Corporate board structures, financial performance and stability: evidence from banking markets in Africa

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Abstract
Purpose – This study aims to examine the effects of board structures (BS) on the financial performance and stability of banks in Africa.
Design/methodology/approach – Using annual data of 366 banks from 26 African countries from 2007 to 2015, the study estimates growths in financial performance using net interest margin and risk-adjusted return on assets; bank stability using z-scores; and BS using board size, board independence and board gender diversity. The system generalized method of moments and ordinary least squares panel-corrected standard error estimation strategies are used to estimate panel regressions.
Findings – The study concludes that board independence has a negative and significant relationship with financial stability but has diverse relationships with financial performance. Board size and board gender diversity have insignificant relationships with financial performance and stability.
Research limitations/implications – The study has relevant implications for practitioners, policymakers and the academic community. The findings provide evidence of the extent to which BS have been instituted to influence the financial profitability and stability of banks in Africa.
Originality/value – This study offers robust evidence on the role of BS in the performance and stability of banks; using a multidimensional conceptualization of the performance and stability of banks in 26 countries in Africa.
Keywords Board structures, Performance, Stability, Banks, Africa
Paper type Research paper

1. Introduction
In context, the financial sector is one such industry where governance has become important because of its role in the economy. The extant literature provides an indication of the positive effects of the financial sector in enhancing economic growth through more efficient and effective resource allocation (Beck et al., 2004). Banks as key players in the financial sector perform
transformative roles in the process of contributing to economic growth by mobilizing resources and allocating them to efficient and effective sources. In the past three decades, countries in Africa have undertaken financial sector reorganization and restructuring comprising deregulation and steady initiation of the sector to foreign involvements (Amidu and Kuipo, 2015; Beck and Cull, 2014). This has brought about internationalization of the financial sector.

The performance and stability in the banking sector matter, as in other sectors, for the efficiency of the production of quality financial services in the financial sector (Claessens and Laeven, 2004). Available management literature indicates that for better performance of banks, there should be effective board structures (BS) in the financial sector (Kyiereboah-Coleman and Biekpe, 2006). Kusi, Gyeke-Dako, Agbloyor and Darku (2018) indicated that in Africa, the BS can endorse or undermine shareholder and stakeholder value maximization though the effects of BS are weightier on the shareholder value maximization. Meanwhile, Dalton and Dalton (2011), Agoraki et al. (2010), DeRue et al. (2009), Hermolin and Weisbach (2003) and Eisenberga, Sundgren and Wells (1998) established no evidence of logical relationships between BS (i.e. board size, board independence) and financial performance of firms. However, Kyiereboah-Coleman and Biekpe (2006) and OECD (2004) claim that BS are the important determining factor of a firm’s financial performance.

Ironically, the Corporate Governance (CG) structures of banks are noted to be in their nascent stages in parts of Africa (Abor and Fiador, 2013). The analysis of the extant literature highlights the vast literature on the nature of the relationship between CG and the financial performance of firms; studies on the impact of CG on banks’ financial stability appears to be very rare. Even on the nature of the relationship between CG and the financial performance of firms, findings from many studies seems to suggest there are divergent evidence. Aside, many studies have concentrated on simple/single performance measures that do not offer comparative and robust analysis. This current study measures performance from a multi-dimensional perspective. Nkundabanyanga (2016) indicates that the performance of banks in the context of Sub-Saharan Africa has generally remained inadequately explained and this overwhelms performance improvement in banks. Moreover, many prior studies appear to be limited in scope as they concentrated on single economies. This study’s panel dataset (i.e. 366 banks in 26 African countries over 9 years) distinguishes it from previous studies that use only firm-level or a country-specific dataset.

The banking sector in most developing economies is perceived to be relatively characterized by low levels of competition and inefficiencies reflected in high banking transaction and services costs. As a result, improving the banking sector’s competitiveness, efficiency and performance in Africa may necessitate an actual empirical understanding of the effects of BS and on the performance of the banking sector. The sector forms a delicate part of an economy and offers a genuine area to make inquiries into matters on CG and firm performance and stability. Banking sector performance is also of topmost policy interest to financial market regulators, investors and academics. The findings of this study thus are directly useful to stakeholders in Africa in particular and could invariably help in the development of the banking and capital markets in Africa. The study finds that increasing independence of bank boards results in higher insolvency risk or lower stability of banks. Board size and board gender diversity do not have significant effects on financial performance and stability. Independent non-executive directors on bank boards of banks should be fewer.

The remainder of this paper is structured in this manner. Sections 2 and 3 explain literature review and data and methods, respectively. Analysis of results are presented in Section 4 and conclusions given in Section 5.

