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Corporate governance, bank risk and performance: evidence from Africa

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ABSTRACT

This paper examines the relationship between corporate governance, bank risk and performance using 635 banks selected from 48 countries in Africa. Data span 2000-2019 at yearly frequency. Implementing a GMM approach, we find that bank risk has significant negative impact on bank performance. Corporate governance variables (board size, role duality, board meetings, independent directors) have significant negative impact on bank performance except for female directors which has significant positive impact on bank performance. Moderating the relationship between bank risk and bank performance with corporate governance variables, we observe a reduction in the negative impact of banks risk on performance in Africa. This study may guide regulators of banks to come out with appropriate corporate governance codes to assist in the reduction of risk and improve performance. Shareholders and management of banks may also make appropriate board appointments and apply best corporate governance practices to improve performance and reduce risk.

Keywords: Bank Risk; Bank Performance; Corporate Governance; Africa.

JEL classification: G21, G32, O5

1. Introduction

Corporate governance according to Shleifer and Vishny (1997) deals with the way in which suppliers of finance to corporations assure themselves of getting a return on their investment. Good corporate governance which is an important tool for the success and continuity of institutions gained massive attention in the wake of the global financial crises in 2008/2009, European sovereign debt in 2010/2013, and other crises which led to a global economic recession (Crowther and Seifi, 2010). Good corporate governance determines how effectively bank risk is managed in order to increase performance. The empirical literature shows evidence of studies on corporate governance, bank risk and performance in developed and Asian countries (Adams and Mehran, 2005; Caprio et al., 2007; Levine, 2004; Macey and O'Hara, 2003) with little or no studies in Africa. Notably, bank risk and poor corporate governance practices remain a major threat to the profitability of banks in Africa as the banking sector in the region is not fully developed compared to those in developed economies (Abor and Fiador, 2013). Most African economies are still underdeveloped and the development of the banking sector can boast socio-economic development such as employment creation and poverty reduction in the continent.

The main source of risk that affect banks performance is credit risk (Ekinci, 2016). As discussed by Jensen and Meckling (1976), Ntim et al. (2015), and Elmagrhi, et al. (2017), the agency theory argues for different corporate governance mechanisms that can align the interest of principals (ownership) and agents (management) in corporations to reduce risk and increase performance. Among the critical governance mechanisms that protect shareholders' interests through monitoring managerial activities is corporate board size (Upadhyay, 2015). Theoretically, larger boards are inefficient due to director free rider problems, coordination and communication problems, and internal conflicts among directors which may increase bank risk and affect bank performance negatively (Jensen, 1993). Empirically, the relationship between board size and bank performance is mixed. For instance, Chahine and Safieddine (2011), Adams and Mehran (2012) and Salim, Arjomandi and Seufert (2016) report positive association whiles Mollah and Zaman (2015), and Mamatzakis and Bermppei (2015) report negative relationship between board size and bank performance.

The frequency of board meetings as noted by Vafeas (1999) can have vital implication for firm value. In line with agency theory, past studies have reported positive effect of board meetings on performance (Liang et al, 2013; Salim Arjomandi and Seufert, 2016; Grove et al., 2011; Abdul Gafoor, 2018). CEO or role duality is the situation whereby one person holds the

two most powerful positions of CEO and chairman on the board of directors (Al-Saidi and Al-Shammari, 2013). Previous studies including Grove et al. (2011), AlManaseer et al. (2012), Mollah and Zaman (2015) found negative associations, Al-Saidi and Al-Shammari (2013) report positive relations, while Bukair and Rahman (2015) and Carty and Weiss (2012) found no impact of role duality on bank performance. Theoretically, under good governance conditions whereby the positions of Chairman and CEO are held by two different people, it is expected that bank risk would be reduced to increase performance.

The resource dependence theory by Carter et al. (2010) argues for an inclusion of female directors on boards to create board diversity and increase performance. Empirically, the study of Gulamhussen and Santa (2015), Pathan and Faff (2013) and García-Meca, García-Sánchez, and Martínez-Ferrero (2015) suggest that the presence of female directors on banks board improve performance. The persons entrusted by shareholders to represent them in order to decrease agency problems are the independent directors (Fuzi, Halim and Julizaerma, 2016). Independence reflects the ability of the board to provide independent monitoring and oversight role of management actions so as to reduce moral hazard which could reduce bank risk and improve performance (Fuzi, Halim and Julizaerma, 2016; Aebi et al., 2012). Empirical evidence shows a mixed result with Pathan and Faff (2013) reporting a negative association while Yeh et al. (2011) and Liang et al. (2013) show positive association between board independence and bank performance.

The empirical studies that examined the association between corporate governance, bank risk and performance are focused on developed economies. Notably, the majority of the countries in Africa are colonies of some of the developed countries including Britain and France. As a result, these African countries do certain things in common with their colonial masters. In view of this, some of the banking practices and corporate governance regulations being used in these African countries are expected to be borrowed from the developed countries of their colonial masters. Therefore, conducting a study to explore the African effect on bank risk, corporate governance and bank performance will deepen the public, academic, and regulators understanding on those unique bank risk and corporate governance challenges that are peculiar to African economies which affect the performance of banks in the continent.

