BANK RISK, CORPORATE GOVERNANCE AND BANK PERFORMANCE IN AFRICA.

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ABSTRACT

This thesis contains the findings of the empirical studies of the relationship between bank risk, corporate governance and bank performance in Africa. Specifically, using a sample of 635 banks from 48 countries in Africa (a total of 10795 firm-year observations) and corporate governance data collected directly from banks annual report, the thesis seeks to examine whether there is a relationship between bank risk and bank performance, whether there is a relationship between corporate governance and bank risk, whether there is a relationship between corporate governance and bank performance, and whether corporate governance moderate the relationship between bank risk and bank performance.

Firstly, using Generalised Method of Moments (GMM) technique, the result suggests that bank risk, measured by Loan Loss Provisions to Net Interest Revenue (LLPNR) has negative relationship with both accounting measures, Return on Assets (ROA) and Return on Equity (ROE). However, bank risk, measured by Loan Loss Reserve to Gross Loan (LLRGL) is insignificantly negative related to both Return on Assets (ROA) and Return on Equity (ROE).

Secondly, the result based on bank risk and corporate governance is mixed. Board size is insignificantly negative related with Loan Loss Provisions to Net Interest Revenue (LPNR) and significantly negative related with Loan Loss Reserve to Gross Loan (LLRGL). Duality is significantly negative related with Loan Loss Provisions to Net Interest Revenue LLPNR and insignificantly negative related with Loan Loss Reserve to Gross Loan (LLRGL). Board meeting is significantly negative related with Loan Loss Provisions to Net Interest Revenue (LLPNR) and significantly positive related with Loan Loss Reserve to Gross Loan (LLRGL). Female directors is significantly negative related with Loan Loss Provisions to Net Interest Revenue (LLPNR) and significantly positive related with Loan Loss Reserve to Gross Loan (LLRGL). Finally, independent directors is insignificantly positive related with Loan Loss Provisions to Net Interest Revenue (LLPNR) and significantly negative related with Loan Loss Reserve to Gross Loan (LLRGL).

Thirdly, the result based on corporate governance and bank performance is mixed. Board size and board meetings have significant and negative impact on Return on Assets (ROA) and Return on Equity (ROE). Duality has insignificant positive impact on Return on Assets (ROA) and significant negative impact on Return on Equity

(ROE). Female directors has significant positive impact on both Return on Assets (ROA) and Return on Equity (ROE), while independent directors has insignificant negative impact on Return on Assets (ROA) and significant negative impact on Return on Equity (ROE).

Finally, the result suggests that all the five governance variables, board size, duality, board meeting, female directors and independent directors, moderate the relationship between bank risk and bank performance in Africa.

Given a dearth of empirical evidence on the relationship between bank risk, corporate governance and bank performance, this study seeks to fill the gap and contribute to the growing literature by providing new evidence on the relationship between bank risk and bank performance, corporate governance and bank risk, corporate governance and bank performance, and the joint effect of corporate governance and bank risk on bank performance.

ABBREVIATIONS

LNTA	Bank size
MEETINGS	Board meetings
BSIZE	Board size
DUAL	CEO or role duality
CEO	Chief Executive Officer
COR	Corruption
CPI	Corruption Perception Index
COST	Cost-to-income ratio
EQTA	Equity/total assets
FEMALE	Female directors
GMM	Generalized method of moments
LNGDP	Gross domestic product
INDEP	Independent directors
LLPNR	Loan loss provisions/net interest revenue
LLRGL	Loan loss reserve/gross loans
NLTA	Net Loan/Total Assets
OLS	Ordinary least squares estimates
ROA	Return on assets
ROE	Return on equity
OECD	The Organisation for Economic Co-operation and Development
2SLS	Two-Stage least squares
VIF	Variance Inflation Factor

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DECLARATION

I declare that, with the exception of contribution of others which have been referenced, this dissertation is my own work and has not been submitted for any other degree or award at the Manchester Metropolitan University or any other institution.

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CHAPTER ONE

INTRODUCTION, BACKGROUND AND MOTIVATION

INTRODUCTION

Good corporate governance is important for the success and continuity of institutions, hence much attention has been paid to the procedure of such governance. It is being recognised everywhere that good governance is important for corporate performance. Corporate governance is therefore currently an important concept worldwide (Crowther & Seifi, 2010). In the same way, bank risk has become an important issue in financial institutions in both developed and developing countries, particularly in the light of the recent financial turmoil. The profit of shareholders and the success of banks depend on how management of these banks manage the bank risks. Therefore, the corporate governance of banks can determine the success of the management of risks of banks which can determine the performance of the banks. The literature on corporate governance is widely covered in developed countries as compared to the developing countries, especially in Africa. In the UK there has been a succession of codes on corporate governance dating back to the Cadbury Report in 1992. All companies reporting on the London Stock Exchange are required to comply with the Combined Code on Corporate Governance, which came into effect in 2003 (Crowther and Seifi, 2003). A significant number of research discuss issues around bank risk, corporate governance and bank performance with focused on developed countries. Few of them are done in Africa especially in banking. Like developed countries, issues related to bank risk, corporate governance and bank performance affect socio economic development of developing countries like Africa. Therefore a study on bank risk, corporate governance and bank performance in Africa is very relevant. This research intends to use bank risk and different corporate governance and bank performance measures to apply in African banks to find out if what other researchers have done is applicable in Africa.

The research hopes to achieve four main objectives. They are, (1) to investigates the relationship that exists between bank risk and bank performance in Africa (2) to find out the relationship that exists between bank risk and corporate governance in Africa (3) to investigate the relationship that exists between corporate governance

and bank performance in Africa (4) to explore the moderating effect of corporate governance on the relationship between bank risk and bank performance in Africa.

To achieve the aim and objectives of this research, a sample of 635 banks have been selected from 48 countries in Africa. Secondary source of information is used and data on bank risk, corporate governance and bank performance are drawn from some data sources such as BankScope, Orbis bank focus, Boardex, World Bank and the banks annual report for corporate governance information. Panel data from 2000 to 2016 is used for the analysis.

1.1 Background of the study

There is a good diversification of financial institutions in Africa. The Republic of South Africa and parts of North Africa have quite developed banking sector with modern banking system and active stock market. Other parts of Africa have poor banking system and many households do not have access to banking services, and there is either non-existence of the stock market or a very small number of listed companies trade in shares (Andrianova et al, 2015). One distinct feature of Africa is that corruption level varies and contract enforcement quality shows that there is likelihood of substantial variation in the behaviour of banking (Andrianova et al, 2015). The greater part of Africa is characterised with common patterns which makes the continent different from other part of the world. One of the safe assets in Africa is treasury bills which attract banks in Africa that operate in environment where risky loans are many. It is interesting to note that loans to the private organisations pose the same risk as loans to the state-owned enterprises (Andrianova, et al, 2015). Due to many different languages in Africa and the absence of inter-ethnic trust can cause inter-ethnic transactions cost to be high in addition to degree of market segmentation (Robinson, 2016). It is important to know that commercial banks which operate in Africa are prone to loans default which result to failures (Andrianova, 2015). This default risk is one of the major risks faced by banks in Africa which impact negatively on bank performance on the continent. Therefore, effective risk management strategies of this risk and other important risks faced by the banks in Africa are required.

On the corporate governance side, the separation of ownership and management in an organisation calls for attention to be given to corporate governance in both developed and developing countries (Okeahalam, 2004). Developing countries like

Africa in particular, corporate governance in the financial institutions is very essential since it causes better management and assists banks with weak corporate governance structures to mobilise funds and help them to attract foreign investors (Okpara, 2011)

Once good corporate governance practices are achieved within the banks in Africa, in effect, risk in the banks can be managed well and a better performance of the banks could be achieved. However, there is still a problem with risk management within the banks in Africa and corporate governance is an issue as it is still developing not just in the banking sector but non-banking firms as well. Africa is characterised with transitional economy and some of the main unique problems are corruption, there is no transparency in the business environment, financial intermediation is low and majority of the enterprises are state-owned (Okeahalam, 2004). Africa is also being affected by political and legal challenges, which impact negatively on the sound corporate governance on the continent. For instance, in Nigeria, the supervision and enforcement of the rules still remains a challenge and the judicial supervision which includes the court have failed, despite the existence of laws, processes and penalties for violations. There are legal and political challenges on corporate governance including legal framework dominated by 1969 Companies code and absence of enforcement of relevant laws (Okeahalam, 2004). Moreover, Register of Companies in Kenya does not have enough resources to monitor the registered companies effectively, according to Okeahalam (2004). One other major problem which negatively impact on effective corporate governance in Africa according to Okeahalam (2004) that needs mentioning and addressing is the problem of undisclosed payments and bribes. Also, in South Africa, despite the rigorous regulations on insider trading listing rules, the implementation and enforcement of these rules and regulation is very weak (Ntim, 2013).

1.2 Motivation, problem and the need for the study

Most of African economies are still underdeveloped. The researcher argues, that one way to develop these economies is to develop the banking sector. Once the banking sector is sound and strong, it can boast the socio-economic development of the continent. Some of the positive results will be employment creation and reduction of poverty. It is a fact that one way of developing the banking sector in Africa is to ensure an effective risk management and ensuring sound corporate

governance within the banks. This gives a good motivating factor for conducting a research on bank risk, corporate governance and bank performance in Africa. Therefore, conducting a research on bank risk, corporate governance and bank performance in Africa is important in identifying the main issues in risk and corporate governance within the banks in Africa in order for the regulatory bodies to find the appropriate measures to curb the problems in order to improve performance of these banks.

There are few empirical studies on bank risk, banks corporate governance and bank performance. There is evidence that the few empirical studies especially on corporate governance focus on non-African firms, according to Abor and Fiador (2013). Most of the countries in Africa are emerging economies and corporate governance is still developing within firms including banks. On the other hand, the banking sector in Africa is not fully developed as those in the developed countries. Banking risk is the main issue which affects the performance of the banks in Africa just like those in the developed countries. 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, it will be interesting to conduct a research to get a picture of bank risk corporate governance and bank performance in Africa.

Cross-country studies on bank risk, corporate governance and bank performance are very limited not just only in Africa but across developed countries in Europe, America and the emerging economies in Asia as well. The few studies on bank risk, corporate governance and bank performance in Africa only focus on single country and do not give a broader picture on the relationship between bank risk, corporate governance and bank performance of the whole continent of Africa. According to OECD (2015) report on African Economic Outlook, Africa still remains a region with most difficult business environment. Therefore, it is very motivating to conduct a research to know how some of these corporate governance issues are impacting on the risk and performance within the banks in Africa.

Another motivation factor to this study is the theoretical contribution that this study may add to the debate on bank risk, corporate governance and bank performance. The contribution may not add to the debate on bank risk, corporate governance and bank performance in Africa alone but towards a general knowledge on banking risk, corporate governance and bank performance. This contribution will be beneficial to both academics and non-academics who are interested in issues and debate on bank risk, corporate governance and bank performance in general, and Africa in specific, hence, the call for this study.

The problem: The problem of bank risk and corporate governance remains one of the major threats to the banks' profitability in Africa. There are many gaps within the literature in these areas in Africa. In the first place, to the best of the researcher's knowledge, the literature on bank risk, corporate governance and bank performance in Africa is scanty or non-existence. To date, there are many studies on corporate governance, yet only a few papers focus on banks' corporate governance (e.g., Adams and Mehran, 2005; Caprio et al., 2007; Levine, 2004; Macey and O'Hara, 2003), even though the key aspects of corporate governance can be applied to banks. The majority of these studies focus on developed and Asian Countries (for example Aebi, Sabato, & Schmid, 2012, Al-Saidi & Al-Shammari, 2013) with very little focus on Africa. Therefore, there is the need to study bank risk, corporate governance and bank performance in Africa.

Secondly, even though different studies have reported on different issues about bank risk, corporate governance and bank performance, there are still some areas that have been given little attention. Some of these areas are the relationship between bank risk and corporate governance, the relationship between bank risk and bank performance, the relationship between corporate governance and bank performance, and the moderating effect of corporate governance on the relationship between bank risk and bank performance. All these areas are fertile grounds which need further research in Africa.

Thirdly, to the best of the researcher's knowledge, in Africa, the literature on the moderating effect of corporate governance on the relationship between bank risk and bank performance is almost nil. Whether there is a positive or negative effect of moderating effect of corporate governance on the relationship between bank risk

and bank performance in Africa still remains a big question, hence the need to conduct a research in this area.

Fourthly, few research on bank risk, corporate governance and bank performance in Africa do not give a broader picture. The reason is that, they concentrate on either small sample size or a single country study. Therefore, there is a need to embark on cross country studies using large sample to determine broader picture on the relationship that exists between bank risk and bank performance, corporate governance and bank risk, corporate governance and bank performance, and the moderating effect of corporate governance on the relationship between bank risk and bank performance in Africa.

1.3 Research questions and contributions

The main research questions are as follows:

Firstly, what is the relationship between bank risk and bank performance in Africa? Secondly, what is the relationship between bank risk and corporate governance in Africa? Specifically, is there positive, negative or no relationship between bank risk and corporate governance in Africa? Or how does corporate governance impact on bank risk in Africa? Thirdly, what is the relationship between corporate governance and bank performance in Africa? Specifically, how do internal corporate governance structures affect bank performance in Africa? Do internal corporate governance structures within African banks increase or decrease the performance of African banks or the internal corporate governance structures have no impact on the performance of African banks at all? Finally, what is the moderating effect of corporate governance on the relationship between bank risk and bank performance in Africa? Specifically, we know that corporate governance affect bank performance, so how does corporate governance moderate the relationship between bank risk and bank performance?

After addressing the above mentioned research questions, this study can contribute to the existing literature in a number of ways. Firstly, this study contributes to the existing literature by extending the debate on bank risk, corporate governance and bank performance. Secondly, unlike the majority of other studies that look at one or two areas, to the best of the researcher's knowledge, this is the first cross country study that combines data on African bank risk, corporate governance and bank

performance. And by using data on African bank risk and bank performance, this study offers the first time cross country study in Africa that gives evidence on the relationship between bank risk and bank performance in Africa. Therefore, this study intends to show how African bank performance is affected by bank risk. Thirdly, by using data on African banks internal corporate governance structures and bank performance, this study portrays a new evidence on the relationship between corporate governance and bank performance in Africa. Therefore, this study gives a new evidence on how internal corporate governance structures within African banks assist in reducing or enhancing the bank performance. Fourthly, unlike single country studies, this study combines data on bank risk, corporate governance and bank performance in many different countries in Africa. As a result, it gives a new evidence on the moderating effect of corporate governance on the relationship between bank risk and bank performance. Therefore this study closes the gab in the existing literature on the moderating effect of corporate governance on the relationship between bank risk and bank performance in Africa. Fifthly, this study can assist both academics and non-academics who are interested in finding information about bank risk, corporate governance or bank performance in Africa. Investors may use the findings from this study to understand African banks. The findings can assist them to diversify their investment portfolios. Banks on the other hand can use the findings from this study to make the right choices about bank risk issues, appointment of boards of directors, and best governance structures to increase bank performance.

1.4 Thesis organisation

This research is divided into ten chapters. The remaining of the work is organised as follows: the first part of chapter two define corporate governance, the second part of chapter two discusses corporate governance in Africa which is followed by some challenges of corporate governance in Africa. Chapter three discusses the detailed theoretical review. The first part of chapter three presents the main theories related to this research, namely Agency, resource dependency and stewardship theories. The remaining of chapter three talks about the theoretical literature review. Chapter four presents the empirical literature review of the study. Chapter five presents the research design and methodology of the whole work. Data sources, criteria for sample selection, measurement of all variables and explanation of control variables are all detailed in this chapter. Chapter five also discusses the OLS assumptions and presents the descriptive statistics. Chapters six, seven, eight and nine present

the empirical results of the relationship between bank risk and bank performance, the relationship between corporate governance and bank risk, the relationship between corporate governance and bank performance, and moderation effect of corporate governance on the relationship between bank risk and bank performance respectively. Chapter ten presents the conclusion and recommendations of the study.

CHAPTER TWO
DEFINITION OF CORPORATE GOVERNANCE AND CORPORATE GOVERNANCE IN AFRICA

2 Introduction

The aim of this chapter is to provide a recognised definition of corporate governance and to discuss the main models identified within the corporate governance literature. The chapter also presents the details of the corporate governance codes of four African countries namely, Egypt, South Africa, Nigeria and Kenya. The chapter also gives brief description of corporate governance in banks. Finally, this chapter outlines some of the main challenges of corporate governance in Africa.

2.1 Definition of corporate governance

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. After the recent financial crises, corporate governance has become an important issue in organisations. The governance of banking has received considerable attention because majority of people consider banks to be the main cause of recent financial turmoil. The concept of corporate governance is very popular in the business world. The returns from investment activities by shareholders of a firm rely partly on corporate governance of the firm, as a result, corporate governance is very vital to shareholders and stakeholders.

The available literature define corporate governance either in a narrowly or broadly way. Cadbury Report (1992) define corporate governance as 'the system by which companies are directed and controlled'. Organisation for Economic Corporation and Development (OECD) Principles of Corporate Governance (1999) also defines corporate governance as 'a set of relationships between a company's management, its board, its shareholders and other stakeholders'. Moreover, one broader definition which is embodied in the Basel Committee on Banking Supervision's (2006) guidance is taken from Leventis et al (2013) and states that

''a banking industry perspective, corporate governance involves the manner in which the business and affairs of banks are governed by the board of directors and senior management which, inter alia, affects how they: (1) set corporate objectives; (2) operate the bank's business on a day-to-day basis; (3) meet the obligation of accountability to their shareholders and take into account the interests of other recognized stakeholders (including, inter alia, supervisors, governments and

depositors); (4) align corporate activities and behaviour with the expectation that banks will operate in a safe and sound manner and in compliance with applicable laws and regulations; and (5) protect the interests of depositors''. Again, corporate governance has also been viewed broadly by Schleifer and Vishny (1997) as 'corporate governance deals with the ways where by finance suppliers to corporations assure themselves of receiving a return on their investment'.

The question is, what constitute a good governance? In 1992, World Bank defined a good governance as the manner in which power is exercised in the management of a country's economic and social resources for development. International Monetary Fund (IMF) (2019) also looks at a good governance as ''a broad concept covering all aspects of how a country is governed, including its economic policies, regulatory framework, and adherence to rule of law''. A good governance can also be described as bureaucratic quality (Reinsberg et al., 2018). The distinction between the IMF and Reinsberg good governance is that IMF looks at good governance as the one with transparency of government accounts, stability and transparency of the economic and regulatory environment for private sector activity, and the effectiveness of public resource management, and the stability and transparency of the economic and regulatory environment for private sector activity (IMF, 1997). Reinsberg et al., (2018) bureaucratic quality on the other hand is measured by perception-based indicator from the International Country Risk Guide (ICRG). This scores high in '' countries where bureaucracy has the power and experts to govern with no drastic changes in policy or interruptions in services of government. Moreover, bureaucracy to some extent tends to be autonomous from political pressure and to have an established mechanism for recruitment and training (Reinsberg et al., 2018).

We now see different types of definitions of corporate governance, the choice of definition is very important since this can affect the structure, focus and interpretation of the subsequent analysis (Brickley and Zimmerman, 2010). Based on the above definitions, it can be established that the emphasis is on shareholders and management. The management are employed by shareholders to manage corporations to bring maximum returns for the shareholders and for the benefit of all other stakeholders. The main concern in the corporate governance concept is how the management manage corporations with the interest of the shareholders in mind to bring the maximum returns expected by the shareholders and stakeholders. This

brings about agency problems which has been a big debate within the corporate governance theory.

2.2 Models of corporate governance

This section discusses the main models of corporate governance within the available literature. The main models of corporate governance identified within the extant literature are the shareholding and the stakeholding models.

2.2.1 The shareholding model

This is the corporate governance model which was originally practiced by US and the UK and it is now being practiced in other parts of the world especially the commonwealth countries. The shareholding model posits that the maximisation of profit through allocative, productivity and dynamic efficiency is the objective of the firm (Maher and Andersson, 1999, Letza et al, 2004). In this model the performance is based on the market value (shareholder value) of the firm. The model also posits that shareholders are the owners of corporations and for that matter they incur greater part of risk, therefore, the main responsibility of corporate managers is to increase the wealth of shareholders (Daily et al, 2003; Ahmad and Omar, 2016; Nwanji and Howell, 2007). Under this model, the shareholders are represented by board of directors and their main function is to safeguard the interest of the shareholders (Fama and Jensen, 1983; Jensen and Meckling, 1976; Bottenberg et al, 2017).

Although some single-tiered boards have executive and nom-executive directors, the board of directors in shareholding model is normally single-tiered and primarily, the board of directors in this model compose of non-executive directors and these directors are elected by the shareholders (Weimer and Pape, 1999; Ahmad and Omar, 2016). In this model the underlying issue of corporate governance comes from the relationship between the principals who are the shareholders and the agents who manage the firm for the principals. This issue arises from the separation of beneficial ownership and executives who make decisions. The owners of the firm are the shareholders, therefore it is the fiduciary duty of the managers to act in the best interest of the shareholders (Letza et al, 2004). However, the behaviour of the firm deviates from the maximisation of profit ideal due to this separation of ownership and executives who make decisions (Maher and Andersson, 1999). This arises because the interest of the principal and the agents differs anytime there is a

separation of ownership and control. Management are not the owners of the business, therefore, they do not pay the entire cost or enjoy the entire benefit of their decisions. As a result, the interest and objectives of the management may be different, such as for instance attachment to a particular investment projects or maximising their salary, although the interest of the investors is to maximise the value of shareholders (Maher and Andersson, 1999).

The main issue of the shareholding model is the principal-agent problem (Letza et al, 2004; Ahmad and Omar, 2016; Franks and Mayer, 1997) and the issue is whether the management can protect the interest of the shareholders effectively under the current institutional arrangement. This principal-agent problem was developed by Jensen and Meckling (1976) among others in the 1970s (Letza et al, 2004). Because few directors and managers are delegated by the shareholders to control and run the firm for the shareholders, the possible risk is that the directors and the managers will serve their own interest at the expense of the shareholders (Letza et al, 2004; Jensen and Meckling, 1976). Therefore, the managers are basically not trustworthy individuals and for that matter they must be monitored. The two main problems which occur in agency relationship which the agency theory is concerned are, first, it is harder and expensive for the performance of the agent to be known by the principal, it is impossible for the principal to verify that the agents behave in appropriate manner. Secondly, because the attitude towards risk of the principals may be different from that of the agents, the two may prefer different actions (Letza et al, 2004; Jensen and Meckling, 1976; Eisenhardt, 1989). Some say that the agency problem was initially identified by Adams Smith in 1776 who noted that joint stock company directors are not expected to be vigilant and cannot handle other people's money as they are with their own (Letza et al, 2004). The 20th century has seen a more serious and wider agency problems since the separation of ownership and control raised the power of managers who are professionals and allow them to pursue their own interest for free (Letza, 2004; Berle and Means, 1932).

The shareholding model offers some suggested solutions to deal with the agency problems. One solution is to find an efficient contract to govern the principal and the agency relationship and the best incentive scheme to align the managers' behaviour while having the interest of the owners (Bottenberg et al, (2017; Letza et al, 2004; Jensen and Meckling, 1976). The second solution to resolve the agency problem is to introduce an incentive systems purposely for rewarding the managers, removal

of restrictions on the market and introduction of voluntary governance code (Ntim, 2009).

One of the characteristics of the shareholding model is its arm's length relationship between the shareholders and the corporations (Weimer and Pape, 1999; Ahmad and Omar, 2016; Franks and Mayer, 1997). Another characteristics of the shareholder-oriented countries according to Bottenberg et al, (2017) is, that the shareholder rights are strongly protected, and in particular, it covers people who hold only minority shares. In the shareholder oriented countries, during control over decisions and assets, other stakeholders of the firm normally have fewer claims (Van Essen et al, 2013; Bottenberg et al, 2017). Other more features of shareholding model are outlined in table one.

2.2.1.1 Criticisms of the shareholding model

Although the shareholding model is dominantly used by the developed countries of Britain and America, and the developing countries of the common Wealth, the model suffers from some weaknesses. In the first place, some argue that this Anglo-American model, due to the market pressures, is flawed by over concern with short-termism, thus market price and expenditures are all short-term, return on investment and corporate profit are also short-term, while management performance is also short term (Letza et al, 2004). Thus one main challenge of corporate governance is that the arrangements of the current institutions allow managers to forgo long-term value and concentrate on short-term profit return (Letza et al, 2004). Another criticism of the shareholding model was made in the 1930s by Merrick Dodd who suggested that businesses and managers of firms have a duty for the society beyond the interest of the owners and for that matter have to engage in social responsibility (Dodd, 1932; Bottenberg et al, 2017). Moreover, with the shareholder approach, the analytical focus on how to resolve corporate governance problem is very narrow, according to Maher and Andersson (1999). The main concern of corporate governance with this approach is focused on the alignment of interest between shareholders and managers and with making sure that the flow of external capital to the firms. However, shareholders are not the only people who invest in the corporation. Success and competitiveness of a corporation are the outcome of teamwork that involves contributions from various providers of resources which include employees, suppliers, investors, distributors, customers and creditors. Therefore, corporate governance and economic performance are affected by

relationships within these different stakeholders in the firm (Maher and Andersson, 1999).

2.2.2 Stakeholding model

This model is used in countries such as Germany, Japan, France and Asian countries. Stakeholding model claims that corporate governance concerns management and directors managing on behalf of stakeholders which involved attention to more than maximising the wealth of shareholder (Nwanji and Howell, 2007). Therefore, according to this model, apart from shareholders, corporations are responsible to a wider constituency of stakeholders (Maher and Andersson, 1999). Unlike the shareholding model, the stakeholding model encourages firms to include the interest of all stakeholders who can affect or be affected by the success of the firm (Ntim, 2009). Based on the stakeholding model, the absence of stakeholder participation in running public corporation and the separation of ownership and control in public organisations brings about governance problem (Ntim, 2009). Customers, employees, creditors and suppliers are part of the other stakeholders. Social constituents is another group of stakeholders and they include local and national government, environmental interest, people in the community in which the firm is sited, and the society as a whole. The view of this model is that corporations and institutions which are socially responsible and they must be managed in the interest of the public (Maher and Andersson, 1999). In this model, performance is judged based on a broader constituency interest in employment, financial performance, market share, and development in trading relations with customers and suppliers (Maher and Andersson, 1999).

There are three categories of this theory namely normative, instrumental and descriptive. The categories are based on their approaches in research (Donaldson and Preston, 1995; Letza et al, 2004) but the two main types are normative and instrumental stakeholder theories. While normative stakeholder theory views stakeholders as ‘ends’, the instrumental stakeholder theory views stakeholders as ‘means’ and it is interested in how the value of stakeholders can be used to improve corporate efficiency and performance (Letza et al, 2004). The normative stakeholder theory originated from the conception of social entity of corporations. It sees modern corporations as something which possesses large scale and scope which require unique professional management capability and a huge amount of capital investments. Share ownership in firms become dispersed and fragmented and

shareholders have turned to be investors instead of owners through stock markets (Letza et al, 2004). Public corporations must be mindful of its social responsibilities including social justice, fairness and employees protection, because firms are involve in various aspects of social life which affect several people in welfare and possible risks (Letza et al, 2004). In this case, firms have become independent entities with their own properties, responsibilities, and purpose (Allen, 1992; Letza et al, 2004). Under the Stakeholder-oriented governance system, different stakeholder groups rights are more equally distributed (Bottenberg et al, 2017).

One of the criticisms of the stakeholder model is that it is difficult to make sure that corporations achieve their broader objectives (Maher and Andersson, 1999). However, Blair (1995) argues against this notion and explains that the argument failed to provide clear guidance to directors and managers to set priorities and decide beneficial use of corporate resources and supply no means to make sure that corporations perform their responsibilities. Therefore, some proponents of corporate governance reforms including academics and policymakers still support this model. Some other criticisms about the stakeholder model recorded by Ntim (2009) are (1) the model gives no effective standard against which corporate agents will be able to judge (2) the stakeholding model has been criticised as being incompatible with the notion of corporate governance and (3) sometimes the model is seen to be vague and also not compatible with the business concept. However the model offers some solutions to the agency problems including offering trust and long-term contractual links between the stakeholders and the firm; employee participation; offering of interfirm co-operation and by introducing business ethics (Ntim, 2009).

Table 1: Outline of theoretical assumptions and features of Shareholding versus Stakeholding corporate governance models

Key point	Shareholding model	Stakeholding model
Theoretical assumptions		
Background	Ownership is separate from control	Different capitalism style
Corporation purpose	Shareholders value maximisation	Stakeholders' wealth maximisation
Economic organisation	Rational economic unit associated with profit motive	Social economic unit associated with stakeholder motive of stakeholder welfare
Governance problem	Agency problem	Stakeholder participation is absence
Source of discipline	External market force	Internal social forces
Cause of problem	Control of shareholders is limited	Failure of governance to represent the interest of stakeholders'
Proposition	Economic market efficiency	Economic social efficiency
Main features		
Structure of board	Executive and non-executive board (one tier)	Executive and supervisory boards (two-tier)
Bank's role	Low	High
Origin/legal system	Anglo-American/common law: US, UK, Commonwealth	Continental Europe/Civil law: Japan, France, Germany
Main Source of finance	Bank's debt	Capital market equity
Role of capital markets	High	Low
Concentration of ownership	Low	High
Time limit of economic benefits	Short term	Long term
Regulatory orientation	Self-regulated	Statutory regulation

Source: Ntim (2009)

2.3 Corporate governance in banks

The attention to the corporate governance in the banking industry has increased in recent years, especially after the recent financial crisis. Even though there are many studies on corporate governance, a few of them focus on corporate governance in banks (for example Anderson and Campbell, 2004**;** Caprio et al, 2007, Andres and Vallelado, 2008; Vasudev and Guerrero, 2014; John et al, 2016). The issue is that many aspects of the corporate governance can be applied to banks. In view of this, the attention to the necessity to study, understand and enhance the corporate governance in the financial services industry has been called by the Basel

Committee on Banking Supervision (BCBS) (Andres and Vallelado, 2008). The fundamental message of the BCBS is the belief that monitoring efficiency increases by a good corporate governance. John et al, (2016) posit that, banks possess special characteristics that impact and interact with the mechanisms of governance. Banking industry is complex in nature and its governance can be said to be different from nonfinancial companies. John et al, (2016) mention that the complexity nature of banks activities, bank regulations, conflict of interest between debtholders and shareholders, and opacity are the main characteristics that make the governance of banks different from nonfinancial companies.

There are other studies that have examined the corporate governance in banks and how they are different from the nonfinancial companies (Mulbert, 2010; Becht et al, 2011, Leaven, 2013; Hopt, 2013). These studies have provided some examinations into the unique characteristics of banks which have given rise to the structures of bank governance that make them different. The first feature is high leverage. It is not uncommon for banks leverage to be more than 90 percent, high leverage of banks is one of the special characteristics that makes them different (Mulbert, 2010; Berger and Bouwman, 2013; DeAngelo and Stulz, 2015; John et al, 2016). In average, the leverage of banks ranges from 87 to 95 percent (Gornall and Strebulaev, 2014; John et al, 2016). John et al, (2016) argue that the probability of banks failures increases as a result of their high leverage levels. Another feature is that the main providers of capital to banks are debtholders and depositors (John et al, 2016). Also, due to the special attributes of banks, Laeven (2013) argues that there is a probability of agency costs to be more evident in financial institutions.

The next unique feature that makes the governance of banks significant is the opacity and the complex nature of banking assets (Mulbert, 2010; John, 2016). The balance sheets of banks are more opaque compared to the other firms and the loan quality of banks is not readily observable compared to physical assets of industrial firms such as machinery which is easily discernible (Mulbert, 2010). The opacity nature of banks makes it tough for banks themselves to assess the riskiness of other banks accurately and the results of this is the cause of the financial crises in 2008 (Mulbert, 2010). Some argue that information asymmetry in banks are more essential (Becht et al, 2011; leaven, 2013). Another feature of banks according to Mulbert (2010) is, that banks are interconnected among themselves since they engage major part of their business with other banks. Therefore, unlike the industrial

firms, the competitors of banks are also very important partners of their business. This situation in banking causes what is known as counterparty risk because the problem of one bank can quickly affect the other bank, the situation is prone to contagion (Mulbert, 2010). Moreover, there are high regulations banks must follow because of their importance on one hand and vulnerability on the other (Mulbert, 2010). For instance, there is a limit on how much risk a bank can take.

The discussion of corporate governance of banks will not be completed without mentioning the corporate governance mechanisms in banks. There are different kinds of corporate governance mechanisms which have been studied by different academics. Some of them are board size, board meetings, the presence of independent directors on a bank board, gender diversity of a bank board, and CEO duality. Some other corporate governance mechanisms in banks also include the presence of chief risk officer on a board, risk committee, busy board, CEO incentives and many more. Like the nonfinancial firms, banks characteristics such as return on assets (ROA), return on equity (ROE) and risk have been used to find out how corporate governance impact on them. For example, board size has been used by many different authors (Chahine and Safieddine, 2011; Nakano and Nguyen, 2012; Adams and Mehran, 2012; Liang et al, 2013; Mamatzakis and Bermpei (2015; Mollah and Zaman, 2015; Salim et al, 2016; O'Sullivan, 2016). Board independent has been used by Pathan et al, (2007), Yeh, et al, (2011), Adams and Mehran (2012), Pathan and Faff (2013), Lian et al, (2013), while CEO duality has also been used by many authors to find the relationship with other variables (for example Grove et al, 2011; Carty and Weiss, 2012; Al-Saidi and Al-Shammari, 2013; Bukair and Rahman 2015). Following the existing literature and based on the availability of data, this study employs five corporate governance mechanisms to answer the corporate governance research questions. The five variables are board size, board independence, role duality, female directors and board meetings.