2. Literature review

From the perspective of Economists, the term CG is “the mechanisms by which functioning executives of entities are made to act in the interests of the owners of the entities and other
stakeholders” (Aboagye and Otieku, 2010, p. 309). For instance, CG involves the ways in which lenders to firms assure themselves of receiving a return on their funds’ outlay (Shleifer and Vishny, 1997). Those who take this perspective, nonetheless, consider that CG is implemented to help financiers make sure the firm managers use funding in the best possible way and earn rewards to them (Lee et al., 2007). Besides, from a legal perspective, “CG is focused on how a corporate organization with ownership separated from operations should be effectively monitored, or organised, through a well-designed legal system, and how the corporate organization may function as anticipated while avoiding illegal, corrupted business operations” (Ai-zhi Lu, 2005). The resource dependency theory contends that there is a growing intricacy and dynamism essential for corporate leadership to provide effective supervision and resources that fit into contemporary ways of business.

Therefore, the CG in an organization ensures structures are instituted to avoid problems, which are sometimes legal in nature. This presupposes that accountability is enshrined in CG. In light of the above, CG promotes better management, accountability, disclosure and transparency which could lead to improved firm performance, in line with the OECD principles of CG. Firms that practice good CG are more likely to accomplish institutional objectives (Aboagye and Otieku, 2010). Good CG must thus be of primary concern to firm owners, managers and other stakeholders. These benefits justify the facts that, CG affects the functioning and development of capital markets and wields a strong influence on the allocation of resources (Bokpin and Arko, 2009). A functioning CG mechanism within a country would most likely improve firm and market performance and economic growth.

It is important to stress that BS form an important part of the CGS. Some of the structures bother on board size, board composition, board diversity, CEO duality, nature of board sub-committees and board meetings. Others relating generally to CGS include institutional share ownerships, conflicts of interest, board performance evaluation, etc. Structures on these are operationalized to ensure that there is soundness in the operation and management of firms. Some of the structures that are important for bank management are thus enumerated below.

Besides, variety is treasured in circumstances where knowledge and ideas are noted to be fluid. Board diversity can generally be defined as variety among the members of boards of directors with regard to characteristics such as kinds of expertise and managerial background, personality, learning style, age, race, education, values, etc. (Williams, 2000). These diverse qualities could crystallize in the economic decisions of boards, which ensures their effectiveness. A well diverse board of a firm could even be a strategic asset to the firm.

In the banking sector, banks generate revenues from their banking services. They earn revenue from interest on advances, demand deposit charges and many newly developed bank services that earn direct commissions or fees, such as investment banking, loan securitization and the writing of insurance policies (Royster, 2012, p. 3). Beyond the revenues that they generate, their performance is noted to be particularly influenced by two factors: the respective market conditions regarding competition and price levels as well as service production capability (Varmaz, 2006). This means that in the same competitive banking environment, a bank manager is to manage these factors to stay more profitable than another bank.

In effect, CGS of banks has been linked to their performance positively (Kusi et al. 2018; Kyereboah-Coleman and Biekpe, 2006; OECD, 2004). For instance, in Kusi et al. (2018), board size is noted to influence returns on equity (ROE) and returns on assets (ROA) positively. The study generally expects that CGS, i.e. BS of banks will be linked to their performance positively. The results of a recent study by Kusi et al. (2018) suggest that the same BS promote and detract shareholder and stakeholder value maximization in Africa though the effect of BS is weightier on shareholder value. A value-relevant variable of corporate BS is its size (Jensen, 1983). As to the optimal size of boards, the literature has not clearly offered a direction. Aboagye-Otchere (2014) obtained an average board size of 8/9 directors for firms. Lipton and
Lorsch (1992) argue that an optimal board size should hover around seven to nine directors to ensure healthier coordination, accountability and quicker decision-making which enhances firm management and performance. According to the resource dependency theory, larger boards are more likely to include a large pool of persons with expertise, diverse educational backgrounds and skills that enhance boards’ capabilities (Al-Musalli and Ismail, 2012) and thus improve bank performance positively.

Generally, Habib (2015) finds a positive relationship between the number of directors and effective monitoring of managerial behaviour, which contributes to improvement in financial performance. Williams et al. (2005) maintain that bigger board size has more specialized skills and is better equipped to monitor management.

Again, board independence as determined in Aboagye-Otchere (2014) and Yaacob and Che-Ahmad (2012) were 69% and 40% in firms, respectively. It is synonymous with board composition in the literature. The extant literature makes a distinction between independent non-executive directors and dependent non-executive directors. According to Ayuso and Argandoña (2009), independent non-executive directors comprise those directors who are not in any way linked to the firm, while the dependent non-executive directors are those directors who have personal and/or professional relationships with the firm other than board membership.

