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Determinants of Board Size and Diversity: A Study of Financial Institutions in South Africa

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Abstract

This examined the determinants of board size and diversity in financial institutions. The study used a panel of selected South African financial institutions, namely banks and insurance companies, from the period 2007 to 2020. Employed the Generalised Method of Moments (GMM) to address the association between financial performance and corporate governance proxied by board size and board diversity. Using the unlisted and listed banks and insurance companies, the study sampled 11 banks and 10 insurance companies. The results revealed that the capital adequacy ratio (CAR) was significant and positive with board diversity. Firm size, leverage ratio, financial stability, efficiency ratio, and return on equity (ROE) were negative and significant with board diversity. The CAR and leverage ratio were positive and significant with board size. Financial stability, efficiency ratio and firm size were significant and negative with board size. Due to challenges in obtaining comprehensive annual reports, a small group of financial institutions were omitted from the sample. The study underpins the need to adopt a unified legal and governance framework to integrate corporate governance principles into the financial components of financial institutions to improve the oversight functions of the board.

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1. Introduction

Corporate governance became a focal point in the business world during the 2007-2009 global economic recession. Corporate governance has been highly discussed and debated by academics, policymakers, investors and researchers since the global economic recession and other corporate scandals such as fraud, corruption and poor management within the institutions (Mallin, 2016). Corporate failures such as VBS (Venda Building Society Mutual Bank), Fidentia and Regal Treasury Bank, and the misconduct of management in advisory firms like Deloitte (Ruggunan & Spiller, 2018). The misconducts and failures have raised a significant demand for a sound corporate governance structure. Corporate governance pertains to structures and procedures in which institutions are overseen and governed (Cadbury, 1992).

Shleifer and Vishny (1997) a sound corporate governance diminishes the controlling authority, where fund providers and other shareholders confer on the institution's agents, increasing the probability of agents investing in positive investment projects. According to Kirkpatrick (2009) while some have viewed corporate governance to prevent institutional crises in businesses, others have blamed the global economic recession of 2007–2009 on financial institutions' weak corporate governance, including improper board practices of directors.

Board size and diversity have received tremendous attention from scholars and policymakers (Issa, Yousef, Bakry, Hanaysha, & Sahyouni, 2021). The board directors of an institution are considered a significant element of corporate governance mechanisms and provide strategic decisions and monitoring management of the organisation (Gallego-Álvarez & Pucheta-Martínez, 2020; Pucheta-Martínez & Gallego-Álvarez, 2020). Corporate governance theories highlight the significance of board size and diversity in enhancing strategic decisions and monitoring the management of the organisation (Jensen, 1993). According to Upadhyay (2023)

the relevance of board diversity in enhancing corporate governance and board effectiveness has significant implications for an institution's economic outcomes. Board diversity and size bring more resources to an institution, which may lead to better financial performance and transparency of information (Baker, Pandey, Kumar, & Haldar, 2020). Increasing an institution's resources may result in improved financial performance and information transparency.

Buchwald and Hottenrott (2019) assert that board size and diversity are considered the fundamental characteristics of corporate governance in various countries like Belgium, Denmark, Italy and Spain, where institutions are enforced to have a certain minimum of female board members. Board diversity is defined as the inclusion of genders within the institution's structures (Brickley, Lease, & Smith Jr, 1988). Diversity of the board is not restricted to gender but considers occupation, ethnicity, religion, culture, age, knowledge, industry experience, and independence (Alawadi, Kakabadse, Morley, & Khan, 2024). Jensen (1993) and Lawal and Yahaya (2024) defined board size as the total number of directors in a company.