Our study seeks to provide answers to the following questions, (1) what is the relationship between bank risk and bank performance in Africa? (2) what is the relationship between corporate governance and bank performance in Africa? (3) can corporate governance moderate the relationship between bank risk and bank performance in Africa? This study

contributes to the debate on corporate governance, bank risk and performance by investigating the roles played by board structures in influencing bank risk to improve performance in emerging economies such as Africa. We conduct a cross-country study using data on 48 African countries¹ to examine the joint effect of bank risk and corporate governance on bank performance in Africa which is the first of its kind. Importantly, our study uses a large sample size (sample of 635 banks selected from 48 countries in Africa during the years 2000-2019) and this provides a broader picture on the relationships between corporate governance, bank risk and performance.

Table 1: Number of banks selected from 48 African countries

No.	Country	No. Of Banks	No.	Country	No. of Banks
1	Algeria	17	25	Madagascar	5
2	Angola	17	26	Malawi	12
3	Benin	5	27	Mali	8
4	Botswana	16	28	Mauritania	7
5	Burkina Faso	7	29	Mauritius	16
6	Burundi	5	30	Morocco	18
7	Cameroon	9	31	Mozambique	16
8	Cape Verde	6	32	Namibia	10
9	Central African Republic	2	33	Niger	4
10	Chad	3	34	Nigeria	28
11	Cote D'Ivoire	12	35	Rwanda	9
12	Djibouti	5	36	Senegal	11
13	DR. Congo	12	37	Seychelles	6
14	Egypt	26	38	Sierra Leone	7
15	Ethiopia	15	39	South Africa	57
16	Gabon	7	40	South Sudan	2
17	Gambia	2	41	Sudan	19
18	Ghana	29	42	Swaziland	7

¹ See table 1 in the appendices for the number of banks selected from 48 African Countries.

19	Guinea	3	43	Tanzania	29
20	Guinea Bissau	1	44	Togo	10
21	Kenya	43	45	Tunisia	31
22	Lesotho	4	46	Uganda	24
23	Liberia	2	47	Zambia	22
24	Libya	9	48	Zimbabwe	20
	Total no. of banks:635				

Source: Fitch Connect and BankScope

The outcome of this study indicates that bank risk has significant negative impact on bank performance. Corporate governance variables (board size, role duality, board meetings, independent directors) have significant negative impact on bank performance except for female directors which has significant positive impact on bank performance. When we moderated the relationship between bank risk and bank performance with corporate governance variables, we observe a reduction in the negative impact of banks risk on performance in Africa. This finding is consistent with agency theory (Jensen and Meckling, 1976; Jensen, 1993) which argues that good corporate governance can align the interest of principals and agents in modern companies which can reduce risk and increase performance. This study may guide regulators of banks to come out with appropriate corporate governance codes that will assist banks to reduce risk and improve performance. Shareholders and management of banks may also make appropriate board appointments and apply best corporate governance practices to improve their performance while reducing risk at the same time.

The remainders of the study are structured as follows. Section 2 delineates a description of the methodology. Section 3 describes the data and statistical properties. Section 4 captures the results and discussion on corporate governance, bank risks and performance in Africa. Section 5 covers the conclusion and policy implications.

2. Methodology

The study employs the Generalized Method of Moments (GMM) as our main estimation model in a panel data approach due to its advantages including resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which other

techniques may not be able to resolve. As noted by Gujarati (2003), panel data in a GMM model allows firm's heterogeneity in individual variables to be controlled.

We classify our variables into response variables which are the bank performance variables including return on assets (ROA) and return on equity (ROE). Our covariates include: bank risk variable such as loan loss provision to net interest revenue (LLPNR), corporate governance variables such as board size (BSIZE), board meetings (MEETINGS), female directors (FEMALE), independent directors (INDEP), and duality (DUAL). To test for the moderating effect of corporate governance on the relationship between bank risk and bank performance, we create an interaction variable between bank risk (LLPNR) and the corporate governance variables (i.e., LLPNR*BSIZE, LLPNR*MEETINGS, LLPNR*INDEP, LLPNR*DUAL, LLPNR*FEMALE). We controlled for total assets (LNTA), cost-to-income ratio (COST), equity to total asset (EQTA), net loan to total asset (NLTA), GDP (LNGDP) and corruption (COR). We include 2007/2008 financial crisis as control variable to determine how it impacted on bank performance in Africa. See table 2 in the appendices for description and measurement of variables.

Table 2: Summaries of measures and Variables.