The combination of executive and non-executive directors instituting a firm’s board is very imperative for its strategic direction and performance. A board is seen to be more independent if it has more non-executive directors (John and Senbet, 1998). Theory submits that non-executive directors often have less information about the business of the firm and have difficulty understanding the complexities of the firm (Weir and Laing, 2000). So it can be argued that executive directors are more familiar with the activities of the firm and, therefore, in a better position to monitor top management. In contrast, a high proportion of outside directors on the board provides healthier settings for making quality shared decisions (Jensen, 1983; Fama and Jensen, 1983).

Meanwhile, the diversity of corporate boards has become a topical issue in CG. It has been looked at from several perspectives such as gender, ethnicity and professionalism in many areas of management research. Prior literature on gender diversity in teams of decision-makers indicates that diversity could either improve the quality of decisions by bringing in new viewpoints and enriching the information set accessible to the team or could obstruct effective team performance by increasing disagreement and conflicts (Boone and Hendriks, 2009; Carson et al., 2004). Kyereboah-Coleman (2006) finds that board diversity through the inclusion of women is important for the enhanced performance of microfinance institutions. Kusi et al. (2018) find similar results as Kyereboah-Coleman (2006) and thus clearly illustrate that gender-diverse boards are likely to be resourceful in decision-making in line with the resource dependency theory. A more diverse board will also exploit more information sources, this, however, comes at the cost of more decisiveness (Randoy et al., 2006). Board diversity makes resources easy to access, this indicates that diversity relating to age, gender and nationality have an impact on the performance of an organization (Stiles, 2001). Also, misrepresentation of women on the board could be regarded as discrimination, which is both unethical and suboptimal (Gallego-Alvarez et al., 2010).

3. Data and methods
A sample size of 366 banks is used for this study (see Asare, 2018). The sample captures banks from 26 African countries in 5 sub-regions in Africa (Appendix 1). The sample includes commercial, development, mortgage, savings and cooperative banks. The study’s period is 2007–2015. The banks and countries included are those that did possess the required data for
the time interval preferred and were available for the study. The data on financial and other
data of the unconsolidated financial statements; country-specific data on macroeconomic
variables and governance of banks were sourced from the Bankscope database, Global
Financial Development Database and the World Development Indicators database (2016).

3.1 Measurement of variables
Previous literature in management has used a number of measures in measuring
performance and stability. Two financial performance and one financial stability variables
are measured and used for the study. Also, the following independent and control variables
are measured and used: board size; board independence/composition; board diversity; bank
size; banking market structure; and gross domestic product per capita growth rate (Asare,
2018) (Table 1).

3.2 Estimation strategies and specification of the models
The study utilizes a panel/longitudinal data structure. The basic models of this study are first
estimated with the Ordinary Least Squares Panel-Corrected Standard Errors (OLS-PCSE)
because of its robustness, not to only unit heteroskedasticity, but it is also against possible
contemporaneous correlations across the units that are common in time-series cross-section
data (see Asare, 2018; Bailey and Katz, 2011). For the reason that the OLS-PCSE has
deficiencies, the study employs the dynamic panel approach as the main estimation
method. The technique offers benefits over OLS and develops on preceding efforts to examine
the associations between BS and financial performance and stability using panel procedures.
Based on the strengths of the dynamic panel approach, this study adopts the system
generalized method of moments (GMM) technique, one of its variations, as propounded and
developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond
(1998) for dynamic panel data. Wintoki, Linck and Netter (2012) agree that the GMM
estimator can effectually deal with the problem of unobserved heterogeneity; it permits a
dynamic relation of the dependent variable while also adjusting for endogeneity biases.

The regression models specified follows arguments put forward by Valverde and
Fernandez (2017) that banks maximize wealth by considering both opening and end-of-period
information and that previous values of BP may affect present performance values.

\[
BP_{it} = \alpha + \beta_1 BP_{it-1} + \beta_2 BS_{it} + \sum_{l=1}^{L} \delta_i \text{CONTROLS}_{it} + \varepsilon_{it}
\]

where, \(BP_{it}\) is the performance of a bank \(i\) in the time \(t\) and \(ICD_{it}\) is the ICD level of a bank \(i\) in
the time \(t\). \(BP_{it-1}\) and \(ICD_{it-1}\) are one-period lagged observations of the respective variables
of a bank. \(BS_{it}\) is a vector of board governance variables such as board size (BODSIZE),
board independence (BODIND) and board gender diversity (BODGEN) of bank \(i\) in time \(t\);
\(\text{CONTROLS}_{it}\) is a vector of control variables including bank size (BSIZE); 5 loan
concentration ratio (CRL5) and Gross Domestic Product per capita growth rate (GDPpcg).
\(\alpha\) is the constant; \(\beta\) and \(\delta\) are the coefficients; to be precise, \(\beta_1\) is the speed of adjustment to
equilibrium \(1\), while \(\varepsilon_{it}\) is the error term.