Mahtab and Abdullah (2016) and Alabi and Truce (2024) argue that financial institutions with effective corporate governance measures are more efficient in allocating resources. Financial performance and corporate governance metrics are correlated, and effective corporate governance has a positive impact on the financial performance of financial institutions (Affes & Jarboui, 2023; Ahmar, 2022; Temba, Kasoga, & Keregero, 2023). Dong, Liang, and Wanyin (2023) identified that the literature on board diversity is inconclusive. Despite prior studies examining the association between corporate governance practices and principles, it was not evident which factors give prominence to corporate governance measures, namely, board diversity and board size in financial institutions. This was further corroborated by Khatib, Abdullah, Elamer, and Hazaea (2022) who used the Malaysian market and affirmed that prior studies sampled non-financial firms and employed similar quantitative methods.

Despite the recurring financial crises, the association linking financial institutions and their performance, along with the stability of financial systems, remains poorly understood. Even during the recent COVID-19 pandemic, the working conditions and the financial industry became tougher for individuals around the world (Song & Zhou, 2020). Scholars such as Ismail et al. (2024) found unusual disruptions to the decisions by financial institutions, causing sustainability threats. Farwell (2022) found that the causal relationship between financial performance and board diversity requires extensive investigation. Meanwhile, Jagirani, Lim, and Kosim (2023) discovered a moderating effect of CAR on board characteristics employing a panel data estimation and multiple regression model. Mustun and Abdul Wahab (2023) assert that interdisciplinary theories suggest a correlation between firm performance and board diversity. These studies underpin the need to examine the key factors of board size and board diversity to acknowledge the drivers that require strengthening, preventing failures in corporate governance practices during a crisis. Financial institutions perform an essential function in the economy by virtue of their ability to mobilise savings and being agents of risk transfer (Tissot & Gadanecz, 2018).

In South Africa, corporate governance is given prominence by all parts of the economy. South Africa initiated the corporate governance publication codes and guidelines of practices with the King Reports (I-IV) (Koma, 2024). The King reports advocates for committees for financial institutions in South Africa. The Basel Committee on Banking Supervision emphasises sound practices of corporate governance in financial institutions to build confidence and trust in investors (Rubio & Carrasco-Gallego, 2016). This study focused on South African financial institutions. The country is a developing country and has distinct characteristics that require a thorough examination of corporate governance drivers. As such, this paper aims to examine the effects of financial performance on board composition, mainly the board size and diversity. Using South Africa as a unit of analysis for the period 2007 to 2020. The study's hypotheses are classified as follows.

H_1: There is a positive correlation between CAR and board diversity.

H_2: There is a positive correlation between CAR and board size.

H_3: There is a positive correlation between leverage and board diversity.

H_4: There is a positive correlation between leverage and board size.

The recent corporate financial scandals in firms like VBS Mutual Bank and Steinhoff in South Africa necessitated greater attention to governance issues. This paper contributes to the discussion of corporate governance through identifying the financial performance measures that influence board size and diversity in financial institutions in an emerging country like South Africa. This paper will empower global and local investors to corporate governance principles that preserve their interests. Methodologically, this study contributes to the corporate governance literature through a reverse regression analysis where board diversity and board size become the function of financial performance and financial stability. Mehran (2011) and Andries and Ursu (2020) assert that there is evidence that better firm performance led to efficient and effective corporate governance. The following section discusses the literature review. Followed by the applicable methodology aimed at addressing the research objectives. Thereafter, data findings and discussions are presented. Lastly, this paper provides a concise conclusion, recommendations and suggestions for future research.

2. Literature Review

2.1. Theoretical Literature Review

The theories that underpin the current study are discussed below.

According to Mans-Kemp and Sauls (2023), agency theory postulates that corporate shareholders are principals and managers are agents. The directors of a board are a crucial mechanism tasked to monitor and control the agents and perform a significant function in the implementation of managerial policies (Fama & Jensen, 1983). The role of directors is to reduce and solve agency problems among agents and principals (Alabdullah & Maryanti, 2021). In accordance with agency theory, female directors enhance the board's effectiveness and firm performance. Diversity will enhance board independence due to ethnicity, gender differences and cultural backgrounds (Khatatbeh, Samman, Al Salamat, & Meqbel, 2024).

