest Rate. *International Journal of Business, Economics and Law*, 27(1), 71–84.
- Lange, V., Higgins, M. P. A., Tory, E., & Kruglanski, W. A. (2011). Handbook of Theories of Social Psychology. *Handbook of Theories of Social Psychology*, 1–560. Retrieved from <https://www.torrossa.com/gs/resourceProxy?an=5017495&publisher=FZ7200#page=479>
- Larmou, S., & Vafeas, N. (2010). The relation between board size and firm performance in firms with a history of poor operating performance. *Journal of Management & Governance*, 14(1), 61–85. <https://doi.org/10.1007/s10997-009-9091-z>
- Lee, Y.-H., & Yang, L. T.-Y. (2021). Corporate social responsibility and financial performance: A case study based in Taiwan. *Applied Economics*, 53(23), 2661–2670. <https://doi.org/10.1080/00036846.2020.1866158>
- Lelissa, T. B. (2014). The determinants of Ethiopian commercial banks performance. *European Journal of Business and Management*, 6(14), 52–62.
- Le, H. T. M., Ting, I. W. K., Kweh, Q. L., & Ngo, H. L. T. (2023). CEO duality, board size and firm performance: evidence in Vietnam. *International Journal of Business Excellence*, 29(1), 98. <https://doi.org/10.1504/ijbex.2023.128255>
- Levin, A., Lin, C.-F., & James Chu, C.-S. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics*, 108(1), 1–24. [https://doi.org/10.1016/s0304-4076\(01\)00098-7](https://doi.org/10.1016/s0304-4076(01)00098-7)
- Lewbel, A. (2012). Using heteroscedasticity to identify and estimate mis-measured and endogenous regressor models. *Journal of Business & Economic Statistics*, 30(1), 67–80. <https://doi.org/10.1080/07350015.2012.643126>
- Liang, Q., Xu, P., & Jiraporn, P. (2013). Board characteristics and Chinese bank performance. *Journal of Banking & Finance*, 37(8), 2953–2968. <https://doi.org/10.1016/j.jbankfin.2013.04.018>
- Li, J., Jiang, T., Ullah, S., & Majeed, M. T. (2021). The dynamic linkage between financial inflow and environmental quality: evidence from China and policy options. *Environmental Science and Pollution Research*, 29(1), 1051–1059. <https://doi.org/10.1007/s11356-021-15616-5>
- Lu, Y., Ntim, C. G., Zhang, Q., & Li, P. (2022). Board of directors' attributes and corporate outcomes: A systematic literature review and future research agenda. *International Review of Financial Analysis*, 84, 102424. <https://doi.org/10.1016/j.irfa.2022.102424>
- Malede, M. (2014). Determinants of commercial banks lending: evidence from Ethiopian commercial banks. *European Journal of Business and Management*, 6(20), 109–117.
- Moore, Z., Harrison, D. E., & Hair, J. (2021). Data Quality Assurance Begins Before Data Collection and Never Ends: What Marketing Researchers Absolutely Need to Remember. *International Journal of Market Research*, 63(6), 693–714. <https://doi.org/10.1177/14707853211052183>
- Msomu, T. S. (2023). Macroeconomic and firm-specific determinants of financial performance: Evidence from non-life insurance companies in Africa. *Cogent Business & Management*, 10(1). <https://doi.org/10.1080/23311975.2023.2190312>
- NBE (National Bank of Ethiopia). (2021). Annual Report. NBE. <https://nbebank.com/wp-content/uploads/pdf/annualbulletin/Annual%20Report%202020-2021/2020-21%20Annual%20Report.pdf>

- Nguyen, T. H. H., Ntim, C. G., & Malagila, J. K. (2020). Women on corporate boards and corporate financial and non-financial performance: A systematic literature review and future research agenda. *International Review of Financial Analysis*, 71, 101554. <https://doi.org/10.1016/j.irfa.2020.101554>
- Nicholson, G. J., & Kiel, G. C. (2007). Can Directors Impact Performance? A case-based test of three theories of corporate governance. *Corporate Governance An International Review*, 15(4), 585–608. <https://doi.org/10.1111/j.1467-8683.2007.00590.x>
- Niemand, T., Rigtering, J. P. C., Kallmünzer, A., Kraus, S., & Maalaoui, A. (2021). Digitalization in the financial industry: A contingency approach of entrepreneurial orientation and strategic vision on digitalization. *European Management Journal*, 39(3), 317–326. <https://doi.org/10.1016/j.emj.2020.04.008>
- Ntim, C. G. (2013). Board diversity and organizational valuation: unravelling the effects of ethnicity and gender. *Journal of Management & Governance*, 19(1), 167–195. <https://doi.org/10.1007/s10997-013-9283-4>
- Ntim, C. G., Lindop, S., & Thomas, D. A. (2013). Corporate governance and risk reporting in South Africa: A study of corporate risk disclosures in the pre- and post-2007/2008 global financial crisis periods. *International Review of Financial Analysis*, 30, 363–383. <https://doi.org/10.1016/j.irfa.2013.07.001>