4. Analysis of results
From Table 2, the average BODSIZE for a bank in Africa is 9.0894 members. This is also in
tandem with the findings of Aboagye-Otchere (2014) and Yatim et al. (2006) who obtained an
average board size of 8/9 directors for firms. Regarding the proportion of independent non-
executive directors that make up the board (BODIND), the descriptive statistics reveal that for
### Variable | Acronym | Operational definition | Pointer | Expected sign
--- | --- | --- | --- | ---
**Dependent Variables**

Financial Performance and Stability

Net Interest Margin | NIM | The NIM is set by banks to cover all the risks and costs of intermediation (Marinković and Radović, 2014). Adequate NIM should generate sufficient income to increase the capital base as risk exposure increases (Angbazo, 1997). NIM is the ratio of net interest income to total income | Financial performance |  
Risk-Adjusted Return on Assets | RAROA | The study computes one risk-adjusted performance measure of return on assets by dividing ROA by its standard deviation (σ) (see also Sissy et al., 2017; Amidu and Wolfe, 2013b) | Financial performance |  
Insolvency Risk | Z-SCORE | The study employs the Z-SCORE (see Sissy et al., 2017; Alhassan and Biekpe, 2016; Demirguc-Kunt and Huizinga, 2010) which signifies a universal measure of bank risk. It measures the number of standard deviations that the bank’s rate of return should fall to drive it into insolvency ((ROA + Equity) / σ ROA). The Z-SCORE thus reflects the firm’s buffer in equity and profits with the standard deviations of profits (Alhassan and Biekpe, 2016). Hence, a higher value indicates a high distance to default and consequently high solvency and vice versa | Financial Stability |  

**Independent and Control Variables**

Board Size | BODSIZE | It is the number of directors who serve on the board (Zahra and Pearce, 1989). It is measured by the total number of directors on the board of a bank | Good Corporate Governance | +

Board Independence/Composition | BODIND | Board independence is measured as the proportion of independent non-executive directors on the board; that is the number of independent non-executive directors to the total number of directors on the board (see also Duru et al., 2016) | Good Corporate Governance | +

Board Diversity | BODGEN | Board diversity is measured as the proportion of directors on the board; that is the number of female directors to the total number of directors on the board (see Duru et al., 2016; Gul et al., 2011) | Good corporate Governance | +/–

Bank Size | BSIZE | Size is measured as a natural logarithm of the bank’s fiscal year-end total assets (Al-Ghanem and Hegazy, 2011; Che-Ahmad and Abidin, 2009) | Good Corporate Governance | +

Banking Market Structure | CLR5 | In line with Alhassan and Asare (2016) and Al-Musalli and Ismail (2012), this study employs the CLR5 (5-bank loan concentration ratio) to measure banks’ lending concentration. The ratio of the total loan assets of the five largest banks to total industry loan assets. It deals with the concentration of lending amongst banking firms for loan customers | Market Concentration | +

Gross Domestic Product per capita growth rate | GDP | GDP is incorporated as justification for differences in the macroeconomic environments of the countries (Sissy et al., 2017; Amidu and Wilson, 2014; Amidu and Wolfe, 2013a). GDP is used to control for general economic growth and development, macroeconomic stability that somehow affect the performance and stability of banks in a country. GDP is measured as the annual rate of growth in GDP per capita | Macroeconomic Stability | +
the entire duration of the study, it is 0.1549, indicating that about 16% of directors on the boards are non-executive directors. This result is lower than that which was obtained by Aboagye-Otchere (2014) and Yaacob and Che-Ahmad (2012) which were 69% and 40%, respectively, in firms. On the other hand, the average ratio for BODGEN of the banks is 0.1076. This indicates that about 11% of board members of a bank in Africa are women.

Thus, on average the NIM, RAROA and Z-SCORE are 6.4557, 3.5891 and 10.6496, respectively. The RAROA is relatively lower than Sissy et al.’s (2017) average (i.e. 5.884) for banks in Africa but higher than that obtained by Amidu and Wolfe (2013b) for banks in Africa (2.482). The NIM in this instance is not similar to Marinković and Radović (2014) of 9.416%. The Z-SCORE is lesser than what the following studies had Sissy et al. (2017) – 39.259 and Amidu and Wolfe (2013a) – 18.69. Z-SCORE which signifies a universal measure of bank insolvency risk is quite low (i.e. high insolvency risk) and depicts that most African banks are gravitating towards insolvency. The financial stability of the banks is quite questionable. NIM in African banks is also usual and reflects normal intermediation spreads in banks. RAROA also looks usual. These depict the efficacy of the banks in utilizing risk assets to make high returns.