Stakeholder theory postulates that managers are bound to have a network of relationships with shareholders and other stakeholders (Freeman, 1984; Kock, Santalo, & Diestre, 2012). A stakeholder in the institution is any individual or any group (the government, employees, creditors, suppliers or investors) that may impact or be impacted by the institution's achievements (Freeman, 1984). In contrast to agency theory, stakeholder theory promotes the accountability of agents to shareholders and stakeholders (Fekadu, Mesfin, Haile, & Stoecker, 2015). Compliant with the theory, the purpose of financial institutions is to coordinate and serve the interests of stakeholders. Watson and Buckley (2024) assert that firms should maximise the wealth of the stakeholders. The theory implies that corporate disclosure should prioritise serving the interests of stakeholders rather than resolving the conflict between shareholders and management (Sweeney & Coughlan, 2008).

According to Nguyen, Locke, and Reddy (2015) resource dependence theory specifies the board characteristics and an institution's critical resource association. The theory focuses on the agent's role as a resource provider through effectiveness and efficiency in meeting the shareholders' needs. Abid, Khan, Rafiq, and Ahmed (2015) contend that the theory focuses on the director's role in securing resources that are essential to the institution through the link to the external environment. Mwai, Kiplang'at, and Gichoya (2014) concur that the provision of resources in the institution strengthens the institution's performance, survival, and organisational functioning.

Agency theory assert that a bloated board will not function effectively (Jensen, 1993). Coles, Daniel, and Naveen (2008) argue that large board size is appropriate for larger companies with complex operations, which may require more advice and monitoring. Therefore, it will require more directors than a small company. Small appropriate boards are more effective than large boards because they encourage personal focus, participation, and interaction (Firstenberg & Malkiel, 1994). However, Dalton, Daily, Johnson, and Ellstrand (1999) argue that according to the resource dependence theory, larger boards often lead to better performance of the institution. Jensen (1993) and Lipton and Lorsch (1992) support the idea that a larger board can be dysfunctional, being that a larger board is less effective due to increased agency problems.

Board size has been widely recognised as a crucial corporate governance mechanism which plays a tremendous role in an institution's management (Isik & Ince, 2016). For this reason, the institution's board size and its impact on performance are some of the argued issues in corporate governance. Agency theory asserts that superior firm performance may be associated with low or smaller board size. Furthermore, agency theory contends that a small board's communication and coordination are more effective than a larger board. However, resource dependence theory advocates for larger board sizes. Resource dependence theory believes that larger boards have an advantage in reducing dependency on external resources because of greater opportunities linked to environmental linkages (Pfeffer and Salancik, 1978).

2.2. Empirical Literature Review

The failures of management and directors are acknowledged as primary causes of institutions' collapse in the banking sector (Dibra, 2016). Hence, better knowledge and understanding of how the banking sector is governed will prevent poor corporate governance. The development of an effective corporate governance system ought to be the main concern of financial institutions and should constitute an essential strength for the sector to be competitive. Erkens, Hung, and Matos (2012) conducted a study with 296 financial institutions in around 30 countries and confirmed the corporate governance role in their financial performance. According to Barucci and Falini (2005) institutional investors play an essential function in a business's governance due to their long-term ownership of the organisation.

Chimbadzwa, Dube, and Guveya (2024) examined the determinants of board diversity of 35 firms listed on the Zimbabwe Stock Exchange from 2009 to 2015. The study used a panel-corrected standard errors regression model and found that Tobin's Q, current ratio, debt ratio and firm size have a significant and positive correlation with board diversity. Nguyen (2021) examined the impact of financial performance on board diversity using 26 Taiwanese commercial banks from 2002 to 2018, found an insignificant relationship between CAR and gender diversity. In contrast to the findings, Sbali and Ed-Dafali (2023) examined the association between CAR and gender diversity using 14 listed banks from emerging countries from 2012 to 2020. The study employed the random and fixed effects and found that CAR has a positive link with gender diversity. In line with the results, Menicucci and Paolucci (2022) sampled 387 Italian banks and constructed an economic model employing unbalanced panel data and found that gender diversity has a significant positive impact because of higher CAR

and equity to assets ratio. Houphouet (2024) asserts that banks are less hazardous when their reports indicate higher capital adequacy and equity to asset ratios. Therefore, a higher percentage of women on the boards correlates with lower leverage and debt ratios. Idun, Arthur, and Tutu (2020) confirm a significant link between leverage and board diversity using 29 commercial banks from Ghana for the period 2003 to 2015. However, the study employed GMM, random effects and fixed effects estimators.