VARIABLE	MEASUREMENT
Panel A: Performance Variables	
ROA	Net income/total assets (%)
ROE	Net income/shareholder's equity (%)
Panel B: Risk Variables	
LLPNR	Loan loss provisions divided by net interest revenue (%)
Panel C: Corporate governance variables	
BSIZE	The number of directors on a bank's board per year
INDEP	Percentage of independent directors on bank board per year
DUAL	A binary number that equal to 1 if the CEO also take the role as chairman at the end of its financial year, or 0 if otherwise
FEMALE	Percentage of female directors on bank board per year
MEETINGS	The number of times that the board meets per year

Panel D: Control Variables	
LNTA	Natural log of total assets
COST	Overheads / net interest revenue plus other operating income (%)
EQTA	Equity divided by total assets (%)
NLTA	Net loans divided by total assets (%)
LNGDP	Annual GDP growth rate
COR	Rank of corruption perception from World bank (corruption perception index)
CRISIS	Dummy variable for 2007/2008 financial crisis

Notes: ROA represents return on asset, ROE represents return on equity, LLPNR denotes loan loss provision/net interest revenue, LLRGL represents loan loss reserve/gross loan, BSIZE represents board size of the bank, INDEP denotes percentage of independent directors, DUAL represents role duality, FEMALE denotes the percentage of female directors on bank board, MEETINGS represents the number of board meetings per year, LNTA denotes the size of the bank, COST denotes cost to income ratio, EQTA denotes equity/total asset, NLTA represents net loans/total assets, LNGDP represents Gross Domestic product, COR denotes corruption, CRISIS represents 2007/2008 financial crisis.

Our empirical model takes the form:

$$\begin{aligned}
ROA_{it} = & \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \\
& \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LPNR_{it} + \beta_{13} (LLPNR * SIZE)_{it} \\
& + \beta_{14} (LLPNR * MEETINGS)_{it} + \beta_{15} (LLPNR * DUAL)_{it} + \beta_{16} (LLPNR * FEMALE)_{it} + \\
& \beta_{17} (LLPNR * INDEP)_{it} + \delta_0 + \varepsilon_{it}
\end{aligned} \tag{1}$$

$$\begin{aligned}
ROE_{it} = & \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \\
& \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LPNR_{it} + \beta_{13} (LPNR * SIZE)_{it} + \\
& \beta_{14} (LPNR * MEETINGS)_{it} + \beta_{15} (LPNR * DUAL)_{it} + \beta_{16} (LPNR * FEMALE)_{it} + \beta_{17} \\
& (LPNR * INDEP)_{it} + \delta_0 + \varepsilon_{it}
\end{aligned} \tag{2}$$

Where,

ROA_{it} is performance of country i at time t, ROE_{it} is performance of country i at time t, EQTA_{it} is equity to assets of country i at time t, NLTA_{it} is net loans to assets of country i at time t, COST_{it} is cost-to-income-ratio of country i at time t, COR_{it} is corruption of country i at time t, GDP_{it} is gross domestic product of country i at time t, BSIZE_{it} is board size of country i at time t, MEETINGS_{it} is the number of board meetings of country i at time t, DUAL_{it} is role duality of country i at time t, FEMALE_{it} is the female directors of country i at time t, INDEP_{it}

is the independent directors of country i at time t , $LLPNR_{it}$ is loan loss provision to net interest revenue of country i at time t , $(LLPNR*BSIZE)_{it}$ represents the joint effect of $LLPNR$ and $BSIZE$ of country i at time t , $(LLPNR*MEETINGS)_{it}$ represents the joint effect of $LLPNR$ and $MEETINGS$ of country i at time t , $(LLPNR*DUAL)_{it}$ represents the joint effect of $LLPNR$ and $DUAL$ of country i at time t , $(LLPNR*FEMALE)_{it}$ represents the joint effect of $LLPNR$ and $FEMALE$ of country i at time t , $(LLPNR*INDEP)_{it}$ represents the joint effect of $LLPNR$ and $INDEP$ of country i at time t , δ_0 is dummy for the crisis period, 1 represent 2007/2008 and 0 represent other years, ε_{it} is the error term of country i at time t , β_1 to β_{17} represent the coefficient of each variable, β_0 is the intercept.

3. Data description and preliminary analysis

To explore the relationship among corporate governance, bank risk and performance in Africa, we sample 635 banks in Africa with 10990 bank-year observations. For a bank to be included in the sample, the bank must have five or more year's financial information between 2000 – 2019 to capture information before, during and after the 2007/2008 financial crises. Unlike the majority of studies which focused only on listed and larger banks, our study sampled both listed and unlisted banks, small, medium and large banks. This approach enabled us to get a bigger sample size to enhance the generalisation of the results of this study. We remove non-synchronous data points² to prevent the problem of underestimation of true correlations and regressions. The data on bank specific variables were extracted from BankScope data base except for 2016-2019 data of some banks which were obtained from Orbis bank³ focus database, which is also provided by Bureau van Dijk. The data on the internal corporate governance variables were accessed directly from the annual reports of the sampled banks website except for few banks which were obtained from Boardex database. The data on some control variables including GDP, and corruption were sourced from the World bank website⁴.

² 1502 African banks were found on BankScope at the time of exporting the banks from the database. Some banks were repeated two or three times and some banks had less bank year information. Banks selected are those with five or more years information. The rest were not selected because they were considered not having enough information to be included in the final sample. Also, if the same bank is repeated more than one, only one is selected.

