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Board expertise and the relationship between bank risk governance and performance

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Abstract: The aim of this paper is to analyze the correlation between risk governance and bank performance while taking into consideration the influence of board expertise. The study argues that the connection between risk governance and performance depends on the level of expertise among board members who are integral to the risk governance framework. By analyzing data from 83 bank-year observations, which includes information from the bank focus database and hand-collected data from annual reports spanning the period from 2012 to 2021, this research employs panel models to analyze the impact of board expertise on bank risk governance and performance relationships among a selection of banks in Sub-Saharan Africa. The research reveals two significant findings: Firstly, the establishment of risk governance structures is negatively associated with bank performance. Secondly, there exists a negative association between the expertise of the board members and their performance. Finally, the study found the risk governance and performance relationship to be positively and significantly moderated by board expertise. The evidence in this study suggests that for risk governance structures to achieve the desired objectives of enhancing performance, board members must possess the required technical expertise. Regulators and shareholders may find this result useful in strengthening regulatory requirements on board expertise and in appointing board members, respectively.

Subjects: Corporate Finance; Banking; Corporate Governance

Keywords: risk governance; board expertise; performance; Sub-Saharan Africa; GMM

1. Introduction

In this study, we explore how the expertise of the board of directors conditionally influences the connection between the bank's risk governance structures and its performance. Risk governance structures were implemented following the 2008 financial crisis to support corporate governance structures that were in existence (Aebi et al., 2012). Research has also placed significant emphasis on the imperative to comprehend the connection between risk governance structures and performance in the aftermath of the crisis (Karyani et al., 2020). While prior studies have sought to understand the implications of risk governance structures for bank performance, the goal of this study is to unravel how the expertise of those recruited to occupy positions in risk governance structures impacts the link between instituting risk governance structures and performance.

Theoretical, agency theory highlights the risk governance mechanism to help reduce the agency problem (Berger et al., 2005). The expertise of the board, on the other hand, is important for the board to monitor and control managerial risk-taking behavior and thereby minimize the potential agency problems (Schnatterly et al., 2021) that can be detrimental to bank performance. The expertise of the board can be regarded as a significant resource, viewed from the perspectives of resource dependence theory (Pfeffer, 1973) and upper echelon theory (Hambrick & Mason, 1984). This expertise can play a crucial role in shaping the establishment of risk governance structures within banks, which in turn can impact their performance. Accounting for board expertise in the risk governance and performance relationship will yield new insights for effective risk governance that would enhance corporate governance practices and enhance performance.

Risk governance according to Nahar et al. (2016) is defined as the set of regulations, methods, and protocols aimed at identifying risks and implementing appropriate corrective measures. Agnese and Capuano (2021) observe that risk governance is the activity performed by the board with the aim of controlling risks, and it includes the design of internal systems to identify, measure, and manage risk. The board needs to have the information, abilities, experience, and diversity required to comprehend and monitor the activities of the bank and its risk profile (BCBS, 2015). This means that to effectively supervise the risk management activities of the bank and ensure their alignment with the overarching goals and objectives, the board should consist of members with a variety of experience, including financial, legal, and risk management.

This study argues that the impact of risk governance on performance would depend on the board of directors leveraging their expertise to determine the bank's risk appetite. This perspective aligns with both the resource dependence and the upper echelon theories. This current study suggests that board expertise is an important resource for the board that can influence how risk governance systems and procedures tend to influence bank financial performance. Hence, the argument posits that the impact of risk governance-related decisions, policies, and actions on performance is contingent upon the specific expertise possessed by individual board members. As a result, further analysis was done to consider a decomposition of the types of expertise that are essential to executing the board's mandate: financial expertise, legal expertise, and industry expertise.

This study adds to knowledge in the current literature concerning the influence of risk governance on performance in various ways. The study demonstrates the necessity of board expertise for effective implementation of risk governance practices, which ultimately leads to improved financial performance. This study, considered the first of its kind to the best of our knowledge in sub-Saharan Africa. Understanding how risk governance influences performance and the role of board expertise is key, particularly in the context of sub-Saharan Africa. This is because the region has experienced significant economic growth in recent years, with the banking sector being a key driver of this growth, yet the financial system in the region is said to be one of the least developed in the whole world (Tyson, 2021).

In addition, the region has suffered several banking crises, including the recent crisis in Ghana and Nigeria, which highlighted the need for effective risk governance in banks (Abor et al., 2022; Ayadi et al., 2020). For example, the Bank of Ghana blamed the recent collapse of banks in Ghana largely on weak board oversight concerning the risk-taking behaviour of banks (Abor et al., 2022). Again, the SSA region is known to be characterised by a weak institutional environment, which may hinder effective risk governance practices. Studies (Kuada, 2016; Pelletier & Stijns, 2018).