Aprianti, Sandrayati, and Sari (2024) examined the 195 businesses and found a positive link between financial performance and board diversity. An earlier study by Gatehi and Nasieku (2022) found similar results when examining listed non-financial firms from the Nairobi Securities Exchange. However, a study by Aprianti et al. (2024) measured financial performance by return on investment, while Gatehi and Nasieku (2022) used ROE. Nasrallah and El Khoury (2022) examined the correlation between financial performance and corporate governance of 150 small non-listed companies in Lebanon. The study employed the two-stage least squares regression model and found that financial performance, measured by ROA and return on investment (ROI), had a positive influence on corporate governance. The findings imply that better financial performance promotes companies to strengthen their governance measures. However, Nawaz and Iqbal (2015) examined the reverse causality of the link between corporate governance and financial performance in 18 Asian countries, using 173 microfinance institutions from 2007 to 2011. The study employed the ordinal logistic regression analysis and found ROE and ROA have a negative influence on board size and board diversity. Their results are consistent with Ismaila and Tanko (2023) who found a negative nexus between ROA and gender diversity using 50 Nigerian listed manufacturing firms from 2013 to 2022.

According to Hasin, Sehat, Mahat, Minhad, and Fauzihardani (2024) board size is a significant determinant of corporate governance, however, prior studies indicate inconclusive results relating to optimal board size. Furthermore, Hasin et al. (2024) argue that larger board size provides more diversity and expertise. Topal and Dogan (2014) and Guest (2008) argue that company-specific variables determine the board size; hence, the direction of the nexus between board size and financial performance varies across companies. Chen and Al-Najjar (2012) examined the determinants of board size using Chinese non-financial firms from 1999 to 2003. The study employed a panel regression model and found that financial performance had a significant positive relationship with board size. Furthermore, the study found an insignificant link between leverage and board size. Alnaif (2014) examined the relationship between firm characteristics and board size of 21 non-financial firms from the Amman Stock Exchange from 2005 to 2012 and employed a multiple regression analysis. The study found that firm profitability, leverage ratio, age and firm size are significant determinants of board size.

Mustapha, Nafiu, Abdul, and Omolekan (2020) examined the determinants of 30 Nigerian Manufacturing companies from 2006 to 2018. The study employed a multiple regression analysis and found that growth prospects, ROA and firm size were the significant determinants of board size. However, Krisnadewi, Soewarno, and Agustia (2020) examined the determinants of board size in Indonesia and found liquidity and leverage ratio are significant determinants.

Emmanuel, Esther, and Miracle (2022) assessed the influence of corporate governance on firm performance from 2014 to 2018 using Nigerian banks. The panel data regression technique was employed to analyse the collected data. The study revealed that board size had an insignificant association with firm performance (ROA). However, Bezawada and Adaelli (2020) assessed the link between board characteristics and performance using 34 Indian banks from the period 2009 to 2018. The study used the asset quality of banks' ratio of net non-performing assets and ROA to measure bank performance. The study used the OLS regression model and found that board size had a positive link with ROA. The results are in line with Riaz, Khan, and Shaheen (2017) who found a positive link between the size of the board and ROA using 168 companies listed on the Lahore stock exchange. The study used a linear regression model.