The logarithm of total assets represented the size of the banks in this study. Results indicate an average BSIZE of 4.3482 over the period. It could be deduced that banks in Africa are quite small. The CRL5 of banks is 82.3796%. This is greater than what Alhassan and Asare (2016) realized in the specific context of Ghana, i.e. 53.27%. This indicates that about 82% of the loan portfolio of banks is controlled by the largest five banks in a specific country (Asare et al., 2021; Asare, 2018). In terms of the macro-economic indicators, the average GDPpcg in Africa is 2.7578% with a small standard deviation of 2.7873. Sissy et al. (2017) and Amidu and Wolfe (2013b) obtained average GDPpcg of 3.10% and 5.20%, respectively.

In testing whether the independent and control variables used in this study are not strongly correlated, the study estimates the correlation coefficients using a Spearman correlation matrix (Table 3) and variance inflation factor (Appendix 2). In keeping with Kennedy (2008) that multicollinearity exists when the correlation coefficients between any two variables are greater than 0.70. The results presented show that using all the variables in the regressions do not result in any multicollinearity, which could bias the models’ coefficients. Strangely, BODSIZE is inversely related to BSIZE. This is contrary to the resource dependency theory. It could be a result of the lack of harmonization of CG practices across countries and banks in Africa. GS of banks are even noted to be in their nascent stages in parts of Africa (Abor and Fiador, 2013).

<table>
<thead>
<tr>
<th>Obs</th>
<th>Mean</th>
<th>Max</th>
<th>Min</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>BODSIZE</td>
<td>2036</td>
<td>9.0894</td>
<td>46.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>BODIND</td>
<td>2036</td>
<td>0.1549</td>
<td>0.9000</td>
<td>0.0000</td>
</tr>
<tr>
<td>BODGEN</td>
<td>2036</td>
<td>0.1076</td>
<td>1.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>NIM</td>
<td>2,440</td>
<td>6.4557</td>
<td>49.2400</td>
<td>-16.7500</td>
</tr>
<tr>
<td>RAROA</td>
<td>2,424</td>
<td>3.5891</td>
<td>65.3818</td>
<td>-76.5106</td>
</tr>
<tr>
<td>Z-SCORE</td>
<td>2,415</td>
<td>10.6496</td>
<td>41.8036</td>
<td>-12.0247</td>
</tr>
<tr>
<td>BSIZE</td>
<td>2,439</td>
<td>4.3482</td>
<td>7.2304</td>
<td>1.0828</td>
</tr>
<tr>
<td>CRL5</td>
<td>2,489</td>
<td>82.3796</td>
<td>100.0000</td>
<td>55.7144</td>
</tr>
<tr>
<td>GDPpcg</td>
<td>2052</td>
<td>2.7578</td>
<td>12.4243</td>
<td>-7.9079</td>
</tr>
</tbody>
</table>

Note(s): NIM is Net Interest Margin; RAROA, Risk-Adjusted Return on Asset; Z-SCORE, is bank insolvency risk; BODSIZE is the board size; BODIND is board independence; BODGEN board gender diversity; BSIZE, Bank Size; CRL5, 5 bank loan concentration ratio; GDPpcg, Gross Domestic Product per capita growth rate

Table 2. Summary statistics
In Table 4, BODSIZE has a strong association with all the financial performance and stability variables. There is a positive relationship between BODSIZE and RAROA and Z-SCORE as expected by the study. However, the study did not expect a negative association of BODSIZE with NIM. This means that banks with larger board sizes tend to have higher

| (1) BODSIZE | 1.0000 | (2) BODIND | 0.2544*** | (3) BODGEN | 0.2953*** | (4) BSIZE/C0 | 0.0435* |
| (5) CRL5 | 0.1273*** | (6) GDPpcg | 0.0292 | 0.1092*** | 0.0342 | 0.1685*** | 0.1613*** |