2.4 Corporate governance in Africa

This section discusses the corporate governance in Africa. The objective of this section is to give a picture of the corporate governance being practiced by some selected countries in Africa. Although this study collects data from 48 countries in Africa to answer the research questions, it is not possible to discuss the corporate governance of all the 48 countries, due to availability of time and information. As a result, four countries have been selected for this discussion. However, at least one

country has been selected from Northern (Egypt), Southern (South Africa), Eastern (Kenya), and Western (Nigeria) part of Africa. As a result of the many corporate scandals around the world, the call for attention to be put on corporate governance in organisations has increased. In addition, there is the need for good corporate governance in listed and unlisted firms not only in Africa but the entire globe. In the western countries, there are corporate governance codes which firms must follow and adhere to. For instance, in the UK, there is corporate governance code, formerly known as the Combined Code, which sets out standards of good practice for companies to follow. In Europe, there is European Union corporate governance rules which companies in member states must adhere to, while there is corporate governance rules in the US and New York Stock Exchange (NYSE) - Corporate Governance Guide which companies must also comply with such rules. In Africa, there are some countries which have already produced and published national corporate governance codes, which companies should follow and adhere to. Details of four corporate governance codes of these African countries are revealed to shed light on the corporate governance in Africa. Although the information provided here come from only four countries, it gives a good picture of corporate governance practices and the level of corporate governance development of the whole Africa. The main themes of each code of the selected countries (Egypt, South Africa, Kenya and Nigeria) which are relevant to this study are presented below.

2.4.1 Guide to Corporate Governance Regulations and Standards in Egypt (March 2011)

This document is compiled and summarised from European Corporate governance Institute, available at www.ecgi.org. The original language of this guide is in Arabic and this was translated and published in 2016. This corporate governance regulations and standards in Egypt addresses the corporate governance principles in the country. These principles are the rules, systems and procedures for the achievement of protection and balance between the interests of the shareholders, board of directors, management of companies and all other stakeholders who are affected by the companies. These regulations are applicable to joint stock companies which are listed on Egyptian Stock Exchange and listed and unlisted financial institutions. The regulations are also applicable to companies that are structured as joint stock companies where their ownership is distributed among a large number of owners and companies that rely on financial institutions for their funding. In addition, closed or family-held joint stock companies and limited liability

companies also have to adhere to these rules as much as is possible. In case it is impossible for family-held joint stock companies or limited liability companies to comply with the governance regulations, they are supposed to apply other alternatives that have lower costs and are more suitable to their financial and managerial capabilities where the alternatives should achieve the same results aimed by these regulations. Due to many benefits achieved by the companies that implement this guidelines and the overall investment climate, it is anticipated that companies and their management, board of directors and shareholders will implement these regulations and comply with them. Similar to the UK corporate governance rule, the Egyptians companies are required to apply all the regulations of this guide and if a company could not apply any of the regulations, the reason (s) why they could not apply must be explained.

Board of directors: The regulation requires the company's board to be in charge of managing the company based on the authorisation of the general assembly. Every board member is considered as a representative of all shareholders and must commit to work in the best interest of the company in every event. It is a requirement that the contract of executive members should not exceed three years. In case this happens, the reason must be disclosed in the annual general assembly where this can be renewed for longer periods.

The regulation advises the board to monitor the company's general situation closely and should never delegate this task to others. Since board of directors need access to information and data in order to do their job effectively, the regulation urges companies to allow board members to have access to information and data anytime they demand for it and irrespective of the format they specify. It tasks the secretary of the board to serve as a link between the management of the company and the members of the board.

The regulation requires the board to prepare annual report and present to the shareholders and should specify the following, in addition to what is required by law: (1) a comprehensive overview about the company's operational and financial Status; (2) prospective vision of the company's activities for the coming year; (3) subsidiaries' activities and operational status (if any); (4) summary about changes in the company's capital structure; (5) the extent of compliance with monitoring and applying the Corporate Governance Regulations, including adequate information about the board and its various committees; (6) the company's Corporate Social

Responsibility (CSR) activities. In addition, the board should set a training plan for its members which must include training on corporate governance regulations.

Board size and meetings: In terms of board size, the regulation requires Egyptian boards to have a minimum of five board members. The code requires all newly appointed board members to have adequate information and data with explanation to assist them to familiarise themselves with every aspect of the company to help them to perform their duties efficiently. With regards to board meetings, the regulation requires company boards in Egypt to meet at least every three months. Companies are required to disclose the number of board meetings and names of people who absent themselves from board meetings or board committee meetings in their annual report. Arrangements, date and time of the meetings shall be convenient for board members to attend. The regulation allows non-executive and independent board members to meet company managers to discuss issues with or without presence of the executive board members.

CEO/Chairman: Unlike the other international codes such as the UK governance code that requires companies to separate the chairman and CEO role, this code in Egypt makes this rule a bit relaxed. The regulation in Egypt requires companies' board to appoint chairman and managing director if they prefer not to have one person holding the two positions. The regulation requires the reasons to be documented in the company's annual report when this occurs, and independent deputy chairman should be appointed to chair board meetings that discuss and evaluate performance of the board. The regulation sets the main role of the chairman and the managing director. While the chairman is in charge of managing the board of directors and achieving its goals, the managing director is responsible for managing the company and reporting to the board regularly. The regulation makes it the responsibility of the chairman to ensure that board members and various committees are familiar with the Corporate Governance Regulations and the methods of their application in Egypt.

However, the regulation in Egypt advises that the evaluation of the board members should be the responsibility of the chairman using specialised bodies or by himself. Such evaluation is never disclosed to a third-party but can be used to identify board members training needs, taking decision for board restructuring, or for improving the board's performance.

Independent directors: The code urges companies to have the majority of their members to be independent non-executives. The alternative is that at least two thirds of the board members should be independent who have technical or analytical skills to benefit both the board and the company. The regulation urges companies in Egypt to form audit committee and must be formed from non-executive members and at least one independent member. The members of the audit committee should be at least three independent members and one should be expert in finance and accounting.

2.4.2 PRINCIPLES FOR CORPORATE GOVERNANCE IN KENYA

This document is obtained and summarised from European Corporate governance Institute, available at www.ecgi.org. This document, principles of corporate governance 2002, was prepared by the Private Sector Corporate Governance Trust in Kenya. In November 1998 and March 1999, consultative corporate governance seminars were held and resolved that a private sector initiative for corporate governance be established in Kenya to formulate and develop a code of best practice for corporate governance. However, these good corporate governance principles are neither prescriptive nor mandatory but are designed as a basis to help companies in Kenya to formulate their own specific codes of best practice. If all corporate entity in Kenya examines its own governance practices, enhance its own governance practices and improves what needs to be improved, then the purpose in which the guidelines are formulated would be served. Chapter three of the document set out sample code of best practice for corporate governance in Kenya. The main information in the code relevant to this study is summarised below:

Board of Directors: The code urges the board of directors to act in the best interest of their company and to exercise leadership and judgement to direct their company to achieve continuing prosperity. Therefore, the code tasks the board of directors to perform certain functions which include (1) directing the company to achieve continuing prosperity (2) acting in the best interest of their company and respecting principles such as accountability and transparency (3) making sure that companies comply with every relevant regulations, laws and codes of best business practice (4) ensuring that there is a good communication with the shareholders and the stakeholders (5) regular assessment of the effectiveness and performance of individual directors including the CEO and (6) to monitor performance indicators and key risk areas and to identify them. In order for the board of directors to fulfil

their functions well the code advises them on certain things such as defining the limits of authority of the top executives and the CEO, defining how the board will operate, having regular meetings and monitor the management performance.

Board meetings: The code discusses about board meetings, but did not state a particular number of meetings that organisations should have each year. The chairman is expected to chair meetings. The chairman must ensure order, good conduct of meetings and giving opportunity to participants to speak to ensure that decisions are made fairly. A company would develop standing orders or regulations to regulate the conduct of board meetings, including how to nominate someone to preside a meeting if chairman or vice chairman is not present to chair a particular meeting**.** The code requires the board to ensure that key members of management are brought into the board meetings so that they can participate and add value to their deliberations and work on behalf of the Board. According to the code, it is the responsibility of the chairperson to prepare agenda for board meetings and chairperson should consult company secretary, the board and the chief executive. Management are expected to agree in advance the calendar of board meetings. Management are also expected to highlight important issues that needs attention of the board, which should be discussed at meetings. The board manual highlights that it is a duty of board directors to attend board meetings and must devote enough time and attention to affairs of their company.

Independent/nonexecutive directors: The code urges corporations in Kenya to ensure that the composition of their board is a balance of executive and non-executive directors to avoid individuals or group of individuals dominating decision making. Like many other corporate governance codes, the code in Kenya requires the independent non-executive directors to be independent of management and free from any business and relationship that can affect the exercise of their ability to bring an independent judgement to bear on issues of strategy. The code also recommends the flowing: (1) that at least one third of the company members in Kenya must be non-executive directors (2) people should not hold many non-executive directors if they hold full time position in another company (3) person with relationship with the director in one company, whether personal or social, cannot become non-executive director in that company and (4) direct customers, suppliers or trading associates a company cannot become non-executive director of that company. The code recommends independent non-executive directors to be

independent of the management and free from anything which will affect their capacity to be independent judge to bear on issues of strategy. Where conflict of interest is likely to occur, for example performance evaluation and directors' nomination and remuneration, independent directors must be relied upon.

CEO/Chairman: The code advises the chairman of the board to be different from the managing director. Therefore, it is obvious that the code supports the split role of CEO and the chairman in order to balance power and authority and to avoid individuals having unfettered powers of decision. However, the code makes it clear that if for some reasons if the two roles are combined, the reasons for combining should be explained publicly. The code sets some responsibility for the chairman which include leading the board, assisting effective management and chair board meetings, making sure that good conduct, order, giving opportunity for members to speak and making sure decisions are made.

2.4.3 KING CODE OF GOVERNANCE FOR SOUTH AFRICA, 2009 (KING III)

This document is obtained and summarised from European Corporate governance Institute, available at www.ecgi.org. King III report is the third report on corporate governance in South Africa before King I and King II. The report sets the code of corporate governance principles and practices for South African companies. The first report was King I in 1994 which was updated to King II in 2002 which has also been updated to King III in 2009 under the chairmanship of Mervyn E. King. The King III became effective from March 2010. The King III report became necessary due to the new Companies Act no. 71 of 2008 ('the Act') and changes in international governance trends. King III report was compiled by the King Committee in South Africa with the assistance from the King subcommittees. In all, there were eleven subcommittees which consisted 106 people established the King III process in South Africa. It is important to note that the King III is also on an 'apply or explain' basis. The King III report applies to all entities in South Africa irrespective of the manner and form of incorporation or establishment and it is also applicable to public, private and non-profit organisations. The report urges all entities to apply the principles in order to achieve good governance. The key areas of King III report of South Africa relevant to this study have been presented below.

Board of directors. The code sets out some responsibilities for company boards. Some of the responsibilities of the board include setting out the strategic direction and control of their company and to promote stakeholder- inclusive approach of

governance. The principle urges the board to act as a focal point for and custodian of corporate governance. In this regard, the role and function of the board should include monitoring the relationship between management and stakeholders and making sure that their company survives and thrives well. It is the requirement of the board to be responsible of the governance of information technology (IT). The board should ensure independent assurance on the effectiveness of IT internal control systems.

The code also urges the companies to appreciate that risk, strategy, performance and sustainability are inseparable. Therefore, the code requires company boards to inform and approve strategy and making sure their strategy is aligned with the purpose of the company and shareholders interest. It is therefore a principle of the board members to act in the best interest of the company. The board is also responsible for setting the levels of risk tolerance once a year, setting the limits for risk appetite and to monitor and make sure that risks taken are within the tolerance and appetite levels. In addition, the board should also ensure a continue risk monitoring by the management and make sure that continues assessment of the risks are performed and a formal risk assessment should be performed at least once a year. The board should also ensure a complete, accurate and accessible risk disclosure to shareholders.

Board meetings: With regards to board meetings, the code recommends that all company boards in South Africa meet at least four times a year. The code requires companies and various committees within companies to record their meetings.

CEO/Chairman: In line with other international code standards, section 2.16 of the principle recommends that every board should select a chairman who is an independent non-executive. The principle also make it clear that the CEO should not hold the position of chairman of the board at the same time. It is important to note that this code does not allow any CEO to become the chairman until three years have elapsed. The board and the chairman together shall consider the number of outside chairmanships held, and it is the responsibility of the board to ensure succession plan for the role of the chairman. The code recommends the members of the board to elect chairman of their board on annual basis and if the chairman is not independent then this should be justified in the integrated report. In order to ensure the chairman is making progress, ability of the chairman to add value and his performance against what is expected of his role should be assessed every

year. Section 2.17 of the code clarifies the appointment of the CEO and requires this responsibility to be taken care of by the board. It is the requirement of the board to ensure that the role and function of the CEO is formalised and to make sure that they evaluate the performance of the CEO against the criteria specified. The board also has to ensure that the succession planning for the senior executives, the CEO and other officers is in place. The CEO shall be responsible for the appointment of Chief Information Officer (CIO) to manage the IT.

Independent directors: Section 2.18 requires the majority of the board members to be non-executive directors and the majority of the non-executive to be independent. The chairman should also be independent and free of conflict upon appointment. If the chairman is not independent, this must be justified in the integrated report. At least one third of the non-executive directors must rotate every year and any non-executive director who is independent serving more than nine years is expected to be subjected to a rigorous review of his independence and performance. Moreover, the code recommends that all committees apart from the risk committee should have majority of non-executive directors of which the majority must be independent.

Board size: The code does not specify the size of the board that companies should use. However, it recommends the board to take into account what size, diversity and demographics make it effective. It recommends that the boards are expected to have a minimum of two executive directors of which one must be the CEO and the other the director in charge of the finance.

2.4.4 EXPOSURE DRAFT OF THE NATIONAL CODE OF CORPORATE GOVERNANCE 2015, NIGERIA.

This document is obtained and summarised from European Corporate governance Institute, available at www.ecgi.org. Nigeria has had different corporate governance codes in the past. 2003 saw a code of corporate governance in Nigeria which was crafted for both public and private companies with multiple shareholders. The 2003 code was brought to enhance corporate discipline, transparency and accountability and the main target was the board of directors. In 2006, code of corporate governance for banks in Nigeria post consolidation was introduced and took effect from April 3rd, 2006. In 2008 code of corporate governance for licensed pension operators was also introduced. Other code of corporate governance in Nigeria

include not-for-profit governance code in 2016 and the exposure draft of the national code of corporate governance 2015.

At the time of writing this section of this dissertation, the latest available corporate governance code found in Nigeria was the 2015 exposure draft of the national code of corporate governance. Therefore, this latest code was used in this work. This code is a Public Sector Governance Code in Nigeria to extend the corporate governance to the public sector. The code is an attempt by the federal government in Nigeria to correct the perceived defect in the 'bottom-up' strategy used in the introduction of corporate governance in Nigeria in 2003, which limited the concept to listed and unlisted public companies and the Anglo-Saxon variant of board structure. This code also came to promote public awareness about corporate governance principles and practices and also to promote the highest standards of corporate governance in Nigeria. This code is applicable to all Public Sector Entities (PSEs) in Nigeria. This code requires the state to let the boards of PSEs to discharge their responsibilities, exercise their authorities and assert their independence.

Board of directors: Part B of the code discusses about the board of directors. The code requires boards to have a clear understanding of its mandate and the implications of its implementation. The code recommends the boards to seek clarity from the government when there is a doubt. The board is expected to execute its mandate to ensure transparent increase in public value and to maximise socio-political benefits. Every public sector entity board is required by the code to work towards a financial target and a dividend policy. On annual basis or more frequently, where appropriate, the government should review the board's mandate. Section 8.9 of the code advises the boards to act with skill, care, diligence and loyalty in the public sector entity's interest. Section 9 also gives advice on the role of the board. According to the code, the board of public sector entity (PSE) has absolute responsibility for the performance and the PSE is fully accountable to government for such performance. Section 9.1 of the code requires the board to give strategic direction to the PSE. The government in agreement with the board, where applicable, appoint the CEO and they ensure the effective succession plan for all key executives and directors is in place and adhered to. The board is expected to make sure that PSEs are fully aware and comply with the applicable laws, regulations, business practice codes, and government regulations.

The code requires the board to be responsible for formulating, monitoring and reviewing corporate strategy, action of major plans, annual budget, policy on risk, and PSEs business plan and identify key performance indicators and risk areas regularly based on financial and non-financial aspects. Section 9.8 of the code mandate the board to monitor and manage the management, board members and the government potential conflicts of interest. The code advises the board and individual directors to abstain from accepting payment of commission, bribery or any form of gift or profit. The boards are also required by the code to ensure that financial statement, which presents the true and fair view of the affairs of PSEs is prepared each year. The board is expected to appraise the performance of the chairman on an annual basis and to ensure that the whole board, its committees and each director's contribution during the entire term of office is effective. The boards in Nigeria are also expected to make sure that there is effective and continuing education programmes for new and existing board members. The code mandate the board to be responsible for IT governance and maintain highest standard of integrity responsibility and accountability and to make sure that it conforms to corporate governance principles while optimising the performance of the PSE.

Independent/non-executive directors: Section 10 of the code gives advice on board structure and composition in which all public sector entities (PSEs) in Nigeria must follow. Section 10.2 advises, that to avoid individual or small group of individuals to dominate the board's decision-taking, PSEs board should constitute both executive and non-executive directors (government institutional directors, independent non-executive directors and nominee directors). It advises that the number of executive directors should not be less than two of which one must be the CEO but the executive directors must not be more than one-third of the whole board size. Also, the number of non-executive directors should not be less than two-thirds of the whole board while the number of independent non-executive directors on the board must not be smaller than half of the number of non-executive directors. The code advises the board to delegate to the executive directors, everyday management of the PSE, and the executive directors are to make sure that they implement the strategic decision of the board effectively and timely.

With regards to non-executive directors, they shall be made up of independent non-executive directors, nominee directors and Government Institutional Directors. Nominee directors are also executive directors in some situations. The code advises

the independent non-executive directors to attend all important committee meetings. The code recommends non-executive directors to perform different functions including the following: the non-executive directors are responsible to give independent and objective supervision and monitoring of the executive management performance which is related to the board's decisions. They shall also be responsible for assisting in resolving conflicts, for instance, the conflicts that will arise due to the executive directors' remuneration and succession. The non-executive directors are also required to participate in the operation of various committees of the board.

CEO/Chairman: In line with other codes of corporate governance in other developed countries such as UK, section 10.7 of the code requires the positions of chairman and the CEO to be separated so that no one in the PSE can hold the two positions at the same time. This means the code prevents a single individual to hold the positions of chairman and CEO at the same time. The code requires the appointment of the CEO of PSEs to be the responsibility of the government and the main job of the CEO will focus on the managing the PSE, making sure that the running of the PSE is effective and efficient in accordance with the board's strategic decision. The CEO is expected to be accountable to the board. Section 11.1 under part C of the code requires the government to appoint one board member who is independent non-executive as the board chairman. It advises that the responsibilities of the chairman and the CEO should be separated, where this becomes impossible then the government should appoint deputy chairman who is independent non-executive director so that no single individual has unfettered decision making powers in the PSE. The code stipulates that the chairman should be the head of the board and has some responsibilities which include ensuring that non-executive directors contribute to the business decisions of the PSE and monitor businesses; ensuring that the CEOs performance is appraised on annual or more frequent basis as the PSE's circumstances may demand, and exercising independent judgement, acting in objective manner and to ensure that every relevant matter is placed on the agenda and prioritised properly.

Board meetings: the code requires that all Nigerian PSE boards and their committees should meet at least once every quarter. The chairman is expected to consult other board members to develop and agree the agenda for the board meetings. All directors are endeavour to attend board and committee meetings.

Attendance of meetings should be an important factor to be taken into account when considering reappointment or re-nomination. According to the code, it is normal for non-executive directors to have a separate meetings, at no cost to the PSE, without the attendance of the executive directors, to discuss crucial matters in PSE best interest, which are of serious concern to the non-executive directors. The board is expected to ensure it receives feedback on the work of its committees and is able to consider their decisions formally. The minutes of the boards and committee meetings are expected to be maintained by the secretary or officer performing that duty.

2.5 CHALLENGES OF CORPORATE GOVERNANCE IN AFRICA

Corporate governance is very important issue due to its implications for socio-economic development in every country. However, there are some challenges that hinder the good implementation of corporate governance in some organisations especially those in Africa. This section seeks to discuss some of the challenges facing the implementation of good corporate governance in Africa.

The first and the most important challenge of corporate governance in Africa is corruption. The association between corruption and firm performance is one of the most topics discussed in the literature of corruption (Sahakyan and Stiegert, 2012). Corruption, the misuse of power by management and officials for eliciting personal gains, is rampant in developing countries. It impedes the nationwide institutions in promoting corporate governance, it weakens institutional foundations which supposed to be there to mitigate agency problems (Lemma, 2015), it increases operational cost at firm level and worsens and distorts corporate governance (Kimuyu, 2007; Lemma, 2015). Corruption is everywhere in Africa and it is reported that corruption and fraud in businesses in East Arica is at its increasing rate (Okeahalam, 2004). Mbaku (2016) posit that corruption is among the most intractable issues in Africa and it is the main restriction to the continent's inclusive economic growth and development. The incident of corruption in Africa cuts across different sectors of African economy. There is evidence of corruption in the mining industry (McClintock and Bell, 2013; Knutsen, 2016), corruption in the banking industry in Mozambique (Hanlon, 2002), and there is an evidence of corruption impacting negatively on public sector spending efficiency within the health and education sectors in Africa (Fonchamnyo and Sama, 2016). Halliburton, oil services giant in US acknowledged that a subsidiary paid a sum of US$2.4m as bribe to

official to gain favourable tax treatment (Okeahalam, 2004). The impact of corruption is very great in Africa, it hinders good corporate governance practices and ultimately affect firm performance.

The second challenge which is similar to corruption is political. Political influence and people of high political positions affect good corporate governance in Africa. The capacity to support good corporate governance in Africa is undermined by some politicians and people of high positions who misuse their powers (Okeahalam, 2004). Some government ministries which are in charge of active monitoring state-owned enterprise boards and serve as independent regulators do not perform their duties well and many are influenced by politicians. Independent bodies such as consumer watchdog are also not developed in many parts of Africa according to Okeahalam (2004). Other problems affecting the corporate governance in Africa include the nature of the weak institutions and the opaque nature of business environment. According to Rossouw (2005), the absence of transparency and market discipline with no sound regulatory environment within some countries in Africa, discourage companies which are owned by private individuals from listing on stock exchanges. Due to these problems, the majority of shareholders are not protected because there are inadequate effective corporate governance mechanisms in place to control managerial behaviour (Okeahalam, 2004). Nigeria for instance, the Judicials such as the courts have failed to hold non-compliance of good corporate governance responsible while there is inadequate legal framework which is mainly dominated by 1969 companies' code, lack of enforcement of the relevant laws, shareholder ignorance and inadequate information management systems in Ghana (Okeahalam, 2004).

The third challenge of corporate governance in Africa that needs mentioning is the lack of effective regulatory and institutional frameworks (Rossouw, 2005) and weak implementation and enforcement of rules and regulations within the continent (Rossouw, 2005; Abor and Fiador, 2013). For instance, there is a rigorous regulations on insider trading listing rules in South Africa but its implementation and enforcement is weak (Ntim, 2013). According to some large body of literature on institutions and developments, the deprivation of Africa is as a result of weak courts, high corruption levels and hostile regulatory environment for private business (Asongu and Nwachukwu, 2016) and judicial supervision including the courts have also failed (Okeahalam, 2004). When the laws and regulations are weak, or if they

are not enforced properly, the result is, that both private and public businesses are mismanaged by the management. This leads to misappropriation of funds by the management and increases agency cost. However, good progress has been made in this regard in South Africa, Mauritius and the Francophone countries (Rossouw, 2005).

Fourth, inadequate resources to monitor the registered companies is another major challenge facing the implementation of good corporate governance in Africa. In order for management of organisations to be monitored effectively demands some training and resources. Inadequate training and resources such as money to hire more non-executive directors for monitoring purposes means that, the management of both private and public firms will manage the firms to suit their own interest. For instance, according to Okeahalam (2004), there is inadequate resources by the Register of Companies in Kenya to monitor their registered companies effectively. In Uganda, one of the governance challenge in their Oil industry according to Van Alstine (2014) is the ability and mandate to involve with oil issues by the local government at the village level. Although some officials such as those at the Natural Resources Departments, involve in an active role, lack of information and resources limit their ability to share and disseminate information with local communities (Van Alstine, 2014).

Last but not the least challenge of corporate governance in Africa is inadequate disclosure of good corporate governance practices. Using a sample of 169 South Africa listed firms from 2002 to 2007, Ntim et al (2012) reported that disclosure of good corporate governance practices on both shareholders and stakeholders has positive effect on firm value. This provides the evidence that disclosing corporate governance practices is good for firms and increases shareholders value. However, undisclosed cases in Africa such as payment and bribery are on a very high record and this continue to undermine legal and corporate governance in Africa (Okeahalam, 2004). The worst scenario is that, in some parts of Africa, some foreign officials are prevented to disclose what they pay to government officials as bribes because they would face reprisals (Okeahalam, 2004).

2.6 CHAPTER SUMMARY

The chapter has looked at some definitions of corporate governance, the main models of corporate governance, codes of corporate governance of some selected countries in Africa (Egypt, South Africa, Nigeria and Kenya) and some challenges of corporate governance in Africa. It has been observed that even though corporate governance has been defined in a broader or narrow way (for e.g. Cadbury Report, 1992; Mayer, 1997; OECD, 1999), there is still not a common definition of corporate governance. The models of corporate governance being used are stakeholding and shareholding. With regards to the codes of corporate governance, it has been observed, that African countries are improving their corporate governance standards which is reflecting in their codes and principles of corporate governance. These principles are in line with many other international principles of good governance. By adhering to the principles of international standard, there is a possibility of better and standard corporate governance structures across the length and breadth of the whole continent of Africa. The major concern is how the various institutions in Africa can work efficiently to enforce the use of the codes and principles of corporate governance in Africa. The main challenges of corporate governance in Africa has been summarised as corruption (Rossouw, 2005), weak implementation and enforcement of rules and regulations (Rossouw, 2005; Abor and Fiador, 2013), inadequate resources to monitor companies, political influence of those of high political positions and inadequate disclosure of good corporate governance practices.

CHAPTER THREE
THEORETICAL LITERATURE REVIEW

3 Introduction

In this chapter, we discuss the extant theoretical literature on bank risk corporate governance and bank performance. In the first place, this chapter discusses the main theories that this study is based on, namely agency, stewardship and resource dependency theories. Secondly, the chapter reviews the theoretical literature on the relationships between bank risk and bank performance, bank risk and corporate governance, corporate governance and bank performance, and the moderation effect of corporate governance on the relationship between bank risk and performance. This is followed by the chapter summary.

3.1 Theoretical literature review

This subsection discusses the relevant theoretical review that provides a link between bank risk, corporate governance and bank performance. Previous studies have used different theories that provide a link between corporate governance characteristics, bank risk and financial performance. Some of the popular theories used by previous studies include signalling theory, agency theory, stewardship theory, corporate legitimacy theory and resource dependency theory. For the purpose of this work, the main theories which are used and discussed are the agency theory, stewardship theory and resource dependency theory.

3.1.1 Agency theory

The first theoretical underpinnings of the research are enshrined in the popular agency theory in business. Jensen & Meckling (1976) define agency theory as the theory that addresses the relationship where in a contract 'one or more persons (the principal (s)) engage another person (the agent) to perform some services on their behalf which involves delegating some decision making authority to the agent. The theory looks at how to ensure that agents (executives, managers) act in the best interests of the principals (owners, shareholders) of an organisation. According to Jensen & Meckling (1976), there is tangible reason to accept that the best interests of the principal will always not be acted in by the agent if the two parties to the relationship are utility maximizers. In this case, how to write contracts so that an agent's performance can be measured and incentivized so that they act with the interest of the principal in mind is the main concern of agency theory as proposed by Jensen and Meckling (1976). Agency theory is concerned about two main problems, how to align the conflicting interests between managers and owners and

how to make sure that agents carry out in the way that the principals want then to (Al-Saidi & Al-Shammari, 2013). The problems can arise when managers make self-interested decisions and manipulate performance information, for example by moving numbers around to create good performance picture. The answer to the problems is by making managers part owners of the firm and to make sure that managers act in the best interest of the owners (Bendickson et al, 2016, Eisenhardt, 1989).

From the point of view of agency theory, the implication for corporate governance is, that adequate monitoring is required to apply to protect and minimise the conflict of interest that exist between management and shareholders, between shareholders, and between debt-holders and firms such as conflict leads to agency cost **(**Fama & Jensen, 1983**;** Al-Saidi & Al-Shammari, 2013). Jensen and Meckling (1976) posit that the principal can minimise divergences from his interest through creating suitable incentives for the agent and through incurring cost of monitoring intended to limit the deviant activities of the agent. This is to make sure that the agent makes the best decisions from the point of view of the principal (Jensen & Meckling, 1976). By doing this the principal incurs some cost often known as monitoring cost. Also, in certain circumstances principal may require the agent to use resources (bonding cost) to make sure that certain actions which will harm the principal will not be taken by the agent (Jensen and Meckling, 1976). Again, according to Jensen and Meckling (1976), there is a divergence between the agent's decisions and decisions that miximise the principal's welfare. The dollar value of the decrease in the principal's welfare as a result of this divergence is also part of the cost to the agency relationship which is known as residual loss (Jensen and Meckling, 1976). Therefore, the sum of the monitoring expenditures by the principal, the bonding expenditures by the agent, and the residual loss is the agency cost (Jensen and Meckling, 1976).

Corporate governance mechanisms affect bank risk and bank performance in various ways. This means that if bank managers, CEOs and directors of Africa banks who are described as agents, according to this theory, are to do their work well, they should be able to manage and reduce the bank risk of the banks in Africa which will reflect on the performance of these banks by increasing their profitability.

However, agency theory faces some criticisms. Nyberg et al. (2010) argue that the incentive alignment prediction of agency theory has not, so far, been empirically

proven in studies of CEO (who are agents) compensation. Another study, by O'Reilly and Main (2010), also questions the lack of empirical support for linking executive pay with firm performance. They believe executive pay may be more likely a function of management power and influence; that is, more of a behavioural than an instrumental phenomenon.

3.1.2 Stewardship theory

Stewardship theory is contrary to agency theory and it argues against the opportunistic self-interest assumption of agency theory (Hendry & Kiel, 2004). In short, the stewardship theory discards the basic notion of conflicting interests that the agency theory has been associated with (Abels & Martelli, 2013). The stewardship theory posits that management should be empowered to run firms since they are trustworthy individuals and are good stewards of the resources entrusted to them (Donaldson & Davis, 1994; Nicholson & Kiel, 2007) and can make decisions that benefit the whole organisation rather than personal gratification (Abels & Martelli, 2013) and they are motivated to act in the principals' best interest (Davies, Schoorman & Donaldson, 1997). Since the stewardship theory recognises the presence of a relationship build on trust between principals and agents, it reduces the cost of monitoring and controlling the behaviour of the management (Abels & Martelli, 2013). In this theory, the main model is based on steward whose behaviour is ordered such that pro-organisational, collectivistic behaviours have higher utility than individualistic, self-serving behaviours. The behaviour of a steward will not move away from the interests of the organisation that he/she is working for, and self-serving behaviours will not be traded or substituted for cooperative behaviours by the stewards (Davies, Schoorman & Donaldson, 1997). The steward puts higher value in cooperation than defection even if there is no alignment of interest of the principals and the stewards (Davies, Schoorman & Donaldson, 1997). The stewardship theory also posits that since the steward seeks to achieve the organisational objective including profitability and sales growth, there is a collective behaviour of the steward. Ultimately, this behaviour is beneficial to the principals through positive effects of profit on dividends and share prices (Davies, Schoorman & Donaldson, 1997). The wealth of the shareholder is maximised by the steward through firm performance, because, by doing so, the utility functions of the steward are maximised. The stewards also believe that there has been an alignment of their interest with the corporation and its owners (Davies, Schoorman & Donaldson, 1997). Contrary to the agency theory, stewardship theory proposes that when power

is concentrated in a single individual and CEO is also the chairman of the board, there would be an attainment of superior performance of the firm (Donaldson & Davis, 1991). As a result, the supporters of stewardship theory argue that there would be a superior return to shareholders than the situation where the CEO and chairman roles are separated (Donaldson & Davis, 1991).