³ The reason is that, when the information of the banks was exported from BankScope database in December 2016, some banks did not have 2016 information at the time. Therefore, 2016 information of those banks were later obtained from the Orbis bank focus, which is similar database which was replaced by Bureau van dijk when BankScope disappeared in December 2016.

⁴ info.worldbank.org/governance/wgi and data.worldbank.org/indicator.

The summary statistics on the association between corporate governance, bank risk and performance in Africa are presented on table 3 in the Appendices. Panel A of table 3 shows the performance variables. The average return on assets (ROA) and equity (ROE) for banks in Africa are 1.77% and 13.96% respectively. We observe a loss in income to shareholders of some banks in Africa as the minimum values of ROA (-6.91%) and ROE (-49.36%) show a negative sign. The average Loan Loss Provision to Net Interest Revenue (LLPNR) per year of banks in Africa is 21.38 percent as shown in Panel B of table 3. The corporate governance variables depicted in Panel C of table 3 indicate that the average board size of banks in Africa is 10 (10.49) which is in line with the board size recommended by Lipton and Lorsch (1992) for efficient board activities. However, this finding contradicts the argument of Jensen (1993) which states that a board bigger than seven to eight members is not beneficial to the effective function of the board due to high chances for animosity and retribution between the board members. The average number of independent directors on African bank board is 4.89. This value portrays that the number of independent directors who are supposed to scrutinise the executives' decision during board meetings is less than the executive directors. This can pose a problem for the independent non-executive directors in scrutinising the executive decisions when a particular decision has to go on voting. Role duality (DUAL) which is a dummy variable has a mean of 0.16 indicating that on average 16% of the sample banks have a combined role of CEO/Chairman position. The average number of female directors on African boards is 1.49 signifying that on average, banks have at least one female director on their board. The average number of board meetings which is held by African banks within a year is around 6 (6.26).

Panel D of table 3 shows all the control variables used in this study. The average size of banks in Africa is 3.56. Cost-to income ratio ranges between 14.46 and 159.21 with a mean of 62.67%. The lower the value of cost to income ratio the higher the efficiency of the bank. The average equity/total asset of banks is 16.33%. The net loan/total asset ratio is used to assess the liquidity of a bank. If this ratio is very high it implies that it may not be possible for the bank to have enough liquidity in the event of unforeseen fund requirements. Banks in Africa depict an average net loan/total asset ratio of 47.60%. GDP recorded from the 48 countries selected for this study ranges between -0.81 to 11.15 with an average GDP of 6.74 per country. With regards to corruption, a high value indicates a very clean country while a low number means very corrupt country. We observe an average corruption value of 35.39, a minimum

22.22 and maximum of 85.85 suggesting that corruption is very prevalent in Africa which can affect bank risk and performance. Finally, the financial crisis of 2007/2008 shows a mean of 0.12 and a standard deviation of 0.32 depicting a minimal impact on banks in Africa.

Table 3: Summary statistics of all variables.

Variables	Mean	Median	Std. Dev.	Mini.	Max.	Skewness	Kurtosis	Observations
<i>Panel A: Performance variables</i>								
ROA	1.77	1.71	2.74	-6.91	9.30	-0.35	5.72	7439
ROE	13.96	14.03	19.54	-49.36	60.33	-0.65	5.33	7439
<i>Panel B: Risk variable</i>								
LLPNR	21.38	12.41	29.52	-16.94	134.88	2.14	8.08	5985
<i>Panel C: Corp. governance variables</i>								
BFSIZE	10.49	10.00	3.49	2.00	23.00	0.72	3.24	2027
INDEP	4.89	4.5	3.18	0.00	18	0.82	3.31	1020
DUAL	0.16	0	0.37	0.00	1.00	1.83	4.33	2032
FEMALE	1.49	1	1.45	0.00	9	1.14	4.64	2013
MEETINGS	6.26	5	4.20	0.00	38.00	3.59	20.94	1447
<i>Panel D: Control Variables</i>								
LNTA	3.56	3.17	1.71	-1.70	9.65	0.28	2.92	7515
COST	62.67	58.99	28.38	14.46	159.21	1.23	5.41	6815
EQTA	16.33	11.76	14.51	2.70	72.91	2.45	9.10	7498
NLTA	47.60	48.85	21.39	2.77	90.01	-0.16	2.50	7243
LNGDP	6.74	7.32	2.46	-0.81	11.15	-0.24	2.16	10773
COR	35.39	32.70	22.22	0.48	85.85	0.25	1.87	10141
CRISIS7_8	0.12	0	0.32	0	1	2.37	6.63	10795

Notes: ROA represents return on asset, ROE represents return on equity, LLPNR represents loan loss provision to net interest revenue, BFSIZE represents board size of the bank, INDEP denotes percentage of independent directors, DUAL represents role duality, FEMALE denotes the percentage of female directors on bank board, MEETINGS represents the number of board meetings per year, LNTA denotes the size of the bank, COST denotes cost to income ratio, EQTA denotes equity/total asset, NLTA represents net

loans/total assets, LNGDP represents Gross Domestic product, COR denotes corruption, CRISIS7_8 represents 2007/2008 financial crisis.