Note(s): *** and ** denotes significance at 1%, 5% and 10%, respectively

Table 3. Spearman correlation matrix of the variables

<table>
<thead>
<tr>
<th>NIM</th>
<th>OLS-PCSE</th>
<th>RAROA</th>
<th>Z-SCORE</th>
<th>NIM</th>
<th>System GMM</th>
<th>RAROA</th>
<th>Z-SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag</td>
<td>0.0593</td>
<td>-1.1784***</td>
<td>0.3302**</td>
<td>(0.7900)</td>
<td>(2.6400)</td>
<td>(2.2300)</td>
<td></td>
</tr>
<tr>
<td>BODSIZE</td>
<td>-0.0458***</td>
<td>0.0538**</td>
<td>0.1595***</td>
<td>1.1507</td>
<td>0.2238</td>
<td>3.1568</td>
<td></td>
</tr>
<tr>
<td>(2.7100)</td>
<td>(2.0700)</td>
<td>(3.4300)</td>
<td>(0.5100)</td>
<td>(0.8800)</td>
<td>(1.4000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BODIND</td>
<td>3.4089***</td>
<td>-1.5085</td>
<td>-6.7698***</td>
<td>-0.59164</td>
<td>54.0004***</td>
<td>-125.7872</td>
<td></td>
</tr>
<tr>
<td>(5.0700)</td>
<td>(-0.8900)</td>
<td>(-9.5400)</td>
<td>(-1.5200)</td>
<td>(2.6400)</td>
<td>(1.6700)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BODGEN</td>
<td>5.0318***</td>
<td>-1.5450</td>
<td>-12.2409***</td>
<td>2.6256</td>
<td>-1.25609</td>
<td>86.7913</td>
<td></td>
</tr>
<tr>
<td>(4.3700)</td>
<td>(-0.8900)</td>
<td>(-8.8300)</td>
<td>(0.0200)</td>
<td>(-0.3100)</td>
<td>(-0.7000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSIZE</td>
<td>-0.6052***</td>
<td>-0.5877***</td>
<td>0.3471***</td>
<td>-4.8962***</td>
<td>3.2714**</td>
<td>0.3638</td>
<td></td>
</tr>
<tr>
<td>(4.7300)</td>
<td>(-2.6800)</td>
<td>(2.0100)</td>
<td>(-3.3100)</td>
<td>(2.5500)</td>
<td>(0.1900)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRL5</td>
<td>0.0388***</td>
<td>0.1261***</td>
<td>0.0666***</td>
<td>-0.1532**</td>
<td>0.2068***</td>
<td>-0.2856***</td>
<td></td>
</tr>
<tr>
<td>(3.3500)</td>
<td>(7.1200)</td>
<td>(4.9900)</td>
<td>(-2.2200)</td>
<td>(3.0700)</td>
<td>(-3.3100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPpcg</td>
<td>0.1825***</td>
<td>-0.1148</td>
<td>-0.4633***</td>
<td>0.0014</td>
<td>0.0108</td>
<td>0.4593</td>
<td></td>
</tr>
<tr>
<td>(3.2600)</td>
<td>(-1.3100)</td>
<td>(-6.6900)</td>
<td>(0.0400)</td>
<td>(0.0700)</td>
<td>(0.6900)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>4.5217***</td>
<td>-3.6381***</td>
<td>6.0397***</td>
<td>36.1085***</td>
<td>-34.9314</td>
<td>25.6101</td>
<td></td>
</tr>
<tr>
<td>(4.7000)</td>
<td>(-2.7600)</td>
<td>(4.9000)</td>
<td>(2.8200)</td>
<td>(-1.4400)</td>
<td>(1.600)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Diagnostics

| R-squared | 0.0895 | 0.0560 | 0.1760 |
| Number of Groups | 247.0000 | 267.0000 | 268.0000 |
| Number of Instruments | 26.0000 | 11.0000 | 11.0000 |
| Observations | 1045.0000 | 1222.0000 | 1239.0000 |
| Wald $\chi^2$(6/6/6) | 128.3200*** | 143.3900*** | 321.8100*** |
| F-test | 2.5300** | 2.1600** | 13.1900*** |
| AR(1) | -0.9000 | -0.2500 | -1.5400 |
| p-value | 0.3680 | 0.8000 | 0.1240 |
| AR(2) | -0.5900 | -0.3600 | -1.2600 |
| p-value | 0.5580 | 0.7200 | 0.2080 |
| Hansen J | 21.1000 | 2.4300 | 0.8000 |
| p-value | 0.2740 | 0.4870 | 0.8490 |

Note(s): *** and ** denotes significance levels of 1%, 5% and 10%, respectively

Table 4. Regression analysis of board structures and financial performance and stability
RAROA even though their NIM is lower. This could be interpreted to mean that banks with larger boards perhaps generate more non-interest income that eventually improves returns on their risk-adjusted assets. This confirms Kusi et al. (2018) that board size increases shareholder and stakeholder value maximization in Africa. This is also contrary to the findings of Agoraki et al. (2010) of a negative connection between board size and profit efficiency of banks. However, this is in tandem with the resource dependency theory of the firm. Interestingly, a larger board size results in good bank stability (high Z-SCORE) of banks, which is also consistent with the resource dependency theory of the firm. Contrary, Agoraki et al. (2010) also settled that smaller BS are associated with better bank efficiency through better management of credit risk.