3.1.3 Resource dependence theory

The third and final theory that this study is based on is the resource dependence theory (Pfeffer & Salancik, 1978). This theory posits that organisations are self-insufficient since they rely on the resources at their external environment which are in possession of other organisations in order to achieve their organisational goals (Pfeffer & Salancit 1978, Voss & Brettel, 2014). Therefore, for an organisation to survive depends on the transaction with the external environment to reobtain the required resources (Pfeffer & Slancit, 1978; Bergmann et al, 2016). The resource dependence theory suggests that, organisation that do not have the critical resources in order to achieve the desired goal will have to seek to form a relationship with other organisations in order to secure the required resources (Pfeffer & Salancit, 1978; Singh, Power, & Chuong, 2011). The theory further suggests that, there are some social –legal apparatus that define and control the nature and give a limit of the relationship between an organisation and players in its environment (Pfeffer & Salancit, 1978; Singh, Power, & Chuong, 2011). Power and dependence play a key role in understanding the relationships between inter-organisations. The balance of power is in favour of the organisation that has (resources) what other organisations need (Malatesta & Smith, 2014). If a particular resource is more critical, the stakeholders can have more powers to execute over the organisation by sheer refusal to make the resource obtainable to that organisation. In view of this, if a particular organisation fails to constantly assess their resources usefulness and quality, they are unable to effectively perform their mission, create public value or react to changes coming from the environment (Frączkiewicz-Wronka, & Szymaniec, 2012).

For a competitive advantage to be achieved, an organisation has to secure resources which are available in the environment but are in possession by the stakeholders, which becomes likely if the organisation can present its own resources adequately (Frączkiewicz-Wronka,& Szymaniec, 2012).

Due to division of labour, managers also depend on the resources which are provided by their subordinate employees like organisational connections, work effort and expertise (Voss & Brettel, 2014). Managers use control to make sure that the resources which their firm is dependent on are available. This control increases the availability of critical resources needed by the organisation, which has positive effect on performance of a firm (Voss & Brettel, 2014).

With regards to board of directors, the theory portrays that the board is a vital link between the firm and the important resources that the firm needs to maximise performance (Nicholson & Kiel, 2007). Some of the resources are (1) the board can provide a firm a link to capital and business elite (2) the board can provide a link to important information to the firm (3) the board can provide a link to customers, suppliers, competitors and other significant stakeholders (Nicholson & Kiel, 2007) (4) Non-executive directors on the board provide the firm a link to expert and contacts and also give them prestige (Haniffa & Cooke, 2002). As a result, it has been argued that a firm with high level of links to the external environment is able to give a company with a high level of access to different resources including information, capital, customers and suppliers (Nicholson & Kiel, 2007). According to Nicholson and Kiel (2007), if resource dependency theory holds then two patterns are expected to happen. (1) A firm with high level of links to its external environment has more access to resources and as a result, experience high corporate performance and (2) A frim with low level of links to its external environment has little access to resources and as a result, experience low` corporate performance.

Briefly, the agency theory proposes that because there is separation of ownership and control in the modern organisations, it is more likely that the management or the agents will consider their interest and personal gain first instead of working with the interest of the owners in mind. This situation is the result of agency problem. The stewardship theory opposes the criticisms made by the agency theory that the agents will work for their personal gains without the interest of the shareholders. Instead, the stewardship theory recommends that the agents are good stewards, therefore, they should be empowered and entrusted to manage the resources and run the firms for the owners without any monitoring cost. Resource dependency theory on the other hand places emphasis on the corporate governance structures within institutions. For instance, resource dependency theory suggests that directors on the board will ensure that managers are monitored effectively and at the same

time they serve as a link between the firm and the critical resources required for the maximisation of the firm financial performance.

3.2 Theoretical Literature review on bank risk and bank performance

Banking activities are complex in nature and they are involved in different kinds of risks which affect the performance of the banks. Banking risk and its performance are interrelated, and a proper definition of these concepts forms the basis of risk management (Apatachioaea, 2015). One way that risk can be defined is the event of uncertainty which can cause loses or situation which occurs through the banking activities which cause adverse effects on the activities by worsening in asset quality, reduction in profits which impact on the function of the bank (Apatachioaea, 2015). Within the banking industry, risk is refer only to negative deviations from expected outcome and it is associated with the probability of loss while opportunities are associated with positive deviations (Apatachioaea, 2015). In the banking industry, any operations, transaction or decision making can bring about risk. Uncertainties are associated with every activity of the bank, therefore, all operations of banks contribute to the total risk of a bank. The risks in banks are associated with financial risk due to the nature of the business of banks; they are the highest affected by deteriorating financial and economic condition in a country (Apatachioaea, 2015). According to Apatachioaea (2015), the risks of banks can be put into two categories. The first category is called permanent risks, which come through a source that may change permanently. The second category is the events or unique risks which occur due to specific, discontinuous source.

There are different sources of risk in banking, and these sources have been grouped under credit risk, liquidity risk, market risk, operational risk, strategic risk and legal risk (Fayman & He, 2011; Apatachioaea, 2015). Credit risk is the failure or inability of a customer to pay back the principal and or interest on a loan on the agreed time with the bank. The inability of a bank to acquire the required short term liquidity is the liquidity risk (Sufian & Chong, 2008; Arif, & Nauman Anees, 2012; Apatachioaea (2015). It should be the top priority of the bank management to ensure that sufficient funds are available to meet future demands of borrowers and providers at the cost which is very reasonable since liquidity risk can impact on bank's capital and earnings negatively. If a bank is unable to liquidate its asset at reasonable price, it faces liquidity risk and a very significant withdrawal of deposits can cause a liquidity trap for a bank (Jeanne & Svensson, 2007; Arif, & Nauman Anees, 2012). Other

factors that can cause serious liquidity issues for banks are extensive commitment based, and long-term lending (Kashyap et al, 2002; Arif, & Nauman Anees, 2012). When banks have large commitments, they have to honour them when they are due. Also, liquidity problems arises when a bank have massive exposure in long-term lending in times of huge liquidity pressure (Arif, & Nauman Anees, 2012).

Market risk on the other hand is the risk of losses which occurs through the bad evolution of exchange rates, interest rates and market prices of primary and derivative financial instruments held by a bank in transactional portfolio (Chen et al, 2013; Apatachioaea, 2015; Ekinci, 2016; Srivastav & Hagendorff, 2016). Market risk consists of currency, equity, commodity and interest rate risks (Ekinci, 2016). The available literature gives little agreement concerning the impacts of changes in interest rates on the performance of banks. On one hand, if the interest rates of banks do not have full flexibility, they will be exposed to repricing and yield curve risk if they borrow short-term while lending long-term. On the other hand, balance sheet interest rate changes can be protected by banks with the application of risk techniques such as interest rate risk hedging by using interest rate derivatives (Gorton and Rosen, 1995; Purnanandam, 2007; Ekinci, 2016). In the banking market, the risk that a new product, company or competitor changes the level of competition is called strategic risk, while legal risk is the risk of losses as a result of unforeseen changes in regulations. Operational risk is the likelihood of a loss on account of inadequate internal processes, employees, systems or external events Apatachioaea (2015).

Among the risks that banks face, credit risk is the most significant risk exposure as a result of the strong link with the profitability of the bank and growth of the economy (Ekinci, 2016). When banks make proper investment decisions, they get the greatest returns on those investment decisions at the least credit risk. Banks reduce their profit and equity if a loan is not repaid, and if the bank is not able to pay off its liabilities it can lead to bank failure (Ekinci, 2016).

Bank risks are managed to target the performance of the bank and the main aim of risk management activity is to optimize the relationship between risk and profitability. From the viewpoint of shareholders, bank performance is finding profit by minimising cost while maximising profit. In perfect competition, according to economic theories, profit maximisation is equal to minimizing costs (Apatachioaea, 2015).

Banking risks which include liquidity, credit, market and operational risk have huge impact on the performance of banks. In this regard, a large body of literature has looked at the impact of bank risk on performance (Tan, 2016; Zhang et al, 2013; Kamua et al, 2015; Al-Tamimi et al, 2015; Arif & Nauman Anees, 2012). These risks come in different forms. For instance, the absence of a deposit base may cause a bank to have a higher liquidity risk. Brunnermeier (2009) adds that a bank reliance on short term debt (for example repurchase agreements) can increase their liquidity risk. Arif & Nauman Anees (2012) contend that bank with liquidity problems may find it very difficult in meeting the depositors demand. In effect, liquidity risk faced by a bank can have negative impact on a bank's earnings, capital and ultimately performance. Under extreme situations it may lead to a collapse of a bank. It is therefore important for banks to maintain good levels of liquidity, since banks that have higher levels of liquidity may undertake lower risk in the event of unforeseen financial shock (Mamatzakis & Bermpei (2014).

On the other hand, a non-performing loan (NPL) leads to credit risk. A loan is said to be non- performing when principal and interest payment are overdue by 90 days or more (Misman et al, 2015). Banks may experience a lower margin of profit if they have problem with NPL and if the situation becomes critical, it can lead to a crises. It appears that banks that have lower risk of default perform more efficient than those that have higher risk of default.Therefore effective risk management in banking is required (Misman et al, 2015). One of the areas that suppose to be given attention as far as bank risk and performance are concerned is investment banking. The reason is that due to the complex nature of the operations of these banks, they are exposed to very high risk which impact on their performance. (Demirguc-Kunt and Huizinga (2010) and Mamatzakis and Bermpei (2014) argue that higher volatility of earnings and higher risk are associated with higher fee-income for investment banks. Demirguc-Kunt and Huizinga (2010) added that the risk investment banks carry is higher because of their involvement in non-interest income activities than commercial and saving banks. As a result of high risk of investment banking activities, Altunbas et al, (2010) argue that this causes increase in write-offs and a reduction of their banking activities which causes a reduction in their performance and capital base. In order to reduce the negative impact cause by risk on bank performance, banks require resources to find effective risk management procedures. If higher risk occurs due to unforeseen event, banks may respond to it by spending more resources to manage the risk. As a result of this, a rise in bank

costs can happen due to the procedure. In accordance with the 'bad luck hypothesis', which states that a negative relationship exists between risk and performance (Berger & De-Young, 1997), it has been identified that banks that are not efficient are nearer failure.

3.3 Theoretical literature review on corporate governance and bank risk

3.3.1 Introduction

Bank risk and corporate governance are much related since a good corporate governance practice can reduce bank risk whiles bad corporate governance practice can increase bank risk. Therefore, bank risk can be said to be dependent on corporate governance. The interest in how banks go about mitigating their risk taking behaviour in recent years have attracted the attention of academic and regulatory bodies (Srivastay & Hagendorff, 2016). Board of directors have a final duty for management of risk and setting the tone for a bank's risk-taking culture at the top. The board makes sure that the bank is stable through monitoring executives on the impact of policies of the firm on the risk of bank, assessing if their current and future risk exposures are in line with the risk appetite, and designing executive incentives to promote prudent risk taking (Srivastav & Hagendorff, 2016). This section looks at different board characteristics that affect bank risk and particular attention is given to board size, board meeting, independent board directors, presence of female directors on board and CEO/chairman or role duality.

3.3.2 Board size and bank risk

A large body of literature has examined banks board size (e.g. Nakano & Nguyen, 2012; Upadhyay, 2015; Chan et al, 2016; Mathew et al, 2016; Switzer & Wang, 2013; Pathan 2009; Rachdi et al, 2013; Huang & Wang, 2015). Only a few of the studies have examined board size of banks and bank risk (Switzer & Wang, 2013; Pathan 2009; Rachdi et al, 2013; Chan et al, 2016). Due to the complex nature of banking activities and sometimes regulatory recommendations which demand more board committees, banks tends to have larger boards than non-financial firms (Adams & Mehran, 2012; John et al, 2016). The main question is whether board size has impact on bank risk and performance. Answer to this question by different researchers has been inconclusive. Theories such as agency and resource dependency hold opposing views on the impact of board size on bank risk and bank performance. Agency theory proposes that bigger board is not efficient because bigger board has problems with communication and coordination, internal clashes

among the directors and director free rider problems (Jensen, 1993). In addition, CEOs can control bigger boards easily because with a bigger board, an individual director's incentive to acquire information and managers is low (Jensen, 1993). However, the resource dependency theory proposes that bigger board is good for firms because firms with diversified board members could give great quality advice, greater expertise and access to resources (Zahra & Pearce, 1989). From the resource dependency perspective, bigger board will work best to reduce the risk of banks because of the collective ideas and opinions from many different diversified board members. Moreover, insiders will find it difficult to control relatively bigger board (Switzer & Wang, 2013). According to Wang and Switzer (2013), there is a negative association between bank credit risk level and board size since larger board will reduce the probability of default. Myers (1977) contends that financial distress firms find their investment policies constrained, and as such there is a very likelihood of default. In the event where credit risk is paramount and a firm is in a distress state, diversified and larger boards may be of benefit (Switzer & Wang, 2013). Upadhyay (2015) posits that moderate corporate decision is made which minimises firm risk when the board size is large. A firm with debt equity value is akin to a call option on the total value of the firm. However, the only situation where such call option will be exercised is when the value of the debt claims is less than the value of the assets. When firm risk is reduced, the value of this call option to equity holders will also be reduced by larger boards. This realises that this call option is less likely to be exercised by managers in firms with larger boards; these firms may be relatively safer to debt holders and ask for lower risk premium (Upadhyay, 2015).

3.3.3 Female directors and bank risk

The big question here is 'does gender play a role in bank board and risk relationship?' The debate of whether the presence of female directors on executive board can have negative or positive effect on the risk of firms such as banks is still ongoing. We contribute to this literature by investigating whether gender composition of a board has impact on bank risk. Different firms in some countries have come under intense pressure to increase the number of female directors on their board. Some countries in Europe including Italy, Belgium, France and Norway have passed legislation mandating increase in female representative for some firms (Sila et al, 2016). The impact of female directors of a bank board on banks risk is still unclear, understudied and the available empirical evidence is mixed and inconclusive. While some studies suggest that the presence of female directors on

bank board reduces risk of the bank, other studies argue that this is not the case. Due to this, few papers have tried to find out whether on average loans granted by female officers have statistically lower default rate (Agarwal and Wang, 2009). Adams and Ferreira (2009) and Farag and Mallin (2017) document that it is important for a firm to include a mix of people who have the necessary experience and background to be able to better monitor and evaluate management and business strategies. One best way to mix people on the board is to diversify the board members to include female directors. It has also been documented that improvement in board's monitoring role can be increased and lower agency cost can be experienced with the presence of female representation on the board (Carter, 2003; Farag & Mallin, 2016; Farag & Mallin, 2017).

Female board diversity which is supported by resource dependency theory, discusses about the benefit and impact of board diversity that a firm may derive (Carter et al, 2010; Farag & Mallin, 2017). Resource dependency theory posits that, the inclusion of female directors on board provides many different resources and benefits (Carter, 2010). Mateos de Cabo et al, (2012) added that the presence of female directors on executive board brings new opinions and perspectives to improve the firm performance that would not happen if the board was to be homogeneous. This theory also posits that diversity possesses the chance to improve information obtained from the managers as a result of the unique information held by diverse directors (García-Meca et al, 2015). Differences in gender and risk taking behaviour have been looked at by a number of studies and the consensus is that women are more risk averse in financial decision making than men (Schuber et al, 1999; Mateos de Cabo et al, 2012; Berger et al, 2014; Nelson, 2015, Sila et al, 2016). One reason to support this is that the likelihood that firms that consist of female directors will take aggressive acquisition strategies is less and even if they do they offer less bid premium (Levi, Li & Zhang, 2014). Levi, Li & Zhang (2014) add that the presence of female director on executive board is important since woman seems to be less likely to destroy the value of the shareholder and as a result do not take risk unnecessarily. At the board level, board gender diversity is important since diversified boards are more likely to understand their customers and stakeholders, they are likely to be effective, bring fresh ideas, vigorously challenge and broad experience, according to Mathew et al, (2016). As a result, a better decision making is achieved and in turn leads to a lower bank risk levels. However, Adams and Funk (2012) posit that the presence of a woman on the board does not

lead to an increase in risk-averse decision making because compare to men, women directors are more risk loving. Also, Farag and Mallin (2017) provide the evidence that male and female executive directors may possess the same behaviour of risk taking and that female directors on management board are not risk averse. Again, Farag and Mallin (2016) show that, compared with their male counterparts, female CEOs are not risk averse.

3.3.4 Board independence and bank risk

We contribute to the literature by examining the` impact of independent board directors on bank risk. The extant literature on board independence have focused mostly on non-financial firms (for example Bhagat & Black, 2002; Ramdani & Witteloostuijn, 2010; Muniandy & Hillier, 2015; Liu et al, 2015; Fuzi et al, 2016) while few concentrate on banks (for example Pathan and Faff, 2013; Yeh et al, 2011; Adams & Mehran, 2012; Liang et al, 2013). Out of the entire literature on bank and board independent directors, only a few are related to bank risk. This causes for further investigation, and one of the reasons may be due to unavailability of data on bank risk and independent board directors. The board of directors suppose to be a mixture of executive and non-executive directors and the two groups of directors should act in the best interest of the shareholders. Regulators and corporate governance codes also recommend a balance of executive and non-executive members on a board (Fuzi et al, 2016; Mathew et al, 2016). The non-executive directors are unable to perform their functions effectively unless they are independent from the management (Fuzi et al, 2016). The independent or the non-executive directors are entrusted by the shareholders to represent them at board meetings to provide an unbiased business decisions (Fuzi, et al, 2016) and to help reduce agency problems (Wang et al, 2014; Chang et al, 2016; Fuzi et al, 2016). It is suggested that a large number of independent directors can decrease the behaviour of bank's risk-taking (Wang et al, 2014; Chang et al, 2016). It has also been argued that independent directors provide extra monitoring in order to reduce the risk of management inflicting danger on the firm (Pathan, 2009; Chang et al, 2016). Also, there is a high probability that a firm's operations will be monitored and controlled by independence directors and they are more likely to improve corporate transparency since the independent directors need to conserve their reputation as professionals (Fama and Jensen, 1983; Chang et al, 2016).

However, Coles et al, (2008) posit that a bank board with higher number of independent board numbers will reduce the number of board seats available to executive directors and this can prevent the flow of information between the management team and the boards. Jensen and Meckling (1976) add that in order to maximise the shareholders wealth, a bank board with more independent directors may involve in high risk-taking.

3.3.5 Role or CEO duality and bank risk

We contribute to this literature by examining the effect of combining CEO and chairman role on bank risk. Role or CEO duality can be explained as the situation in which the same person holds the position of Chairman and CEO on a company's board at the same time (Dharmadasa, 2014; Krause et al, 2014). Different theories have different arguments on having the same person as CEO and chairman of a company at the same time and the separation of the two roles. Stewardship theory establishes that the same person occupying the two seats as CEO and chairman reduces the conflict during decision making (Syriopoulos & Tsatsaronis, 2012). This theory also posits that strong and unified leadership with a good strategic direction is achieved when one person is holding the position of CEO and chairman at the same time. Stewardship further argues that the CEO duality helps to make timely and best decisions within a firm since the CEO knows how to run the business because of the in-depth knowledge of the business already gained by the CEO (Brickley et al. 1997; Syriopoulos & Tsatsaronis, 2012). Contrary to the stewardship theory argument, the agency theory argues that separating the CEO and chairman roles is a good corporate governance practice when considering the interest of the shareholders and this aids effective control and monitoring of management (Jensen, 1993; Syriopoulos & Tsatsaronis, 2012). Also, CEO duality constraints independence of the board of directors. Furthermore, it is the responsibility of the board of directors to manage the process of firing, hiring, compensating the CEO and evaluating. The performance of the chairman should not be assessed by the same person, otherwise it will be self-evaluated (Jensen, 1993; Syriopoulos & Tsatsaronis, 2012). According to Switzer and Wang (2013), credit risk level will reduce with the situation where the CEO does not hold board chairman position at the same time. It has also been argued that when the chairman and CEO roles are separated, it will result to reducing firm risk and improve firm performance (Syriopoulos & Tsatsaronis, 2012).

3.3.6 Board meetings and bank risk

A large body of literature has discussed board characteristics of firms (Kaymak and Bektas, 2008; de Villiers, 2011; Al-Saidi & Al-Shammari, 2013; Dharmadasa et al, 2014; Rodriguez-Fernandez et al, 2014; Jermias, 2014; Bukair & Rahman 2015; Gaur, 2015; Issarawornrawanich, 2015). Only a limited number of literature focus on bank board characteristics and meetings (Kaymak & Bektas, 2008; Aebi et al, 2012; Al-Saidi & Al-Shammari, 2013; Liang et al, 2013; Salim Arjomandi & Seufert, 2016). There is a clear indication that board meetings have effect on risk and financial performance of the bank due to the important role in which a firm's meetings play in a way in which organisations are controlled and managed. Agency theory by Jensen & Meckling, (1976) states that the relevant and important of frequent corporate board meetings is the increased capacity to advise effectively, discipline management and monitor them, and the result is the improvement in the corporate financial performance. The theory also posits that, the frequency of board meeting shows that the monitoring by the board is active (Conger et al, 1998; Grove et al 2011). Other supporters of this argument are Adams and Ferreira (2007), who contend that the avenues in which board of director can get vital information which are firm-specific to enable them perform their monitoring role, which include monitoring of the risk-taking activities is board meetings. Battaglia and Gallo (2015) add that when a board meets more frequently, the board members get closer control over the managers. Also, according to Grove et al (2011), the banking business is complex and therefore require active role and effective board monitoring. Moreover, Adams and Mehran (2003) argue that bank board is bigger and its committees are more, and in order to operate effectively it needs to meet very frequently. However, frequent board meeting has been opposed by Vafeas (2009). Vefeas (2009) argues that, firm performance can be affected by frequent board meetings through agency cost (refreshment, managerial time, travel expenses meeting fees, etc.).

3.4 Theoretical literature review on corporate governance and bank performance

3.4.1 Introduction

Due to the experience of the recent financial crisis, more attention has been given to the corporate governance of banks. As a result, the financial crises has restored the attention to the need for improvement of the corporate governance so that financial stability can be ensured (Chitan, 2012). The Basel Committee on Banking Supervision (BCBS) has requested that an attention to be given to the importance of studying, understanding and improving the financial entities corporate governance (Andres & Vallelado, 2008). The core of the message by BCBS is the believe that corporate governance is good for sound financial system which results to economic development and the committee also believes that good corporate governance can increase banks monitoring efficiency and performance (Andres & Vallelado, 2008). In this study, the board characteristics which have been reviewed in relation to corporate governance and bank performance are board meetings, board size, presence of female directors, CEO/Chairman role duality, and independent directors.

3.4.2 Board meetings and bank performance

Frequency of board meetings according to the agency theory context, may indicate active monitoring by the board (Grove et al, 2011; Conger, Finegolda, & Lawler, 1998). Frequent board meetings increase the top management supervision, and the more important the advisory role which can increase the performance of a firm. Also, the complex nature of the business of a bank demands a more active role from the board. On the other hand, difficult decisions and financial distress times, the number of times board meet may increase (Liang et al, 2013). Grove et al, (2013) point out that frequent board meetings indicate a more effective monitoring role, which might mitigate agency costs and consequently can result to improvement in firm's financial performance. Jensen and Meckling (1976) argue that corporate board gives advice, supervision, and seek accountability from management so that the interest of shareholders is pursued by the managers**.** There is an indication, that corporate board meetings have impact on their financial performance because of the significant role in which corporate board meetings play in the way in which companies are managed and governed. Vafeas (2009) argues that one of the important attributes that can have some vital implications for firm value is the frequency of board meetings. From the perspective of the agency theory by Jensen

and Meckling (1976), frequent corporate board meetings come with increased capacity to advise effectively, discipline management and monitor them, and as a result improve the corporate financial performance. Due to the complex nature of the banking industry, a more active role and efficient monitoring of the board is needed. Moreover, for effective operating purposes, bank boards tend to be bigger and have more committees, which are required to meet more (Adams & Mehran, 2003; Grove et al, 2011). Liang et al, (2013) also argue that frequency of board meetings can serve as a sign of proactive board. Ntim (2009) adds, that higher frequency of board meetings can result to a higher quality of managerial monitoring, and thereby impacts positively on corporate financial performance.

However, Vafeas (2009) and Vafeas (1999a) contend that there is an agency cost in the form of travel expenses, refreshments, directors' meeting fees and managerial time which goes with the board meetings that can affect corporate performance negatively. Lipton and Lorsch (1992) also suggest that various things such as routine tasks, like presentation of management reports and numerous formalities take much of the meetings, and this minimises the amount of time that suppose to be available to outside directors to effectively monitor management which can have negative effect on corporate performance.

3.4.3 Role or CEO duality and bank performance.

CEO/Chairman separation reflects the board's ability to provide independent monitoring and oversight role of management actions and result to better banks overall performance. CEO duality which is the practice whereby a single individual serves as CEO and chairman of a company's board at the same time (Rechner and Dalton, 1991**;** Al-Saidi and Al-Shammari, 2013; Krause et al, 2014; Mamatzakis and Bermpei, 2015) has been a subject which is interest to academics for over 20 years (Krause et al, 2014). The CEO is a full- time employee who is in charge of a company's everyday operations and, as a result is responsible for the company's financial performance. The chairman of the board on the other hand is usually part-time employee who is mainly responsible for making sure that the board operates effectively (Al-Saidi and Al-Shammari, 2013).

The two key theories in the issue of CEO duality are agency and stewardship. On one hand, these two theories agree that non duality reflects higher board oversight and weaker CEO power. On the other hand, CEO duality reflects lower board oversight and stronger CEO power (Finkelstein et al, 2009; Krause et al, 2014).

Agency theory recommends that, to prevent managerial entrenchment, management and boards should be independent from each other (Fama & Jensen, 1983a). Agency theorists have constantly argued that CEO duality has adverse effects on firm performance since CEO duality directly conflicts with this recommendations (Jensen, 1993). Some supporters of the agency theory are Lipton and Lorsch (1992), Worrell et al. (1997) and Carlsson (2001). These authors contend that the separation of CEO and chairman roles can result to improvement in performance due to the improvement in the boards' effectiveness in managerial monitoring.

The UK corporate governance code (2012) also recommends organisations to separate the role of chairman from CEO to make sure that there is a clear division of responsibilities. Al-Saidi and Al-Shammari (2013) posit that signing the two roles to one person is a clear indication of bad corporate governance. Rechner and Dalton (1991) add that assigning one person as CEO and chairman at the same time constitute a clear conflict of interest while Grove et al. (2011) contend that the main cause of agency conflicts as a result of reduction in monitoring and permitting the CEOs to act in their own interest is duality. Moreover, Fama and Jensen (1983) and Jensen (1993) contend that large organisations' agency cost can be minimised if decision management and decision control are separated, and that the board of directors is only an effective device for decision control if it limits the decision discretion of top managers. It is also argued that when one person holds the positions of CEO and chairman at the same time it could lead to decision making not to be in the best interest of the shareholders who are minority (Liang et al, 2013; Jensen, 1993) and would reduce the independence of the board (Yermack, 1996).

Contrary, some scholars integrating stewardship theory (Donaldson & Davis, 1991) and resource dependency theory (Boyd, 1995) argue that CEO duality promotes leadership unity and organisational effectiveness (Gulick & Urwick, 1937; Krause et al, 2014). Brickley et al. (1997) support this and conclude that the costs associated with a breakup of a combined position are larger than the benefits for the majority of firms. Other opposing view of separating the CEO and chairman roles come from Liang et al (2013) who argue, that if the chairman and the CEO do not agree on the same strategies, decision making would be problematic if the two roles are held by two different people, and this will have some adverse effects on firm performance (Lipton and Lorsch, 1992; Rechner and Dalton, 1991)

However, most of the empirical studies find that there is no significant difference in valuation between firms with separated chairman and CEO roles and firms with combined CEO and chairman positions (e.g**.** Dahya & Travlos, 2000; Schmid & Zimmermann, 2008). Krause et al (2014) reviewed CEO duality, one of their concluding remarks is, that the most consistent outcome in the literature of CEO duality is that the separation of CEO and chairman positions alone does not improve firm performance. Elsayed (2007) adds that both CEO duality and separation styles have associated costs and benefits. CEO duality can be of benefit to some firms while separation can also be more worthy for other firms. Strategically, it should be better if firm boards are allowed free to employ the structure they consider to be beneficial for them.

3.4.4 Female directors and bank performance

Diversity in corporate boardrooms has now become a pressing issue in the world and many developed countries now demand improvement in board diversity practices and the disclosure of these practices from corporations (Harjoto, Laksmana, & Lee, 2015). Kang, Cheng and Gray (2007) define board diversity as variety in the composition of the board of directors. There are two groups such varieties may be classified, namely observable diversity (such as nationality, age, gender and ethnic background) which is readily detectable attributes of directors, and less visible diversity, such as educational, functional and occupational backgrounds, industry experience, and organisational membership of directors. From a 'rational' point of view, diversity can be seen as a 'functional' characteristic of a group of people assigned to a particular common task (i.e. board) (Mahadeo et al, 2012). Such functionality can result to a greater knowledge base, creativity and innovation and as a result, give competitive advantage to organisations (Werbel et al, 2003). According to Kang et al, (2007), board diversity brings about solving problem effectively, promotion of more effective global relationships, improved understanding of the market place and increased creativity and innovati.

The US adopted a new set of rules which is required by publicly traded firms to disclose whether and how diversity of board is considered in their selection process of director nominees. There is still inadequate indication of the effect of diversity comprised boards on management decision making, although these rules identify the need of board diversity (Harjoto, Laksmana, & Lee, 2015). Although ethnic and gender diversity is now active policy making topic in many different countries, with

some national governments giving rules establishing quotas for diversity, it is still not clear how and if desired outcome be gained from these policies. Theories provide some understanding of the nature of the relationship between financial performance and board diversity (Cartel et al, 2010). One of the theories that provide the most backing for a positive link between gender and ethnic diversity of the board and firm performance is resource dependence theory (Carter et al, 2010). According to this theory, diversity has the possibility to improve the information given by the board to managers because of the unique information held by diverse directors (García-Meca, García-Sánchez & Martínez-Ferrero, 2015). Gender and nationalities differences are most likely to bring distinctive information sets which are available to management improved decision making (Carter et al, 2010).

On the other hand, having diverse board of directors may cause decision making to be slower and more conflicted, suggested by some theory directors. This makes a lot of researchers see board diversity as 'double-edged sword', precisely improving group processes on some duties and resulting to higher quality solutions, while also reducing cohesion and all too often disrupting group processes (García-Meca, García-Sánchez & Martínez-Ferrero, 2015). Resource dependency theory also gives the foundation for some theoretical point of view for a business case for board diversity (Carter et al, 2010). As a result of distinctive information held by diverse directors, diversity have the possibility to improve the information delivered by the board to managers. Diverse directors may bring different views and nontraditional ways to problems because they have little chance to be insiders or business experts. Accessibility is given by diverse directors to vital constituencies in the external environment. The formation of this vital link is essential since more than half of the human capital pool available to the firm is composed of women and ethnic minorities (Carter et al, 2010).

Gender is perhaps the most longstanding and discussed component of board composition (Mahadeo, Soobaroyen, & Hanuman, 2012), yet a number of studies find that the number of female directors on boards is not encouraging. Some studies propose that a lot of women who are directors are likely to have staff management skills like communication, legal or human resources instead of marketing functions and operations in contrast to men (García-Meca, García-Sánchez & Martínez-Ferrero, 2015). Women are also very likely to possess non-business background and to have advanced degrees which aid firms to gain competitive advantage

through dealing effectively with diversity in their product and labour market. Female board members also bring different views to the boardroom and transparency (Upadhyay & Zeng, 2014), encourage lively discussion in the boardroom and help represent shareholders better (García-Meca, García-Sánchez & Martínez-Ferrero, 2015). According to Gulamhussen and Santa (2015), some advocates support that women behaviour is different in different kind of situations and their unique behaviour in the boardrooms assists boards to access untapped talent and transfer greater independence since women do not belong to the informal social networks dominated by males.

3.4.5 Board size and bank performance

Company's board of directors' structure and its association to company performance is extensively studied in various economics and business disciplines (O'Sullivan et al, 2016). Among the most important governance mechanisms that protect shareholders' interests through monitoring managerial activities is corporate board (Upadhyay, 2015). And one of the most important board characteristics within corporate governance literature is board size. Jensen (1993) adds, that Board size is an important attribute that affects board effectiveness. According to resource dependency theory, large board size is good for firms because a firm with large and diversified board members can have greater expertise, they can have quality advice and access to resources (Zahra & Pearce, 1989, Salim et al, 2016). Also, it is relatively harder for insiders to control larger board size. Resource dependency theory also argues that bigger board comes with greater chance for additional links and therefore access to resources (Kiel and Nicholson, 2003). Brown and Caylor (2004) also add that firms with larger board size have higher returns on equity and higher net profit margins than do firms with smaller board size.

According to Hoque et al (2013), a board that have bigger number of directors is able to have bigger committees than board that have smaller number of directors. Bigger committees are able to contribute to better financial performance (Hoque et al, (2013). O'Sullivan, (2016) add that a firm with larger board will find it easier to identify opportunistic behaviours of managers. Moreover, many studies mention that firms which are opaque require additional advice on their numerous segments and many board members bring experience and expertise (O'Sullivan, et al, 2016). Lipton and Lorsch (1992) and Yermack (1996) recommend three reasons why bank holding companies have larger boards. Firstly, board size has positive effect on

asset size. Secondly, bigger diversified firms might require extra board members to assist management monitoring. The third reason is that banks requiring bigger boards may have come as a result of mergers and acquisitions in the industry (O'Sullivan, Mamun and Hassan, 2016). From the viewpoint of neo-institutional, larger boards comes with higher managerial monitoring. The effect is that this can improve efficiency and Corporate Financial Performance for shareholders by ensuring conformance to corporate regulations and norms. Also, decisions of executives which includes disclosure ones, can effectively be scrutinised by larger boards'', according to Ntim and Soobaroyen (2013).