4. Results and Discussion

We present the results and discussion for bank risk measured with Loan Loss Provision to Net Interest Revenue (LLPNR), corporate governance, and bank performance in this section and on tables 4 and 5 in the appendices.

Table 4: LLPNR as risk measure and ROA as performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
LLPNR	-0.0155	-0.00808	-0.00960	-0.0395***
	(0.0184)	(0.0103)	(0.00959)	(0.000632)
BoardSize	-0.0207	0.00413	0.00705	-0.0646***
	(0.0225)	(0.0306)	(0.0254)	(0.00206)
Duality	0.215	-0.351	-0.140	-0.0416
	(0.395)	(0.716)	(0.429)	(0.0458)
BoardMeetings	-0.0404*	0.00322	-0.00422	-0.0892***
	(0.0215)	(0.0309)	(0.0259)	(0.00144)
percentfemale	0.00539	-0.0109	-0.00312	0.00415***
	(0.00762)	(0.00727)	(0.00620)	(0.000363)
percentindep	0.00244	0.00696*	0.00767**	-0.00408***
	(0.00430)	(0.00387)	(0.00338)	(0.000282)

LLPNRbsize	-0.000523	-0.000278	-0.000373	0.000306***
	(0.00107)	(0.000751)	(0.000699)	(3.32e-05)
LLPNEdual	-0.0181*	-0.00398	-0.00720	0.0137***
	(0.0108)	(0.0131)	(0.0109)	(0.00472)
LLPNRmeet	-0.000144	0.000395	0.000467	0.00209***
	(0.00137)	(0.000956)	(0.000883)	(2.03e-05)
LLPNRpercentindep	-0.000172	-0.000286***	-0.000276***	4.08e-06
	(0.000197)	(0.000101)	(9.55e-05)	(5.73e-06)
LLPNRpercentfemale	0.000236	3.27e-05	8.41e-05	-3.21e-05***
	(0.000364)	(0.000195)	(0.000186)	(8.66e-06)
BankSize	-0.0436	-0.0580	-0.0689*	0.0664***
	(0.0525)	(0.0433)	(0.0361)	(0.00245)
EQUITASSET	0.0467***	0.0412***	0.0448***	0.0229***
	(0.00800)	(0.00889)	(0.00660)	(0.000305)
NLTOASSET	-0.00522	-0.00320	-0.00589	-0.00675***
	(0.00419)	(0.00583)	(0.00445)	(0.000292)
COSTTOINCOMERATIO	-0.0469***	-0.0544***	-0.0522***	-0.0327***
	(0.00502)	(0.00399)	(0.00318)	(0.000261)

ControlofCorruption	-0.00508	-0.00698	-0.00525	-0.00347***
	(0.00335)	(0.0118)	(0.00495)	(0.000352)
lngdpcon	-0.00864	-0.0380	-0.0121	0.0338***
	(0.0284)	(0.496)	(0.0471)	(0.00297)
crisis7_8	0.581	0.482**	0.502***	0.200***
	(0.377)	(0.194)	(0.180)	(0.00514)
L.ROA				0.393***
				(0.00264)
Constant	5.536***	5.759*	5.362***	4.682***
	(0.598)	(3.351)	(0.602)	(0.0377)
Observations	631	631	631	594
R-squared	0.493	0.438		
Number of id		175	175	169

Notes: LLPNR denotes loan loss provision/net interest revenue, BSIZE represents board size of the bank, INDEP denotes percentage of independent directors, DUAL represents role duality, FEMALE denotes the percentage of female directors on bank board, MEETINGS represents the number of board meetings per year, LLPNR*MEETINGS represents interaction between loan loss provision to net interest revenue and board meetings, LLPNR*DUAL represents interaction between loan loss provision to net interest revenue and role duality, LLPNR*FEMALE represents interaction between loan loss provision to net interest revenue and female directors, LLPNR*BSIZE represents interaction between loan loss provision to net interest revenue and board size, LLPNR*INDEP represents interaction between loan loss provision to net interest revenue and independent directors, LLRGL*MEETINGS represents interaction between loan loss reserve to gross loan and board meetings, LLRGL*DUAL, LNTA denotes the size of the bank, COST denotes cost to income ratio, EQTA denotes equity/total asset, NLTA represents net loans/total assets, LNGDP represents Gross Domestic product, COR denotes corruption, CRISIS7_8 represents 2007/2008 financial crisis, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