The OLS-PCSE analysis also established that BODIND has a negative and significant relationship with Z-SCORE. However, it has a significant positive relationship with NIM as well as no significant relationship with RAROA. These findings suggest that the BODIND influences a bank’s insolvency risk. Increasing independence of bank boards leads to lower Z-SCORE and thus high insolvency risk. In line with the general stability (Z-SCORE) measurement, this specifies that higher levels of bank board independence give rise to increased risk loan portfolios, hence increases in operating risk in the form of non-performing loans. This is in line with the resource dependency theory that claims that corporate boards are to ensure resources are provided to improve performance. Based on this finding, this is to be achieved by boards that have fewer members that are independent. On the RAROA, the analysis agrees with Hermelin and Weisbach (2003) that there is little to suggest that board independence/composition has any cross-sectional relation with firm profits; though as Fama and Jensen (1983) and Pearce and Zhara (1992) claim that overall performance of banks will improve with the right proportion of executive and non-executive directors on their boards.

On BODGEN, it has positive and negative significant relationships with NIM and Z-SCORE correspondingly, while a strong relationship with RAROA is non-existent. This means that gender-diverse boards can make policies and take initiatives that improve interest margins in relation to total income but end up destabilizing the bank. However, Kusi et al. (2018) indicate that the positive relationship between gender diversity and financial performance is not significant. This result supports the finding of Kyereboah-Coleman (2006) that board diversity through the inclusion of women is important for the enhanced performance of financial institutions. This reemphasizes the assertion of Boone and Hendriks (2009) that the quality of decisions that improve performance is enhanced by the inclusion of more women on bank boards in Africa which is consistent with the resource dependency theory of the firm.

In the OLS-PCSE, the control variables have significant relationships with all the financial performance and stability variables. BSIZE has a significant negative relationship with NIM and RAROA but a positive relationship with Z-SCORE. This does not reflect the results in Alhassan and Asare (2016). This indicates that smaller banks have higher financial performance and less stability. Alternatively, CRL5 has a significant positive relationship with RAROA, NIM and Z-SCORE, indicating that in highly concentrated banking markets net interest margins, ROA are higher; but the stability of banks is lower. This is contrary to the “quiet-life” hypothesis of Hicks that explains that higher concentration results in financial performance and stability decline. On the other hand, it is in line with the efficient structure hypothesis, which postulates that efficient banks are more likely to focus on enhancing efficiency. GDPpce has significant positive and negative relationships with NIM and Z-SCORE, respectively. Interestingly, it has no significant relationship with RAROA.

Table 4 reveals that BODIND has negative and positive significant relationships with Z-SCORE and RAROA, respectively, in the system GMM. Kusi et al. (2018) support the significant positive coefficient of the RAROA. However, the Z-SCORE relation is consistent with the OLS-PCSE results. So as already indicated in the analysis above, these findings suggest that the BODIND, i.e. independence of the board or composition of the board has an
influence on a bank’s insolvency risk. Increasing the independence of bank boards by the inclusion of more non-executive directors leads to higher stability. It can be reiterated that this is consistent with the view that non-executive directors on bank boards are considered by stakeholders as a central control and monitoring aspect of CG to provide the necessary checks and balances needed to enhance bank board effectiveness (Barako et al., 2006).

Unexpectedly in the system, GMM, BODSIZE and BODGEN have no significant relationships with the financial performance and stability variables and are inconsistent with the OLS-PCSE estimation results. This casts doubts on the analysis above that board size and board gender diversity influence financial performance and stability in Africa. CG weaknesses in Africa perhaps could be one of the reasons for this inconsistency.

Unlike the OLS-PCSE, the system GMM presents CRL5 as having a significant relationship with all financial performance and stability variables. It has a strong negative association with NIM and Z-SCORE but a positive and significant association with RAROA. Therefore, banks with market power (in a concentrated industry) earn higher profits but have poor stability. The latter is not in line with the OLS-PCSE results and the “quiet life” hypothesis, but the former tends to agree with the hypothesis but is inconsistent with the OLS-PCSE. These indicate that in highly concentrated banking markets in Africa, ROA and bank stability are not concurrently higher as there are less net interest margins. There appears to be an agreement in the results presented in the two estimations and thus makes the results more accurate.

On the other hand, BSIZE has significant positive and negative relationships with RAROA and NIM, respectively. There seems to be no significant link between BSIZE and Z-SCORE. This means larger banks have lower interest margins but higher ROA. This is as indicated in the analysis of the OLS results above. GDPpcg also has inconsistent relationships with financial performance and stability in the two estimations as it has no significant relationship with financial performance and stability in the system GMM. However, positive relationships are signifying that as the economic growth of a country increases, financial performance and stability also improves. This is quite intuitive; as the macro economies grow, businesses grow and banks benefits in terms of maximization of performance.