This study provides insight into the risk governance and performance nexus and enriches our understanding of the role of board expertise, which appears to have been overlooked in the literature, especially in the African context. Furthermore, following Raouf and Ahmed (2022), a risk governance index for sampled banks in sub-Saharan Africa is constructed to include credit committee characteristics. Finally, the development of a board expertise index grounded in

resource dependence and upper echelon theory will enrich existing literature. The board expertise index encompasses financial expertise, legal expertise, and prior experience in the banking industry (industry expertise).

The subsequent sections of this paper is organized as follows: Section 2 presents a literature review and hypotheses developments, while Section 3 outlines the methodology and materials employed in the study. Section 4 presents the findings. Lastly, Section 5 offers conclusions and recommendations.

2. Literature review and hypotheses development

2.1. Risk governance and performance

The relationship between risk governance and bank performance is established based on agency theory. The theory contends that shareholders and managers are presumed to have competing interests due to the separation of management from control, thereby causing agency problems (Fama & Jensen, 1983). This leads to an increased incidence of information asymmetry, conflicts of goal, adverse selection, and moral hazard. An organizations board of directors is seen as one of the internal control mechanisms that can decrease agency problems. This is because the board provides oversight, monitoring, and control which in turn helps in aligning the interest of management with that of the shareholders (Aebi et al., 2012). Studies have suggested that establishing risk governance system can assist in resolving agency problems because it provides monitoring tools for banks board to handle risks (Gontarek & Belghitar, 2018; Nahar et al., 2016).

Ellul and Yerramilli (2013) studied how risk governance affects the performance of banks in the US. They constructed a risk governance index that considered the establishment of a risk management department, the presence of a risk committee, the appointment of a CRO, audit committee independence, and the implementation of ERM. They found the majority of the risk governance variables have a positive influence on performance. The study by Aebi et al. (2012) also suggests that risk governance was a major factor that influenced bank performance during the 2008 financial crisis. Nahar et al. (2016) also report that risk governance is positively correlated with the performance of banks in Bangladesh. Hassan and Mollah (2014) found a significant correlation between bank financial performance and governance measures such as independence of the board, size of the board, number of female directors, board meeting attendance, and CEO qualification. Using the United Kingdom (UK) firms in the FTSE350, Malik et al. (2020) demonstrate that enterprise risk management (ERM) is positively correlated with performance. They argue that an effective board risk committee enhances the effects of ERM on company performance.

Contrary to the above studies, Sun and Liu (2014) found the risk governance and performance relationship to be negative. Sun and Liu (2014) contend that if the board risk committee and chief risk officer become concerned about risk reduction, management may become conservative towards risk. This may not result in larger returns in comparison to the level of risk assumed. Furthermore, unlike shareholders, managers may not be free to diversify their risk, and overly cautious risk governance measures may result in investments that are not as profitable as they could be, thus affecting a bank's performance. Based on the theoretical review and the empirical perspectives above, the following hypothesis is formulated:

H1a: There is a positive relationship between risk governance and performance of banks.

2.2. Board expertise and performance

One primary objective underpinning the establishment of the board of every organization is to leverage on the collective expertise of members to function well including the ability to detect and manage risk. The agency theory, which highlights the board's role in monitoring and control, supports this approach. The notion is that board members will need a certain amount

of knowledge and expertise to deal with issues that arise (Hambrick et al., 2015). Over the years, researchers have concentrated on agency theory and looked at how factors like board independence and composition impact performance (Haque & Arun, 2016). However, board member knowledge, according to Fama and Jensen (1983), is relevant in ensuring that decision-making and control systems function well. The resource dependence theory (RDT) by Pfeffer (1973) emphasizes the significance of resources in improving performance. The theory emphasizes effective corporate governance and, most importantly, the impact of directors' characteristics as necessary to reinforce entities' capacity to be protected against external shocks and reduce uncertainty. According to the RDT, firms need to have appropriate access to resources to have control and exert more influence because resources are essential to success. Nienhüser (2008) posits that organizations are reliant on external resources, such as funding, expertise, and partnerships, to achieve their objectives. The expertise of the board members of a firm is crucial in integrating systems and resources from the environment into the firm because the knowledge of their profession and communities helps them navigate any uncertainties.

Upper Echelon Theory by Hambrick and Mason (1984) explores how top executive characteristics, such as age, office tenure, education, and functional background, influence their cognitive frames and perspectives. These factors, in turn, impact their decision-making and actions concerning strategic matters. Ulrich and Dulebohn (2015) highlight that the executive team's collective tendencies shape the overall direction and priorities of the business. Their inclination to align with strategies that resonate with their personal ideas and values can significantly impact decision-making. For instance, executives with a financial background may prioritize financial performance when making choices. Furthermore, diversity within a board can introduce fresh perspectives and novel ideas that may have been overlooked. This inclusivity can play a role in shaping the bank's performance (Beji et al., 2021).