Table 5: LLPNR as risk measure and ROE as performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	FIXED	2SLS	GMM
WLLPROVTONETINTREV	-0.0118	-0.00130	-0.00974	-0.240***
	(0.116)	(0.0755)	(0.0715)	(0.00498)
BoardSize	0.0980	0.0200	0.144	-0.144***
	(0.183)	(0.224)	(0.186)	(0.0102)
Duality	3.080	7.548	3.372	1.593***
	(2.635)	(5.245)	(3.035)	(0.253)
BoardMeetings	-0.187	0.0448	0.0660	-0.650***
	(0.159)	(0.227)	(0.190)	(0.0122)
percentfemale	0.102*	-0.0583	-0.0110	0.0463***
	(0.0541)	(0.0533)	(0.0457)	(0.00471)
percentindep	8.07e-05	0.0265	0.0360	-0.0178***
	(0.0285)	(0.0284)	(0.0249)	(0.00121)
LLPNRbsize	-0.00983	-0.00868	-0.00706	-0.00457***
	(0.00796)	(0.00550)	(0.00522)	(0.000210)
LLPNRdual	-0.122*	-0.0481	-0.0891	0.179***
	(0.0692)	(0.0957)	(0.0804)	(0.0268)
LLPNRmeet	-0.0214**	-0.00440	-0.00830	0.0134***

	(0.00933)	(0.00700)	(0.00657)	(0.000186)
LLPNRpercentindep	-0.000472	-0.00204***	-0.00192***	-0.000243***
	(0.00133)	(0.000744)	(0.000713)	(6.95e-05)
LLPNRpercentfemale	0.00324	0.00152	0.00142	0.00258***
	(0.00238)	(0.00143)	(0.00139)	(0.000128)
BankSize	0.0910	-0.0763	-0.276	0.369***
	(0.350)	(0.318)	(0.266)	(0.0160)
EQUITASSET	-0.185***	0.137**	-0.0145	-0.147***
	(0.0385)	(0.0652)	(0.0474)	(0.00285)
NLTOASSET	-0.0193	0.112***	0.0173	-0.0252***
	(0.0274)	(0.0427)	(0.0323)	(0.00184)
COSTTOINCOMERATIO	-0.295***	-0.354***	-0.326***	-0.201***
	(0.0339)	(0.0292)	(0.0230)	(0.00197)
ControlofCorruption	-0.00299	0.0196	-0.0144	0.0359***
	(0.0238)	(0.0867)	(0.0342)	(0.00237)
lngdpcon	-0.229	-8.728**	-0.247	0.0505**
	(0.201)	(3.638)	(0.320)	(0.0236)
crisis7_8	7.985***	4.972***	5.875***	2.641***
	(2.932)	(1.421)	(1.351)	(0.0439)

L.ROE				0.402***
				(0.00189)
Constant	38.35***	87.52***	36.65***	30.07***
	(3.819)	(24.56)	(4.250)	(0.407)
Observations	631	631	631	594
R-squared	0.439	0.455		
Number of id		175	175	169

Notes: *LLPNR* denotes loan loss provision/net interest revenue, *BSIZE* represents board size of the bank, *INDEP* denotes percentage of independent directors, *DUAL* represents role duality, *FEMALE* denotes the percentage of female directors on bank board, *MEETINGS* represents the number of board meetings per year, *LLPNR*MEETINGS* represents interaction between loan loss provision to net interest revenue and board meetings, *LLPNR*DUAL* represents interaction between loan loss provision to net interest revenue and role duality, *LLPNR*FEMALE* represents interaction between loan loss provision to net interest revenue and female directors, *LLPNR*BSIZE* represents interaction between loan loss provision to net interest revenue and board size, *LLPNR*INDEP* represents interaction between loan loss provision to net interest revenue and independent directors, *LLRGL*MEETINGS* represents interaction between loan loss reserve to gross loan and board meetings, *LLRGL*DUAL*, *LNTA* denotes the size of the bank, *COST* denotes cost to income ratio, *EQTA* denotes equity/total asset, *NLTA* represents net loans/total assets, *LNGDP* represents Gross Domestic product, *COR* denotes corruption, *CRISIS7_8* represents 2007/2008 financial crisis, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

4.1 Relationship between bank risk (*LLPNR*) and bank performance (*ROA*) moderating with corporate governance variables

The results for *ROA* displayed on table 4 in the appendices show that bank risk (*LLPNR*) and board size have significant negative impact on bank performance (-0.0395) and (-0.0646) respectively. However, when bank risk and board size interacted, we found a significant positive impact on performance (*LLPNR*BSIZE*= 0.000306) suggesting that board size moderates the relationship between bank risk and performance. This finding indicates that African banks are able to benefit from strong board which is able to work effectively by exploring new ways to minimise risk and increase bank performance. The result further suggests that banks in Africa are benefiting from the right size of board and board members

are able to have constructive discussions during meetings, which enable them to reduce risk and improve bank performance. Our result is consistent with Chahine and Safieddine (2011), Adams and Mehran (2012) and Salim, Arjomandi and Seufert (2016) who report positive association in their studies.

With regards to role duality, we find an insignificant negative impact on bank performance (-0.0416). However, moderating duality with risk show a significant positive effect on bank performance ($LLPNR*DUAL= 0.0137$). This finding suggests that a single person holding the positions of CEO and chairman roles is a good governance practice to reduce bank risk and improve performance. This could mean that, when a single person holds the two positions in Africa, he gains more experience due to the in-depth knowledge already gained in the banking business, works harder to protect his reputation, identifies risks and deal with them on time (quick decision making), which could minimise risk and improve performance. Therefore, duality is seen as blessings to African banks and not a curse, as portray by many critics such as proponents of agency theory. The findings support stewardship theory which argues that same person occupying the seats of chairman and CEO minimises conflicts during decision making, strong and unified leadership with a good strategic direction is achieved, and timely and best decisions within a firm is made which could reduce bank risk and improve performance (Syriopoulos and Tsatsaronis, 2012; Brickley et al., 1997).