However, there are many different opposing views to bigger board. The agency theory perspective suggests that because of director free rider problems, coordination and communication problems, and internal conflicts among directors, larger boards are inefficient (Jensen (1993). Also, boards that are larger than seven to eight members are not likely to function effectively since the chances for animosity and retribution between the members of the board are high (Jensen 1993; Hoque et al, (2013). Moreover, when it comes to decision making, it is very hard for a firm with bigger board to organise board meetings and it is more difficult and demands a lot of effort for larger group to reach consensus (Cheng, 2008). Due to this reason, the decision from a bigger board has a tendency to be less extreme, that is, tend to be either bad or good and as a result less variable performance has the possibility to be associated with larger boards (Cheng, 2008). Again, it is harder for CEO who is dominant to control a larger board than a smaller board (Jensen, 1993) because incentive to obtain information by individual director's and monitor managers is low in boards which are bigger (Pathan & Faff, 2013). Additionally, the larger groups' final decision reflect more compromises and are less extreme than those of smaller groups (Sah and Stiglitz, 1991; Cheng (2008). Eisenberg (1998) discussed two main sources of the board-size effect. They are: as group size increases, communication and coordination problems also increases, and the ability of the board to control management decreases, which lead to agency problems which stem from the separation of management and control (Eisenberg et al, 1998). Lipton and Lorsch (1992) and Hoque et al, (2013) also add that the number of people on boards should be limited to between eight and ten, since boards bigger than this number have problems with less-candid discussion regarding managerial performance, slower decision making and biases against risk-taking.

3.4.6 Board independence and bank performance

The majority of the previous studies compare board independence with non-financial firms (for instance, Rosenstein and Wyatt, 1990; Core et al, 1999; Nguyen and Nielsen, 2010; Liu et al, 2015; Bhagat & Black, 2002), with few studies focusing on banking and financial institutions. As a result, there are very few empirical literature on board independence and bank performance. The most important corporate governance mechanism is the board of directors who work to ensure that the self-interested managers do not pursue private benefits at the expense of shareholders (Lu &Wang, 2015). The board of directors should always act in the best interest of the shareholders by working as a collective body. To work for the shareholders interest, the board needs both executive and non-executive directors. The persons entrusted by shareholders to represent them in order to decrease agency problems are the independent directors (Fuzi, Halim & Julizaerma, 2016). It is argued that bank boards normally have more independent directors than non-financial firms since banks normally have complex instruments and trading activities to address them (John et al, 2016). Fuzi et al (2016) posit that board independence reflects the ability of the board to provide independent monitoring and oversight role of management actions so as to reduce moral hazard. Aebi et al (2012) define independent directors as directors without any relation with the company except for their board seat. According to Bradley and Chen (2015), NYSE and NASDAQ classify a director as independent even if the director was a former employee of the firm, so far as the employment of the director terminated at least three years prior to the directorship. However, director is not regarded by RiskMetrics as independent if the director has any business transaction with the firm or has ever worked for the firm (Bradley & Chen, 2015). Bohren and Staubo (2016) also state that directors who have professional ties to the manager are called inside or dependent directors while those who do not have professional ties to the manager are called outside or independent.

It is argued that unless the non-executive directors are independent from management and to make sure that unbiased business judgement are provided, they will find it impossible to exercise their duties effectively and efficiently (Fuzi, Halim & Julizaerma, 2016). Lu and Wang (2015) add that if the board is not independent, when performing its advising and monitoring duties, the function of the board could be compromised. Furthermore, Jensen and Meckling (1976) and

Bohren and Staubo (2016) state that firm value may be created by independent directors because of the potential conflict of interest that exist between owners who delegate control rights to the managers and managers who runs the firm. Independent directors who have no personal or professional ties to the firm or to the manager have less to lose and perform their monitoring functions by challenging the manager better than those directors who have professional or personal ties to the firm or to the manager (Bohren & Staubo, 2016). According to Knyazeva et al (2013), independent board serves as a valuable monitoring role and positively affects firm profitability and operating performance. Knyazeva et al (2013) add that, partly through better alignment of manager incentives with shareholder interests, independent boards contribute to improved profitability and higher valuation. Also, the most abled body which have been identified inside the board which is assume to undertake monitoring and advisory role is outside independent directors because they are less, or not subject to potential conflicts of interest that minimises their monitoring capacity. Again, outside directors are experienced professionals in large organisations and other firms and for that matter they care about their reputation. It is mentioned that this reputation induces outside directors to monitor (Nguyen & Nielson, 2010) and outside independent directors have technical experts in management and decision making that enable them to be effective monitors (Fama & Jensen, 1983; Nguyen and Nielson, 2010). Moreover, CEOs are more likely to be removed by outside-dominated boards as a result of poor performance (Weisbach, 1988).

However, according to Nguyen and Nielsen (2010), adding more independent directors to a board might not always be helpful. Independent directors often lack high advisory skills which require deep insight into the frim, competitors, its customers, suppliers and industry, this is caused by their arms-length distance from the frim ((Bhagat & Black, 2002; Bohren and Staubo, 2016). Also, the CEO may be reluctant when sharing information with the board because independent board is a tougher monitor, therefore management friendly boards can be optimal (Adams and Ferreira, 2007). Moreover, Agrawal and Knoeber, (1996) indicate that independent boards decrease firm value, they find a negative relationship between more outside directors and firm performance.

3.5 Theoretical literature review on moderating effect of corporate governance on the relationship between bank risk and bank performance

As mentioned earlier, banking activities are associated with risks which affect the performance of banks. The earlier discussions have looked at the direct impact of bank risk on bank performance, the impact of corporate governance on bank risk, and the impact of corporate governance on bank performance. This section looks at the moderation effect of corporate governance on the relationship between bank risk and bank performance. In other words, this section looks at the joint effect of corporate governance and bank risk on bank performance.

Previous studies have looked at how different corporate governance characteristics impact on bank performance. Firstly, according to agency theory, smaller board is more efficient than bigger board as a result of an increase in agency conflicts due to inefficient communication, agency conflicts and cooperation cost that associate with bigger board (Lipton & Lorsch, 1992; Jensen, 1993; Mamatzakis & Bermpei, 2015). Contrary, resource dependency theory posits that, through bigger boards, firms obtain greater expertise and have access to resources. As a result, bigger board improves firm performance (Zahra & Pearce, 1989; Salim, Arjomandi & Seufert, 2016).

Secondly, agency theory posits that frequent board meetings may indicate active monitoring by the board (Grove et al, 2011). Thirdly, role duality impact on bank performance. Al-Saidi and Al-Shammari, (2013) define role duality as the situation whereby one person holds the two most powerful positions of CEO and chairman on the board of directors. As agency theory and the Cadbury Committee (1992) recommend the separation of chairman and CEO roles, stewardship theory opposes the separation of chairman and CEO roles and recommends one person to hold both chairman and CEO roles. Fourthly, Independent directors are entrusted by shareholders to represent them in order to minimise agency problems. Independence reflects the ability of the board to provide independent monitoring and oversight role of management actions so as to reduce moral hazard (Fuzi, Halim and Julizaerma, 2016). Fifthly, previous studies (e.g. Robinson & Dechant, 1997; Mamatzakis & Bermpei, 2015) suggest that female directors are more likely committed to their work and have better communication with other members on the board and work to improve firm performance. According to resource dependency theory, diversity have the possibility to improve the information given by the board

to managers because of the unique information held by diverse directors (García-Meca et al., 2015). We expect female directors to interact with bank risk to reduce bank risk and improve bank performance.

However, to the best of the researcher's knowledge, no study has looked at any potential interactions that may occur between bank risk and performance. By contrast, it is rare to find literature assessing the extent to which corporate governance may moderate the relationship between bank risk and bank performance. The question is, what is the impact on bank performance if corporate governance interacts with bank risk? To the best of the researcher's knowledge, the impact of the interaction between corporate governance and bank risk on bank performance is missing within the banking-corporate governance literature, especially in Africa. This is a very fertile area which needs to be researched. As a result, this section looks at the moderation effect of bank corporate governance on the relationship between bank risk and bank performance. To be specific, we want to see the impact on bank performance in Africa when corporate governance interacts with bank risk. Different mechanisms which include corporate governance have been recommended by agency theory to resolve the conflicts in modern companies in which there is an existence of separation of ownership and control (Jensen and Meckling, 1976; Ntim et al., 2015; Ntim et al., 2017). As a result, we include a number of corporate governance characteristics to see how their interaction with risk affects bank performance. This discussion is based on five corporate governance characteristics already discussed above namely, board meetings, board size, female directors, role duality and the presence of independent directors.

We already know from the above discussions that, bank risk can have either negative or positive impact on performance. On the other hand, various corporate governance characteristics can also have negative or positive impact on bank performance. Although banking risk affect performance, it also depends on the quality of corporate governance in place. Therefore, we argue that, in a better governed banks, risk is managed effectively leading to improved performance. On the contrary, in poor governed banks, risk is not managed well leading to poor performance. For example, smaller boards may possess the ability to hold frank meetings and involve mostly in effective monitoring (Ntim et al., 2017), therefore, smaller boards can reduce bank risk to improve bank performance. Contrary, bigger

boards can impair their efficacy of monitoring in the form of excessive managerial play (Ntim et al., 2017) which cannot help to reduce the impact of bank risk on performance. Similarly, independent directors provide advice and monitoring role (Knyazeva et al., 2013), and they are also experts in management and making decisions (Fama & Jensen, 1983; Nguyen & Nielson, 2010). Therefore their interaction with bank risk can help reduce the impact of bank risk on performance.

Moreover, it has been suggested that female are more risk averse in making financial decisions than men (Berger et al, 2014; Nelson, 2015, Sila et al, 2016) and bring different views to the board room (Upadhyay & Zeng, 2014). It is also believed that the likelihood that female directors will take aggressive acquisition strategies is less and even if they do they offer less bid premium (Levi, Li & Zhang, 2014). Therefore, it is expected that when female directors interact with bank risk, the risk is likely to be reduced to improve bank performance. Also, role duality is perceived not to be good for bank risk reduction. According to the agency theory, separation of CEO and chairman role is good corporate governance practice (Jensen, 1993; Syriopoulos and Tsatsaronis, 2012). Duality is considered as self- evaluated when chairman is assessed by the same person. According to Switzer and Wang (2013), credit risk level will reduce with the situation where the CEO does not hold board chairman position at the same time. Therefore, when CEO and chairman positions are held by two different people it is expected that bank risk will reduce and improve bank performance. Similarly, board meetings will have negative impact on bank risk and improve bank performance. Agency theory posit that that the relevant and important of frequent corporate board meetings is the increased capacity to advise effectively, discipline management and monitor them (Jensen & Meckling, (1976), which could reduce bank risk and improve performance. We argue that when corporate governance mechanisms in place are good and efficient, we expect risk to be managed well to reduce the negative impact it has on bank performance. In the event of financial distress, there would be low adverse impact on bank performance when corporate governance interacts with bank risk.

3.6 Chapter summary

This chapter has focused on the main theories that support this work namely, agency theory, stewardship theory and resource dependency theory. The chapter also focused on the theoretical literature review of the main themes of the research namely, the relationship between bank risk and bank performance, the relationship

between bank risk and corporate governance, the relationship between corporate governance and bank performance and the moderation effect of corporate governance on the relationship between bank risk and performance. The next section is chapter four which focuses on the discussion on the previous empirical findings on the relationship between bank risk and bank performance, corporate governance and bank risk, corporate governance and bank performance and the joint effect- of corporate governance and bank risk on bank performance.

CHAPTER FOUR
EMPIRICAL LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

4 Introduction

This chapter discusses the detailed empirical literature review. The chapter is divided into four parts. The first part discusses the detailed empirical literature on the relationship between bank risk and bank performance. The second part discusses the empirical literature on the relationship between corporate governance and bank risk. The third part looks at the empirical evidence on the relationship between corporate governance and bank performance. The fourth part also looks at the empirical evidence of the moderation effect of corporate governance on the relationship between bank risk and bank performance.

4.1 Empirical literature review on bank risk and bank performance

The empirical literature on the relationship between bank risk and bank performance has been studied quiet extensively. However, the extant literature mainly focuses on developed and emerging countries in Asia (For example Tan, 2016) with little attention on Africa. Moreover, the findings from the existing literature are mixed. This calls for further research, especially in Africa where studies on bank risk and bank performance relationship is very dearth.

I.Maghyereh and Awartani (2014) analysed the Gulf Corporation Council (GCC) banking sector efficiency performance with a sample of 70 banks. The main motivation of the study was to provide an assessment of whether market power, risk taking activities and regulations have any effect on efficiency performance of GCC banks. The findings indicate that when the risk was measured by Z-score or even by the ratio of non-performing loans to total loans has negative effect on efficiency. Tan et al, (2017) used a two-step generalized method of moments (GMM) system estimator to investigate the effect of risk, competition and cost efficiency on profitability of Chinese commercial banks between 2003 and 2013. The empirical findings show that credit risk and security risk have significant and negative effect on bank profitability, liquidity risk is negatively related to ROE, and capital risk is significantly and negatively related to ROA and net interest margin (NIM). Tan and Floros (2012) report another similar finding in their evaluation of the determinants of bank profitability in China. They used a sample of 101 banks over the period 2003-2009. Using two step GMM estimators, the results show that credit risk is negatively

related to bank profitability, measured as ROA, but positively related to net interest margin. In addition, Al-Tamimi, et al, (2015) examined the association between financial risk and performance (measured by return on assets and return on equity) of Gulf Cooperation Council (GCC) Islamic banks and the relative importance of common types of risks, namely credit, liquidity, capital and operational risks. Using a sample of 11 banks, they find a significant negative relationship between GCC Islamic bank performance and two types of risk, namely capital risk and operational risk. Similarly, liquidity risk in Pakistani banks was examined by Arif and Nauman Anees (2012). They evaluated its effect on bank performance using data from various secondary sources with a sample of 22 Pakinstani banks between 2004-2009, with a panel data yielding 132 observations. The result indicates that liquidity risk has a significant impact on bank performance. The results show that the two factors exacerbating risk are liquidity gap and non-performing loan and these two have negative relationship with banks profitability. Another similar evidence was reported by Boadi et al, (2016). The authors analysed the bank specific, macroeconomic and some risk determinants of bank profitability of rural and community banks (RCBs) in Ghana. Using fixed effect panel regression analysis with a sample of 114 RCBs during 2005-2013, the findings show a sign that funding risk is negatively related to RCBs profitability in Ghana.

Furthermore, the examination of factors that affect the investment banks performance in the G7 and Switzerland using a panel analysis by Mamatzakis and Bermpei (2014) shows that there is a negative impact of liquidity on cost efficiency and bank performance for banks that fall under low liquidity regime. Also, Athanasoglou et al (2008) examined the effect of bank-specific, industry-specific and macroeconomic determinants of bank profitability in Greek covering a period from 1985 to 2001 using GMM technique. The empirical results show a reduction in profit when there is increase exposure to credit risk. Again, Sufian (2011) reported a negative impact of credit risk (proxy as ratio of loan loss provisions to total loans) on Korean banks profitability when examined Korea bank profitability from 1992 to 2003. Moreover, using banks with different ownership structures in Japan, Liu and Wilson (2010) examined the determinants of bank profitability over the period 2000 to 2007. The results show that well capitalised and efficient banks with lower credit risk perform better than less efficient banks which have higher credit risk. Consistent with the above findings is the findings from Sufian and Chong (2008) who provided an examination into the determinants of banks profitability in Philippines from 1990

to 2005 with 280 bank-year observations. The findings indicate a negative relationship between credit risk and bank profitability. Another negative effect of bank risk on performance was provided by Zhang et al, (2013). The authors studied the relationship between market concentration, risk-taking and bank performance over the period 2003-2010. The results show that banks that take a lower level of risks perform better and observed a negative relationship between bank performance and market risk, credit risk and overall risk. The exploration of the impact of operational risk on bank performance in Kenya by Muriithi and Waweru (2017) shows that operational risk has negative impact on bank performance.

Other studies have provided some empirical evidence of positive association between bank risk and performance. For instance, in Turkey, the effects of credit risk and market risk (interest rate risk and foreign exchange rate risk) on bank performance was investigated by Ekinci (2016). A weekly data from 18th January 2002 to 30th October, 2005 with 716 observations was employed. The findings of this study indicate that credit risk, measured as return of industrial index, and foreign exchange risk have strong and positive effect on Turkish banks profitability. Tan et al. (2017) examined the effect of risk, competition and cost efficiency on profitability of Chinese commercial banks. The findings show that liquidity risk is significantly and positively related to ROA and NIM, capital risk has positive effect on ROE and commercial banks with higher insolvency risk are associated with higher profitability (ROA and ROE). Similarly, Sufian and Habibullah (2009a) examined the determinants of Chinese banks profitability from 2000 to 2005. Using a total sample of 220 bank-year observations, the empirical result shows that credit risk has positive effect on performance of state owned commercial banks in China. Sufian and Habibullah (2009b) provided another examination of the performance of 37 Bangladeshi commercial banks from 1997 to 2004. The empirical findings suggest that credit risk has positive impact on bank performance in Bangladesh. In another similar study, 4 state-owned commercial banks and 12 joint-stock commercial banks were used by Sufian (2009) to investigate the determinants of the profitability of banks in China between 2000-2007. The empirical findings suggest that commercial banks in China that have higher levels of liquidity and credit risks have greater profitability. Also, using a sample of 25 commercial banks in Bangladesh for a period ranges from 2006 to 2013 to investigate the determinants of bank profitability, Rahman et al, (2015) report a strong and positive relationship between credit risk and bank profitability.

However, some studies find insignificant or no relationship between bank risk and bank performance. For instance, Tan (2016) tested the impacts of competition and risk on bank profitability over the period 2003–2011. Using a sample of 41 Chinese commercial banks, the results indicate that banks profitability on China persists to small extent, the results did not find any robust impact of risk and competition in the Chinese banking industry. According to the authors, the unclear impact of risk and bank profitability can be attributed to the fact that the China Government still have influence or provide strong support to the banks in China, especially the state owned commercial banks. The support comes through four assets management companies and capital injections (Tan, 2016). In addition, the impact of currency risk on multilateral banks performance was investigated by Kamau et al (2015). A sample of 53 banks was analysed and the findings indicate that, the currency risk has no significant impact on the multilateral banks performance which was measured by after-tax accounting profitability or loss.

As mentioned earlier, the result of bank risk and performance relationship is mixed. Some report positive, some report negative relationship while others report insignificant or no relationship between bank risk and performance. The conflicting nature of the results may be partly due to the fact that the past studies use different proxies for risk and performance, different techniques of estimation and different countries have different characteristics. In this case, Africa gives an interesting research environment to explore the relationship between bank risk and performance. In Africa, we expect that bank risk impact on bank performance negatively. As a result, we state our first hypothesis as follows:

Hypothesis 1: There is a significant and negative association between bank risk and bank performance in Africa

4.2 Empirical literature review on corporate governance and bank risk

The empirical literature focuses on the relationship between bank risk and five corporate governance variables namely, board size, female directors, board independence, role or CEO duality and board meetings.

4.2.1 Board size and bank risk

Empirically, there is still limited literature on the relationship between board size and bank risk. The available empirical findings are still not conclusive and provide mixed results. Some studies provide evidence of negative relationship between board size and bank risk (e.g. Pathan, 2009; Switzer & Wang, 2013; Lu & Boateng, 2017)). Some other evidence provides positive relationship between board size and bank risk (e.g. Chan et al, 2016; Battaglia & Gallo, 2017) while some provide evidence of no significant relationship between board size and bank risk (e.g. Akbar et al (2017).

Pathan (2009) examines the impact of bank board structure on bank risk-taking relevance. Using a sample of 212 large US bank holding companies over 1997–2004, the findings suggest that smaller and less restrictive board has positive effect on bank risk taking. This means there is a negative relationship between board size and bank risk, which is in line with the resource dependency theory. According to Pathan (2009), this finding suggests that the board structure of the bank is a vital determinant of bank risk-taking. Pathan (2009) added that given that the structure of the board is instrumental to the risk-taking of the bank, intensive monitoring should be done by regulators to the banks where interests of both managers and shareholders are aligned in a way to control extreme risk-taking. Similarly, Wang and Hsu (2013) provide an investigation into the association that exist between board composition and operational risk events of financial institutions from 1996 to 2010. The results show that board size is negatively and non-linearly associated with the possibility of operational risk events.

Again, Lu and Boateng (2017) reported a negative relationship between board size and bank risk using a sample of 79 UK banks between 2000 and 2014. Also, the relationship between credit risks of banks and the corporate governance structures of these banks from the perspective of creditors was explored by Switzer and Wang (2013). The sample of the study consists of all the US commercial banks (SIC: 6020), federally chartered saving banks (SIC: 6035) and non-federally chartered saving banks (SIC: 6036) from Compustat during the period 2001–2010. The final

sample consists of a panel of 228 banks with 782 observations. After controlling for firm specific characteristics and market variables which include leverage, market-to-book-ratio and profitability which is measured by return on assets (ROA) and return on equity (ROE), the results reveal that commercial banks with larger boards are associated with significantly lower credit risk levels, which is consistence with the resource dependency theory. The authors reveal that banks with greater market to book ratios are linked to higher probabilities of default and small banks and higher leverage banks and lower ROA have more probability to default. Moreover, Rachdi et al, (2013) find that small and dual functions boards are associated with an increase in insolvency risk using a sample of 11 Tunisian conventional banks over the period from 2001 to 2011.

Contrary, using a sample of 16 listed commercial banks in China from 2003 to 2011, Chan et al, (2016) provide empirical evidence that smaller board size leads to lower exposure to risk in China. This implies a positive relationship between board size and bank risk. Similarly, Battaglia and Gallo (2017) report that smaller bank board causes less bank risk taking, using 40 European banks from 2006 to 2010.
However, the examination of the link between board structures and risk taking of corporates in the financial sector in UK by Akbar et al (2017) shows no significant effect of board size on bank risk taking. Based on the above discussion and findings, we state our second hypothesis as follows:
Hypothesis 2: There is a significant positive association between board size and bank risk in Africa

4.2.2 Female directors and bank risk

There are a number of authors who have included gender diversity as a corporate governance mechanism in their studies (Farrell & Hersch, 2005; Wang & Kelan, 2013; Chapple & Humphrey, 2014; Lakhal, 2015; Nelson, 2015; Ward & Forker, 2017). These studies have focused on the relationship between gender diversity and other variables, whiles the relationship between gender diversified board and bank risk has been ignored. Therefore, there is a very limited study on board gender diversity and bank risk. Within the African context, the empirical study of the relationship between female directors and bank risk is hard to find.

Since little is known about demographic characteristics of executive teams effect on corporate governance in banking, Gulamhussen and Santa (2015) gave an assessment into the role of women in the boardroom of banks. They use a sample

of 461 banks from OECD countries and controlled for country and bank specific effects. The results find a negative association between the female presence in the bank boardrooms and risk-taking. Similar finding was reported by Chan et al, (2016). They anaylised 16 commercial banks in China from 2003 to 2011 to find the effect of board of director's socio-economic background on bank risk-taking behaviour. The empirical evidence finds that a higher proportion of female directors reduce the risk of Chinese listed commercial banks. Using a sample of 612 European banks from 20 European countries to investigate the European Union corporate board gender diversity, Cabo et al, (2012) also find that the number of female directors is bigger on the banks boards which have lower risk. Moreover, Dong (2017) investigates the impact of board governance characteristics on bank efficiency and risk taking. The findings show that the proportion of female directors on bank board is associated with lower traditional banking risk. Furthermore, Palvia et al (2015) examined if default risk and capital ratios of banks are associated with the gender of the bank's CEO and Chairperson of the board using a sample of 6729 US banks between 2007 to 2010. The findings of the study indicate a negative association between bank default risk during the recent financial crises and female CEOs and Chairwomen. A study by Lu and Boateng (2017) also finds the presence of female directors on bank board has negative and significant effect on credit risk, using a sample of 79 UK banks for the period of 2000-2014. Furthermore, Dong et al (2017) find the presence of female directors on bank board leads to lower banking risk, using 105 commercial banks from 2003 to 2011 in China

Contrary to the above findings, Berger et al (2014) investigate how age, gender and education of executive teams affect the financial institutions portfolio risk in Germany. The study uses a sample of 10,719 bank-year observations. The regression equation for the analysis contained several control variables including bank size and capital adequacy ratio. The findings indicate that, the rise in female board representation increases the portfolio risk of the German banks, even though the change is statistically and economically marginal. Similarly, using a sample of 101 banks over a period from 2003 to 2011, Yu et al (2017) report a positive relationship between the percentage of female directors and bank risk.

Few other empirical evidence that concentrate on gender difference in banking and risk is limited to loan officers and does not give examination of bank board executive members. For instance, Bellucci et al, (2010) report that female officers are more

risk-averse than male officers and as a result tend to limit credit accessibility to new and un-established borrowers more than their counterparts who are males. Similarly, Beck et al. (2013) show that loans default rate on loans issued by female loan officers tend to be lesser than those which are issued by male loan officers. Rad et al, (2013) find that female loan officers concentrate more on collateral as a proxy for risk aversion when evaluation their loan application for the first time than men. However, they also show that as far as risk aversion is concerned, there are no substantial differences between male and female loan officers when evaluating subsequent loan applications. These findings suggest that gender diversified board is likely to reduce bank risk levels. Therefore, we state our third hypothesis as follows:

Hypothesis 3: There is a significant negative association between the presence of female directors on bank board and bank risk in Africa.

4.2.3 Board independence and bank risk

Empirically, the literature on board independence and bank risk is very limited. This gives a very fertile ground for future research in this area, especially in Africa where the literature on this relationship is almost nil. Some of the limited literature on board independence and bank risk are highlighted here. Minton et al, (2010) study how risk taking and firm value are related to board independence and financial expertise using a sample of 652 banks and other financial firms from 2000 to 2008. The results show that the percentage of independence board directors and risk are negatively related. Similarly, Chan et al, (2016) used a sample of 16 listed commercial banks from 2003 to 2011. The result indicates that a higher proportion of independent directors on the board reduce bank risk taking. Again, Switzer and Wang (2013) examined the association that exist between credit risk of banks and corporate governance structures. The empirical findings show that boards with more independent executive directors have lower credit risk levels. Recently, using a sample of 40 European banks from 2006 to 2010, Battaglia and Gallo (2017) find European banks with more independent directors have lower default probability using z-score as risk measure. Moreover, using a sample of 276 financial firms in the UK, Akbar et al (2017) record that a financial board with more independent directors would take less risk. Again, using a sample of 212 US BHCs over 1997-

2004, Pathan (2009) reports that board independence and bank risk are negatively related.

Contrary**,** Rachdi et al (2013) use a sample of 11 Tunisian conventional banks from 2001 to 2011. The empirical results show that the presence of independent directors within the board causes an increase in global risk. A study by Vallascas et al (2017) shows that board independent increases bank risk taking after the recent financial crisis, using a sample of 262 banks between 2004 and 2014. Similar result was recorded by Lu and Boateng (2017) who find that board independence has positive impact on bank risk, using 79 UK banks from 2000 to 2014. Within the African context, we expect that the presence of independence directors on bank board will cause a reduction in bank risk. Therefore we state our fourth hypothesis as follows:

Hypothesis 4: There is a significant negative association between board independence and bank risk in Africa

4.2.4 Role or CEO duality and bank risk

In general, the empirical literature and findings on CEO duality and bank risk is very scanty. The literature on CEO duality and bank risk is not just limited within African context but the entire literature on developed and emerging countries as well. The limited available empirical literature shows a mix results regarding the relationship between CEO duality and firm performance. For instance CEO duality was found to be negatively related to bank performance (For example Grove et al, 2011; Mollah & Zaman; 2015) while a positive association between bank performance and CEO duality was recorded by Al-Saidi and Al-Shammari (2013). There are empirical evidence which shows either CEO duality or separation of the two posts has no relation with bank performance (for example Carty & Weiss, 2012; Bukair & Rahman, 2015). In relation to bank risk, Rachdi et al, (2013), examined how board characteristics affect banking industry using a sample of 11 Tunisian conventional banks from 2001 to 2011. The result shows the evidence that duality board is associated with insolvency risk. Using a sample of 79 banks, Lu and Boateng (2017) find a significant and positive effect of CEO duality on credit risk of UK banks. Contrary, using a sample of 276 UK financial firms, Akbar et al (2017) show that CEO duality has negative impact on bank risk taking. In general, the relation between CEO duality and bank risk has been largely ignored. Based on the available literature and empirical findings, we expect the separation of CEO and

chairman role to cause a reduction in bank risk in Africa. As a result, we state our fifth hypothesis as follows:

Hypothesis 5: There is a significant negative association between CEO or role duality and bank risk in Africa.

4.2.5 Board meetings and bank risk

Another area that has a very limited study within the corporate governance literature is the association between board meetings and bank risk. In fact, this literature has been largely ignored in developed countries, emerging countries in Asia as well as developing African countries. The previous empirical literature shows a mixed results regarding the relationship between board meeting and performance in the banking and non-banking industries. In the non-banking industries, Brick and Chidambaran (2010) recorded a positive impact of board activities on firm value. Mangena and Tauringana (2008), Ntim and Osei (2011) and Hoque et al (2013) found positive effect of board meetings on firm performance. However, Vafeas (1999) recorded a negative relationship between board meetings and firm performance .In the banking industry, there are few empirical findings that shows positive relationship between board meetings and bank performance (see Grove et al, 2011; Liang et al, 2013; and Salim Arjomandi & Seufert, 2016). With regards to bank risk, Battaglia and Gallo (2017) recorded a negative relationship between the number of board meetings and bank risk using a sample of 40 European banks between 2006 and 2010. A mentioned earlier, the relationship between board meetings and bank risk has been largely ignored. A bank board that meets frequently means that any issues related to risk will be identified and resolved immediately to minimise the risk. We expect that when African banks boards meet more frequently, they will be in the position to identify and resolve their risk on time. Therefore, we state our sixth hypothesis as follows:

Hypothesis 6: There is a significant negative association between frequency of banks board meetings and bank risk in Africa

4.3. Empirical literature review on corporate governance and bank performance

This literature review focuses on the relationship between bank performance and five corporate governance variables namely, board size, female directors, board independence, role or CEO duality and board meetings.

4.3.1 Board meetings and bank performance

Empirically, there is not enough evidence on the association between board meetings and bank performance. This provides a fertile ground for further research. As a result. This study aims to find out how board meetings affect the performance of banks in Africa. The exploration of a set of board characteristics and analysis of their impacts on the performance of bank asset quality in China using a sample of 50 largest Chinese banks during the period of 2003–2010 by Liang et al (2013) find that the number of board meetings have positive impact on bank performance (ROA). Similarly, in Australian banks, Salim et al., (2016) find a positive effect of frequency of board meetings on bank performance. Consistent with the above findings and the agency theory, Grove et al, (2011) used US commercial banks to examine the corporate governance and performance in the wake up of the financial crisis. They employed multiple regression model with a sample of 236 public commercial banks in the US. Consistent with their hypothesis, the findings reveal that the frequency of board meetings is positively associated with financial performance. The results indicate that the boards of US public commercial banks that meet more frequently increase the financial performance of those banks. More recently, Abdul Gafoor (2018) finds that board meeting has significant and positive association with bank performance, measured by ROA. Based on the above discussion and empirical findings, we expect that more board meetings will improve the performance of African banks. Therefore, our seventh hypothesis is as follows:

Hypothesis 7: There is a significant positive association between the frequency of banks board meetings and bank performance in Africa

4.3.2 Role or CEO duality and bank performance.

The available empirical literature relating to the relationship between role duality and bank performance gives a mix results, which include positive relationship (Al-Saidi & Al-Shammari, 2013), negative relationship (Grove et al, 2011; Mollah & Zaman, 2015; AlManaseer et al, 2012) and no relationship (Bukair & Rahman, 2015; Carty & Weiss, 2012; Abdul Gafoor et al. (2018).

Grove et al, (2011) examine corporate governance and performance in the wake up of financial crises using US commercial banks. The authors use a sample of 236 public commercial banks and controlled for bank size and opportunity to grow. Using multiple regression model to examine the impact of corporate governance factors on financial performance, the results find a negative relationship between CEO duality and bank performance. This result confirms that CEO duality shows a weakness in corporate governance and affect firm performance negatively, which is consistent with agency theory. Similarly, Mollah and Zaman (2015) examined if Shariah supervision as a cornerstone of Islamic banking helps Islamic banks perform better and create shareholder value over 2005-2011 year period. Using a sample of 172 banks, the results find a negative effect of CEO duality on Islamic banks performance. Moreover, Dong et al (2017) report a negative relationship between CEO duality and bank performance using 105 commercial banks in China**.** Recently, Sarkar and Sarkar (2018) find that the impact of CEO duality on state-owned bank performance in India is negative

Contrary, Al-Saidi and Al-Shammari (2013) examined the relationship between board composition and bank performance using a sample of nine Kuwait listed banks between 2006 and 2010. Using regression to test such relationship and controlling for bank size, leverage (debt ratio), capital adequacy and ownership concentration, they report a positive association between role duality, where the chairman is the same person as the CEO, and bank performance. This finding is consistent with stewardship theory and inconsistent with the agency theory proposed by Jensen and Meckling (1976). AlManaseer et al. (2012) reported a negative relationship between separation of CEO and chairman role and bank performance in Jordan, using a sample of 15 Jordanian banks.