Studies have argued that the characteristics of the board executives make a difference in the quality of decision-making (Adams & Jiang, 2016; Hambrick et al., 2015). In a recent study, Fernandes and Fich (2023) found board members with adequate expertise positively influence stock returns and lower firm reliance on government relief programs. Amoozegar et al. (2017) found that firms with board members who have attained relevant industry expertise, particularly in risk management, are rewarded with long-term financial performance. Magee et al. (2019) examine how board members with prior experience in the banking and finance industry influence firm performance and report that prior experience positively influences performance. Financial expertise is also considered a requirement for discussion, especially in identifying possible risks the bank is exposed to and how to reduce the risk of company failure and enhance performance. Liu and Sun (2021), using a sample of US banks, found that a fraction of directors who are legal experts is inversely correlated with performance. Minton et al. (2014) also suggest that directors' experience is highly associated with weaker financial performance. The following hypothesis is developed based on the above discussions:

H1b: There is a positive relationship between board expertise and performance of banks.

2.3. The role of board expertise in risk governance and performance nexus

According to Chen et al. (2021), poor-performing banks have shortcomings in their risk governance systems, primarily because of deficiencies in their expertise. Research has also established a significant relationship between bank risk governance systems and performance (Agnese & Capuano, 2021; Karyani et al., 2020). Similarly, board expertise has been established in the literature as a factor influencing performance (Liu & Sun, 2021; Magee et al., 2019). Nevertheless, these studies do not examine the combined influence of various expertise factors on bank performance. As far as our knowledge extends, existing literature has not yet delved into the moderating function of board expertise in the context of the relationship between bank risk governance and performance. The investigation undertaken in this study aims to enhance the

understanding of the conditions necessary for risk governance to contribute to sustainable bank performance, particularly in sub-Saharan Africa. Hence, this study hypothesizes that:

H1c: Board expertise interacts with risk governance to positively influence performance of banks.

3. Methodology

3.1. Data

The research employed panel data spanning from 2012 to 2021 and encompassed a total of 83 banks originating from five sub-Saharan African nations: Ghana, Kenya, Nigeria, South Africa, and Mauritius. These countries were first selected based on the International Monetary Fund's classification as middle-developing economies in Sub-Saharan Africa (International Monetary Fund African Dept, 2021). Second, the countries were also selected based on the criteria that banks operating in these countries have published copies of their annual reports on their websites. Third, the selected banks consistently published their annual reports throughout the study duration.

Generally, research on risk governance within the Sub-Saharan African region has been relatively scarce. Mention can be made of Yahaya et al. (2020), who studied risk governance and performance in sub-Saharan Africa. However, the study focused on 50 banks from 6 countries, and the measurement of risk governance was also limited to just one aspect of risk governance, specifically risk committee characteristics. By expanding the measurement of risk governance to include other indicators, this study provides more comprehensive information that can assist in broader policy formulation. Consequently, this study is both necessary and justified, as it aims to contribute to the ongoing policy discourse surrounding risk governance within the banking sector of this particular sub-region.

Data on risk governance and board expertise were collected by hand from annual reports of banks, similar to the approach in the literature (Abid et al., 2021; Aljughaiman & Salama, 2019). Data on performance and other control variables were obtained from bank focus database. Detailed descriptions and measurements of variables included in the models of this study are presented in the appendix.

3.2. Index

Existing studies have employed different types of indicators to measure risk governance (Abid et al., 2021; Aljughaiman & Salama, 2019; Raouf & Ahmed, 2022). This current paper adopted the measurement of the risk governance index from existing literature, particularly following the approach used by Raouf and Ahmed (2022). A risk governance index (RGOVI) consisting of 19 indicators grouped into five (5) components, including the board characteristics, chief risk officer characteristics, risk committee, credit committee, and audit committee is shown in the appendix. The risk governance index used in this study is the sum of the scores of all indicators for each bank in each year. A board expertise index (BODEXP) is constructed based on the upper echelon theory and the resource dependence theory to include three distinct measurements of expertise: financial expertise, legal expertise, and industry experience. The appendix provides the criteria utilized for scoring the different dimensions of board expertise in this study. The board expertise index is established by computing the cumulative expertise score for each bank every year. It is presupposed that a higher score signifies a higher degree of expertise held by a bank within a specific year.

3.3. Empirical model and estimation technique

To assess the influence of risk governance on the performance of banks in Sub-Saharan Africa, several models were estimated based on the following specification.

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 RGOVI_{it} + \sum_{j=1}^{10} \beta_j X_{it} + \varepsilon_{it} \quad (1)$$

In Equation (1) ROA_{it}represents the performance for bank *i*, at time *t*. ROA_{it-1} it is the the first lag of the dependent variable performance. $RGOVI_{it}$ represents the risk governance index for *i*, at time '*t*. $\sum_{j=1}^{10}\beta_j X_{it}$ represents set of controls variables included in the study. $\beta_{0-4,}\beta_N$ denotes the parameters. ε_{it} is mean zero scalars; decomposes into $\varepsilon_{it} = \mu_i + v_{it}$. μ_i is the time invariant firm specific effect and v_{it} captures all other white noise in the models. The subjects *i* and *t* denote bank and year respectively. A dynamic specification is employed in this study, as it is believed that the present performance value may be influenced by its past values. The appendix provides comprehensive definitions of the variables used in the analysis.