Board meeting has significant negative relationship on bank performance (-0.0892) suggesting that smaller number of board meetings is better so far as improvement in African banks performance is concerned. Contrary, interacting bank risk with board meeting indicate a significant positive association with bank performance ($LLPNR*MEET=0.00209$). This finding suggests that regular board meetings reduce bank risk and improve performance. Our finding is in line with the agency theory by Jensen and Meckling (1976) which argues that frequent board meetings increase the capacity to advise effectively, discipline management and monitor them, which could reduce bank risk and improve performance.

Independent directors have significant negative relations with bank performance (-0.00408) depicting that more independent directors are chosen by the bank for regulatory and compliance purposes, and their presence do not bring any benefit to the banks. However, moderating with bank risk show positive relations with bank performance ($LLPNR*INDEP = 4.08006$). The presence of female directors has significant positive impact on bank performance (0.00415) suggesting that the ideas, experience and qualities female directors bring to the board help improve banks performance in Africa. Nonetheless, moderating bank

risk with female directors depict a significant negative impact on bank performance ($LLPNR * FEMALE = -3.210$) This means female directors interacting with bank risk in Africa has not improve performance. The result could mean that since the number of female directors on African bank board is very small, based on our descriptive statistics, they are just a token on the board. As a result, they may not be able to challenge the male counterpart on decisions as expected. In addition, the female directors may not have enough qualification, skills and experience required to be on bank board. They may be friends and family of management without going through appropriate scrutiny before appointed. As a result, their presence on the board will not do anything good to reduce bank risk and improve performance. Our finding contradicts the resource dependency theory, which suggest that board diversity, which includes the presence of female directors, brings distinct information sets which are available to management improved decision making (Carter et al, 2010), which could reduce risk and improve bank performance.

Examining the impacts of control variables (bank specific and macroeconomic variables) on bank performance measured with ROA in Africa, we find that Bank size has significant positive association with bank performance (0.0664) implying that the economies of scale enjoyed by larger banks in Africa assists them to minimise cost and make higher profit. Equity to asset ratio has significant positive association with bank performance (0.0229) which indicates that well capitalised banks in Africa are able to change their funds to higher income earnings to make more profit. Net loans to assets ratio have significant negative impact on bank performance (-0.00675). This suggests that the banks in Africa have a small number of bad loans resulting to a reduced level of net loans resulting to higher bank performance. Cost-to-income ratio (COST) has a significant negative effect on bank performance (-0.0327) depicting that the banks in Africa have efficient and prudent way of managing their operations, which help them to increase their performance. Corruption is significantly negative associated with bank performance (-0.00347) which is indicative that when CPI reduces (an increase in corruption), bank performance increases. GDP has significant positive impact on performance (0.0338) implying that higher growth causes a higher demand for lending which ultimately leads to higher bank profitability. We observe a significant positive impact of the 2007/2008 global financial crises on banks in Africa (0.0338).

4.2 Relationship between bank risk (LLPNR) and bank performance (ROE) moderating with corporate governance variables

We further explore the association between bank risk (LLPNR), corporate governance, and bank performance measured with ROE and results displayed on table 5. Our results show that bank risk measured with LLPNR has a significant negative impact on bank performance (-0.144) in line with the ROA results. The corporate governance variable board size has significant negative effect on bank performance (-0.144). Moderating the relationship between bank risk and performance with bank size, we find a significant reduction in the negative impact of bank risk on bank performance ($LLPNR*BSIZE = -0.00457$). Role duality is found to have a significant positive relation with bank performance (1.593). This positive relationship suggests that a single person holding CEO and chairman positions is better for improvement of bank performance in Africa. We again find a significant positive impact of role duality on bank performance when we moderated the relationship between bank risk and performance with role duality ($LLPNR*DUAL = 0.179$).

As observed in ROA, there is a significant negative connection between board meetings and bank performance measured with ROE (-0.650). However, a significant positive relationship is observed when board meeting interacted with bank risk and performance ($LLPNR*MEETINGS = 0.0134$) indicating that frequent board meetings can reduce risk and increase performance in African banks in line with the agency theory. Independent directors show significant and negative effect on bank performance (-0.0178). This association is further observed when independent directors on corporate boards moderate the relationship between bank risk and performance ($LLPNR*INDEP = -0.000243$). The coefficients of LLPNR and $LLPNR*INDEP$ are -0.240 and -0.000 respectively depicting that although the sign on both coefficients is negative, the negative effect on bank performance has decrease from -.240 to -0.0002. This implies that when independent directors in Africa interact with bank risk, they are able to achieve risk reduction to improve bank performance. This result supports the theoretical view which emphasises that independent directors reduce agency problems, gives unbiased decisions, and provide proper monitoring to reduce risk and increase performance (see Fuzi et al., 2016; Pathan, 2009; Chan et al., 2016).