From 2012 to 2013, Naushad and Malik (2015) used the Gulf Cooperation Council banking sector to investigate the influence of board size on the performance of 24 banks. The study used the OLS regression model and found that smaller boards had been more effective in monitoring banks. The dependent variables were Tobin's Q and ROA, whereas board size was an independent variable. The findings are in line with Lawal and Yahaya (2024). Mustapha (2020) in the period 2013 to 2015, assessed the correlation linking corporate governance and firm performance in the Nigerian Stock Exchange using 22 listed banks. The study used a panel regression analysis and found board size, board genders and ROA were insignificant. The results are in line with Wirawan and Willim (2023) who found no association linking the women's presentation on the board and firm performance. The results are, however, inconsistent with Wu, Gao, Luo, Xu, and Shi (2024) who found a positive and significant correlation between gender diversity and financial performance using 494 listed non-financial firms from the period 2018 to 2022 in China. However, the study used the GMM model. Similar results were found by Bagh, Khan, Meyer, and Riaz (2023) using non-financial firms from Moscow in the period 2008 to 2020, employing GMM. Wadesango, Charity, Blessing, and Haufiku (2020) assessed 13 banks in Zimbabwe for the period 2010 to 2017 and used the classical linear regression model and found that board composition, leverage ratio, and board size were significantly explaining Zimbabwe's profitability of commercial banks. The study employed ROE to measure profitability.

The empirical and theoretical literature in this study is gathered from different countries, and the studies employed various methodologies. Studies on determinants of board size and board diversity are inconclusive.

Agency theory is widely employed in corporate governance studies; however, we found that other theories are also applicable. Other theories, such as resource dependency, transaction cost, stewardship, and stakeholder theory, were developed in the discipline (Hussain, Rigoni, & Orij, 2018; Lau, Lu, & Liang, 2016). Assert the use of multi-theory as there is no single ideal theory. This paper differs based on the financial measures applied, focusing on a developing country and the economic sector.

3. Methodology

3.1. Data, Sample and Variables

To analyse the annual data from 2007 to 2020 for 21 financial institutions in South Africa, this study employed the panel regression models. To source insurance company data, the Orbis database and the Financial Sector Conduct Authority (FSCA) were used, and the Bureau Van Dijk Orbis Bank focus database was used to obtain data on banks. Furthermore, annual integrated reports were sourced from the company's websites. Bussin and Modau (2015) assert that the FSCA database and Bureau Van Dijk Orbis Band focus are South Africa's leading providers of data feeds. From the total of 19 banks in South Africa, 11 banks were sampled. From the total of 179 insurance companies in South Africa, 10 companies were sampled. From the total of 21 sampled financial institutions, there were 291-time cross-sectional observations.

Our dependent variables consisted of board size and board diversity. The independent variables were CAR, ROE, ROA, leverage ratio and efficiency ratio. Transparency and disclosure, firm size, leverage ratio, and growth prospects were control variables. The number of female members to total board members proxied board diversity. The total number of board of directors proxies board size. Transparency and disclosure were proxied by the disclosures of auditors' reports, remuneration of directors, accounting policies, committees, compliance reports, and the age and qualification of directors. CAR, financial stability and financial performance were independent variables. Capital adequacy ratio proxied by the total equity to total assets. The Z-score proxied financial stability, and financial performance is proxied by ROA (net income to average total assets) and ROE (net income to average total equity). The sampled financial institutions comprised insurance companies and banks in Table 1.

Table 1. List of financial institutions.

Banks	Insurance companies
HBZ bank limited	Sasria Limited
Albaraka bank limited	Clientele limited
Standard bank of South Africa limited	PSG consultant
Bidvest bank limited	Old mutual life assurance company limited
First rand bank limited	Federated employers mutual assurance company
Nedbank limited	Liberty holdings limited
Grindrod bank limited	Export credit insurance corporation of South Africa
Mercantile bank limited	Professional provident society limited
Absa bank limited	Discovery life limited
Investec bank limited	African reinsurance corporation
Habib overseas bank limited	

3.2. Model Specification

The dynamic panel GMM was used in the study to achieve the objective of identifying significant determinants of board size and diversity in South African financial institutions. The GMM is used instead of ordinary least squares to overcome the challenges of endogeneity and specification errors associated with panel data (Arellano & Bover, 1995; Gujarati & Porter, 2009). The panel data approach comprises choosing an appropriate estimation method among fixed effects and random effects. To that end, this study performed the Hausman tests together with the null hypothesis and found random effects model was appropriate rather than the fixed effects model (Arellano & Bond, 1991).