To examine the board expertise and performance relationship, Equation (1) above is modified to replace risk governance with board expertise

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 BODEXP_{it} + \sum_{j=1}^{10}\beta_j X_{it} + \varepsilon_{it} \quad (2)$$

BODEXP is an index of either composite board expertise or specific aspects of board expertise such as legal, financial and industry expertise. To examine the role of board expertise (BODEXP) on the association between risk governance and performance, an interaction term of RGOVI and BODEXP is introduced. This entails combining Equation (1) and Equation (2) as follows;

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 RGOVI_{it} + \beta_3 BODEXP_{it} + \beta_4 (RGOVI_{it} * BODEXP_{it}) + \sum_{j=}^{10}\beta_j X_{it} + \varepsilon_{it} \quad (3)$$

In Equation (3) $(RGOVI_{it} * BODEXP_{it})$ represent the interaction term between risk governance and board expertise.

3.4. Estimation technique

The study examines the anticipated relationships using the two-step systems generalized method of moments. The differences GMM estimator and the system GMM estimator are the two types of GMM estimators that have been established in the literature (Arellano & Bond, 1991; Arellano & Bover, 1995). Using the system GMM avoids the drawbacks associated with the difference GMM, which introduces bias due to its reliance on lagged levels of explanatory variables as instruments. System GMM adjusts the difference equation to account for weak instruments by adding a level equivalent (Roodman, 2009). Additionally, there are two SGMM variations: one-step and two-step. Blundell and Bond (1998) developed the two-step system GMM to handle more persistent data. Windmeijer's (2005) two-step estimator with corrected standard errors was used to analyze the associations in this study since it is asymptotically more successful than the one-step estimator. This study employed the two-step SGMM because it is suitable for analyses conducted with shorter time horizons compared to the number of cross-sectional units, which is the situation presented by the data in this study. This method also enables us to view performance as a dynamic process in which past performance influences current performance. The Sargan/Hansen test for overidentification constraints, as well as the Arellano and Bond test for second-order serial correlation in the error term, are utilized in the study to ensure that the estimates are consistent (Roodman, 2009).

4. Empirical results and discussion

4.1. Descriptive statistics

Table 1 presents the summary statistics for the sampled banks in SSA. The mean for dependent variable ROA is 1.58%, suggesting that the return generated on assets for banks within the sub-region for the study period is low on average. The average index for independent variables of interest (risk governance and board expertise) was 12.18 and 1.584, respectively, with a standard deviation of 2.52 and 0.95, respectively. The average percentage of board gender diversity, which is female representation on the board of sample banks, is 17.7%. This means that, on average, there are about 17.7% of women on the boards of banks included in the study. This evidence suggests that only a handful of women are involved when it comes to being appointed to the apex positions of banks as board members. For the study period, banks included in the study recorded an average

of 7.6% growth. The average size of banks included in the study, calculated as the natural log of total assets, is 15.339 with a standard deviation of 3.154.

4.2. Correlation matrix

The correlation diagnostics of the explanatory variables are presented in Table 2. This is to identify potential multicollinearity among the explanatory variables. The result shows that the independent variables included in the study do not exhibit any high correlation with each other, suggesting that all the independent variables are suitable for the model. This is consistent with Damodar (2004), who posits that the correlation coefficient among regressors does not present any problems for regression analysis unless it exceeds a threshold value of 0.80.

4.3. Bank risk governance, board expertise, and performance

This section presents the results and analysis regarding the relationship between bank risk governance structures, board expertise, and performance. Table 3 captures the results of the GMM estimation accounting for the risk governance and performance relationship in model 1, the board expertise and performance relationship is also specified in model 2, and the interaction effect of bank risk governance with board expertise on performance is specified in model 3. Column 1 of Table 3 demonstrates that there is a significant and adverse relationship between the risk governance mechanisms of banks and their performance. This appears to be consistent with the study of Sun and Liu (2014), who reported an inverse relationship between risk governance and performance. Battaglia and Gallo (2015) also provide evidence that risk governance mechanisms such as the size of the risk committee are negatively correlated with performance. The result, however, contradicts the results of Malik et al. (2020), who indicated that risk management effectiveness has a significant and positive association with performance. The results also contradict expectations based on moral hazard, which suggests that efficient risk management should incentivize banks to assume more risk in anticipation of greater returns.