However, there are some empirical studies which support neither agency theory nor stewardship theory and provide no support for role duality or separation of CEO and chairman roles. For instance, Bukair and Rahman (2015) examined the relationship between board structure, investment account holders (IAHs) and social contribution and bank performance. A sample of 40 Islamic banks operating in the countries within the Gulf Cooperation Council (GCC) between the period from 2008 – 2011 were selected for the study. After controlling for other factors (such as bank size and leverage) that can affect bank performance within the selected countries, the results indicate that the separation of CEO and chairman roles has no effect on bank

performance. This means there is no relationship between CEO duality and bank performance in the GCC countries. Similarly, Carty and Weiss (2012) investigated whether CEO duality is associated with bank failure and whether bank regulators, as can be expected, are opposed to CEO duality. Using a sample of 1297 US publicly traded banks by employing a structured interviews, the results indicate no correlation between bank failure and CEO duality. The findings suggest that CEO duality is a less important factor in corporate management than suggested by many previous researchers and policy makers. Moreover, using a sample of 36 banks from 2001 to 2014, Abdul Gafoor etal (2018) find no significant improvement in bank performance when the role of chairman is separated from the CEO. Based on the above discussions we expect that separation of CEO and chairman role to improve African banks performance. As a result, we state our eighth hypothesis as follows:

Hypothesis 8: There is a significant negative association between CEO or role duality and bank performance in Africa.

4.3.3 Female board directors and bank performance

The link between female directors and bank performance has not been extensively researched. As a result, the empirical findings on the association between the presence of female directors on board and bank performance is very limited. This provides a very fertile ground for a research especially in Africa where studies on the nexus between female directors and bank performance is almost not available. One of the reasons may be unavailability of data or difficulties in obtaining data to examine such relationship. Gulamhussen and Santa (2015) provide assessment of role of women in the boardrooms using a sample of 461 banks from OECD countries. The study controls for bank and country specific effects. Regression analysis was employed and the results indicate a positive relationship between the presence of female directors in the boardrooms and bank performance. This findings indicate that the presence of female directors on the bank board have a positive influence on the bank performance which is consistence with the resource dependency theory.

Similarly, Pathan and Faff (2013) study to find out if board structure (gender, board size and independence) in banks have any relationship with bank performance, measured by six alternative methods, including return of average assets (ROAAs), return on average equity (ROAE) and Tobin's Q ratio (Q). The study uses a panel of US bank holding companies (BHC) between 1997 – 2011. Using a sample of top

212 BHCs in the US, the results show that the presence of female directors on board has a positive effect on bank performance in the pre-Sarbanes-Oxley Act (SOX) time (1997-2002), even though this positive effect of gender diversity on bank performance diminished in the post SOX period (2003-2006). Moreover, García-Meca et al (2015) analyse the effect of board diversity on banks performance using a sample of 159 banks in nine countries between 2004 -2010. The result suggests that gender diversity has positive effect on bank performance and therefore increases bank performance. Again, Dong et al (2017) find a positive association between the presence of female directors on bank board and bank performance. In Africa, we expect that female directors will bring different ideas on the bank board to support their male counterparts to provide better bank performance. Therefore we state our ninth hypothesis as follows:

Hypothesis 9: There is a significant positive association between the presence of female directors on bank executive board and bank performance in Africa.

4.3.4 Board size and bank performance

Empirical studies have reported a mixed results on the association between board size and firm performance. Some studies find positive association between board size and bank performance (for example Chahine & Safieddine, 2011; Salim et al, 2016; O'Sullivan et al, 2016; Adams & Mehran, 2012), and some find negative association (For instance Liang et al, 2013; Mamatzakis & Bermpei, 2015; Mollah & Zaman, 2015) between board size and bank performance. Chahine and Safieddine (2011) investigate the impact of board size and its composition on the performance of banks in the context of an emerging market. The study uses a sample of 749 firm years of data on the Lebanon banking sector from 1992 to 2006. The data includes all nationwide banks in operation in any year over the whole study period. After controlling for a number of factors that may affect Lebanon bank performance, the results find that there is a positive association between board size and Lebanon bank performance, as measured by return on assets (ROA) and return on equity (ROE).

Similarly, Adams and Mehran (2012) analyse the association between board governance and bank performance measured by Tobin's Q. The study uses a sample of banking firms which spans 34 years. The authors employed regression analysis and the findings indicate that board size is positively associated with bank performance. The findings provide evidence that increase in board size as a result

of adding directors with subsidiary directorships may increase the value to the bank since these directors may be principally appropriate for dealing with organisational complexities when they arise. Another similar findings was reported by Salim et al (2016) who provide an empirical evidence of the link between corporate governance and Australians banks efficiency over 1999 to 2013 period. The study uses a sample of 11 Australian Banks. The study also uses a two-stage double-bootstrap data envelopment analysis. The findings suggest that board size has a significant and positive effect on the efficiency of the banks. This findings suggest that larger boards bring higher knowledge into the decision and supervisory process.

Moreover, in the US, O'Sullivan et al (2016) provide the examination between the associations between some board characteristics and bank holding company performance, measured by Tobin's Q and return on assets (ROA) before and during the recent financial crisis. The study uses a sample of 150 largest US bank holding companies from 1999 to 2009. The results find a positive association between board size and bank holding performance. However, the positive association between board size and bank performance diminished during the financial crisis. Also, the result finds the association between board size and bank holding performance during the financial crisis to be negative. The findings during the crises supports Jensen's (1993) argument that boards have less chance to function effectively when it is larger. More recently, Abdul Gafoor et al (2018) find significant and positive relationship between board size and bank performance, measured by ROA. Again, Nahar et al (2016) report a significant and positive association between board size and bank performance (measured by both ROA and ROE) using a sample of 30 listed banks in Bangladesh from 2006 to 2012. Also, using a sample of 372 banks Aebi et al (2012) report a significant and positive relationship between board size and bank performance.

Contrary to the above findings, Liang et al (2013) explored a set of board characteristics and analysed their impacts on the performance of bank asset quality in China. They used a sample of 50 largest Chinese banks during the period of 2003–2010. Consistent with the agency theory, the result found that board size has a significant negative impact on bank performance. The findings give a suggestion that when it comes to banks supervision and advice functions, smaller boards in China tend to be more efficient. Similarly, Mamatzakis and Bermpei (2015) provide an investigation into the impact of corporate governance on the US investment

banks performance over the period of 200-2012. The study uses a sample of 23 listed investment banks which are headquartered in the US. After controlling for some other variables and using dynamic panel analysis, the authors find a negative association between board size and bank performance. The threshold analysis of the study reveals that the negative effect is higher when the size of the board increase beyond the critical number of around ten board members. This means that above a threshold value the increasing cost of monitoring and communication worsens the investment banks performance (Mamatzakis & Bermpei, 2015), Moreover, Mollah and Zaman (2015) examined if Shariah supervision as a cornerstone of Islamic banking assists Islamic banks perform better and generate value to shareholders. They used a sample of 172 banks over 2005 – 2011 period. The relationship was tested using both accounting (ROA) and market based (Tobin's Q) performance measures. The results find a negative relationship between board size and Islamic banks performance. Recently, using a sample of 84 Japanese banks listed on Tokyo Stock Exchange from 2001 to 2011, Sakawa and Watanabel (2018) report a significant and negative association between board size and bank performance.

However, Georgantopoulos and Filos (2017) assess the impact of board structure on bank performance for the case of Greek banks. They used a sample of 13 Greek banks and collected data from 2008 to 2014. The empirical results show an inverted U-shaped relationship between board size and bank performance. We expect that smaller board size will bring better performance for African banks and therefore support the agency theory which state that due to coordination and communication problems, and internal conflicts among directors, larger boards are inefficient. Therefore we state our tenth hypothesis as follows:

Hypothesis 10: There is a significant negative association between bank board size and bank performance in Africa.

4.3.5 Board independence and bank performance

The empirical literature on the relationship between board independence and bank performance shows a mixed results, negative (e.g. Pathan & Faff, 2013), positive (e.g. Abdul Gafoor et al, 2018; Dong, 2016; Liang et al, 2013; Pathan et al, 2007; Lee & Carlson, 2007), U-shape (e.g. Georgantopoulos & Filos, 2017), and no relationship (e.g. Adams & Mehran, 2012). The available empirical literature shows an inconclusive results and for that matter needs further investigation, especially in

Africa where there is very limited literature on this area. The presence of directors who are independent on the board should indicate a positive relation to the firm's performance. If there is negative relationship or no relationship with firm's performance then such independent directors' performance on the board were jeopardised (Fuzi, Halim & Julizaerma, 2016).

Georgantopoulos and Filos (2017) investigated corporate governance mechanisms of Greek banks. They used a sample of 13 Greek banks and collected data from 2008 to 2014. The results find an inverted U-shaped relationship between the percentage of independent board directors and bank performance. Pathan et al (2007) examine the effect of independent directors and board size on the local commercial banks performance. The relationship over 1999-2003 was examined using a panel fixed effect in the individual regression model. The study controlled for other factors that can affect bank performance such as bank size and leverage. They find a statistically significant positive association between the number of independent directors on the bank board and bank performance. In China, Liang et al (2013) explore a set of board characteristics and analyse their impact on the performance of bank asset quality. The authors use a sample of 50 largest Chinese banks during the period of 2003–2010. The result finds a significant and positive association between the proportion of independent directors and both bank performance and asset quality.

Similarly, Lee and Carlson (2007) use sample of S&P 500 firms and find that boards with most independent board members perform significantly better than firms with less independent boards. Furthermore, Abdul Gafoor et al (2018) find a significant and positive relationship between board independence and bank performance using a sample of 36 commercial banks. Also, Dong et al (2017) investigated how board governance characteristics affect bank efficiency and risk taking. The results indicate that board independence is linked with increase in banks profit efficiency. Moreover, Yeh et al (2011) explored whether the financial institutions performance is higher with more independent directors on different committees during the 2007-2008 financial crisis. The study uses a sample of 20 largest financial institutions from the G8 countries. The results show that during the financial crisis of 2007-2008, performance was higher for financial institutions which have more independent directors on the risk and audit committees. This means there is a positive relationship between committee independence and firm performance during the

crises. Recently, Sarkar and Sarkar (2018) find that the proportion of independent directors has a positive effect on the performance of private banks in India.

Contrary to the above findings, Pathan and Faff (2013) examined the relationship between banks board structure (gender, board size and independence) and bank performance using a sample of top 212 bank holding companies (BHCs) in the US. Using a panel of US bank holding companies (BHC) between1997 – 2011, the results indicate that board independence decreases bank performance, measured by different proxies including ROAA, ROAE and Tobin's Q. This means there is a negative association between board independence and bank performance in America. More recently, Sarkar and Sarkar (2018) find that the proportion of independent directors has a negative impact on the performance of state-owned banks in India.

However, the association between board governance and bank performance measured by Tobin's Q was analysed by Adams and Mehran (2012). The study uses a sample of banking firms which spans 34 years. The findings indicate that board independence is not related to bank performance. This means that there is no association between board independence and bank performance**.** In view of the above discussions, we expect that the independent board directors should give proper monitoring scrutiny on the decisions and strategies of management of African banks in order to bring better performance of African banks. As a result, we state our eleventh hypothesis as follows:

Hypothesis 11: There is a significant positive association between board independence and bank performance in Africa.

4.4 Empirical literature review on moderation effect of corporate governance on the relationship between bank risk and bank performance

The previous empirical literature report a negative relationship between bank risk and bank performance (e.g. I.Maghyereh & Awartani, 2014; Al-Tamimi, Miniaoui & Elkelish, 2015; Mamatzakis & Bermpei, 2014; Sufian & Chong, 2008; Athanasoglou et al, 2008; Sufian, 2011; Liu & Wilson, 2010; Zhang et al, 2013). Contrary to the above findings, Ekinci (2016) find a very strong and positive relation between bank risk and performance while Tan (2016) and Kamau et al, (2015) report no relation between bank risk and bank performance.

There are also some previous empirical findings on the relationship between corporate governance and bank performance. For instance, Chahine and Safieddine (2011), Adams and Mehran (2012) and Salim, Arjomandi and Seufert (2016) report a positive while Mollah and Zaman (2015) and Mamatzakis and Bermpei (2015) report a negative association between board size and bank performance. Frequent board meetings has positive impact on bank performance (e.g. Liang et al, 2013; Salim Arjomandi & Seufert, 2016; Grove et al, 2011; Abdul Gafoor, 2018). Al-Saidi and Al-Shammari (2013) report a positive relation between role duality and bank performance while Grove et al, (2011), AlManaseer et al. (2012), Mollah and Zaman (2015) report a negative relationship between role duality and bank performance. However, Bukair and Rahman (2015) and Carty and Weiss (2012) find no evidence on the impact of role duality on bank performance. For independent directors, the empirical evidence shows a mix results. For instance, Pathan and Faff (2013) report a negative association while Yeh et al (2011) and Liang et al (2013) report a positive association between board independence and bank performance. Empirical evidence has also been reported by Gulamhussen and Santa (2015), Pathan and Faff (2013) and García-Meca, García-Sánchez, and Martínez-Ferrero (2015) and show that the presence of female director on banks board improve performance.

However, to the best of the researcher's knowledge, the empirical literature on moderation effect on the relationship between bank risk and bank performance has largely been ignored. Based on the empirical findings on the relationship between bank risk and bank performance and the relationship between corporate governance and bank performance, we expect corporate governance to moderate the relationship between bank risk and bank performance in Africa. Therefore, we state our twelve hypothesis as follows:

Hypothesis 12: Corporate governance moderate the relationship between bank risk and bank performance in Africa

4.5 Chapter summary

This chapter has focused on four main themes, empirical literature on the relationships between bank risk and bank performance, corporate governance and bank risk, corporate governance and bank performance and the moderation effect of corporate governance on the relationship between bank risk and bank performance. It has been observed that as we have some previous empirical

literature on the relationship between bank risk and bank performance, the relationship between corporate governance and bank risk, and the relationship between corporate governance and bank performance, there is no literature on the moderation effect of corporate governance on the relationship between bank risk and bank performance. As it has been mentioned in Chapter ten, the literature on this area is very scarce so this study recommends more studies on the moderation effect of corporate governance on the relationship between bank risk and bank performance.

CHAPTER FIVE
RESEARCH DESIGN

5 Introduction

This chapter covers detailed discussion of the research design and methodology. The chapter looks at the sample selection, different sources of data for this work, criteria for the sample selection and data collection. This chapter also discusses the methodology used to achieve the objectives of this research. Firstly, it discusses how each of the variable used have been measured. Secondly, it presents the justification of the control variables used. Thirdly, this section presents the ordinary least square (OLS) assumptions. Specifically, the chapter discusses the various assumptions that should be met before conducting the OLS regression. Finally, this chapter presents the descriptive statistics of the variables used, which is followed by the chapter summary.

5.1 Sample selection and data sources

5.1.1 Sample selection

The sample of banks used for this research were obtained from BankScope database provided by Bureau van Dijk. As of 8th December 2016, a total of 1502 African banks were on BankScope database. All these banks were exported from the database. The criteria used to select the final sample has been explained under sample selection criteria. Table 3 shows the specialisation of each bank selected and the number of banks included under each specialisation in the final sample. The specialisation of these banks are bank holding company, central bank, clearing and custody institution, commercial bank, corperative bank, credit institution, finance company, investment and trust corporation, investment bank, Islamic bank, micro-finance institution, multilateral governmental bank, other non-banking credit institution, private banking/asset management company, real estate and mortgage bank, saving bank and securities firm.

5.1.2 Data sources

With regards to data sources, the first category of data is the data on the bank specific variables. All the data on the bank specific variables were extracted from BankScope data base with the exception of 2016 data of some banks which were obtained from Orbis bank focus database, which is also provided by Bereau van Dijk. The reason is that, when the information of the banks were 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 Bereau van dijk when BankScope disappeared in December 2016. The second category of data is the data on corporate governance variables. The data on the internal corporate governance variables were tapped from the annual reports of the sampled banks. These annual reports were downloaded direct from the website of the sampled banks. However, there are corporate governance information of some few banks which were obtained from Boardex database. The third category of the data is data on some variables included in the control variables. These variables are GDP and corruption. Data on corruption which is one of the variables of the six world governance indices (wgi) was downloaded from the Worldbank website, info.worldbank.org/governance/wgi. Data on GDP rate was also obtained from the worldbank website at data.worldbank.org/indicator.

5.1.3 Sample selection criteria

For a bank to be included in the sample, the bank suppose to have five or more year's financial information between 2000 – 2016. The year 2000 was chosen as the beginning because the idea was to have more years, more financial information and also to capture more banks within the sample. 2016 was chosen as the end year because it was the most recent year in which financial information was available when collecting the data. Unlike the majority of studies which concentrate only on listed banks, the sample for this study included both listed and unlisted banks. This allowed this study to include more banks. Also, unlike other studies that concentrate only on larger banks, this study considered small, medium and large banks. The main reason for choosing both listed and unlisted banks is to get a bigger sample for the study in order to get a broader picture from the findings of the research. The sample size and the study period can enhance the generalisation of the results of this study. This criteria enabled panel study analysis to be applied to this study. According to Gujarati (2003) and (Wooldridge (2009), the advantages of using panel data include, firm's heterogeneity in individual variables can be controlled when using panel data.

As mentioned earlier, 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 which were selected are those which have 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. In all 635 banks were selected and included in the final sample and the total bank-years observation is 10795.

It is important to note that, as bank specific information was obtained from the year 2000, corporate governance information was obtained from 2005. The reason is that we did not find many banks with annual reports prior to 2005. We did not find annual reports of some banks at all. Some banks also had annual reports but did not contain any corporate governance information that we were looking for. In all, 365 banks contain corporate governance information that we were looking for in their annual reports. The annual reports of these banks were downloaded manually and the corporate governance information were tapped from them. Since all the 635 sampled banks did not have annual reports, the analysis of this research involving corporate governance information can be described as unbalanced panel data analysis.

Table 2: Number of banks selected from each country

No.	Country	No. Of Banks selected	Total No. of banks found in BankScope	No.	Country	No. of Banks selected	Total No. of banks found in BankScope
1	Algeria	17	19	25	Madagascar	5	7
2	Angola	17	18	26	Malawi	12	13
3	Benin	5	7	27	Mali	8	11
4	Botswana	16	17	28	Mauritania	7	7
5	Burkina Faso	7	9	29	Mauritius	16	21
6	Burundi	5	7	30	Morocco	18	23
7	Cameroon	9	14	31	Mozambique	16	17
8	Cape Verde	6	9	32	Namibia	10	14
9	Central African Republic	2	2	33	Niger	4	6
10	Chad	3	5	34	Nigeria	28	42
11	Cote D'Ivoire	12	18	35	Rwanda	9	9
12	Djibouti	5	6	36	Senegal	11	15
13	DR. Congo	12	15	37	Seychelles	6	6
14	Egypt	26	29	38	Sierra Leone	7	12
15	Ethiopia	15	27	39	South Africa	57	67
16	Gabon	7	8	40	South Sudan	2	4
17	Gambia	2	8	41	Sudan	19	26
18	Ghana	29	43	42	Swaziland	7	7
19	Guinea	3	6	43	Tanzania	29	38
20	Guinea Bissau	1	2	44	Togo	10	11
21	Kenya	43	47	45	Tunisia	31	31

22	Lesotho	4	4	46	Uganda	24	24
23	Liberia	2	7	47	Zambia	22	23
24	Libya	9	14	48	Zimbabwe	20	35
	Total no. of banks selected :635						

Source: BankScope

Table 2 above shows the number of countries and the total number of banks selected from each country for this study. In all, the total number of banks selected for this study were selected from 48 countries out of the 54 countries in Africa. There is only one bank selected from Guinea Bissau representing the country with the smallest number of banks. 57 banks were selected from South Africa which represents the country with the highest number of banks, from table two.

Table 3 below shows the total number of banks and the percentage of banks selected under each banks specialisation. In all, the 635 banks selected for this study come from at least one of the 17 bank's specialisation in table 3. From table 3, Clearing and custody institution recorded only one bank, other non-banking credit institution recorded only one bank while private banking / Asset Mgt. Company also recorded only one bank. These bank specialisations represent only 0.2% each, which is the lowest number of banks. The specialisation with the greatest number of banks is commercial bank which has 399 banks representing 62.8%.

Table 3 Specialisation of the banks selected for the study

No.	Bank specialisation	No. of banks	Percentage
1	Bank holdings company	33	5.2%
2	Central bank	26	4.1%
3	Clearing and custody institution	1	0.2%
4	Commercial bank	399	62.8%
5	Corperative bank	2	0.3%
6	Credit institution	27	4.3%
7	Finance company	27	4.3%
8	Investment & trust corperation	2	0.3%
9	Investment bank	51	8.0%
10	Islamic bank	24	3.8%
11	Micro-finance institution	18	2.8%
12	Multi-lateral governmental bank	6	0.9%
13	Other non-banking credit institution	1	0.2%
14	Private banking / Asset mgt. comp	1	0.2%
15	Real estate & mortgage bank	8	1.3%
16	Savings bank	6	0.9%
17	Securities firm	3	0.5%

Source: BankScope

5.2 METHODOLOGY

This subsection of the research discusses all the methodological approach used to answer the research questions. This section in particular discusses the explanatory variables and how they are measured. The justification for choosing the firm characteristics variables and how they are measured are also discussed. Moreover, the model specification and different statistical tests which were performed to achieve the research aims and objectives are also discussed in this section.

5.2.1 Measurement of bank risk and performance

One of the objectives of this research is to find out the relationship between bank risk and performance in Africa. The main dependent variables for this relationship are return on asset (ROA) and return on equity (ROE) which are proxies for bank performance. ROA and ROE are used because they have been used in recent studies and also used by a large body of literature (e.g. Tan, 2016; Bennett et al,

2015; Rahman et al, 2015). Both ROA and ROE are measured based on earlier studies. ROA is measured as the ratio of net income to total assets (e.g. Tan, 2016; Bennett et al, 2015). ROE is measured as the ratio of net income to equity (e.g. Tan, 2016; Bennett et al, 2015). Our bank risk variables are Loan Loss Reserve to Gross Loan and Loan Loss Provision to Net Interest Revenue. Loan Loss Reserve to Gross Loan is measured as loan loss reserve divided by gross loan (LLR/GL). Loan Loss Provision to Net Interest Revenue is measured as Loan Loss Provision divided by Net Interest Revenue (LLP/NET INT REV).

5.2.2 Measurement of Corporate Governance Characteristics

In all, five corporate governance characteristics have been used in this study. They are board size, board meetings, independent directors, presence of female directors and role duality. These five variables are used to determine the relationship between bank risk and corporate governance, the relationship between corporate governance and bank performance, and the moderating effect of corporate governance on the relationship between bank risk and performance. The choice of these five variables are based on three main reasons. The first reason is the availability of data. In general, corporate governance data is very difficult to get. In the African context, corporate governance data is very hard to find. Therefore, we had to go for variables which have some information and at the same time answer the research questions. Secondly, these five corporate governance characteristics used in this study are among the most frequently used variables in many studies to answer similar research questions. Thirdly, since the data was not available anywhere, we had to collect all the corporate governance information from the banks annual reports. As a result, we had to choose variables which can be found in the annual reports of most of the banks.

The measurement of corporate governance variables are in line with the previous studies. Board size is measured as the number of members on the board at the end of the financial year (e.g Sakawa & Watanabel, 2018; Lu & Boateng, 2017). Similarly, independent directors is measured as the percentage of independent directors on the board at the end of the financial year. Consistence with the previous studies (e.g. Liang et al 2013; Aebi et at, 2012), board meetings is measured as the number of times that the board meets per year. Presence of female directors is measured as the percentage of female directors on the board at the end of the financial year. Finally, role duality is a dummy variable that equals to 1 if the CEO

also takes the role as chairman at the end of its financial year, or 0 if otherwise (e.g. Hakimi et al, 2018; Akbar et al, 2017; Lu and Boateng, 2017; Liang et al, 2013; Aebi et al, 2012).

5.2.3 Justification for Control Variables

To test the hypothesis, other variables apart from the independent variables, have been added to control for the potential effects on our dependent variables. This subsection outlines and justifies the inclusion of the control variables used in this research.

5.2.3.1 Bank Size

Bank size has been measured as the natural logarithm of total assets. Also, a large body of literature has used bank size as control variable to see the potential effect it has on bank performance (e.g. Abdul Gafoor et al, 2018; Sakawa & Watanabel, 2018; Nomran et al, 2018; Tan, 2016; Al-Saidi & Al-Shammari, 2013; Salim et al, 2016; Dietrich & Wanzenried, 2011). The size of the bank can have different effects on different business activities of the bank including diversification of portfolio, opportunities in investments and access to equity capital (Zhan et al, 2008; Rahman et al, 2015). Theoretically, larger banks can make entry difficult by creating barriers which allow them to make investments and generate funds easily to improve their profitability (Al-Saidi & Al-Shammari, 2013; Short & Keasey, 1999). It has been argued that a large size bank may results to economies of scale which can lead to a reduction in the cost of gathering and processing information (Elsas, 2010; Tan, 2016; Rahman et al, 2016; Salim et al, 2016). The reduction of cost will ultimately increase bank profitability (Pasiouras & Kosmidou, 2007). Dietrich and Wanzenried (2011) add that, the degree of product and diversification of loan is more associated with bigger banks than smaller banks. As a results, the risk of larger banks are reduced and due to economies of scale which is possible with bigger size, there is possibility of positive relationship between bigger bank size and performance (Smirlock, 1985). However, as a result of agency cost, cost related to managing large firms and the overhead bureaucratic processes, it may be possible to see a negative association between size and performance of banks that become very large (Dietrich and Wanzenried, 2011; Pasiouras and Kosmidou, 2007).

On the other hand, it has been argued that smaller and diversified banks can reduce problems of information asymmetry leading to a negative effect of size on performance (Tan, 2016). Moreover, smaller banks can achieve economies of scale

through increasing their size to a certain level where additional increase in the size brings about diseconomies of scale (Tan, 2016). As a result of the above, Athanasoglou et al (2008) argue that performance increases with size at the initial stage and then reduces at a later stage through reasons such as bureaucracy. Short and Keasey (1999) posit that the bigger the bank, the easier for it to generate internal funds and access external funds as well. A reduction in financial difficulties assist larger banks to make bigger profitable investments which can increase their performance. In general, the impact of bigger size on bank performance has proven to be positive to some extent. However, due to bureaucratic and other reasons, bigger bank can have adverse impact on performance when the bank grows extremely large (Athanasoglou et al, 2008).

Moreover, due to higher ability to diversify their business activities, bigger banks could be less risky (Lu, and Boateng, 2017; Akbar et al., 2017). In addition, bigger banks are perceived to have easy access to financial products, and in effect aid better portfolio diversification and ultimately reduce banks risk (Chan et al, 2016). Also, due to the fact that bigger banks have ability and resources to make enquiries for information about their customers and profile of their risk, bigger banks could have lower risk (Lu, & Boateng, 2017). Berger et al. (2014) posit that, because bigger banks have the ability to absorb risk and due to the fact that some institutions are considered as too important to fail, we expect a positive association between bank risk and size.

Sakawa and Watanabel (2018) find bank size to be significant and positively related to bank performance. Similarly, using a sample of 25 banks in Bangladesh from 2006 to 2013, Rahman et al, (2015) report a significant and positive relationship between bank size and performance and add that size confirms an existence of economies of scale. Also, Tan et al. (2017) find significant and positive association between bank size and performance, measured by both ROA and ROE when they investigated into the impact of risk, competition and efficiency on bank profitability in China. Recently, Shawtari (2018) examined bank performance of the Yemeni banking sector using ROA, ROE and bank margins as bank performance measures. Using a sample of 16 banks, from 1996 to 2013, the findings indicate that bank size has positive impact on bank performance (ROA and ROE). Similar recent finding was recorded by Hasanov et al., (2018). They examined the bank-specific and

macro-economic determinants of bank profitability. Using 22 banks in Azerbaijan, the results indicate that bank size has positive impact on profitability.

Contrary, using a sample of 82 Chinese banks with GMM estimator, Tan (2016) finds that bank size has significant and negative association with performance. Similarly, Al-Saidi and Al-Shammari (2013) report a negative and significant relationship between firm size and performance using a sample from 1988 to 1992. Furthermore, Dietrich and Wanzenried (2011) find the evidence that smaller and bigger banks perform better than medium sized-banks. Also, Elyasiani and Zhang (2015) report a negative association between bank size and performance measured by ROE. Doumpos et al (2015) find that smaller bank size result to higher bank soundness, using a sample of 1756 commercial banks from 94 countries. However, using a sample of 10 commercial banks in Tunisia, Bougatef (2017) shows that bank size has a negative but insignificant impact on ROA. Similarly, using a sample of 50 largest Chinese banks during the period of 2003–2010 by Liang et al, (2013), the result shows that bank size has positive but insignificant impact on bank performance, measured by ROA.

However, using a sample of 212 US bank holding companies from 1997 to 2004, Pathan (2009) finds that bank size has negative relationship with total risk, idiosyncratic risk and assets return risk, during an examination of the impact of structure banks on bank risk-taking relevance. Similarly, using a sample of 228 banks, Switzer and Wang (2013) examined the relationship between credit risk of banks and the corporate governance structures of these banks from the perspective of creditors. The findings indicate that bank size has significant negative impact on risk. Moreover, Chan et al. (2016) analyse 16 commercial banks in China from 2003 to 2011 to find the effect of board of director's socio-economic background on bank risk-taking behaviour. The findings suggest that bigger bank size reduces systemic risk. Furthermore, Berger et al (2014) examined how age, gender and education of executive teams affect the financial institutions portfolio risk. Using a sample of 10,719 bank-year observations, the findings show that lager banks are associated with a reduction in bank risk in Germany.

Contrary, Dong (2016) investigated the impact of board governance characteristics on bank efficiency and risk taking. The findings show that bank size has positive impact on bank risk. However, Lu and Boateng (2017) report a negative but insignificant relationship between bank size and bank risk using a sample of 79 UK

banks between 2000 and 2014. Similarly, Akbar et al. (2017) find negative and insignificant relationship between bank size and risk, using 276 UK financial firms from 2003 to 2012.

5.2.3.2 Cost to Income Ratio

Cost-to-income-ratio, also known as cost efficiency, measures banks operational efficiency. This variable has been used because of data availability and also it is considered as one of the important factors to determine bank's risk and performance. In addition, a number of past studies have included cost-to-income ratio as a determinant of bank profitability (e.g. Rahman et al, 2015; Dietrich & Wanzenried, 2011; Elsas et al, 2010; Pasiouras & Kosmidou, 2007). The cost-to-income ratio has been defined by Dietrich & Wanzenried (2011) as the operating costs (such as staff salaries administrative costs, and property costs, excluding losses due to bad and non-performing loans) over total generated revenues. The ratio of cost-to-income ratio provide information on the impact of efficiency of management concerning expenses on banks performance. The higher the ratio of cost-to-income ratio, the less efficiency of the management, the more risk and less performance banks incur. The ratio can also show the cost of running the bank and benefits of staff and their salaries are the main elements of it (Rahman et al, 2015).

Some previous studies demonstrate a negative relationship between banks performance and cost-to-income ratio (e.g. Rahman, 2015; Syafri, 2012; Dietrich & Wanzenried, 2011). Using a sample of 372 commercial banks over the period 1992 to 2009, Dietrich & Wanzenried (2011) examined the determinants of bank profitability before and during the financial crisis. The empirical results indicate that cost-to-income ratio has significant and negative effect on bank profitability in Switzerland. Similarly, Goddard (2013) examined the determinants and convergence of banks from 1992 to 2007. Using a sample of 4787 from eight European countries, the findings indicate that cost to income ratio has significant negative impact on banks performance. Empirical relationship between cost-to-income ratio and bank risk has largely been ignored.

5.2.3.3 Equity to total asset

This is a measure of capital adequacy of the bank and it is used as proxy for bank capital (for example Djalilov & Piesse, 2016). It has been used in a number of past studies to find out how it influences banks performance (e.g. Djalilov & Piesse; 2016 Daly & Frikha, 2017; Dietrich & Wanzenried, 2011) and bank risk (e.g. Pathan, 2009;

Chan et al., 2016; Minton et al., 2010; Dong, 2016). The ratio of equity to total asset is expected to have positive impact on bank performance and negative impact on bank risk since it represents the amount of available funds to back operations of the bank, and for that matter serve as safety net in case of adverse events (Djalilov & Piesse, 2016; Athanasoglou et al., 2008). In addition, when a bank has higher equity to asset ratio, it is perceived to be safer, and for that matter we expect the risk to be lower (Chan et al., 2016). It also shows the ability of the bank to honour its engagements to its clients based on its own resources (Daly and Frikha, 2017).

Moreover, an increase in the bank's capital indicates a good future for the bank (Djalilov & Piesse, 2016). Therefore, the higher this ratio, the lower the risk and the higher the performance of the bank and vice versa. For instance, a bank is considered relatively less risky and safer when it has higher ratio of capital-to-asset. Contrary, a bank with lower capital-to-asset ratio is considered as unsafe and more risky (Dietrich & Wanzenried, 2011). Also, a higher equity-to-asset ratio bank will have lesser need for external funding than a bank with lower equity-to asset ratio (Dietrich & Wanzenried, 2011). The more efficient an institution is likely to be, the higher this ratio is, based on the 'moral hazard hypothesis (Daly & Frikha, 2017). According to Ariyadasa et al. (2017), most studies find the impact of capital on performance to be positive and significant. This is an indication that well capitalised banks perform better. Contrary, some studies suggest that capital does not have any significant impact on banks performance and risk. All things being equal, banks that have lower equity-to asset ratio and need more external funding will have higher interest to pay and has lesser profit and more risky than the counterparts which need less external funding and pay less interest.