Below is the specification of the general system GMM.

$$Y_{it} = \alpha Y_{it-1} + \beta X_{i\,t-1} + \mu_i + \varepsilon_{it} \quad (1)$$

Where:

Y_{it} = The dependent variable of the institution's i for the time t.

Y_{it-1} = The lagged dependent variable.

X= The vector of the explanatory variables.

μ_i = The time-invariant institution's specific effect

ε_{it} = The disturbance term.

The generalised system GMM is as follows.

$$BS_{it} = \alpha BS_{it-1} + \beta_1 FINPERF_{it} + \beta_2 FINSTAB_{it} + \sum_{n=1}^{i} \beta X_{i\,t} + \mu_i + \varepsilon_{it} \quad (2)$$

$$BD_{it} = \alpha BD_{it-1} + \beta_1 FINPERF_{it} + \beta_2 FINSTAB_{it} + \sum_{n=1}^{i} \beta X_{i\,t} + \mu_i + \varepsilon_{it} \quad (3)$$

Where BS_{it} represents the board size, BD_{it} board diversity, $FINPERF_{it}$ financial performance represented by ROA and ROE, $FINSTAB_{it}$ financial stability, μ_i time-invariant institution's specific effects, ε_{it} error term.

Diagnostic tests were conducted before estimation of the above model. The data collected were checked for heteroskedasticity, multicollinearity and serial correlation to prevent erroneous regression analysis results. Applying the P-value of more than 0.05 implies there is no heteroskedasticity; therefore, to test for check for heteroskedasticity, the F-tests and the Chi-square tests were performed. A correlation matrix was applied to identify any multicollinearity within the variables.

Table 2. Determinants of board diversity (BD) in selected financial institutions.

Variables	2-Step System GMM BD	2-Step System GMM BD
Lagged board diversity	0.0125 (0.0181	0.0307 (0.0297)
Financial stability	-0.736*** (0.0867)	-1.068*** (0.0849)
Efficiency ratio	-0.0389*** (0.00321)	-0.0683 (0.00448)
Capital adequacy ratio (CAR)	0.000646*** (0.0000223)	0.000445*** (0.0000402)
Firm size	-1.384*** (0.218)	-2.820*** (0.370)
Leverage ratio	-0.0687*** (0.00383)	-0.0617*** (0.00375)
Return on assets (ROA)	-0.0266*** (0.00794)	
Return on equity (ROE)		-0.0315*** (0.00584)
N	249	249
Groups	21	21
Instruments	14	14
AR(1)	-2.37	-2.50
AR(2)	-0.64	-0.65
Sargen test	0.08	0.02
Hansen test	9.34	10.57

Note: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Standard errors in parentheses. ROA= Return on assets, and ROE= Return on equity.

4. Results and Discussion of Findings

The percentage of women on the board is employed to assess board diversity. The association between board diversity and its lagged variable is statistically insignificant. A financial institution's financial stability is critical since it has economic and social consequences. The Z-score, which measures financial stability, has a negatively significant affiliation with board diversity. These results imply that financial stability has a negative impact on board diversity. A percentage increase in financial stability decreases the board diversity of the institutions. Furthermore, the results imply that when financial stability increases, board diversity could be ineffective. However, inconsistent with that of Ogboi, Aderimiki, and Enilolobo (2018); Nyumutsu (2019) and Ho, Nguyen, Le, Nguyen, and Tran (2025) who found gender composition had a positively significant association with bank stability. The link between efficiency ratio and board diversity is negatively significant. The results imply efficiency ratio negatively influences the board diversity of selected financial institutions. A percentage decrease in the efficiency ratio increases the board diversity of the selected financial institutions. Furthermore, the results indicates that board diversity could be inefficient when efficiency ratio increases. Inconsistent with Shabbir, Xin, and Hafeez (2020) and Thaker, Charles, Pant, and Gherman (2022) who found a positive link between the number of females on the board of directors and the efficiency ratio.