Column 2 of Table 3 shows that there is a significant and adverse correlation between board expertise and performance. This outcome corroborates the results of Minton et al. (2014), who find that directors' experience is highly associated with weaker performance. The outcome of this study

Table 1. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	830	1.587	3.333	−18.781	19.489
RGOVI	830	12.18	2.52	6	18
BODEXP	830	1.584	.948	0	3
OWN	830	.46	.499	0	1
GEND	830	.177	.105	0	.5
SIZE	830	15.339	3.154	8.123	22.947
GROWTH	830	.076	.838	−4.373	3.818
AGE	830	3.486	.858	.693	5.209
LEV	830	7.104	4.248	−14.351	47.412
TIER1	830	18.284	6.749	−16	45.09
LOASST	830	45.534	16.648	.223	90.379
OPIASST	830	2.989	2.975	−2.673	41.458
CRRISK	830	6.286	6.127	.001	37.162
OPRISK	830	1.852	4.225	0	28.612
LQRISK	830	56.367	20.586	.437	121.444
INRISK	830	5.269	5.725	−9.931	24.882
RISKTI	830	0	1	−1.942	5.022

Table 2. Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) RGOVI	1.000										
(2) BODEXP	0.217	1.000									
(3) OWN	−0.124	−0.054	1.000								
(4) GEND	0.215	0.125	0.016	1.000							
(5) SIZE	−0.029	0.079	0.461	0.091	1.000						
(6) GROWTH	0.011	−0.040	0.092	0.029	0.114	1.000					
(7) AGE	−0.008	−0.052	0.384	−0.019	0.308	−0.011	1.000				
(8) LEV	−0.032	0.033	−0.022	−0.175	0.149	−0.006	0.087	1.000			
(9) TIER1	−0.024	0.094	−0.152	0.235	−0.042	−0.012	−0.216	−0.347	1.000		
(10) LOASST	−0.121	−0.186	0.084	−0.202	−0.071	−0.061	0.252	−0.005	−0.300	1.000	
(11) OPIASST	−0.069	0.071	0.221	−0.009	−0.016	0.072	−0.123	−0.238	0.050	−0.163	1.000

Table 3. GMM results of the interaction effects of board expertise on bank risk governance and performance nexus

	(1)	(2)	(3)
VARIABLES	**ROA**	**ROA**	**ROA**
L.ROA	0.227***	0.236***	0.214***
	(0.00861)	(0.0103)	(0.0152)
RGOVI	−0.136***		−0.235***
	(0.0200)		(0.0321)
BODEXP		−0.124***	−0.589***
		(0.0418)	(0.219)
RGOVI*BODEXP			0.0609***
			(0.0167)
OWN	−0.457	−0.0999	−0.129
	(0.560)	(0.308)	(0.473)
GEND	1.518***	0.829***	1.546***
	(0.341)	(0.258)	(0.317)
SIZE	−0.593***	−0.549***	−0.568***
	(0.0780)	(0.0535)	(0.119)
GROWTH	0.257***	0.299***	0.271***
	(0.0154)	(0.0201)	(0.0303)
AGE	0.838***	0.658***	0.430***
	(0.230)	(0.147)	(0.163)
LEV	−0.0214***	−0.0169***	−0.0272***
	(0.00686)	(0.00391)	(0.00972)
TIER 1	0.0501***	0.0509***	0.0521***
	(0.00631)	(0.00574)	(0.00734)
LOASST	0.00583**	0.0132***	0.00375
	(0.00230)	(0.00267)	(0.00236)
OPIASST	−0.0802***	−0.0885***	−0.108***
	(0.0159)	(0.0174)	(0.0175)
Constant	−0.422	3.859	3.518
	(7.046)	(5.346)	(7.072)
AR (1) test (z,p-value)	−3.16 (p=0.002)	−2.11 (p=0.035)	−2.26 (p=0.024)
AR (2) test (z,p-value)	0.07 (p=0.944)	−0.64 (p=0.520)	−0.21 (p=0.832)
Sargan test (Chi-square, p-value)	6.52 (p=0.163)	5.62 (p=0.132)	4.98 (p=0.173)
Hansen test (Chi-square, p-value)	3.25 (p= 0.518)	2.15 (p=0.542)	2.49 (p=0.478)
Number of instruments	17	17	17
Observations	747	747	747
Number of groups	83	83	83
Observations	747	747	747
Number of id	83	83	83

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

aligns with the findings of Liu and Sun (2021) on directors' legal expertise and performance. They demonstrate, using a sample of US banks, that the share of independent directors with legal expertise among board members is negatively associated with performance. On the contrary, the findings of Adams and Jiang (2016) suggest that financial expertise among board members contributes to improved firm performance.

In model 3 of Table 3, the outcomes indicate that the interaction effect between risk governance and board expertise on performance is not only positive but also highly significant. The results from Model 3 show that the interaction of risk governance and board expertise positively affects performance, while the results in Model 1 and Model 2 suggest that risk governance mechanisms and the board's expertise individually have a negative association with performance. This means that risk governance structures and the expertise of the board are important for improving financial performance. Ellul and Yerramilli (2013) report that firms that manage risk better are the ones who attain higher profitability. The results suggest that a bank with adequate board expertise can leverage the expertise for effective risk management decisions. That is, risk governance mechanisms coupled with board expertise will enable financial institutions to take risks and effectively manage the risks that would ultimately drive financial performance. The results sit well with agency theory, which posits that while shareholders may be more interested in low-risk investments, management may be interested in taking on more risk to generate high returns. However, risk governance structures coupled with the right board expertise will help to align managers' interests with shareholders' interests through effective risk management and better financial performance. Therefore, for banks' boards of directors to function well and appropriately recognize and manage risk to enhance performance, their expertise is crucial.