Using GMM technique from 2000 to 2013, Djalilov and Piesse (2016) find banks equity to total asset to be positively related to ROA, a measure of bank performance. Similar to the above finding, Daly and Frikha (2017) report a significant and positive correlation between equity-to-asset and bank performance (both ROA and ROE**).** Recently, Hasanov et al. (2018) examined the bank-specific and macro-economic determinants of bank profitability. Using a sample of 22 banks, the findings show that equity to asset ratio has significant and positive impact on bank profitability. Moreover, using a sample of 10 commercial banks in Tunisia, Bougatef (2017) finds that equity to asset has significant and positive impact on bank performance, measured by ROA. In addition, using a sample of 50 largest Chinese banks during

the period of 2003–2010, Liang et al, (2013) find that the equity to assets ratio has significant positive impact on bank performance, indicating that banks with high degree of capital perform better in China.

Contrary, using a sample of 372 commercial banks between 1992 to 2009, Dietrich and Wanzenried (2011) examined the determinants of bank profitability before and during the financial crisis. The results show that equity to asset ratio has significant and negative impact on bank profitability in Switzerland during the financial crisis 2007-2009. Similarly, Mollah and Zaman (2015) examined whether Shariah supervision as a cornerstone of Islamic banking helps Islamic banks perform better and create shareholder value. Using data from 2005-2011, with a sample of 172 banks, the results show that equity to assets ratio has significant negative impact on Islamic banks performance. Another similar finding was reported by Dong et al., (2017) who report a significant negative association between equity to assets ratio and profit efficiency of Chinese banks.

Using a sample of 212 US bank holding companies from 1997 to 2004, Pathan (2009) finds that a higher capitalised banks are exposed to higher risk, during an examination of the impact of structure banks on bank risk-taking relevance. The finding indicates a positive relationship between bank capital and risk. Contrary, Chan et al. (2016) analysed 16 commercial banks in China from 2003 to 2011 to find the effect of board of director's socio-economic background on bank risk-taking behaviour. The findings suggest that banks with higher capital ratios have lower systemic risk. Similarly, Minton et al. (2010) study how risk taking and firm value are related to board independence and financial expertise using a sample of 652 banks and other financial firms from 2000 to 2008. The results indicate that the equity to asset ratio has negative relationship with bank risk. However, Dong (2016) investigated the impact of board governance characteristics on bank efficiency and risk taking. The findings indicate that equity to asset ratio has positive but insignificant impact on bank risk.

5.2.3.4 Net loans to total assets

Loans-to-assets ratio represents the investments of banks in loans and advances (Sun et al, 2017). When the level of loans is high, it indicates that the traditional lending activities involve by the bank is high at the same time, operational cost is increased as a result of the bank subject to increasing level of default risk (Sun et al, 2017). In sum, a high net loans to assets ratio will result to high bank risk and

low performance. Dong et al., (2017) find a significant positive impact of net loans to assets ratio on Chinese banks profit efficiency. Daly and Frikha (2017) find that the ratio of net loans to total assets have positive and significant effect on bank performance using ROA and bank efficiency as proxy of bank performance. Mollah and Zaman (2015) examined whether Shariah supervision as a cornerstone of Islamic banking helps Islamic banks perform better and create shareholder value. Using data from 2005-2011 year period, with a sample of 172 banks, the results find that net loans to assets ratio has insignificant effect on Islamic banks performance. Dong et al. (2017) investigated the impact of board governance characteristics on bank efficiency and risk taking. The findings indicate that the loan to asset ratio has positive but insignificant impact on bank risk.

5.2.3.5 GDP growth

When considering macroeconomic factors that affect bank performance and bank risk, GDP is no exception. As a result, some studies have used GDP to determine how it affects bank performance (for example Albertazzi & Gambacorta, 2009; Boateng et al., 2015; Mollah et al., 2017) and bank risk (e.g. Berger et al, 2014). This study also seek to adopt how GDP as a macroeconomic variable impact on the risk and performance of African banks. GDP measures the size of economy. According to Boateng et al., (2015), a higher GDP growth causes a higher demand which encourages firms to borrow more to produce more goods and services to meet the higher demand for goods and, consequently decrease bank risk and increase their profitability. Shawtari (2018) posits that a favourable condition in a country at any point in time causes people to borrow from banks which cause a favourable condition for banks to make more profit.

Using a data for 10 industrialised countries to examine the link that exists between the profitability of bank and the business cycle, Albertazzi and Gambacorta (2009) find significant and positive impact of GDP on bank performance, measured by ROA. Similarly, Mollah and Zaman (2015) examined whether Shariah supervision as a cornerstone of Islamic banking helps Islamic banks perform better and create shareholder value. Using data from 2005-2011 year period, with a sample of 172 banks, the results indicate that GDP has significant positive impact on Islamic banks performance. A more recently, Shawtari (2018) provided an examination into bank performance of the Yemeni banking sector using different proxies of bank performance, namely ROA ROE and bank margins. Using a sample of 16 banks,

from 1996 to 2013, the findings show that GDP has positive impact on bank performance.

Contrary to the above findings, there are few empirical findings that indicate a negative relationship between GDP and bank performance (e.g. Boateng et al., 2015). Using a sample of 111 Chinese commercial banks between 2000 to 2012, Boateng et al., 2015) find a negative relationship between GDP and bank performance. The authors suggest that a higher GDP growth is associated with higher costs and increased loan loss provision, which causes a negative impact on bank performance. Similarly, Safrali and Gumus (2010) report a negative relationship between GDP and bank performance when they examined how macroeconomic factors impact on bank performance in Azerbaijan. Another similar findings is also reported by Rashid and Jabeen (2016). These authors analyse the performance determinants of both Islamic and conventional banks in Pakistan and their findings show that GDP has negative relationship with bank performance.

However, using a sample of 156 Islamic banks from 2005 to 2013, Mollah et al (2017) find that GDP has no significant impact on bank performance (ROA). Similarly, using a sample of 10 licensed banks from 2006-2014 in Sri Lanka, Ariyadasa (2017) find no significant impact of GDP on banks performance in Sri Lanka. Berger et al (2014) examined how age, gender and education of executive teams affect the financial institutions portfolio risk. Using a sample of 10,719 bank-year observations, the result indicates that GDP growth has a positive impact on bank risk in Germany. The relationship between bank GDP and bank risk has largely been ignored.

5.2.3.6 Corruption

Corruption is very prevalent and it is important issue around the globe which has made it an important topic for discussion in the last decade. Corruption can be defined as misuse of entrusted power for personal gain (Arshad and Rizvi, 2013). Corruption comes in different forms and its impact on people and businesses is very high. A public office is said to be abused when an officer accepts or offers bribe. Some form of corruption include stealing state assets, money laundering and nepotism (Arshad and Rizvi (2013). According to World Bank (2017), individuals and businesses spend about $1.5 trillion in bribes each year which is about 2% of global GDP. Corruption can adversely impact service delivery, for example when a police officer asks for bribe before performing a routine task, corruption can unfairly

influence the decision on who wins a government contract, and also affect how institutions such as banks' operate (World Bank, 2017). The slow development within African can partly be attributed to the high degree of corruption and poor governance. This is manifested in the Transparency International's 2017 Corruption Perception Index (CPI), where majority of African countries fall below the list of 180 countries. When the activities involving corruption within various sectors of African countries are high without any proper interventions to curb the situation, the major impact would be slow economic development which can lead to a very high increase in bank risk and poor bank performance.

There are very few empirical evidence within the banking industry that indicate that corruption has impact on banks' performance. Some of these limited findings are reported by Bougatef, (2017), Arshad and Rizvi (2013) and Aburime (2009). Using GMM technique, Bougatef (2017) finds that corruption has significant and positive relation with ROA, a measure of bank performance. According to Bougatef (2017), commercial banks in Tunisia take advantage of corruption to make profit. Contrary, using a sample of 10 banks, Arshad and Rizvi (2013) find significant negative correlation between corruption and bank performance, measured by ROA. Moreover, using a sample of 48 banks from 1996 to 2006, Aburime (2009) reports a negative relation between corruption and bank performance (ROA) in Nigeria. The empirical evidence between corruption and bank risk has largely been ignored. Based on the above discussion, we expect the relationship between corruption and bank performance in Africa to be negative and bank risk to be positive.

5.2.4 Model Specification

Due to the number of countries (48) and banks (635) involved in this study, it became impossible to apply either qualitative or mixed methods in this study. As a result, quantitative method rather than qualitative or mixed methods is used in this research. Specifically, the countries and the number of banks involved in this research are too many to apply qualitative or mixed methods. Also, using quantitative methods provides greater accuracy, objectivity and generalisation of results.

Although this study treated African as a monolithic whole, the researcher recognises, that there are some differences between different countries and different parts of Africa. Such differences include, culture, bank regulations, judicial systems, population size, security systems, and the level of employment. All these

can affect bank risk and performance of banks in Africa. However, we feel that presenting Africa as one uniform block is justified in our case, as we did not find any differences between the banks. In addition, we use GMM to account for differences between the banks if any. As mentioned in chapter 10, future research can look at different African regions (north, south, east and west) separately to see whether any significant differences are observed.

However, the hypothesis which has been developed and will be examined in this research have been summarised below.

Hypothesis 1: There is a significant and negative association between bank risk and bank performance in Africa.

Hypothesis 2: There is a significant positive association between board size and bank risk in Africa.

Hypothesis 3: There is a significant negative association between the presence of female directors on bank board and bank risk in Africa.

Hypothesis 4: There is a significant negative association between board independence and bank risk in Africa

Hypothesis 5: There is a significant negative association between role duality and bank risk in Africa.

Hypothesis 6: There is a significant negative association between the frequency of banks board meetings and bank risk in Africa.

Hypothesis 7: There is a significant positive association between the frequency of banks board meetings and bank performance in Africa

Hypothesis 8: There is a significant negative association between role duality and bank performance in Africa.

Hypothesis 9: There is a significant positive association between the presence of female directors on bank executive board and bank performance in Africa.

Hypothesis 10: There is a significant negative association between bank board size and bank performance in Africa.

Hypothesis 11: There is a significant positive association between board independence and bank performance in Africa.

Hypothesis 12: Corporate governance moderate the relationship between bank risk and bank performance in Africa.

The study uses GMM as main estimation method, where the dependent variables were regressed on explanatory variables to examine the above hypothesis. The regression equations are specified below:

First, the study finds the relationship between bank risk and performance.

To find the relationship between bank risk and performance using LPNR as risk measure, the following econometric models were used

$$ROA_{it} = \beta_0 + \beta_1 LPNR_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 LPNR_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (2)$$

To find the relationship between bank risk and performance using LLGL as risk measure, the following econometric models were used

$$ROA_{it} = \beta_0 + \beta_1 LLRGL_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (3)$$

$$ROE_{it} = \beta_0 + \beta_1 LLRGL_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (4)$$

Second, the study finds the relationship between corporate governance and bank risk. To determine such relationship the following econometric models were used

$$LPNR_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (5)$$

$$LLRGL_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (6)$$

Third, the study finds the relationship between corporate governance and bank performance. Below are econometric models used:

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (7)$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (8)$$

Fourth, the study finds the moderating effect of corporate governance on the relationship between bank risk and performance

To find the moderating effect using LPNR as risk measure, below econometric models were used

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LPNR_{it} + \beta_{13} (LPNR*SIZE)_{it} + \beta_{14} (LPNR*MEETINGS)_{it} + \beta_{15} (LPNR*DUAL)_{it} + \beta_{16} (LPNR*FEMALE)_{it} + \beta_{17} (LPNR*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (9)$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LPNR_{it} + \beta_{13} (LPNR*SIZE)_{it} + \beta_{14} (LPNR*MEETINGS)_{it} + \beta_{15} (LPNR*DUAL)_{it} + \beta_{16} (LPNR*FEMALE)_{it} + \beta_{17} (LPNR*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (10)$$

Finally, to find the moderating effect using LLRGL as risk measure, the following econometric models were used

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LLRGL_{it} + \beta_{13} (LLRGL*SIZE)_{it} + \beta_{14} (LLRGL*MEETINGS)_{it} + \beta_{15} (LLRGL*DUAL)_{it} + \beta_{16} (LLRGL*FEMALE)_{it} + \beta_{17} (LLRGL*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (11)$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE + \beta_{11} INDEP + \beta_{12} LLRGL_{it} + \beta_{13} (LLRGL*SIZE)_{it} + \beta_{14} (LLRGL*MEETINGS)_{it} + \beta_{15} (LLRGL*DUAL)_{it} + \beta_{16} (LLRGL*FEMALE)_{it} + \beta_{17} (LLRGL*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (12)$$

Where,

ROA_{it} is performance of country i at time t

ROE_{it} is performance of country i at time t

$LPNR_{it}$ is loan loss provision to net interest revenue of country i at time t

$LLRGL_{it}$ is loan loss reserve to gross loan of country i at time t

$SIZE_{it}$ is bank size 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

$(LPNR*BSIZE)_{it}$ represents the joint effect of LPNR and BSIZE of country i at time t

$(LPNR*MEETINGS)_{it}$ represents the joint effect of LPNR and MEETINGS of country i at time t

$(LPNR*DUAL)_{it}$ represents the joint effect of LPNR and DUAL of country i at time t

$(LPNR*FEMALE)_{it}$ represents the joint effect of LPNR and FEMALE of country i at time t

$(LPNR*INDEP)_{it}$ represents the joint effect of LPNR and INDEP of country i at time t

$(LLRGL*BSIZE)_{it}$ represents the joint effect of LLRGL and BSIZE of country i at time t

$(LLRGL*MEETINGS)_{it}$ represents the joint effect of LLRGL and MEETINGS of country i at time t

$(LLRGL*DUAL)_{it}$ represents the joint effect of LLRGL and DUAL of country i at time t

$(LLRGL*FEMALE)_{it}$ represents the joint effect of LLRGL and FEMALE of country i at time t

$(LLRGL*INDEP)_{it}$ represents the joint effect of LLRGL and INDEP of country i at time t

β_1 to β_{17} represent the coefficient of each variable

β_0 is the intercept

δ_0 is dummy for the crisis period, 1represent 2007/2008 and 0 represent other years

ε_{it} is the error term of country i at time t

5.2.5 Classification of variables: performance, risk, corporate governance, interacting and control variables

We classify our variables into different types and how these variables are measured is presented in table 4. In the first place, our main dependent variables are the bank performance variables which are the return on assets (ROA) and return on equity (ROE). Second, our bank risk variables are loan loss provision divided by net interest revenue (LPNR) and loan loss reserve divided by gross loan (LLRGL). It should be noted that the two bank risk variables which serve as independent variables in the bank risk and performance relationship become dependent variables in the bank risk and corporate governance relationship. The third variable group consist of independent corporate governance characteristics namely, board size (BSIZE), board meetings (MEETINGS), female directors (FEMALE), independent directors (INDEP), and duality (DUAL). The fourth group of variables are the control variables which are total assets (LNTA), cost-to-income ratio (COST), equity to total asset (EQTA), net loan to total asset (NLTA), GDP (LNGDP) and control of corruption (COR). Furthermore, we include 2007/2008 financial crisis as control variable to determine how it impacted on bank performance in Africa.

Table 4: Variables and how to measure them.

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 (%)
LLRGL	Loan loss reserve divided by gross loans (%)
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	Control of corruption by World bank
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, LN*GDP* represents Gross Domestic product, *COR* denotes corruption, *CRISIS* represents 2007/2008 financial crisis.

Note: There might be many different ways in which corruption is measured (for instance, based on opinions and perceptions) and accounted for. The way a country may be described as corrupt might not give the true picture of corruption in that particular country. Therefore, the researcher acknowledges that there might be a problem with the way in which corruption is measured since corruption is impossible to measure with complete accuracy. However, this thesis uses the same corruption across different countries. This makes the researcher consistent, so the results are easily comparable across individual countries in our sample. Also, looking at the scarcity of the quantitative studies related to this topic, there is good justification for pursuing this quantitative analysis. In addition, using GMM controls for country fix effects

5.3 Ordinary least squares assumptions and descriptive statistics

This subsection discusses how the Ordinary Least Squares (OLS) assumptions were met before conducting the analysis. It is important to note that the main OLS assumptions were met before conducting the actual analysis. To meet the assumptions, a number of statistical tests were conducted to address the OLS assumptions. In addition to the discussion of OLS assumptions, the section also presents the descriptive statistics.

5.3.1 Ordinary least squares assumptions

In the first place, because the study includes small, medium and large banks, it was noticed that some control variables have extreme values, very small and very large. This situation can violate OLS assumptions and can also lead to spurious results. To deal with the problem of outliers, the outliers were minimised by winsorising the affected variables at 5% and 95% levels. Secondly, according to Cizek et al (2005), when using panel data, it must be checked whether series have unit roots or not. Non- stationarity data causes spurious results. In view of this, it was determined whether series is stationary or not. As a result, we conducted a unit-root test of each variable used by performing Fisher-type unit-root test, which work well with an unbalanced panel data. With the Fisher-type unit-root test, the null hypothesis states that ‘all panels contain unit-root’ while the alternative hypothesis states that ‘at least one series in the panel is stationary. After the unit-root test, it was observed that no variable has unit-root. Therefore the null hypothesis was rejected and the alternative hypothesis was accepted. The results of the test are presented in table 5 below.

Table 5: Results of Fisher-type Unit Root Test

Variables	Fisher-type Unit Root Test
ROA	0.0000
ROE	0.0000
LLPNR	0.0000
LLRGL	0.0000
BSIZE	0.0000
INDEP	0.0000
DUAL(dummy variable)	1.0000
FEMALE	0.0000
MEETINGS	0.0000
LNTA	0.0000
COST	0.0000
EQTA	0.0000
NLTA	0.0000
LNGDP	0.0000
COR	0.0000

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, LN*GDP* represents Gross Domestic product, *COR* denotes corruption

Third, in order to make sure that the model does not suffer from heteroscedasticity problem, we run heteroscedasticity robust standard error (Robust OLS). Thus the regressions are based on robust standard error. This automatically removes any issues of heteroscedasticity if there is any. Therefore our test is free from heteroscedasticity problems.

Four, in order to avoid multicollinearity problem, the study checked whether the explanatory variables are highly correlated. Two statistical techniques were used to test this. First, we use Variance Inflation Factor (VIF) to test for multicollinearity problems. According to Gujarati (2003), when VIF exceeds 10 and the correlation coefficient between any two variables is greater than 0.8, then the problem of multicollinearity is expected. Tables 6 and 7 below show VIF test and correlation

matrix respectively. The two tables show no issues of multicollinearity as the highest VIF test is 3.52 and the correlation matrix table does not show any problem of multicollinearity. The two statistical techniques indicate that OLS assumptions have not been violated as a result of multicollinearity.

Table 6: Multicollinearity test using Variance Inflation Factor (VIF)

Variables	VIF
ROA	3.52
ROE	3.35
LLPNR	1.03
LLRGL	1.09
BSIZE	1.40
INDEP	1.26
DUAL	1.15
FEMALE	1.20
MEETINGS	1.15
LNTA	1.46
COST	1.03
EQTA	1.06
NLTA	1.12
LNGDP	1.31
COR	1.32

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, LN*GDP* represents Gross Domestic product, *COR* denotes corruption

Table 7: Pearson (left) and Spearman (right) correlation matrices of the variables

	Correlations															
Variables	ROA	ROE	LLRGL	LLPNR	LNTA	EQTA	NLTA	LNGDP	COR	COST	CRISIS 7_8	BSIZE	DUAL	MEETINGS	FEMALE	INDEP
ROA	1	.765**	-.165**	-.331**	-.071**	.319**	-.024*	-.005	.017	-.551**	.059**	-.043	-.061**	-.058*	.087**	-.017
ROE	.732**	1	-.216**	-.299**	.075**	-.182**	-.079**	.018	.000	-.493**	.072**	-.043	.013	-.057*	.044	-.059
LLRGL	-.143**	-.198**	1	.391**	-.144**	.056**	-.167**	-.144**	-.062**	.046**	-.044**	-.078**	.020	.081**	-.042	-.008
LLPNR	-.356**	-.363**	.363**	1	-.019	-.105**	.109**	-.062**	.001	-.038**	-.061**	.083**	-.028	.001	.028	-.019
LNTA	-.055**	.033**	-.136**	-.034**	1	-.250**	.047**	.266**	-.036**	.004	-.050**	.070**	.052*	.082**	.143**	.165**
EQTA	.206**	-.135**	.139**	-.027*	-.184**	1	.070**	-.027*	-.004	-.090**	-.024*	-.028	-.134**	-.011	.063**	.033
NLTA	-.007	-.051**	-.208**	.027*	.035**	-.017	1	-.019	.236**	-.054**	-.012	.019	-.179**	-.052	.020	.178**
LNGDP	-.012	-.009	-.073**	-.044**	.224**	-.053**	-.017	1	-.298**	.115**	.002	.245**	-.128**	.127**	.093**	-.062*

COR	.067**	.025*	-.063**	-.027*	-.051**	.117**	.232**	-.304**	1	-.105**	.018	-.126**	.056*	.028	.124**	.315**
COST	-.581**	-.560**	.091**	.034**	.012	-.027*	-.093**	.090**	-.101**	1	-.025*	-.023	-.097**	-.004	.005	.093**
CRISES7_8	.039**	.053**	-.019	-.055**	-.054**	.003	-.012	.000	.014	-.019	1	.023	.032	.029	-.083**	.031
BSIZE	-.045	-.045	-.095**	.031	.081**	-.041	.030	.277**	-.085**	-.032	.032	1	-.184**	.076**	.059**	-.146**
DUAL	-.023	.023	.014	-.023	.045	-.076**	-.209**	-.117**	.056*	-.051*	.032	-.190**	1	.042	-.096**	-.180**
MEETINGS	-.068*	.034	.048	-.003	.041	-.031	-.096**	.029	-.084**	.037	.011	-.010	.102**	1	.115**	.159**
FEMALE	.080**	.022	-.036	-.042	.105**	.153**	-.015	.054*	.125**	.003	-.079**	.033	-.057*	.013	1	.110**
INDEP	-.001	-.045	.000	-.038	.137**	.142**	.157**	-.051	.298**	.060	.036	-.133**	-.183**	.168**	.142**	1

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, LN*GDP* represents Gross Domestic product, *COR* denotes corruption, *CRISIS* represents 2007/2008 financial crisis.

Finally, normality assumption has to be met. Therefore the study test for any departures from normality and minimise non-normalities within the variables. Therefore, the study computes the skewness and kurtosis to check the extent in which the variables are normally distributed (Gujarati, 2003). The statistical results of the skewness and kurtosis show that the variables deviate from a normal distribution. The natural log of some of the variables were taken to minimise the non-normality. Secondly, when the variables were winsorised to reduce the outliers, it helped improve the normality of the variables. Also, the impact of non-normality is expected to be minimised or removed due to robust OLS regression which was done to correct the issue of heteroscedasticity. In general, the various statistical tests conducted are expected to take care of any issue of non-normalities, serial correlations, multicollinearities heteroscedasticities, and non-linearity. Therefore, it can be concluded that the OLS assumptions were met before conducting the analysis of this study.

5.3.2 Descriptive statistics

This subsection of the research provides detailed information on the descriptive statistics on all the variables used for achieving the research aims and objectives. The descriptive statistics is shown in table 8 below.

Table 8: Summary descriptive statistics of all variables.

Variables	Mean	Median	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis	Observations
Panel A: *Performance variables*								
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
Panel B: Risk variables								
LLPNR	21.41	12.43	29.55	-16.94	134.88	2.14	8.06	5990
LLRGL	6.65	4.17	7.02	0.25	31.50	1.93	6.59	5743

Panel C: Corp. governance variables								
BSIZE	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
Panel D: Control Variables								
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* 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, LN*GDP* represents Gross Domestic product, *COR* denotes corruption, CRISIS7_8 represents 2007/2008 financial crisis

Panel A of table 8 shows that the first measure of performance, ROA ranges from a minimum of -6.91% to a maximum of 9.30%, with an average of 1.77%. The second performance measure, ROE on the other hand has a minimum value -49.36% and a maximum of 60.33% with an average value of 13.96%. ROA and ROE have a

standard deviation of 2.74% and 19.54% respectively. The negative signs on the minimum values of ROA and ROE means that the shareholders of some of the African banks are losing instead of gaining, because those banks are not making profit. However, since the mean values are positive, it can be concluded, that on average the banks in Africa are making profit. Panel B shows the two risk measures, Loan loss provision to net interest revenue (LPNR) and Loan Loss Reserve to Gross Loan (LLRGL). The minimum values of LPNR and LLRGL are -16.94 and 0.25 respectively and their maximum values are 134.88 and 31.50 respectively. While LLPNR has an average value of 21.41 with a standard deviation of 29.55, LLPGL has average value of 6.65% and a standard deviation of 7.02%.

Panel C of table 8 presents all the independent corporate governance variables. The Board size of African banks ranges from a minimum of 2 and a maximum of 23. On average the board size of African banks is 10.49 and a median number of 10. This value is within the board size (i.e. between 8 and 10) recommended by Lipton and Lorsch (1992), for efficiency of a board. Jensen (1993) also argue that any 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 standard deviation of the board size is 3.49. The number of independent directors on African bank board ranges from a minimum of 0 to a maximum of 18 with a standard deviation of 25.30. The average number of independent directors on African bank board is about 4.89. This value portrays that the number of independent directors who suppose 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.

The next corporate governance variable is role duality which is a dummy variable with minimum number of 0 and a maximum number of 1, with a mean value of 0.16 and a standard deviation of 0.37. This means, on average the 16% of the sample banks have a combined role of CEO/Chairman position. The next variable to DUAL on the table is female directors on African boards with a minimum value of 0% and a maximum value of 9. The number of female directors has an average value of 1.49 and standard deviation of 1.45. This means the average number of female directors on the banks board is only 1.49 which is very small number compare to average board size of 10.49. The last but not the least independent corporate

governance variable on the table is board meetings. The board meeting has a minimum value of 0 and a maximum value of 38 with a standard deviation of 4.20. The average number of board meetings which is held by African banks within a year is around 6 (6.26).

Apart from the independent variables, there are other factors which can also affect bank risk and bank performance in Africa. As a result, we control for a number of these factors. Panel D of table 8 shows all the control variables used in this study. The first control variable is the bank size which is the natural log of the total assets of the banks. The minimum banks size is -1.70 and the maximum is 9.65 with a standard deviation of 1.71. The mean value of total asset (LNTA) of the African banks is 3.56. The second control variable is cost-to income ratio. Cost-to income ratio has a minimum value of 14.46 and a maximum value of 159.21 with a standard deviation of 28.38. The mean value of cost-to-income ratio is 62.67%. The lower the value of cost to income ratio the higher the efficiency of the bank. Equity/total asset is the third control variable. 2.70% represents the minimum value while 72.91% represents the maximum value and has a standard deviation of 14.51. It has a mean or average value of 16.33 %. The fourth control variable is net loan/total asset. This ratio is used to assess the liquidity of a bank. The banks have a minimum net loan/total asset of 2.77% and a maximum value of 90.01% with a standard deviation of 21.39. The average net loans to total asset ratio is 47.60%. 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.

GDP is the fifth control variable. The minimum GDP recorded from the 48 countries selected for this study is -0.81 and a maximum of 11.15 with a standard deviation of 2.46. The average GDP of all the countries is 6.74. The sixth control variable is corruption. A high number means very clean while a low number means very corrupt. The minimum corruption figure is as low as 0.85 and a maximum of 85.85 with a standard deviation of 22.22. The average corruption value in the 48 countries selected for this study is 35.39. This value suggest that corruption is very prevalent in Africa which can affect their bank risk and performance. Finally, financial crisis of 2007/2008 is a dummy variable with a minimum number of 0 and a maximum number of 1. Financial crisis has a mean of 0.12 and a standard deviation of 0.32.

5.4 Chapter summary

This chapter has focused on research design and methodology. The chapter first describe the sample selection and sources of data. In this regard, all the banks were selected from BankScope database. The selected banks come from 48 countries in Africa and from different bank specialisation and the majority of the sample banks are commercial banks. The data of the banks specific information are obtained from BankScope and Orbis bank focus databases provided by Bereau van Dijk. The data on the internal corporate governance variables were obtained from the annual reports of the sampled banks. These annual reports were downloaded direct from the website of the sampled banks. However, there are corporate governance information of some few banks which were obtained from Boardex database. Corruption and GDP data were obtained from the World Bank website.

The sample and sample selection criteria have been explained in this chapter. The study cover a seventeen year period from 2000 to 2017. The study uses a panel data analysis and 635 banks are used as the final sample for the study. The data on these banks have been used to analyse and test the relationship between bank risk and performance, bank risk and corporate governance, corporate governance and bank performance, and the moderating effect of corporate governance on the relationship between bank risk and performance. All the variables and how they are measured have been explained in this chapter in addition to the justification for control variables. One of the main things this chapter focused is the OLS assumptions. Under this, the various OLS assumptions that must be met before the actual analysis is carried out have been discussed. Finally, the chapter presented and discussed the summary statistics of all the variables used in this study.

CHAPTER SIX

EMPIRICAL RESULTS OF THE RELATIONSHIP BETWEEN BANK RISK AND BANK PERFORMANCE

6 Introduction

The aim of this section of the research is to investigate the relationship between bank risk and performance. In order words, the main research aim is to find out the impact of bank risk on the performance of African banks. As mentioned earlier, we follow previous studies (e.g. Tan, 2016) and use GMM as our main statistical model and OLS, fixed effect and 2SLS for our robustness analyses. GMM is used as our main estimator because of the number of advantages which are derived from such technique including resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which other techniques may not be able to resolve (see for example, Tan, 2016). We use two bank risk measures in our analyses, Loan Loss Provision to Net Interest Revenue (LLPNR) and Loan Loss Reserve to Gross Loan (LLRGL); and two bank performance measures, Return on Assets (ROA) and Return on Equity (ROE). Discussions and robustness analyses which test the relationship between bank risk and performance are presented in this section. This section relates to hypothesis one.

6.1. Empirical result of bank risk and bank performance using LLPNR as bank risk measure

To find the impact of bank risk on bank performance using LLPNR as risk measure, the following models were used as mentioned in chapter four; the results are presented in tables 9 and 10.

$$ROA_{it} = \beta_0 + \beta_1 LPNR_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 LPNR_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (2)$$

6.1.1. Results of independent variable

From tables 9 and 10, LLPNR is significant and negatively correlated with both ROA and ROE at 1% level of significance. These findings are consistent with hypothesis one, which postulated a statistically significant negative association between bank risk and bank performance in Africa. These results indicate that the risks incurred by African banks including credit risk, operational risk, interest rate risk and foreign

exchange risk have significant and adverse impact on bank performance in Africa. Due to poor performance of many business activities in Africa, the greater part of bank risk may have come from credit risk resulting from unpaid loans of businesses and individuals. The negative impact of bank risk on bank performance in Africa means that the banking cost becomes higher when there is bank risk and eventually decreases the profit of the banks. The result lends empirical support to previous empirical literature which find negative impact of bank risk on bank performance (e.g. Tan et al, 2017; Al-Tamimi, et al, 2015; I.Maghyereh and Awartani, 2014; Mamatzakis and Bermpei, 2014; Athanasoglou et al, 2008; Sufian, 2011; Liu and Wilson, 2010; Sufian and Chong, 2008; Zhang et al, 2013; Muriithi and Waweru, 2017). Contrary, this significant negative relationship between bank risk and bank performance is inconsistent with some of the previous empirical literature which document a significant positive relationship between bank risk and performance (e.g. Ekinci, 2016; Tan et al, 2017; Sufian, 2009; Sufian and Habibullah; 2009a; Sufian and Habibullah, 2009b). Again, the significant negative effect of bank risk on performance is also not in line with Tan (2016), Kamau et al. (2015) and Rahman et al. (2015) who find insignificant effect of bank risk on performance. The inconsistent of this result with some previous empirical literature may come from differences in how the variables are measured.