The correlation between the CAR and board diversity is positively significant. The findings indicate that a percentage increase in CAR increases the board diversity of the selected financial institutions. Furthermore, financial institutions will allow a more adequate level of loss, whilst conserving their sustainability. Consequently, the institution will be less likely to fail due to high capital reserves. Consistent with Saerang, Tulung, and Ogi (2018) who found a positively significant link in women's representation on the board and the CAR. Firm size and board diversity have a negatively significant link. The increase in the firm size will lead to a decline in board diversity. Furthermore, board diversity could be ineffective when firm size increases. The result is in contrast with Reddy and Jadhav (2019) who identified a positive correlation in firm size and board diversity. However, consistent with Pervin and Rashid (2019) who found that firm size and board diversity had a negative and statistical association.

The link between leverage ratio and board diversity is negatively significant. A percentage increase in the leverage ratio will significantly have a negative influence on the percentage of board diversity. However, a higher leverage ratio is safer less risky for financial institutions. The findings are consistent with Harris (2014) and Hordofa (2023) who found a negatively significant link between the leverage ratio and gender diversity. A board with more gender diversity tends to enhance financial performance (Tabash, Akinola, & Abousamak, 2021). Financial institutions invest in lower risky alternatives when the board has more female representation.

The correlation between ROA and board diversity is significantly negative. The result suggests that a percentage increase in ROA will decrease the board diversity of the selected financial institutions. Furthermore, the findings signify that an increase in ROA could render board diversity ineffective. Tabash et al. (2021) and Ismaila and Tanko (2023) found similar negative results. However, in contrast with Musa, Jerry, and Abdulrasheed (2020) and Lehri, Sadiq, Ullah, and Latif (2024) who found a positively significant affiliation in gender diversity and ROA. Nedelchev (2018) the representation and participation of women on a board is one important factor affecting performance and operation. The ROE and board diversity link is significantly negative. When ROE increases, board diversity will decrease, and that may lead board diversity to be inefficient. In contrast with the results, Joecks, Pull, and Vetter (2013) and Ogunsanwo (2019) found a positive influence on gender diversity and ROE. However, Musa et al. (2020) found that the correlation between gender diversity and ROE had no impact.

Table 3. Determinants of board size (BS) in selected financial institutions.

Variables	2-Step system GMM BS	2-Step system GMM BS
Lagged board size	-0.341***	-0.337***
	(0.00262)	(0.00348)
Financial stability	-0.359***	-0.555***
	(0.0165)	(0.0159
Efficiency ratio	-0.0827***	-0.0809***
	(0.000913)	(0.000893)
Capital adequacy ratio (CAR)	0.000419***	0.000433***
	(0.00000423)	(0.00000373)
Firm size	-0.369***	-0.599***
	(0.0899)	(0.0912)
Leverage ratio	0.00669***	0.00579***
	(0.000506)	(0.000495)
Return on assets (ROA)	-0.0813***	
	(0.00150)	
Return on equity (ROE)		-0.0533***
		(0.00157)
N	249	249
Groups	21	21
Instruments	14	15
AR(1)	-2.69	-2.34
AR(2)	-0.96	-1.06
Sargan test	7.37	4.98
Hansen test	7.34	7.59

Note: *** $p < 0.001$,** $p < 0.01$,* $p < 0.05$. Standard errors in parentheses.