For the control variables, OWN, which was measured as a dummy variable that takes the value of one when the bank originates from a foreign country and zero otherwise, showed a negative relationship with the performance, which possibly means that banks that originate from a foreign country are less profitable as compared with banks that were started locally. Lensink and Naaborg (2007) find similar results when they report that foreign ownership of banks is negatively associated with performance. The relationship between gender (GEND) and performance is both statistically significant and positive, implying that female directors on the board positively impact bank performance. This aligns with the findings of Noland et al. (2016), who also found a positive and significant association between female directors and performance. Bank size (SIZE) exhibits a statistically significant and negative relationship with performance. Perhaps this reflects the well-known size effect in finance literature. The results show that growth, which represents the changes in annual earnings, is positively and significantly correlated with performance. This means that a bank with higher growth potential is more inclined to improve performance. Tier 1 capital ratio and loans-to-asset ratio (LOASST) are both positively associated with performance. The positive relationship between the loan-to-asset ratio and performance could mean that bank performance may increase due to higher interest income generated from a larger loan portfolio.

The variable AGE, as expected, recorded a significant positive association with performance. This suggests that banks that have been in business for a long time are likely to leverage their experience and may perform better as compared to those who are new to the market. The relationship between leverage (LEV) and performance is negative. This means that highly geared banks are less profitable, possibly because a chunk of the bank's returns may go into servicing debt obligations. Finally, with regards to the other operating income to asset ratio (OPIASST), the expectation was that banks that depend on other operating income should generate more revenue, which would enhance financial performance. However, the relationship established in this study is rather negative and significant. The results suggest that non-interest income is not a panacea for poor performance in a bank's core business of earning interest income. The negative relationship may also indicate participation in riskier non-interest income activities may not be the best use of shareholders' capital.

The System GMM post-estimations result in all models in Table 3 having positive diagnostics. The p-values reported for AR (2) show there is no problem of second-order autocorrelation. Hansen J-Statistic indicates instruments are valid, and the models specified in the study are not weakened by many instruments. Therefore, all the results are robust.

4.4. Risk governance, types of board expertise and bank performance

In this section, the analysis is expanded to include a decomposition of board expertise. Models similar to those presented in Table 3 are estimated, utilizing individual components of the board expertise measure. Table 4 presents the findings of this analysis. Columns 1 to 3 as reported in Table 4 indicate that legal expertise, industry expertise, and financial expertise all exhibit significant and negative associations with performance. Similar to this finding is the study of Liu and Sun (2021), which suggests that board members with legal expertise have a negative impact on performance. Additionally, they align with Aebi et al. (2012), who discovered an inverse relationship between financial expertise and performance in the period of the financial crisis. However, these results differ from those of Haniffa and Cooke (2005), who propose that having a financial expert as a board member enhances the quality of financial reporting and ultimately boosts performance. Similarly, Krishnan et al. (2011) found that board members with legal expertise significantly contribute to both financial reporting quality and performance.

Columns 4 to 6 of Table 4 present the outcome of the moderation effects of the various types of board expertise with risk governance on performance. The results show that all types of expertise, when interacted with, have a positive and significant effect on performance. Krishnan et al. (2011) show that members of the board have legal and accounting expertise that complements overseeing financial reporting and enhancing performance. Directors with legal backgrounds are better able to spot early mitigation strategies and leverage their legal expertise to manage lawsuits. Sakalauskaite (2018) suggests that excessive risk-taking, which leads to more lawsuits, is primarily the outcome of opportunistic behavior on the part of banks. This indicates that having board members with legal expertise can improve the bank's capacity to adhere to rules and regulations, lowering the risk of compliance and improving performance.

The System GMM post-estimations result in all models in Table 4 having positive diagnostics. The p-values reported for AR (2) show there is no problem of second-order autocorrelation. Hansen J-Statistic indicates instruments are valid, and the models specified in the study are not weakened by many instruments. Therefore, all the results are robust.

5. Conclusions and recommendations

The main object of this study is to increase understanding of how risk governance impacts bank performance by considering the moderating role of board expertise. It is contended that the board of directors' expertise is crucial in the relationship between risk governance and performance as a catalyst that increases the ineffectiveness of risk governance structures, thereby leading to better performance outcomes for banks. The results provide new insights over prior studies that show that weaknesses in risk governance structures are among the factors that led to the corporate governance failures that led to the financial crisis in 2008 (Abid et al., 2021; Chen et al., 2021; Gontarek & Belghitar, 2018). Following these studies, other studies have made efforts to explore the relationship between bank risk governance and performance (Battaglia & Gallo, 2015; Gontarek & Belghitar, 2018; Karyani et al., 2020).