Table 9: Results of impact of bank risk on bank performance using LLPNR as bank risk measure and ROA as bank performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
LLPNR	-0.0297***	-0.0271***	-0.0272***	-0.0160***
	(0.00111)	(0.000764)	(0.000740)	(0.00392)
LNTA	-0.0198	-0.0532***	-0.0574***	0.0142
	(0.0176)	(0.0203)	(0.0167)	(0.0328)
EQTA	0.0372***	0.0448***	0.0421***	0.0462***
	(0.00345)	(0.00312)	(0.00256)	(0.0125)
NLTA	-0.00875***	0.000205	-0.00373**	-0.0246**
	(0.00141)	(0.00191)	(0.00161)	(0.00998)
COST	-0.0558***	-0.0656***	-0.0629***	-0.0702***
	(0.00142)	(0.00114)	(0.00103)	(0.00609)
LNGDP	0.0106	-0.186*	0.0236	0.403***
	(0.0127)	(0.103)	(0.0218)	(0.0922)
COR	-0.00189	0.00524	0.000481	0.0201**
	(0.00141)	(0.00319)	(0.00206)	(0.00990)
CRISIS7_8	0.183	0.135**	0.148***	0.0769
	(0.130)	(0.0552)	(0.0552)	(0.0798)
Lag of dependent variable				0.186***
				(0.0247)
Constant	5.698***	6.938***	5.775***	3.053***
	(0.202)	(0.717)	(0.219)	(0.993)
Observations	5,502	5,502	5,502	4,920

R-squared	0.515	0.509

Notes: LLPNR denotes loan loss provision/net interest revenue, 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 10: Results of impact of bank risk on bank performance using LLPNR as bank risk measure and ROE as bank performance measure

MODEL	**(1)**	**(2)**	**(3)**	**(4)**
VARIABLES	**OLS**	**Fixed effect**	**2SLS**	**GMM**
LLPNR	-0.229***	-0.214***	-0.213***	-0.101***
	(0.00957)	(0.00614)	(0.00589)	(0.0276)
LNTA	0.534***	-0.215	-0.285**	0.133
	(0.146)	(0.164)	(0.131)	(0.257)
EQTA	-0.197***	-0.0455*	-0.118***	-0.0662
	(0.0178)	(0.0251)	(0.0196)	(0.105)
NLTA	-0.0930***	-0.0221	-0.0624***	-0.208***
	(0.0102)	(0.0153)	(0.0124)	(0.0669)
COST	-0.391***	-0.484***	-0.446***	-0.521***
	(0.0105)	(0.00918)	(0.00799)	(0.0415)
LNGDP	-0.151	-4.571***	-0.00528	4.147***
	(0.0932)	(0.827)	(0.153)	(0.734)
COR	0.00437	0.0553**	0.0189	0.176**
	(0.0100)	(0.0257)	(0.0151)	(0.0707)
CRISIS7_8	4.914***	1.986***	2.323***	1.767***
	(1.002)	(0.443)	(0.444)	(0.589)

L.ROE				0.185***
				(0.0220)
Constant	46.60***	80.17***	51.03***	21.14***
	(1.469)	(5.748)	(1.596)	(7.718)
Observations	5,516	5,516	5,516	4,932
R-squared	0.491	0.457		

Notes: LLPNR denotes loan loss provision/net interest revenue, 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.

6.1.2 Results of control variables

The results of control variables are presented in Tables 9 and 10. From These tables, we find that LNTA, which measures bank size in terms of total asset is insignificant and positively correlated with both ROA and ROE. The positive impact of bank size on performance indicates that the economies of scale enjoyed by larger banks enable them to reduce cost and make more profit. A reduction in cost help the banks to improve their performance. The positive correlation between bank size and performance can also mean that a rise in total asset absorbs the rise in net income. Moreover, the positive coefficient could also suggest that the bigger banks in Africa get benefits through diversification of the activities of their loan portfolios which leads to higher bank performance. However, the banks in Africa are not able to utilise the advantages that bigger bank size brings to make profit. Therefore, the positive effect of size on performance is insignificant. The insignificant nature of this result may come from measurement error or multicollinearity. Although this issue were resolved before the analyses, issues like multicollinearity might not be removed completely. This finding is consistent with the finding of Bougatef (2017) who finds insignificant association between bank size and bank performance in Tunisia. However, the finding is inconsistent with the findings of prior literature which report a significant positive correlation between bank size and performance (e.g. Sakawa and Watanabel, 2018; Rahman et al., 2015; Tan et al., 2017; Shawtari, 2018; Hasanov et al., 2018). The insignificant positive relationship between bank size and performance is also not consistent with the findings of Tan (2016), Al-

Shammari (2013), Dietrich and Wanzenried (2011), Elyasiani and Zhang (2015) and Doumpos et al (2015) who report significant negative correlation between bank size and performance. The inconsistence of this result with other empirical results may come from differences in sample size and study time frame.

Equity to asset ratio (EQTA), which measures bank capitalisation is significant and positively correlated with ROA at 1% level of significance but insignificant and negatively correlated with ROE. The inconsistent result of ROA and ROE may come from the fact, that the behaviour of equity and debt holders (ROA) may be different from the behaviour of equity holders (ROE), hence the results of ROA and ROE can be different. For instance, debt and equity holders (ROA) may accept certain level of losses whiles equity holders (ROE) may not accept any losses at all, they only demand their returns from the bank whether the bank incurs loss or makes profit. The positive correlation between equity to asset ratio and bank performance implies that banks with higher degree of capitalisation perform better in Africa. The findings can also be explained by the fact that well capitalised banks in Africa can change their funds to higher income earnings to make them more profitable. The finding supports the theoretical argument by Djalilov and Piesse (2016) and Athanasoglou et al., (2008) who argue that, the ratio of equity to total asset is expected to have positive impact on bank performance because it represents the amount of available funds to back operations of the bank, and for that matter serves as safety net in case of adverse events, which could increase bank performance. This finding is in line with the findings of some past empirical findings (e.g. Bougatef, 2017; Djalilov and Piesse, 2016; Hasanov et al., 2018). However, this finding is not in line with the negative correlation between equity to asset ratio and bank performance recorded by prior empirical literature (e.g. Dietrich and Wanzenried, 2011). The differences in the findings may be due to different time frame of the studies and different ways in which the variables were measured.

Contrary, the negative correlation between equity to assets ratio and bank performance suggests that less capitalised banks are able to increase their profitability compared to a well-capitalised banks. It also suggests that high capital protection is penalised with low profit in Africa, but this is not significant in the case of Africa, which may be due to measurement error and extreme values within the data.

Loans to asset ratio (NLTA), which assesses the liquidity of banks, is highly significant and negative related to both ROA and ROE at 5% and 1% significance levels respectively. This indicates that when the ratio of loans to assets decreases, banks in Africa have enough liquidity to cater for any unforeseen fund requirement. This gives confidence to their depositors to deposit more funds. When more funds are deposited, the banks get opportunity to invest some of the deposits, which help the banks to earn more profit. The negative coefficient on net loans to assets also suggests that African banks have the ability to manage, control and monitor their loans very efficiently, they do not have a record of more bad loans, and subsequently reduce cost leading to higher bank performance. The findings are not in line with the findings of Daly and Frikha (2017), Dong et al., (2017), Mollah and Zaman (2015) who document a positive relationship between net loans to assets ratio and bank performance. This may be due to differences in the study time frame and differences in measuring the variables.

Cost to income ratio (COST) is found to be significant and negatively associated with ROA and ROE at 1% level of significance. The result indicates that banks with low cost-to-income ratio perform better in Africa than those with high cost-to-income ratio. The negative coefficients on ROA and ROE imply that banks in Africa have good management team who are experts and skilled in managing their operations efficiently and for that matter making good profit. This findings lend some support to the theoretical argument which states that, the higher the ratio of cost-to-income ratio the less efficiency of the management, which could reduce bank performance and vice versa (see for example, Rahman et al, 2015). The significant negative association between cost to income ratio and bank performance is in line with the findings of some previous empirical studies (e.g. Rahman, 2015; Syafri, 2012; Dietrich and Wanzenried, 2011; Goddard, 2013).

We find that GDP (LNGDP) has significant and positive impact on both ROA and ROE. The higher GDP growth which is positively related to bank performance indicates that higher growth causes a higher demand for lending which ultimately leads to higher bank profitability. On the other hand, this result means that there is a high probability of higher demand for lending during a period of cyclical upswing which may result to higher bank performance. The positive impact of GDP on bank performance supports the theoretical statement by Boateng et al., (2015) who suggest that higher GDP growth results to a higher demand which encourages firms

to borrow more to produce more goods and services to meet the higher demand for goods and, subsequently increase banks performance. The significant and positive impact of GDP on bank performance lend empirical support to some previous empirical findings of Albertazzi and Gambacorta (2009), Shawtari (2018). Contrary, this findings do not lend empirical support to Boateng et al., (2015), Safrali and Gumus (2010), Rashid and Jabeen (2016) who record significant negative impact of GDP on bank performance. In addition, the findings do not lend empirical support to the findings of Mollah et al (2017) and Ariyadasa (2017) who document no significant impact of GDP on bank performance. The inconsistent of this result and other previous empirical results may come from differences in measuring the variables and differences in sample size.

In terms of control of corruption (COR), there is significant and positive relationship between COR and bank performance based on both ROA and ROE at 5% significant levels. The positive sign means an increase in Corruption Perception Index (CPI), which is a reduction in corruption. This means that when Corruption Perception Index (CPI) increases (a reduction in corruption), banks performance significantly increases. The result shows that an increase in corruption within the institutions including banks in Africa is not good for improvement of performance of banks in Africa. Therefore, a reduction in corruption will help improve the performance of African banks. The result is consistent with Bougatef (2017) and contrary to Aburime (2009) and Arshad and Rizvi (2013) who find a significant negative relationship between corruption and bank performance.

For the impact of financial crisis, we find insignificant and positive correlation between CRISIS and bank performance based on ROA but significant and positive correlation between CRISIS and bank performance based on ROE at 1% significance level. The insignificant result of ROA may be due to measurement error, multicollinearity and extreme values**.** The positive coefficient on financial crisis may indicate that, the crisis hit more in the developed countries with a very little or no impact on African countries. As a result, the banks in Africa were still able to embark on their business activities to make profit during the crisis period.

6.2 Empirical result of bank risk and bank performance using LLRGL as bank risk measure

To find the impact of bank risk on bank performance using LLRGL as risk measure, the following econometric models were used as stated in chapter four. The results are presented in Tables 11 and 12 below.

$$ROA_{it} = \beta_0 + \beta_1 LLRGL_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (3)$$

$$ROE_{it} = \beta_0 + \beta_1 LLRGL_{it} + \beta_2 SIZE_{it} + \beta_3 EQTA_{it} + \beta_4 NLTA_{it} + \beta_5 COST_{it} + \beta_6 COR_{it} + \beta_7 GDP_{it} + \delta_0 + \varepsilon_{it} \quad (4)$$

6.2.1 Result of independent variables

From Tables 11 and 12, LLRGL has insignificant and negative impact on bank performance based on both ROA and ROE. The insignificant of these results may be caused by measurement error, autocorrelation, extreme values and multicollinearity. These issues were dealt with before the analysis, it is possible that they cannot be removed completely. The findings mean that hypothesis one, which postulates a significant negative association between bank risk and performance in Africa is rejected. However, the negative impact of bank risk on bank performance implies that risks associated with the businesses of banks which are caused by factors such as non-performing loans, lack of proper risk management strategies and policies and inefficient banking operations have adverse effect on bank performance in Africa. The findings is consistent with Tan (2016), Kamau et al. (2015) and Rahman et al. (2015) who document insignificant association between bank risk and performance. Contrary, the findings do not lend empirical support to previous empirical literature (e.g. Tan et al, 2017; Al-Tamimi, et al, 2015; I.Maghyereh and Awartani, 2014; Mamatzakis and Bermpei, 2014; Athanasoglou et al, 2008; Sufian, 2011; Liu and Wilson, 2010; Sufian and Chong, 2008; Zhang et al, 2013; Muriithi and Waweru, 2017) which document a significant negative association between bank risk and performance. In addition, the insignificant negative relationship between bank risk and performance is inconsistent with previous empirical literature which document significant positive relationship between bank risk and performance (e.g. Ekinci, 2016; Tan et al, 2017; Sufian, 2009; Sufian and Habibullah; 2009a; Sufian and Habibullah, 2009b). The

inconsistent of this result with some past literature may cause by differences in study time frame, sample size and variable measurement.

Table 11: Results of impact of bank risk on bank performance using LLRGL as risk measure and ROA as performance measure

MODEL VARIABLES	(1) OLS	(2) Fixed effect	(3) 2SLS	(4) GMM
LLRGL	-0.0542*** (0.00638)	-0.0475*** (0.00481)	-0.0495*** (0.00444)	-0.0119 (0.0145)
LNTA	-0.0617*** (0.0206)	-0.0554** (0.0237)	-0.0531*** (0.0191)	-0.0503 (0.0383)
EQTA	0.0440*** (0.00381)	0.0671*** (0.00387)	0.0545*** (0.00308)	0.0509*** (0.0140)
NLTA	-0.0153*** (0.00161)	-0.00581** (0.00228)	-0.00945*** (0.00189)	-0.0537*** (0.0102)
COST	-0.0576*** (0.00158)	-0.0662*** (0.00130)	-0.0636*** (0.00116)	-0.0539*** (0.00684)
LNGDP	0.0436*** (0.0143)	0.0721 (0.119)	0.0542** (0.0239)	0.285*** (0.101)
COR	0.000530 (0.00153)	0.00225 (0.00375)	0.000272 (0.00231)	0.0360*** (0.0102)
CRISIS7_8	0.0798 (0.152)	0.243*** (0.0639)	0.240*** (0.0638)	0.230** (0.0922)
L.ROA				0.189*** (0.0274)
Constant	5.827*** (0.230)	5.080*** (0.817)	5.466*** (0.248)	3.748*** (1.038)
Observations	5,017	5,017	5,017	4,517
R-squared	0.439	0.421		

Notes: LLRGL denotes loan loss reserve/gross loan, 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 12: Results of impact of bank risk on bank performance using LLRGL as risk measure and ROE as performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
LLRGL	-0.451***	-0.373***	-0.397***	-0.151
	(0.0478)	(0.0395)	(0.0354)	(0.111)
LNTA	0.274	-0.385**	-0.322**	-0.295
	(0.174)	(0.196)	(0.153)	(0.292)
EQTA	-0.171***	0.0709**	-0.0717***	-0.100
	(0.0199)	(0.0319)	(0.0239)	(0.134)
NLTA	-0.136***	-0.0476**	-0.0916***	-0.276***
	(0.0124)	(0.0188)	(0.0148)	(0.0751)
COST	-0.407***	-0.479***	-0.445***	-0.386***
	(0.0117)	(0.0107)	(0.00923)	(0.0495)
LNGDP	0.0559	-2.575***	0.184	2.893***
	(0.108)	(0.974)	(0.171)	(0.740)
COR	0.00912	-0.00640	-0.000760	0.0716
	(0.0116)	(0.0309)	(0.0172)	(0.0693)
CRISIS7_8	5.160***	2.872***	3.054***	1.764***
	(1.167)	(0.526)	(0.524)	(0.672)
L.ROE				0.241***
				(0.0261)
Constant	47.71***	66.28***	49.26***	29.63***
	(1.732)	(6.705)	(1.840)	(8.175)
Observations	5,026	5,026	5,026	4,525

R-squared	0.395	0.335

Notes: LLRGL denotes loan loss reserve/gross loan, 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

6.2.2 Result of control variables

Results of the control variables are presented in Tables 11 and 12. With regards to control variables, we confirm the following findings: (1) LNTA in terms of total asset has insignificant and negative impact on both ROA and ROE. The insignificant of the results may be caused by measurement error and multicollinearity. The negative coefficient on performance indicates that the smaller banks in Africa are easily managed by the managers to make more profit. It can also be explained by the fact that managers of the banks in Africa are more efficient when they concentrate on smaller number of businesses, which lead to higher banking performance. However these are not significant in the case of Africa, based on our result. This finding is in line with the finding of Bougatef (2017) who documents insignificant relationship between bank size and performance in Tunisia. However, the finding is not in line with the findings of prior literature which report a significant positive relationship between bank size and bank performance (e.g. Sakawa and Watanabel, 2018; Rahman et al., 2015; Tan et al., 2017; Shawtari, 2018; Hasanov et al., 2018). The insignificant negative relationship between bank size and performance is also not in line with the findings of Tan (2016), Al-Shammari (2013), Dietrich and Wanzenried (2011), Elyasiani and Zhang (2015) and Doumpos et al (2015) who document a significant negative correlation between bank size and performance. The inconsistent of this result and the result of some previous studies may be due to the differences in sample size and the way in which the variables are measured.

Banks capitalisation measured by EQTA is found to have significant and positive impact on ROA at 1% level of significance but insignificant and negative impact on ROE. The insignificant of ROE may be caused by measurement error**.** Moreover, due to the differences in the behaviour of equity and debt holders (ROA) and the behaviour of equity holders (ROE), sometimes the results of ROA and ROE is expected to be different. For instance, debt and equity holders (ROA) may accept certain level of losses whiles equity holders (ROE) may not accept any losses at all,

they only demand their returns from the bank whether the bank incurs loss or makes profit. The significant positive relationship between equity to asset ratio and bank performance suggests that banks which have high capital perform better in Africa. The findings also suggest that well capitalised banks in Africa can change their funds to higher income earnings to make more profit. The finding supports the theoretical argument by Djalilov and Piesse (2016) and Athanasoglou et al., (2008) who argue that, the ratio of equity to total asset is expected to have positive impact on bank performance because it represents the amount of available funds to back operations of the bank, and for that matter serves as safety net in case of adverse events, which could increase bank performance. This finding is consistent with previous empirical findings (e.g. Bougatef, 2017; Djalilov and Piesse, 2016; Hasanov et al., 2018). However, this finding is not consistent with the significant negative relationship between equity to asset ratio and bank performance documented by prior empirical literature (e.g. Dietrich & Wanzenried, 2011).

Bank's liquidity, measured by loans to asset ratio (NLTA) is highly significant and negatively associated with ROA and ROE at 1% significant levels. This implies that banks may have enough liquidity to cater for any unforeseen fund requirement when the ratio of loans to assets decreases. This gives confidence to depositors to deposit more funds which help the banks to invest more to earn more profit. The negative coefficient on net loans to assets also suggests that when the loan exposure is very high (low liquidity), it causes higher bank performance. This is a suggestion that banks in African are able to control, manage, and monitor their loans very efficiently, and in effect decrease cost which could lead to improvement in bank performance. The finding lends empirical support to the past studies that find a negative association between bank risk and performance (e.g. Tan, 2016). However, the finding does not lend empirical support to the past studies that find a positive association between bank risk and performance (e.g. Daly and Frikha (2017), which may come from differences in samples size and sample period.

The relationship between cost to income ratio (COST) and bank performance is negative and significant at 1% significant level based on both ROA and ROE. The negative relationship indicates that the banks' operations are efficiently managed by the management and as a result causing a reduction in operational cost, which in effect increasing banks performance. This result supports the argument from the theory which indicates that, the lower the value of cost-to-income ratio the higher

the efficiency of the management, which could improve bank performance and the higher the ratio of cost-to-income ratio the less efficiency of the management, which could reduce bank performance (Rahman et al, 2015). The significant negative relationship between cost to income ratio and bank performance is consistent with the findings of Rahman (2015), Syafri (2012), Dietrich and Wanzenried (2011) and Goddard (2013) who find similar result.

With regards to GDP, we record a significant positive relationship between GDP and bank performance at 1% significance level in terms of both ROA and ROE. The positive coefficient on GDP suggests that high growth leads to a high demand for lending which finally brings about high bank performance. The result also indicates that during a period of cyclical upswing, there is a high probability of higher demand for lending, which could cause an increase in bank performance. The positive relationship between GDP and bank performance lends some support to the theoretical argument by Boateng et al., (2015) who suggest that high GDP growth leads to high demand, which encourages firms to borrow more to produce more goods and services to meet the higher demand for goods and, subsequently causes an increase in banks performance. The significant and positive relationship between GDP and bank performance is consistent with prior empirical literature (e.g. Albertazzi and Gambacorta, 2009; Shawtari, 2018). In contrast, probably due to the differences in sample size, sample period and the way in which variables are measured, this finding is not consistent with the past empirical literature which find a significant negative relationship between GDP and bank performance (e.g. Boateng et al., 2015; Safrali and Gumus, 2010; Rashid and Jabeen, 2016). Moreover, the finding is also inconsistent with insignificant relationship between GDP and bank performance reported by prior empirical studies (e.g. Mollah et al., 2017; Ariyadasa, 2017).

Corruption (COR) has significant and positive impact on ROA but insignificant and positive impact on ROE. The insignificant impact on ROE may be caused by measurement error. The significant positive coefficient on ROA implies that as CPI increases (a reduction in corruption), bank performance significantly increases. The result shows that adverse effect of corruption on the institutions including banks is not good for improving the performance of banks in Africa. On the other hand, a reduction in corruption will help improve the performance of African banks. The result is consistent with Bougatef (2017) and contrary to Aburime (2009) and Arshad

and Rizvi (2013) who find a significant negative relationship between corruption and bank performance.

Financial crisis (CRISIS) has significant and positive impact on bank performance based on both ROA and ROE. These findings may indicate that, the crisis hit more in the developed countries with a very little or no impact on African countries. As a result, the banks in Africa were able to embark on their businesses to make profit during the crisis period.

6.3 Robustness analysis

This section discusses how the results of the main model (GMM) are robust or sensitive to results of alternative models and estimations. Specifically, this study carried out different robustness analysis in order to check the extent at which the main results of this study are robust or sensitive to different alternative models and estimations. The alternative techniques used is this study are OLS, fixed effect and 2SLS. Therefore, this section reports the results based on ordinary least square model (OLS), results based on fixed-effects model and two-stage least squares (2SLS) model and compare them to the main results, GMM. To assist clarity and comparison of the results, the mail results (GMM) and the results of the robustness tests are presented in the same table. Our tests suggest that the main results are robust, although we observe some sensitivities in the magnitude of the coefficient and significance levels.

6.3.1 Results based on LLRGL as bank risk measure and ROA as bank performance measure.

5.3.1.1 Result of independent variables

From table 11, consistent with the main model, the direction of the coefficients of LLRGL under OLS, fixed effect and 2SLS is the same as the GMM. Specifically, the signs of LLRGL under OLS, fixed effect and 2SLS are negative, which are the same as the result of the main technique, GMM. With regards to the significance levels, the main result is statistically insignificant whiles OLS, fixed effect, and 2SLS are all significant at 1% level.

6.3.1.2 Results of control variables

The results of control variables are presented in table 11. Bank size which was statistically insignificant under the main model is now significant under OLS, fixed effect, and 2SLS. However, the significance level of bank size under fixed effect is

5% while it is 1% under both OLS and 2SLS.The direction of the coefficient which is negative remains negative throughout. Equity to total asset is significantly associated with performance under all the four techniques used. Consistent with the main technique, the significance levels of the other three techniques is 1%. The direction of the coefficient also remains unchanged. Specifically, the coefficients of equity to total assets of all the techniques used remain positive. Consistent with the main result, the coefficients of Net loans to assets and cost-to-income ratio remain the same under OLS, fixed effect and 2SLS. Specifically, net loans to asset and cost-to-income-ratio have negative impact on bank performance under all the four techniques used, GMM, OLS, fixed effect and 2SLS. Moreover, consistent with the main result, net loans to assets and cost-to-income ratio are statistically significant under OLS, fixed effect and 2SLS techniques. The 1% significance level of the main technique remains the same under OLS and fixed effect and 2SLS for cost-to-income ratio. Apart from fixed effect technique which is significant at 5%, OLS and 2SLS remain 1% significant levels for net loans to asset ratio. Like the main model, the coefficients of GDP remains positive under OLS, fixed effect and 2SLS. The direction of significance of GDP remains 1% under OLS, but changed to 5% under 2SLS and became insignificant under fixed effect. With regards to control of corruption, the direction of coefficients remain unchanged under OLS, fixed effect and 2SLS. Specifically, the positive impact of control of corruption remain unchanged under OLS, fixed effect and 2SLS. However, the 1% significance level became insignificant under OLS, fixed effect and 2SLS. Finally, the positive impact of financial crisis remain the same based on OLS, fixed effect and 2SLS. However, the 5% significance level under 2SLS changed to 1% significance level under both fixed effect and 2SLS and changed to insignificant under OLS.

6.3.2 Results based on LLRGL as bank risk measure and ROE as bank performance measure.

6.3.2.1 Results of independent variables

From table 12, the direction of coefficient of LLRGL remains the same based on OLS, fixed effect and 2SLS. Specifically, the negative impact of LLRGL under the main model (GMM) remains the same under OLS, fixed effect and 2SLS. However, there are differences in the significance levels. Specifically, the main result (GMM) which was statistically insignificant is now statistically significant at 1% significant level based on OLS, fixed effect and 2SLS.

6.3.2.2 Results of control variables

The results of the control variables are presented in table 12. For bank size (LNTA), the direction of coefficient of the main model which was negative under GMM remains negative under fixed effect and 2SLS but changed to positive under OLS. On the other hand, consistent with the main model, bank size has negative impact on bank performance based on fixed effect and 2SLS but the negative impact changed to positive under OLS technique. Equity to assets ratio which was insignificant under the main model is now significant based on OLS, fixed effect and 2SLS. However, there are changes in the significant levels. Equity to assets ratio which is insignificant under the main model (GMM) is 1% significant under both OLS and 2SLS while it is 5% significant under fixed effect. Moreover, consistent with the main model, equity to assets ratio has negative impact on performance based on OLS and 2SLS but the negative impact changed to positive under fixed effect technique.

Consistent with GMM model, the negative impact of net loans to assets remains unchanged under OLS, fixed effect and 2SLS. Consistent with the main model, net loan to assets remains significant under OLS, fixed effect and 2SLS. However, there is a slight change in the significance level under fixed effect model. Specifically, the 1% significant level under GMM remains unchanged under OLS and 2SLS but this changed to 5% significant level under fixed effect model. With regards to cost-to-income ratio, the direction of the coefficient of the main technique remains unchanged under OLS, fixed effect and 2SLS. Specifically, cost-to-income ratio has negative impact on performance based on OLS, fixed effect and 2SLS, which is consistent with the main model. In addition, the direction of the significance levels remains unchanged. Specifically, in line with the main model, OLS, fixed effect and 2SLS remains 1% significant level. The direction of coefficient of GDP which was positive under the main model remains positive under OLS and 2SLS but this changed to negative under fixed effect. In addition, there are sensitivities in the significant levels. In line with the main model, the 1% significance level remains the same based on fixed effect. However, the 1% significance level became insignificant based on both OLS and 2SLS techniques.

In line with the main model, the positive impact of control of corruption remains the same under OLS but this positive impact changed to negative under fixed effect and 2SLS techniques. Consistent with the main model, direction of the significance level

remains the same under OLS, fixed effect and 2SLS. Specifically, in line with the main model, control of corruption is statistically insignificant under OLS, fixed effect and 2SLS. Finally, the direction of the coefficient of financial crisis of the main technique remains the same. To be specific, financial crisis has positive impact on performance based on OLS, fixed effect and 2SLS, which is the same as the main technique, GMM. In addition, in line with the main model, financial crisis is significantly related to bank performance under OLS, fixed effect and 2SLS. The direction of the significance level also remains unchanged. Thus, the 1% significance level under the main model remains the same under OLS, fixed effect and 2SLS models.

6.3.3 Results based on LLPNR as bank risk measure and ROA as bank performance measure

6.3.3.1 Empirical results of independent variables

From table 9, the sign on the coefficient of LLPNR remains negative under OLS, fixed effect and S2LS. Secondly, consistent with the main model, LLPNR is significantly related to bank performance based on OLS, fixed effect and 2SLS. Thirdly, consistent with the main result (GMM), the significant level remains 1% under OLS, fixed, and 2SLS.

6.3.3.2 Empirical results of control variables

The results of the control variables are presented in table 9. The sign on the coefficient on bank size has changed. Specifically, the positive sign changed from positive under the main model to negative under OLS, fixed effect and 2SLS. In terms of the significance level, bank size is insignificant related to ROA based on OLS, which is in line with the main technique but significant at 1% significance level based on fixed effect and 2SLS techniques. Equity to assets ratio has positive impact on bank performance under OLS, fixed effect and 2SLS techniques, which is consistent with the main technique, GMM. The significance level of equity to assets ratio based on OLS, fixed effect and 2SLS remain unchanged. Specifically, in line with the main technique, equity to assets ratio is statistically significant related to bank performance at 1% significance level under OLS, fixed effect and 2SLS techniques. The direction of coefficient on net loan to assets ratio remains negative under OLS and 2SLS but changed to positive under fixed effect technique. Consistent with the main model, net loans to assets ratio is significantly related to bank performance under OLS and 2SLS techniques but became insignificant under

fixed effect model in column 2. However, the significance level remains 5% under 2SLS but changed to 1% under OLS.

The direction of coefficient on cost-to-income ratio remains negative based on OLS, fixed effect and 2SLS. That means cost-to-income ratio is negatively associated with bank performance based on OLS, fixed effect and 2SLS, which is in line with the main technique. The direction of the significance level also remains the same. Specifically, 1% significance level under the main technique remains the same under OLS, fixed effect and 2SLS. With regards to GDP, the 1% significance level under GMM changed to 10% under fixed effect technique and became insignificant under OLS and 2SLS. The direction of coefficient on GDP remains positive under OLS and 2SLS techniques but changed to negative under fixed effect technique. The direction of significance of control of corruption changed from 5% significance level under the main technique, GMM, to insignificant under OLS, fixed effect and 2SLS techniques. The sign on the coefficient of control of corruption remains positive under fixed effect and 2SLS but changed to negative under OLS. The direction of the coefficient on 2007/2008 financial crisis remains positive based on OLS, fixed effect and 2SLS. In line with the main model, 2007/2008 financial crisis is insignificant related to performance based on OLS but became significant based on fixed effect and 2SLS techniques. However, the significance level under 2SLS is 1% while fixed effect is 5%.

6.3.4 Results based on LLPNR as risk measure and ROE as performance measure

6.3.4.1 Results of independent variables

From table 10, the sign on the coefficient of LLPNR remains negative under OLS, fixed effect and S2LS. In line with the main technique, LLPNR is significantly related to bank performance based on OLS, fixed effect and 2SLS. Consistent with the main result (GMM), the significant level also remains 1% under OLS, fixed, and 2SLS.

6.3.4.2 Results of control variables

The results of the control variables are presented in table 10. In line with the main model, GMM, The direction of coefficient on bank size remains positive under OLS model but changed to negative under fixed effect and 2SLS models. There is sensitivity in the significance levels of bank size. Specifically, in line with GMM, the result of fixed effect model of bank size remains insignificant but this changed to 1% and 5% under OLS and 2SLS respectively. With regards to equity to assets ratio,

the direction on coefficient remains negative under OLS, fixed effect, and 2SLS. There are sensitivities in the significance levels of equity to assets ratio. Specifically, the main model, GMM which was insignificant became 1% significant under OLS and 2SLS models and 10% under fixed effect models. The direction of significance level of the results of net loans to assets ratio of OLS and 2SLS show similar apart from fixed effect model. In particular, net loans to assets ratio is significantly related to bank performance at 1% significant level under OLS and 2SLS models, which is consistent with the main model but insignificantly related to bank performance under fixed effect model, which is inconsistent with the main model. Moreover, consistent with the main model, the sign of the coefficient on net loans to assets remains negative under OLS, fixed effect and 2SLS.

Consistent with the main model, the direction of coefficient on cost-to-income ratio remain negative based on OLS, fixed effect and 2SLS models. The statistical level of significance of cost-to-income ratio has not changed. In particular, the 1% level of significance of cost-to-income ratio of the main model remains the same under OLS, fixed effect, and 2SLS. With regards to GDP, the coefficient changed from positive under the main model to negative under OLS, fixed effect and 2SLS. There are sensitivities within the direction of significance level of GDP. In particular, fixed effect model remains 1% significant while OLS and 2SLS models became statistically insignificant. The direction of coefficient on control of corruption has not changed. Specifically, the positive coefficient on control of corruption remains unchanged under OLS, fixed effect and 2SLS. Consistent with the main model, the direction of the significance level of COR remains 5% under fixed effect model but became insignificant under OLS and 2SLS models. Finally, the direction of coefficient and significance level of financial crisis has not changed. Specifically, the significance level of the financial crisis which is 1% based on the main model remains unchanged under OLS, fixed effect and 2SLS. Moreover, the positive coefficient on financial crisis under the main model has not changed under OLS, fixed effect and 2SLS.

NB: The reason for the inconsistence of some of the results of the main statistical model, GMM, with some of the results of OLS, fixed effect and 2SLS may be partly due to the fact that GMM possesses a number of advantages including, resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which the other techniques may not be possess.

6.4 Additional analysis

6.4.1 Additional Analysis using Z-SCORE as risk measure

We conduct additional analysis to test for the relationship between bank risk and performance using Z-score as risk measure and ROA and ROE as performance measures. The results are summarised below and the Tables showing the results are in the appendix.

Using GMM as our main estimation method, the results find that Z-score has significant positive relationship with both ROA and ROE at 1% significant levels. The lag of ROA and ROE are significant at 1% levels. With regards to control variables, we report the following findings. (1) Bank size has insignificant negative relationship with ROA and insignificant positive relationship with ROE (1) Equity to total assets (EQTA) has significant and positive relationship with ROA and positive but insignificant relationship with ROE. Net loans to assets is insignificantly positive related to ROA and significantly positive related to ROE at 1% significant level. Cost-to-income ratio is significantly negative related to both ROA and ROE at 1% and 5% significant levels respectively. GDP is significant positive related to ROA at 1% significant level and insignificant positive related to ROE. Corruption has significant negative relationship with ROA at 10% significant level and significant negative relationship with ROE at 5% significant level. Finally, financial crises of 2007/2008 has insignificant negative relationship with ROA and significant positive relationship with ROE at 1% significant level.

6.4.2 Additional analysis using Tier 1 as risk measure

We further conduct additional analysis to test for the relationship between bank risk and performance using Tier 1 as risk measure and ROA and ROE as performance measures. The results are summarised below and the Tables showing the results are in the appendix.