4.1 Diagnostics and robustness checks

Tests and assessments are used in this study to endorse the consistency, reliability and efficiency of the models. The summary statistics are used to detect outliers in the data and eliminated them. In scrutinizing for multicollinearity, the Spearman’s correlation and variance inflation factor (Appendix 2) tests are used. The Wooldridge (2003) test of no first-order autocorrelation and Breusch-Pagan/Cook-Weisberg test are used to rationalize the application of the OLS-PCSE as they confirm the presence of serial correlation and heteroscedasticity. About the OLS-PCSE models, the Wald chi-squared test of serial correlation [2] in this case indicates the absence of no first-order autocorrelation. This is a confirmation of the appropriateness of the models in estimating the links between BS and financial performance and stability. The test outcomes for the model’s validity of the systems GMM estimator do not reject the null hypothesis of valid instruments. The models reveal no first- and second-order autocorrelation; hence, the null hypothesis of no first- and second-order autocorrelation could not be rejected.

5. Conclusions

This study’s multidimensional conceptualization of BS and financial performance and stability of banks provides a further robust systematic approach to a comprehensive understanding of aspects of banking markets, in the context of emerging economies in Africa. The study thus contributes to practice and policy in bank management.
The study concludes that board independence has a negative and significant relationship with financial stability but has mixed relationships with financial performance. This finding submits that the independence of a bank’s board affects its insolvency risk. Increasing the independence of bank boards results in higher insolvency risk or lower stability of banks. Board size has insignificant positive and negative relationships with financial performance and stability, respectively. Board gender diversity also has negative relationships with financial performance and stability, but the relationships are not significant.

The effects of board size and board gender diversity on financial performance and stability are not proved by this study. This has been explained to mean that manipulating board size and board gender diversity in the context of banks does not influence the performance and stability of banks. Banks, in Africa in general, should not increase the number of board of directors, number of independent non-executive directors or women directors of their boards with the aim of ensuring effective boards to improve their financial performance and stability. This study reiterates that fewer independent non-executive directors on bank boards are the best for the banks. This is on the basis that less independent boards are noted to manipulate the banks’ policies and strategies to improve insolvency risk, i.e. financial stability. The emphasis as per the resource dependency theory is on the probability that larger boards are likely to have persons with diverse expertise which can be pooled together to recruit the right calibre of executive managers to operate the bank.

The central banks should control board independence/composition as a BS to make bank management better in specific situations. For instance, the current directives of the Bank of Ghana stipulate that independent directors shall constitute at least 30% of the composition of the boards of banks. So currently in Ghana, that is what the central bank thinks is needed to help improve the CG of the banking sector and is in line with this study’s findings.

Nevertheless, banks are cautioned to be circumspect in increasing their board size and diversity, as this study indicates the inclusion of the right proportion of executive and non-executive directors. There should be flexibility in the board size and composition to achieve these. In jurisdictions where central banks do not have guidelines on how the boards are to be constituted, other stakeholders must ensure boards are instituted properly taking into consideration the findings of this study. In that regard, the banking system must adopt appropriate BS with the help of regulatory institutions like the central banks.

The findings of this research are generalizable to an extent but limited to the financial sector. Subsequently, there exists a need to undertake a cross-industry study comparing the regions in Africa or the countries or a cross-continent study comparing banks in Africa to others in other continents. Several countries’ data in Africa were collected. The political and economic systems in the countries may differ. Other studies could also extend knowledge by looking at the non-linearity of the relationship between the interaction of BS and GS on one hand and BP on the other hand.

Notes
1. A value of $d$ between 0 and 1 implies that profit persists, but they will eventually return to their normal (average) level. A value close to 0 means that the industry is fairly competitive (high speed of adjustment), while a value close to 1 implies less competitive structure (very slow adjustment) (refer to Athanasoglou et al., 2008).
2. To test for correlation between members of the series of the numbers arranged in time in the panel.

References


Ai-Zhi, L. (2005), A Study of How the Internal and External Corporate Governance Mechanisms Are Associated with Financial Performance, Graduate Institute of Accounting, Tamkang University, New Taipei City.


Further reading


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**Note(s):** BODSIZE is the board size; BODIND is board independence; BODGEN board gender diversity; BSIZE, Bank Size; CRL5, 5 bank loan concentration ratio; GDPpcg, Gross Domestic Product per capita growth rate

*Table A2.* Variance inflation factor of variables