There is a significant positive impact of female directors on bank performance (0.0463) in line with our ROA findings, and bank risk and performance moderated with female directors ($LLPNR*FEMALE = 0.00258$) which contradict our ROA findings. This positive impact implies that female directors in Africa bring their knowledge and experience to the board to help reduce bank risk and improve performance. Theoretically, this finding is consistent with the resource dependency theory, which suggest that board diversity, which includes the

presence of female directors, brings distinct information sets which are available to management improved decision making (Carter et al., 2010).

Assessing the impact of the control variables (bank specific and macroeconomic variables) on bank performance measured with ROE, we find a significant positive connection between bank size and performance (0.369) in line with the ROA findings. Equity to assets ratio has a significant negative association with bank performance (-0.147) indicating that banks in Africa with smaller capital make more profit which contradict the ROA findings. There is a significant negative association between net loans to assets ratio and bank performance (-0.0252) affirming the ROA results. Cost-to-income ratio and bank performance also show a significant negative effect in line with ROA findings. Contradicting the ROA findings, corruption has a significant positive effect on bank performance (-0.201) implying that as CPI increases (a reduction in corruption), banks performance increases. Confirming our ROA findings, we observe a significant positive impact of GDP and the financial crises of 2007/2008 on performance (0.0505) and (2.641) respectively.

It should be noted that the inconsistency of our results between the two bank performance variables ROA and ROE may be due to differences in the behaviour of debt holders (ROA) and equity holders (ROE). Notably, debt holders (ROA) are less likely to accept poor governance practices such as the presence of less female directors on the bank board, which may result in poor bank performance, equity holders (ROE) may entertain or tolerate poor governance practices leading to poor performance. Since the behaviour of debt holders and equity holders are not the same, the results of ROA and ROE are expected to be different sometimes.

4.3 Additional analysis

We performed additional analysis to check the robustness of our results. First, we reproduced our overall analysis in tables 4 and 5 by using OLS regression, and these results are presented in model 1 of tables 4 and 5. Our OLS results are in line with those reported by GMM implying that our results are robust. Secondly, using fixed-effect regression analysis to check the robustness of our results as suggested by (Ntim, et al., 2013), we find that the GMM results are very similar to those reported by fixed effect in model 2 of tables 4 and 5. Finally, we employed 2SLS regression analysis to further check the robustness of our results. Again, our results, presented in model 3 of tables 4 and 5, remains very similar to our GMM results.

5. Conclusion

The study examined the association between corporate governance, bank risk and performance in Africa using annual data of 635 banks from 48 countries in Africa. Our bank performance proxies include return on assets (ROA) and return on equity (ROE), and bank risk proxy is loan loss provision to net interest revenue (LLPNR). Findings indicate that bank risk (LLPNR) has negative impact on bank performance measured by both ROA and ROE. The corporate governance variables including board size, role duality, board meetings, independent directors have significant negative impact on bank performance except for female directors which has significant positive impact on bank performance in Africa using both ROA and ROE performance measures. With regards to our control variables, bank size, and equity to total assets ratio have significant positive effects on bank performance whereas Net loans to assets ratio, and Cost-to-income ratio have significant negative impact on bank performance for both ROA and ROE except for equity to total assets ratio which show positive impact for ROA but negative impact for ROE. Except for corruption which has negative impact on bank performance, GDP and global financial crises in 2017/2018 have negative impact on bank performance (ROA and ROE). When bank risk interacted with the corporate governance variables, we find a significant reduction in the negative effect of bank risk on bank performance suggesting that good corporate governance moderate the relationship that exists between bank risk and bank performance in Africa. These findings are consistent with agency theory (Jensen and Meckling, 1976; Jensen, 1993) which argues that different corporate governance mechanisms including board meetings, board size, female directors, role duality and the presence of independent directors can align the interest of principals and agents in modern companies to reduce risk and increase performance.

This study is the first cross country study that has captured corporate governance effects on bank risk and performance in Africa. Our study contributes to the growing literature on corporate governance, bank risk and performance and bridges the gap in the literature that is focused on only bank risk and performance in advanced economies. Regulators in Africa play a crucial role in providing confidence in their economies while protecting investors. Therefore, our study may guide them to come out with appropriate corporate governance codes that will assist banks to reduce bank risk and improve performance. Shareholders and management of banks may also make appropriate board appointments and apply best corporate governance practices to improve their performance while reducing risk at the same time. Our study suffers from some limitations which need mentioning. One, the study considered banks that have five

or more years' information only. As a result, some banks were excluded from the final sample because they had less than five years' information at the time of data collection. In addition, our sample also do not include rural banks. Therefore, our empirical results do not represent the total banks in Africa. Future studies can add rural banks to their sample to see if their results will be different. Two, corporate governance information of some of the banks were not available. The reason is that, the annual reports of some banks were either not found or not available at all. Future research can extend this study by considering all other banks in their sample by employing mixed methods approach to capture information from the banks that do not have annual reports by sending questionnaires through email to management of those banks.

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