In this study, the argument is to put forth that the quality of risk governance resides in the expertise of the members of the board that occupy roles on risk governance committees. As such, it is believed that the board's expertise enhances the link between risk governance and bank performance. Results obtained from this study support this argument. First, the relationship between risk governance and bank performance was examined, aligning with prior research findings that demonstrated a negative association. Similarly, an analysis of board expertise revealed a negative association with performance. However, when risk governance was interacted with board expertise, a positive and significant relationship with performance emerged, in line with

Table 4. GMM results using decomposition of board expertise

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
L.ROA	0.197***	0.230***	0.211***	0.225***	0.251***	0.225***
	(0.00371)	(0.00681)	(0.00335)	(0.00723)	(0.00657)	(0.00749)
LEGEXP	−0.224***			−1.064***		
	(0.0163)			(0.235)		
MANEXP		−0.0791***			−0.480***	
		(0.0151)			(0.0799)	
FINEXP			−0.106***			−0.586***
			(0.0177)			(0.103)
RGOVI				−0.235***	−0.303***	−0.284***
				(0.0454)	(0.0619)	(0.0496)
LEGRGOVI				0.0811***		
				(0.0173)		
MANRGOVI					0.0312***	
					(0.00686)	
FINRGOVI						0.0471***
						(0.00890)
OWN	−1.690***	−0.573**	−1.057***	−0.00332	1.028**	0.0634
	(0.243)	(0.286)	(0.191)	(0.403)	(0.518)	(0.431)
GEND	2.870***	1.203***	2.243***	2.942***	3.168***	3.249***
	(0.233)	(0.170)	(0.249)	(0.279)	(0.303)	(0.327)
SIZE	−0.656***	−0.444***	−0.541***	−0.606***	−0.660***	−0.676***
	(0.0240)	(0.0601)	(0.0517)	(0.0783)	(0.0991)	(0.100)
GROWTH	0.320***	0.254***	0.320***	0.370***	0.356***	0.373***
	(0.00707)	(0.0176)	(0.0136)	(0.0163)	(0.0205)	(0.0269)
AGE	0.488***	0.842***	0.439***	0.981***	0.542***	0.578***
	(0.108)	(0.140)	(0.0985)	(0.210)	(0.199)	(0.191)
LEV	−0.0369***	−0.0109***	−0.0152***	−0.0370***	−0.0319***	−0.0293***
	(0.00481)	(0.00375)	(0.00535)	(0.00681)	(0.00552)	(0.00641)
TIER1	0.0310***	0.0290***	0.0443***	0.0140***	0.0105	0.00916*
	(0.00411)	(0.00429)	(0.00364)	(0.00397)	(0.00859)	(0.00519)
LOASST	0.00807***	0.0160***	0.0142***	0.0183***	0.0114***	0.0141***
	(0.00126)	(0.000975)	(0.00152)	(0.00286)	(0.00237)	(0.00200)
OPIASST	−0.231***	−0.106***	−0.105***	−0.141***	−0.137***	−0.132***
	(0.0131)	(0.00737)	(0.00451)	(0.00985)	(0.0104)	(0.00922)
Constant	−21.74	−17.22	3.039	55.38	−17.81	−10.34
	(17.58)	(17.15)	(37.81)	(38.92)	(45.95)	(48.09)
AR (1) test (z, p-value)	−2.77 (*p*=0.006)	−2.67 (*p*=0.008)	−2.21 (*p*=0.027)	−3.58 (*p*=0.000)	−1.85 (*p*=0.064)	−2.52 (*p*=0.012)
AR (2) test (z, p-value)	−0.55 (*p*=0.583)	−0.45 (*p*=0.652)	−0.34 (*p*=0.733)	−0.81 (*p*=0.416)	0.18 (*p*=0.861)	−0.45 (*p*=0.651)
Sargan test (Chi-square, p-value)	5.50 (*p*=0.240)	5.01 (*p*=0.171)	5.41 (*p*=0.144)	1.16 (*p*=0.559)	0.71 (*p*=0.950)	2.51 (*p*=0.474)

(*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
Hansen test (Chi-square, p-value)	3.07 (p=0.546)	2.25 (p=0.522)	2.68 (p=0.444)	0.72 (p=0.699)	0.85 (p=0.932)	2.48 (p=0.478)
Number of instruments	16	15	15	16	18	
Observations	747	747	747	747	747	747
Number of id	83	83	83	83	83	83

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

hypothesis H1c. These findings suggest that improving a bank's financial performance necessitates both robust risk governance structures and board expertise. In conclusion, it is posited that board expertise is indispensable for establishing a strong risk governance structure, thus facilitating the achievement of profit maximization objectives. Thus, establishing a best-practice risk governance structure does not necessarily enhance performance unless banks make the effort to also promote the inclusion of the right expertise among the board of directors to strengthen the risk management effort.

The findings of this study demonstrate the benefits of both risk governance mechanisms and board expertise in bolstering financial performance. This study specifically supports the implementation of risk governance mechanisms as an internal monitoring tool to mitigate the agency problem among banks. On the other hand, the board's expertise should be viewed as a prerequisite that would support banks' efforts to improve performance through effective risk management. By emphasizing the nature of the relationship between different types of expertise (legal, financial, and industry expertise) and performance, the results further enable practitioners to understand how risk governance and the various expertise of the board especially influence financial performance. This would enable a more targeted approach to dealing with risk governance and board expertise-related issues affecting performance.