A negatively significant link exists between board size and its lagged variable. Consequently, increasing the lagged board size significantly reduces the board size, signifying that past board size has a significant but negative impact on the current board size of the selected financial institutions. The nexus between board size and its independent variable, financial stability, is negatively significant. The result implies that an increase in the financial stability, efficiency ratio, firm size, ROA and ROE will decrease the board size of the selected financial institutions. Furthermore, the results show that board size could be inefficient when the dependent variables (financial stability, efficiency ratio, firm size, ROA and ROE) increase. Adams and Mehran (2012) and Karkowska and Acedański (2020) found a negative link between financial stability and board size. Meanwhile, Li, Kong, Atuahene, Bentum-Micah, and Agyapong (2020) and Khatatbeh et al. (2024) found a strong positive nexus between financial stability and board size, while Belkhir (2009); Erkens et al. (2012) and Thoha, Nugraha, Suryoko, Nadhifah, and Rhosyida (2022) found an insignificant link between board size and financial stability.

Furthermore, the results are consistent with Shabbir et al. (2020) finding a negative link between efficiency ratio and board size. However, inconsistent with Salim, Arjomandi, and Seufert (2016); Shahid, Gul, and Hasnain (2017); Inim (2021) and Thaker et al. (2022) who found a positively significant link between efficiency ratio and board size. Moreover, the results are inconsistent with Chin, Ganesan, Pitchay, Haron, and Hendayani (2019); who found a significantly positive link between board size and firm size. However, the result is consistent with Nakano and Nguyen (2013) and Singh, Rai, Ojha, Gyawali, and Gupta (2018) who found a negatively significant

link between ROA and board size. Furthermore, inconsistent with Malik, Wan, Ahmad, Naseem, and Rehman (2014); Isik and Ince (2016); Majeed and Muhammad (2020) and Bezawada and Adaelli (2020) who found a positive link between ROA and board size. The results are consistent with Majeed and Muhammad (2020) who found a negatively significant association between ROE and board size. Almoneef and Samontaray (2019); Gafoor, Mariappan, and Thiyagarajan (2018); Ogunsanwo (2019) and Kafidipe, Uwalomwa, Dahunsi, and Okeme (2021) however, found a positive and statistical link between ROE and board size. Panditharathna and Kawshala (2017) and Sarpong-Danquah, Gyimah, Afriyie, and Asiamah (2018) reported that the ROE and board size association is insignificant.

The link between Board size and CAR, and leverage ratio are, however, positively significant. The results imply that a percentage increase in the independent variables (CAR and leverage ratio) will significantly increase the board size of the selected financial institutions. Furthermore, implies that board size will be effective when the independent variables (CAR and leverage ratio) increase. In accordance with Fanta, Kemal, and Waka (2013), El-Masry, Abdelfattah, and Elbahar (2016) and Okoro and Nwadialo (2018) who observed a significantly positive affiliation between CAR and board size. Furthermore, the results are in line with Conyon and Peck (1998); Guest (2008); Huang and Wang (2015); Uddin, Khan, and Hosen (2019) and Sanga (2023) who found significantly positive results between leverage ratio and board size. However, inconsistent with Chen and Al-Najjar (2012) who found insignificant results between the leverage ratio and board size.

5. Conclusion and Recommendations

This study focused on financial institutions registered with the FSCA and Bureau Van Dijk Orbis Bank in South Africa, with data set from 2007 to 2020. The key findings of the study are that the capital adequacy ratio and leverage influence the corporate governance measured by board size and board diversity of financial institutions in South Africa. The data is obtained from the statement of financial position; therefore, these two aspects should be managed effectively. The practical implications of the findings are that a more diverse board can lead to better decision-making and more transparency, and accountability. Financial institutions should prioritise increasing board size and board diversity to enhance growth. It will also assist institutions in adapting to the complex market environments. Financial institutions should adjust their board structures to comply with best practices and standards of corporate governance. By doing so, financial institutions can improve their reputation and attract more investors by instilling confidence through effective corporate governance measures.

Nevertheless, the study's scope for future research. Studies on board diversity may consider including other attributes such as age, experience, professional background and racial diversity, data was not available for our study. Future studies may also examine the association between board size and diversity and financial performance in financial institutions accounting prior, during and post-COVID-19 periods. It is significant since the impact of the crisis may take several years in the financial markets; hence an investigation into this would contribute to the corporate governance literature.

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