- Ntim, C. G., & Soobaroyen, T. (2013). Corporate Governance and Performance in Socially Responsible Corporations: New Empirical Insights from a Neo-Institutional Framework. *Corporate Governance An International Review*, 21(5), 468–494. <https://doi.org/10.1111/corg.12026>
- Pathan, S., & Faff, R. (2013). Does board structure in banks really affect their performance? *Journal of Banking & Finance*, 37(5), 1573–1589. <https://doi.org/10.1016/j.jbankfin.2012.12.016>
- Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, 58(5), 1546–1571. <https://doi.org/10.5465/amj.2013.0319>
- Pucheta-Martínez, M. C., & Gallego-Álvarez, I. (2020). Do board characteristics drive firm performance? An international perspective. *Review of Managerial Science*, 14(6), 1251–1297. <https://doi.org/10.1007/s11846-019-00330-x>
- Quoc Trung, N. K. (2022). Board of directors characteristics affect commercial banks' performance – evidence in Vietnam. *Cogent Business & Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2060164>
- Sahyouni, A., & Wang, M. (2019). Liquidity creation and bank performance: evidence from MENA. *ISRA International Journal of Islamic Finance*, 11(1), 27–45. <https://doi.org/10.1108/ijif-01-2018-0009>
- Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly*, 23(2), 224–253. <https://doi.org/10.2307/2392563>
- Sarhan, A. A., Ntim, C. G., & Al-Najjar, B. (2019). Board diversity, corporate governance, corporate performance, and executive pay. *International Journal of Finance & Economics*, 24(2), 761–786. <https://doi.org/10.1002/ijfe.1690>
- Shakil, M. H., Tasnia, M., & Mostafiz, M. I. (2020). Board gender diversity and environmental, social and governance performance of US banks: moderating role of environmental, social and corporate governance controversies. *International Journal of Bank Marketing*, 39(4), 661–677. <https://doi.org/10.1108/ijbm-04-2020-0210>
- Siddique, A., Khan, M. A., & Khan, Z. (2021). The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks. *Asian Journal of Accounting Research*, 7(2), 182–194. <https://doi.org/10.1108/AJAR-08-2020-0071>
- Singh, D. A., & Gaur, A. S. (2009). Business Group Affiliation, Firm Governance, and Firm Performance: Evidence from China and India. *Corporate Governance An International Review*, 17(4), 411–425. <https://doi.org/10.1111/j.1467-8683.2009.00750.x>
- Terraza, V. (2015). The Effect of Bank Size on Risk Ratios: Implications of Banks' Performance. *Procedia Economics and Finance*, 30, 903–909. [https://doi.org/10.1016/s2212-5671\(15\)01340-4](https://doi.org/10.1016/s2212-5671(15)01340-4)
- Teshome, E., Debela, K., & Sultan, M. (2018). Determinant of financial performance of commercial banks in Ethiopia: Special emphasis on private commercial banks. *African Journal of Business Management*, 12(1), 1–10. <https://doi.org/10.5897/AJBM2017.8470>
- Tewodros, B. A., & Gedion, A. A. (2019). Determinants of financial performance in private banks: A case in Ethiopia. *African Journal of Business Management*, 13(9), 291–308. <https://doi.org/10.5897/ajbm2019.8771>
- Tshipa, J., Brummer, L., Wolmarans, H., & Du Toit, E. (2018). The impact of flexible corporate governance disclosures on value relevance. Empirical evidence from South Africa. *Corporate Governance The International Journal of Business in Society*, 18(3), 369–385. <https://doi.org/10.1108/cg-05-2017-0106>
- Ullah, A., Ahmed, M., Raza, S. A., & Ali, S. (2021). A threshold approach to sustainable development: Nonlinear relationship between renewable energy consumption, natural resource rent, and ecological footprint. *Journal of Environmental Management*, 295, 113073. <https://doi.org/10.1016/j.jenvman.2021.113073>
- Ur Rehman, A., Aslam, E., & Iqbal, A. (2022). Intellectual capital efficiency and bank performance: Evidence from Islamic banks. *Borsa Istanbul Review*, 22(1), 113–121. <https://doi.org/10.1016/j.bir.2021.02.004>
- van Essen, M., van Oosterhout, J. H., & Carney, M. (2011). Corporate boards and the performance of Asian firms: A meta-analysis. *Asia Pacific Journal of Management*, 29(4), 873–905. <https://doi.org/10.1007/s10490-011-9269-1>
- Weis, T., Rawlins, M., Itana, K., & Coleman, R. (2022). The Leadership Gender Gap in Banking: Insights from Ethiopia, 178183. World Bank Group.
- Wu, Q., Furuoka, F., & Lau, S. C. (2021). Corporate social responsibility and board gender diversity: a meta-analysis. *Management Research Review*, 45(7), 956–983. <https://doi.org/10.1108/mrr-03-2021-0236>
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185–211. [https://doi.org/10.1016/0304-405x\(95\)00844-5](https://doi.org/10.1016/0304-405x(95)00844-5)