The study had limitations due to the availability of data, resulting in the inclusion of only five sub-Saharan African countries. As a result, generalizing the findings beyond this region may be challenging. However, it is suggested that the findings of the study are applicable to sub-Saharan African banks since most of them exhibit similar characteristics and are mostly underdeveloped (Tyson, 2021).

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Appendix

Description and Measurement of Variables

Symbol	Variable	Measurement
Dependent Variable		
ROA	Return on Asset	Quantified as the ratio of total return to total assets. (Malik et al., 2021)
Key Explanatory Variables		
RGOVI	Risk Governance Index	Index consisting of 19 indicators grouped into five components namely; board, risk committee, credit committee, audit committee, and chief risk officer (Aljughaiman and Salama (2019).
BODEXP	Board Expertise	An index representing board expertise namely, financial expertise, legal expertise and industry expertise.
Control Variables		
GROWTH	Growth	Quantified as the change in the annual earnings of the bank (Javaid et al., 2021).
AGE	Age	Expressed as the natural logarithm of the number of years since the firm's establishment (Zaid et al., 2020).
OWN	Own	Dummy variable that measures the origin of the bank. It is scored as "1" if the bank originates from a foreign country and "0" otherwise.
LEV	Leverage	Measured as the ratio of total debt to total assets (Zaid et al., 2020).
Tier 1	Tier 1 Capital	Quantified as the ratio of tier 1 capital to total risk-weighted assets (Raouf, 2020).
SIZE	Size of the Bank	Measured as the natural logarithm of total assets (Peni & Vähämaa, 2012).
GEND	Board gender diversity	Measures female representation on the board (Faccio et al., 2016).
LOASST	Loans-to-total assets	Measured as the ratio of total loans-to-total assets (Aljughaiman & Salama, 2019)
OPIASST	Operating income to total asset	Measured as the ratio of other operating income to the total asset (Abid et al., 2021).

Measurement of Risk Governance Index

Variable	Measurement
(1) Board characteristics	
Board Size	This variable is scored "1" if board size of a bank is larger than the mean value of the board size of all banks during the year in a particular country and "0" otherwise
Board chair duality	Board chair duality is scored "1" if board chair is not the CEO (non-executives) and not the chair of any board sub-committee and otherwise "0"
Board meetings	This variable is scored "1" if the members of the board held more meetings in the year than the average of all board meetings of sampled banks in a particular country and "0" otherwise.
Board independence	If most of the members on the board are considered independent, this is score "1" otherwise "0"
(2) Risk committee characteristics	
Risk committee existence	Risk committee existence in a bank in a given year is scored "1" otherwise "0"
Risk committee chair independence	If risk committee chair is independent, score "1" otherwise "0"
Risk committee meeting	Scored "1" if the members of the risk committee met more often during the year than the average of risk committee meeting across all samples in a particular country and otherwise "0"
Risk committee independence:	Scored "1" if the majority of members on the risk committee are independent or otherwise "0".
(3) Credit committee characteristics	
Credit committee existence	The existence of the credit committee is scored "1" otherwise "0"
Credit committee chair independence	Score "1" if chair of the credit committee is independent, otherwise "0"
Credit committee meeting:	Scored "1" if the members of the credit committee met more often during the year than the average of credit committee meeting across all samples in a particular country and otherwise "0"
Credit committee independence	Scored "1" if the majority of the credit committee members are independent or otherwise "0".
(4) Audit committee characteristics	
Audit committee existence	Audit committee existence is scored "1", otherwise "0".
Audit committee chair independence	Score "1" if audit committee chair is independent, and otherwise "0".
Audit committee meeting	This is scored "1" if the audit committee convened more frequently during the year than the average number of audit committee meetings for all sampled banks in a specific country.

(*Continued*)

(Continued)

Variable	Measurement
Audit committee independence	This is scored "1" if a majority of the members of the audit committee are independent or otherwise scored "0".
(5) Chief risk officers' characteristics	
Presence of a chief risk officer	If there is a chief risk officer present in the bank is scored "1" otherwise "0"
CRO independence	If chief risk officer performs an independent function, this is scored "1" otherwise "0"
CRO authority	Score "1" if chief risk officer reports directly to the board or otherwise "0"

Measurement of Board Expertise Index

Symbol	Variable	Measurement
LEGEXP	Legal Expertise	This variable is assigned a "1" if, in a given year, the bank's board of directors had a greater number of members with legal expertise compared to the average of other banks, and "0" otherwise.
FINEXP	Financial Expertise	This variable is assigned a "1" if, in a given year, the bank's board of directors had a greater number of members with financial expertise compared to the average of other banks, and "0" otherwise.
INDEXP	Industry Expertise	This variable is assigned a "1" if, in a given year, the bank's board of directors had a greater number of members with prior experience working in the banking industry compared to the average of other banks, and "0" otherwise.