Using GMM as our main estimation method, the results find that Tier 1 has insignificant positive relationship with ROA and significant positive relationship with ROE at 1% significant level. The lag of ROA and ROE are significant and positive at 1% levels. With regards to control variables, we report the following findings. (1) Bank size has insignificant negative relationship with both ROA and ROE (1) Equity to total assets (EQTA) has insignificant positive relationship with ROA and significant negative relationship with ROE at 5% significant levels. Net loans to assets is significantly negative related with ROA at 1% significant level and

insignificantly negative related with ROE. Cost-to-income ratio is significantly negative related to both ROA and ROE at 1% levels. GDP is significant positive related to ROA at 1% significant level and insignificant positive related to ROE. Corruption has significant positive relationship with both ROA and ROE at 1% significant levels. Finally, financial crises of 2007/2008 has significant positive relationship with ROA and significant positive relationship with ROE at 5% and 1% significant levels respectively.

6.5 Chapter summary

This chapter has focused on presentation and discussion of empirical results on the link between bank risk and bank performance. Specifically, the chapter attempted to examine what impact bank risk has on African bank performance. Using GMM estimation, the findings indicate that bank risk measured by LLPNR has significant negative relationship with bank performance, measured by both ROA and ROE. These results are consistent with a number of some previous empirical findings. These results imply that different risks incurred by African banks have adverse impact on the bank performance, therefore, effective risk management strategies are required. This results have policy implications for management and regulatory bodies of banks in Africa. However, bank risk measured by LLRGL has negative impact on bank performance, based on both ROA and ROE but not significant.

CHAPTER SEVEN

EMPIRICAL RESULTS OF THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE AND BANK RISK

7 Introduction

The objective here is to investigate the association between African board characteristics and bank risk of banks selected from 48 countries for this study. Specifically, this section of the research seeks to find out how the board characteristics of African banks impact on their bank risk. The dependent variable is bank risk which is measured by LLPNR and LLRGL. We regress each risk variable on board variables namely, board size, female directors, independent directors, CEO or role duality and board meetings. These variables are used based on availability of data and also these variables are widely used in the literature. We use GMM as our main statistical model and OLS, fixed effect and 2SLS for robustness tests. We use GMM as main model due to a number of advantages associated with such technique. This include resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which other techniques may not be able to resolve.

We use two econometric models as mentioned in chapter four and the results are presented in Tables 15 and 16. Below are the econometric models.

$$LPNR_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (5)$$

$$LLRGL_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (6)$$

Table 13: Results of corporate governance and bank risk using LLPNR as risk measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
BSIZE	0.464**	-1.107**	0.0222	-0.0569
	(0.224)	(0.518)	(0.334)	(0.101)
FEMALE	-0.0631	-0.0634	-0.0446	-0.117***
	(0.0756)	(0.122)	(0.0854)	(0.0212)
INDEP	-0.0551	-0.0449	-0.0370	0.00312
	(0.0382)	(0.0630)	(0.0445)	(0.00907)
DUAL	-3.822	18.36*	-0.668	-10.81***
	(3.654)	(10.88)	(4.863)	(0.494)
MEETINGS	-0.285	-0.274	-0.384	-0.758***
	(0.267)	(0.472)	(0.342)	(0.0386)
LNTA	2.351***	1.084	1.641***	0.968***
	(0.629)	(0.791)	(0.580)	(0.188)
EQTA	0.188**	0.0745	0.152*	-0.155***
	(0.0794)	(0.164)	(0.0899)	(0.0155)
NLTA	0.120**	0.156	0.152**	0.254***
	(0.0531)	(0.107)	(0.0648)	(0.0188)
COST	0.136**	0.126*	0.128***	0.0764***
	(0.0674)	(0.0730)	(0.0455)	(0.0205)
COR	-0.121***	-0.0458	-0.132**	-0.106***
	(0.0408)	(0.218)	(0.0575)	(0.0188)
LNGDP	-0.967***	12.87	-0.881*	1.122***
	(0.332)	(9.030)	(0.520)	(0.181)

CRISIS7_8	-3.850	-0.650	-2.132	-5.078***
	(4.451)	(3.558)	(3.208)	(0.182)
L.LLPNR				0.0341***
				(0.00291)
Constant	1.265	-71.15	10.01	1.987
	(7.131)	(61.39)	(7.572)	(2.142)
Observations	631	631	631	570
R-squared	0.099	0.052		

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 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 14: Results of bank risk and corporate governance using LLRGL as risk measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
BSIZE	-0.117**	-0.191**	-0.151**	-0.0784***
	(0.0460)	(0.0799)	(0.0624)	(0.0112)
FEMALE	0.00763	-0.0171	-0.00467	0.0131***
	(0.0130)	(0.0178)	(0.0151)	(0.00420)
INDEP	-0.0156*	-0.0241**	-0.0174**	-0.0126***
	(0.00903)	(0.00963)	(0.00808)	(0.00116)
DUAL	1.210	5.667***	1.672*	-0.166
	(0.965)	(1.752)	(0.986)	(0.145)
MEETINGS	0.0847	0.136*	0.0927	0.0555***
	(0.0549)	(0.0708)	(0.0607)	(0.00981)
LNTA	0.274*	0.169	0.231**	0.406***
	(0.147)	(0.116)	(0.0977)	(0.0164)
EQTA	0.0814***	0.0484*	0.0726***	0.00428*
	(0.0205)	(0.0269)	(0.0193)	(0.00231)
NLTA	-0.0560***	-0.101***	-0.0781***	-0.00634***
	(0.0131)	(0.0165)	(0.0124)	(0.00240)
COST	0.0218**	-0.00463	0.00323	0.0165***
	(0.0103)	(0.0103)	(0.00825)	(0.00238)
COR	-0.00609	-0.00102	0.000646	-0.00632**
	(0.00812)	(0.0348)	(0.0126)	(0.00299)
LNGDP	-0.0911	2.437*	-0.0717	0.0783***
	(0.0616)	(1.365)	(0.116)	(0.0182)
CRISIS7_8	-1.858**	-0.336	-0.745	-0.190***
	(0.836)	(0.559)	(0.536)	(0.0239)

L.LLRGL				0.730***
				(0.00967)
Constant	6.265***	-5.006	8.989***	-0.359*
	(1.149)	(9.235)	(1.521)	(0.188)
Observations	614	614	614	558
R-squared	0.184	0.157		

Notes: LLRGL denotes 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, CRISIS7_8 represents 2007/2008 financial crisis, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

7.1 Result of independent variables

Model 4 of Tables 15 and 16 show the empirical findings of the relationship between corporate governance and bank risk based on GMM model. First, the effect of board size (BSIZE) on bank risk is found to be negative but insignificant when bank risk is measured by LLPNR but this became highly significant and negative when the risk is measured by LLRGL at 1% significant level. The insignificant impact on bank risk is consistent with the finding of Akbar et al (2017). The insignificant result may be caused by measurement error and multicollinearity. The statistically significant negative impact of board size on bank risk means that hypothesis two, which predicted significant positive association between board size and bank risk can be rejected. Although smaller board size is perceived to be better corporate governance practice, it is not good for African banks since it increases bank risk. This suggests that bigger board is better for risk management and reduction in Africa as compared to smaller board. The result can also be explained by the fact that African banks would benefit from different ideas, opinion and experience which are brought together by many different board members to reduce bank risk. Also, the result can mean that African banks could benefit from bigger board which is associated with more monitoring in order to reduce bank risk. This result lend some theoretical support to resource dependency theory, which suggests that larger board could bring access to resources, expertise, quality advice and it is difficult for insiders to control bigger board, which could help to minimise banks risk levels.

Contrary, this does not support agency theory which argues that due to communication and coordination problems as well as internal clashes among directors, larger board is not efficient, and could increase bank risk. The negative impact of board size on bank risk is consistent with prior empirical findings (e.g. Pathan, 2009; Wang & Hsu, 2013; Lu & Boateng, 2017; Switzer & Wang, 2013; Rachdi et al, 2013). However, this result is not consistent with Chan et al. (2016) and Battaglia and Gallo (2017), who report a significant positive effect of board size on bank risk. Differences in sample size and the way in which variables are measured may be the cause of inconsistencies of our findings with the previous empirical findings.

Second, the results show that DUAL has insignificant negative impact on LLRGL and significant negative impact on bank risk, measured by LLPNR at 1% level of significance. The insignificant of our result may be due to measurement error and autocorrelation. The significant negative impact of duality on bank risk supports hypothesis five, which predicted a significant negative association between duality and bank risk. This finding means that the same person holding CEO and chairman role at the same time is good for bank risk reduction in Africa. Splitting CEO and chairman roles to be handled by two different individuals, is considered by the market as a good corporate governance practice. However, this does not work well for African banks because it causes an increase in bank risk. The result also suggests, that African banks may benefit from a single person who is knowledgeable, experienced and has shareholders interest at heart to hold the positions of CEO and Chairman at the same time, to reduce bank risk. Duality also causes quick decision making, which could help minimise bank risk in Africa. Theoretically, the negative impact of duality on bank risk supports the stewardship theory argument, that CEO duality helps to make timely and best decisions within a firm since the CEO knows how to run the business because of the in-depth knowledge of the business already gained by the CEO (Brickley et al. 1997; Syriopoulos and Tsatsaronis, 2012), which could reduce bank risk. The finding is in line with the finding of Akbar et al (2017), who documents a significant negative relationship between duality and bank risk. However, the finding is not in line with Rachdi et al, (2013) and Lu and Boateng (2017) who find significant positive relationship between duality and bank risk. Differences in study time frame and measurement of variables may be the result of our finding being not consistent with the findings of some previous empirical findings.

Third, the impact of board meetings (MEETINGS) on bank risk, measured by LLPNR is significant and negative at 1% significance level. This finding supports hypothesis six, which postulated significant negative association between frequent board meetings and bank risk. This suggests that smaller number of meetings by the board of directors causes the risk of the banks in Africa to increase. Also, some African banks may have many issues which require more attention and frequent meetings to resolve them. Therefore, smaller number of meetings may not be sufficient to resolve the issues of problem banks, hence the risk of these banks will increase. The negative impact of board meetings on bank risk can also be explained by the fact that a high frequency of board meetings indicates that the board plays a proactive role and increase monitoring, which is associated with lower bank risk in Africa. The negative impact of board meetings on bank risk lend some theoretical support to the agency theory (Jensen & Meckling, 1976), which states that frequent corporate board meetings is the increased capacity to advise effectively, discipline management and monitor them, which could reduce bank risk and improve financial performance. This finding is consistent with Battaglia and Gallo (2017) who record a significant negative relationship between the number of board meetings and bank risk using a sample of 40 European banks between 2006 and 2010.

However, the result shows significant positive impact of board meetings on bank risk measured by LLRGL at 1% level of significance. The positive impact of board meetings on bank risk rejects hypothesis six, which predicted a significant negative association between board meetings and bank risk in Africa. This finding means that frequent board meetings is not good because it leads to higher bank risk in Africa. This result means that agency cost associated with more board meetings including refreshments, sitting allowance and transport cost of board members, is more than the benefits that more board meetings can bring. Also, the board members may be dominated by friends and family, and they may go for meetings to discuss more about their private life (such as issues relating to marriage and funerals) and little discussions on the main purpose of the board meeting. In such circumstance, more meetings will increase the risks of the banks instead of reducing them. The positive impact of board meetings on bank risk does not support agency theory, which recommends corporate boards to have more meetings, because this could lead to higher bank risk in Africa.

The main cause of conflicting results of the impact of board meetings on LLPNR and LLRGL may be due to differences in a way in which LLPNR and LLRGL are measured. On the other hand, since the two risks variables are measured differently, sometimes different result can be expected.

Four, female directors (FEMALE) has significant negative impact on bank risk, measured by LLPNR at 1% level of significance. This result supports hypothesis three, which predicted significant negative association between the presence of female directors on bank board and bank risk. This means African banks with smaller number of female directors increase bank risk. This result can be explained by the fact that the qualities, experience and contributions that more female directors bring to the board help to reduce bank risk in Africa. It is also perceived that women are risk averse and for that matter do not take risk unnecessarily. Therefore, they will challenge their male counterparts on the board to take the right decision when it comes to risk taking. Females are also perceived to be careful and more responsible of their actions. As a result, more female directors on African banks board may help reduce bank risk. The finding lend theoretical support to resource dependency theory, which argues 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 bank risk. The finding also supports other theoretical view which suggests, that the presence of female directors in the boardroom brings competitive advantage because females are likely to have non-business background and have advanced degrees (García-Meca, García-Sánchez & Martínez-Ferrero, 2015), which could reduce bank risk. The negative relationship between female directors and bank risk is consistent with some previous empirical findings (e.g. Gulamhussen & Santa, 2015; Chan et al, (2016; Cabo et al, 2012; Dong, 2017; Palvia et al., 2015; Lu & Boateng, 2017; Dong et al, 2017). Contrary, this result is not consistent with Berger et al (2014) and Yu et al (2017), who report significant positive association between the presence of female directors and bank risk, probably due to differences in sample size and differences in study time frame.

However, the impact of FEMALE on bank risk became significant and positive at 1% significance level when risk was measured by LLRGL, rejecting hypothesis three. This finding means that the presence of female directors in the boardroom does not help bank risk reduction but rather increases bank risk in Africa. The general notion

that female are risk averse and for that matter could help reduce bank risk does not manifest within African context, based on our findings. Moreover, the inclusion of more female directors is considered to be good corporate governance practice, which could reduce bank risk. However, within the African context, female directors may not have enough qualification, skills and experience necessary to contribute efficiently during board meetings. In addition, the boardroom of African banks is dominated by males with only small number of females. In this case, the female presence in the boardroom can be described as a token, and therefore may not be possible for them to challenge their male counterparts when needed. Therefore, their presence on the board may not help reduce bank risk. The positive effect of female directors on bank risk does not lend any support to resource dependency theory which recommends diversified board such as inclusion of female directors. The positive effect of female directors on bank risk is in line with the findings of Berger et al (2014) and Yu et al (2017). However, the finding is in contrast with the past studies that document a significant negative association between female directors and bank risk (e.g. Gulamhussen & Santa, 2015; Chan et al, 2016; Cabo et al, 2012; Dong, 2017; Palvia et al., 2015; Lu & Boateng, 2017; Dong et al, 2017). The inconsistence of our result and some previous empirical results can be caused by differences in a way in which the variables are measured.

Five, the presence of independent directors (INDEP) is insignificant positively related to LLPNR but significant negatively related to LLRGL at 1% level of significance. The inconsistence of the results may be due to differences in a way in which LLPNR and LLRGL are measured. Different results can be expected since LLPNR and LLRGL are measured differently. The significant negative relationship between board independent and bank risk is in line with hypothesis four which predicted a significant negative association between board independence and bank risk in Africa. The result suggests that the smaller number of independent directors on bank board of directors increases bank risk in Africa. This may imply that smaller number of independent directors may be dominated by executive board members, and for that matter they may not be able to challenge the executive directors to prevent them from taking decisions which may cause the risk of the banks to increase. This result also implies that the presence of more independent directors contribute to minimise bank risk in Africa. In other words the greater proportion of board independence is associated with lower bank risk levels in Africa. The result could also mean that the greater number of independent directors in Africa on the

banks board provide more monitoring and scrutinise management decisions to make sure that unjustifiable risk decisions which may not help the banks are prevented. Therefore when there is small number of independent directors, the risk of the banks increases. The negative effect of board independence on bank risk support Wang et al. (2014) and Chang et al. (2016), who argue that a large number of independent directors can decrease the behavior of bank's risk-taking. This result also supports the theoretical argument, that independent board directors provide unbiased decisions, reduce agency problems (Fuzi et al., 2016), and provide extra monitoring to ensure a reduction of risk of management inflicting danger on firms (Pathan, 2009; Chang et al, 2016), which could reduce bank risk. The significant negative effect of independent directors on bank risk is consistent with a number of some previous studies (e.g. Pathan, 2009; Switzer & Wang, 2013; Chan et al., 2016; Akbar et al., 2017; Battaglia and Gallo, 2017). However, the result is not consistent with positive association between board independence and bank risk reported by Rachdi et al (2013), Lu and Boateng (2017), and Vallascas et al (2017), probable due to differences in sample size and measurement of the variables.

However the insignificant positive impact of board independence on bank risk, measured by LLPNR may be caused by measurement error, extreme values and multicollinearity. The positive sign means that the presence of more independence directors increases bank risk in Africa. Independent directors are to provide a monitoring role, however, they may not have the knowledge, skills and experience to perform such function and therefore their presence may increase bank risk. However this is not significant in the African context based on our findings. This result is not consistent with the findings of prior empirical literature that document significant positive relationship between board independence and bank risk (e.g. Rachdi et al., 2013; Lu and Boateng, 2017; Vallascas et al., 2017) and significant negative relationship between board independent and bank risk (e.g. Pathan, 2009; Switzer and Wang, 2013; Chan et al., 2016; Akbar et al., 2017; Battaglia and Gallo, 2017).

7.2 Result of control variables

These results are presented in Tables 15 and 16. Regarding the control variables impact on bank risk under GMM regression, we report the following findings: Bank size measured by LNTA is statistically significant positive related to both LLPNR and LLRGL at 1% significant level. The findings indicate that the management of African

banks are unable to manage bigger banks properly and as a result increase the risk of the banks. Also, because bigger banks have more customers who apply for loans, there is likelihood that many of the customers who borrow the loans in Africa will default the payment, and as a result increase the risk of the banks. In addition, bigger banks in Africa cannot take advantage of economies of scale to reduce their risk. The result is in line with the theoretical prediction, that due to bureaucracy, bigger banks can have adverse effect when the banks grow extremely large (Athanasoglou et al, 2008), which could increase risk. This finding is consistence with some prior literature (e.g. Dong, 2016) and contrary to others (e.g. Pathan, 2009; Chan et al., 2016; Berger et al., 2014) who find negative impact of bank size on risk probable due to sample size and time frame of studies.

Equity to asset ratio (EQTA) is significant and negative related to LLPNR at 1% significant level. This result indicates that less capitalised banks in Africa are associated with higher bank risk. This result shows that in the event of high demand of capital or withdrawal of funds, the more funds available serve as a safety net for higher capitalised banks in Africa and for that matter reduce their risk. The higher capitalised banks in Africa are able to take advantage of their available funds to hire skilled and experienced personnel who can manage the risk of their banks, therefore they are exposed to less risks. In the event where banks capital is low, the risk of the banks can increase, which is being manifested in Africa, based on this finding. Theoretically, the result support Daly and Frikha (2017), who show that well capitalised bank is the ability of the bank to honour its engagements to its clients based on its own resources, which could reduce its risk. The significant negative impact of equity to assets ratio on bank risk is consistent with the findings of Chan et al. (2016) and Minton et al, (2010) and contrary to Pathan (2009) and Dong (2016) who report significant positive and insignificant impact of equity to assets ratio on bank risk respectively. The inconsistence of our result and other previous results may be due to differences in the way in which the variables are measured.

Contrary, our result shows that equity to assets ratio is significant and positively related to LLRGL. The result indicates that larger capitalised banks in Africa are punished with high risk. The high capital banks in Africa may be tempted to grant more loans to different customers, and some of them have high probability to default. This will mean that the banks may be prone to high default risk. If the banks have poor risk management techniques, they may not be able to save the banks

from incurring high risk. This finding is consistent with findings of Pathan (2009) and contrary to the findings of some prior literature (e.g. Chan et al., 2016; Minton et al., 2010) which report a significant negative relationship between equity to asset ratio and bank risk. The reason for the inconsistency of the results may be that their sample size and the way they measured their variable may be different from this study.

The inconsistency of the results of the impact of equity to asset ratio on bank risk may be caused by differences in the way in which LLPNR and LLRGL are measured. Since the two risk variables are measured differently, different results can be expected sometimes.

The impact of net loans to asset ratio (NLTA) on bank risk, measured by LLPNR is significant and positive at 1% significant level. The result implies that African banks lend more to their customers. More borrowing by customers make the banks prone to high default risk as many of the borrowers may not be able to repay their loans. High net loans means the banks will lose a lot of profit and spend more to manage the loans. The banks may not be in the position to embark on some vital operations and activities due to high loans with little profit, which may pose big danger to the banks and increase risk. Our result lend theoretical support to Sun et al. (2017) who posit, that when the level of loans is high, it indicates that the traditional lending activities involve by the bank is high at the same time, operational cost is increased as a result of the bank subject to increasing level of default risk. Our result is not in line with Dong et al., (2017) who find insignificant effect of net loans to assets on bank risk.

However, the result shows that net loans to assets has significant and negative impact on bank risk, measured by LLR/GL at 1% significant level. The result means that smaller level of net loans increase bank risk. This is because, although the level of net loans may be small, the loans offered may still not be managed probably due to poor risk management techniques used by the banks in Africa.

The inconsistency of the results of the impact of NLTA on bank risk may be caused by differences in the way in which LLPNR and LLRGL are measured. Since the two risk variables are measured differently, different results can be expected sometimes.

The impact of cost-to-income ratio (COST) on bank risk measured by both LLPNR and LLRGL is significant and positive at 1% significant levels. This result implies

that the total operational cost incur by African banks exceeds their total generated income, and as a result, increases the risk of the banks. The result can also mean that the efficiency of management of the banks in Africa concerning expenses on banks performance is low, and for that matter exposes the banks to higher risk.

Control of corruption (COR) has significant negative impact on bank risk, measured by both LLPNR and LLRGL. The significant negative coefficient on corruption indicates an increase in corruption. This findings indicates that the high corrupt activities in Africa pose high threat to the activities of banks, which reduce their revenues and increase their risk. Therefore, an increase in corruption in Africa causes an increase in their bank risk.

The impact of GDP (LNGDP) on bank risk, measured by both LLPNR and LLRGL is statistically significant and positive at 1% significant levels. These findings may mean that during the period of cyclical upswings demand for loans and other bank services increases. The high demand for loans will increase the probability of default as a result of non-payment of some of the loans. In the situation where the banks in Africa have no proper credit risk management strategies in place, the risk of the banks will go high, hence the positive impact of GDP on bank risk in Africa. The findings support Shawtari (2018) who posits that a favourable condition in a country at any point in time causes people to borrow from banks to invest, and high borrowing could increase the banks default risk.

The impact of financial crisis of 2007/2008 (CRISIS) on bank risk is significant and negative based on both risk measures, LLPNR and LLRGL at 1% significant levels. Our findings mean that, the financial crisis hit developed countries more and has little or no impact on Africa, in terms of risk, hence the crisis could not increase the risk of African banks. Also, it can mean that the African banks put more measures in place during the crisis period to manage their risk well in order to avoid the impact of the crisis, hence a reduction of their risk during the crisis period.

7.3 Robustness analysis

As mentioned earlier, this study uses GMM as the main model to analyse the relationship between corporate governance and bank risk. In addition, the study uses additional techniques to test how robust our main technique is. This section discusses how the main results (GMM) are robust or sensitive to alternative models and estimations. Specifically, this study carried out different robustness analysis in order to check the extent at which the main results of the relationship between bank

risk and corporate governance in Africa are robust or sensitive to different alternative models and estimations. The alternative techniques used in this study to test for this robustness are OLS, fixed effect and 2SLS. As a result, this section reports the results based on ordinary least square model (OLS), fixed-effects model and two-stage least squares (2SLS) model and compare them with the results of the main results, GMM. To assist clarity and comparison of the results, the main results (GMM) and the results of the robustness tests are presented in the same table. These results are presented in tables 15 and 16. Our tests suggest that the main results are robust, although we observe some sensitivities in the magnitude of the coefficient and significance levels.

7.3.1 Results based on LLRGL as bank risk measure and corporate governance variables.

7.3.1.1 Result of independent variables

From Table 16, consistent with the results of the main model, the negative coefficient on board size has not changed under OLS, fixed effect and 2SLS. The direction of the significance level of board size changed slightly. Specifically, 1% significant level of board size under the main model, GMM became 5% under OLS, fixed effect and 2SLS models. The coefficient on female directors of the main model remains the same under OLS model but changed under fixed effect and 2SLS models. Specifically, the positive impact of female directors on bank risk based on the main model remains unchanged based on OLS but the impact of female directors on bank risk became negative based on fixed effect and 2SLS models. In terms of the significance levels, apart from the result of the main model of female directors which is 1% significant, the results of female directors based on OLS, fixed effect and 2SLS became insignificant. The negative coefficient on the result of independent directors under the main model remains the same under OLS, fixed effect and 2SLS. However there are some sensitivities in the direction of the significance level of the results of independent directors. In particular, 1% significance level of the results of independent directors under the main model became 5% under fixed effect and 2SLS models and changed to 10% under OLS model.

Duality is negatively related to bank risk based on the main result. However, duality became positively related to LLRGL based on OLS, fixed effect and 2SLS. Consistent with the result of the main model, the result of duality under OLS is not

significant but this became 1% significant under fixed effect model and changed to 5% significant under 2SLS model. Finally, the positive coefficient on the result of board meetings under the main model has not changed under OLS, fixed effect and 2SLS models. The 1% significance level of the coefficient on the result of board meetings under the main model became 10% significant under fixed effect model and changed to insignificant under OLS and 2SLS.

7.3.1.2 Result of control variables

These results are presented in Table 16. Consistent with the main model, the direction of coefficient of the result on bank size remains positive under OLS, fixed effect and 2SLS. However, there are some sensitivities in the direction of the significance level of the coefficients of the results of bank size. Specifically, the 1% significant level of the result of bank size under the main model became 5%, 10% and insignificant under 2SLS, OLS and fixed effect models respectively. The direction of coefficient on the results of equity to assets ratio has not changed. Specifically, the positive impact of equity to assets ratio under the main model remains the same under OLS, fixed effect and 2SLS models. Consistent with the result of the main model, the significance level of the coefficient on equity to assets ratio remains 10% under fixed effect model but this became 1% significance under OLS and 2SLS models. Consistent with the main result, the direction of coefficient on the result of net loans to assets remains negative under OLS, fixed effect and 2SLS. The 1% significance level of the coefficient on the results of net loans to assets under OLS, fixed effect, and 2SLS models remain the same as the main model.

The positive impact of cost-to-income ratio on LLR/GL under the main model, GMM remains positive under OLS and 2SLS models and became negative under fixed effect model. The 1% significant level of the result of the impact of cost-to-income ratio under the main model became 5% under OLS model and changed to insignificant under both fixed effect and 2SLS models. Similar to the main model, the direction of coefficient on control of corruption remains negative under OLS, and fixed effect models and became positive under 2SLS model. Inconsistent with the main results, the coefficient on control of corruption, which was 5% statistically significant associated with bank risk under the main result is now statistically insignificant under OLS, fixed effect and 2SLS models. The direction of coefficient on GDP which is positive under the main model is similar to that of fixed effect but

this changed to negative under OLS and 2SLS models. Inconsistent with the main result, the coefficient on GDP, which was 1% significantly related to bank risk based on the main model is now 10% significantly related to bank risk based on fixed effect model and insignificantly related to bank risk based on both OLS and 2SLS models. Finally, the negative coefficient on the result of 2007/2008 financial crisis under the main model, GMM remains negative under OLS, fixed effect and 2SLS models. The direction of significance of the coefficient on 2007/2008 financial crisis which was 1% significant under the main model is now 5% significant under OLS model and insignificant under fixed effect and 2SLS models.

7.3.2 Results based on LLPNR as bank risk measure and corporate governance variables.

7.3.2.1 Results of independent variables

From Table 15, consistent with the results of the main model, the result of board size shows statistically insignificant under 2SLS model but this became 5% significant under OLS and 2SLS models. Consistent with the result of the main model, the direction of coefficient on board size remains negative under fixed effect model but this became positive under OLS and 2SLS models. The direction of coefficient on female directors has not changed. Specifically, the negative coefficient on female directors of the main model remains negative under OLS, fixed effect and 2SLS models. However, the level of significance level of female directors which was 1% significant under the main model is now insignificant under OLS, fixed effect and 2SLS models. The direction of coefficient on independent directors which was positive is now negative based on OLS, fixed effect and 2SLS models. However, the level of significance level of the main result of independent directors shows similar direction. Specifically and consistent with the result of the main model, board independence is insignificantly related to bank risk under OLS, fixed effect and 2SLS models. Duality which is significantly related to bank risk at 1% significance level under the main model in now 10% under fixed effect model and insignificant under OLS and 2SLS models. The direction of coefficient on duality which is negative under the main model has not changed apart from the result of fixed effect model which is now positive. The direction of coefficient on board meetings which is negative under the main model has not changed based on OLS, fixed effect and 2SLS models. The direction of significance level of the coefficient on board meetings under the main model which was 1% is now insignificant under OLS, fixed effect and 2SLS models.

7.3.2.2 Results of control variables

These results are presented in table 15. Consistent with the results of the main model, the direction of coefficient on bank size has not changed. In particular, the positive impact of bank size on bank risk under the main model remains the same under OLS, fixed effect and 2SLS models. Consistent with the results of the main model, the direction of significance level shows similar level under OLS and 2SLS models apart from fixed effect model which became insignificant. Equity to asset ratio shows negative impact on bank risk under the main model but this changed to positive under OLS, fixed effect and 2SLS models. The direction of significance level of equity to assets ratio which was 1% significance based on the main model is now 5%, 10% and insignificant based on OLS, 2SLS and fixed effect models respectively. Consistent with the result of the main model, the direction of coefficient on net loans to assets ratio remains positive under OLS, fixed effect and 2SLS models. However, 1% significance level of the result of net loans to assets ratio under the main model is now 5% under OLS and 2SLS models and became insignificant under fixed effect model.

Consistent with the main model, the direction of coefficient on cost-to-income ratio remains positive under OLS, fixed effect and 2SLS models. Moreover and consistent with the result of the main model, the impact of cost-to-income ratio remains significant under OLS, fixed effect and 2SLS models. However, the 1% significance level of the result of cost-to-income ratio under the main model remains unchanged under 2SLS model but changed to 5% and 10% under OLS and fixed effect models respectively. Consistent with the result of the main model, control of corruption has negative impact on bank risk under OLS, fixed effect and 2SLS models. However, consistent with the main model, the direction of significance level of the result of control of corruption remains 1% based on OLS model and became 5% and insignificant based on 2SLS and fixed effect models respectively. Consistent with the result of the main model, the direction of coefficient on GDP remains positive under fixed effect model but changed to negative under OLS and 2SLS models. The 1% significance level of the result of GDP based on the main result has not changed under the result of OLS model but became 10% and insignificant based on 2SLS and fixed effect models respectively. Finally, consistent with the result of the main model, the direction of coefficient of the result on financial crisis has not changed and remains negative based on OLS, fixed effect and 2SLS.

However, the 1% significant level of the result of financial crisis under the main model is now insignificant under OLS, fixed effect and 2SLS models.

NB: The reason for the inconsistence of some of the results of the main statistical model, GMM, with some of the results of OLS, fixed effect and 2SLS, may be partly due to the fact that GMM possesses a number of advantages including, resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which the other techniques may not be able to resolve.

7.4 Additional analysis using Z-score and TIER 1 as bank risk measures

We conduct additional analysis to test for the relationship between corporate governance and bank risk using Z-SCORE and TIER 1 as risk measures. The results are summarised below and the Tables showing the results are in the appendix.

Using GMM as our main estimation method, we find the following results. The results show that the lag of both Z-score and Tier 1 are significant positive at 1%. The results show that board size has significant positive relationship with Z-score at 1% significant level and insignificant negative relationship with Tier 1. The presence of female directors has insignificant negative relationship with Z-score and significant positive relationship with Tier 1 at 1% significant level. The presence of independent directors has significant positive impact on Z-score and significant negative impact on Tier 1. Both Z-score and Tier 1 are significant at 1% significance levels. Duality has insignificant positive impact on Z-score and significant and positive impact on Tier 1 at 1% significant level. Board meetings has significant negative impact on Z-score and significant and positive impact on Tier 1, both are significant at 1% significant levels.

With regards to the control variables, we report the following findings: Bank size has significant and negative impact on Z-score at 1% significant level and significant and positive impact on Tier 1 at 1% significant level. Equity to assets ratio is significant and positive correlated with Z-score at 5% significant level and significant positive correlated with Tier 1 at 1% significant level. Net loans to asset is insignificant positive correlated with Z-score and significant negative correlated with Tier 1 at 1% significant level. Cost-to-income ratio is significant negative correlated with both Z-score and Tier 1 at 1 % significant levels. Corruption has significant negative impact on Z-score at 1% significant level and significant positive impact on Tier 1 at 1% significant level. The relationship between GDP and Z-score is significant and

negative at 1% significant level, the relationship between GDP and Tier 1 is negative and insignificant. Finally, 2007/2008 financial crisis has significant positive impact on Z-score at 1% significant level and significant negative impact on Tier 1 at 1% significant level.

7.5 Chapter summary

This chapter has focused on presenting and discussing the empirical results of the relationship between internal corporate governance structures and bank risk of African banks. Specifically, this chapter attempted to find out how different corporate governance characteristics help reduce or increase bank risk in Africa. This chapter addresses hypothesis 2 to 6. Two bank risk measures were used namely, Loan Loss Provision to Net Interest Revenue (LLPNR) and Loan Loss Reserve to Gross Loan (LLRGL). Our independent corporate governance variables used are board size, board meetings, role or CEO duality, female directors and independent directors. Using GMM estimation, we recorded the following findings, board size has significant negative impact on bank risk, measured by LLRGL but insignificant negative impact on bank risk, measured by LLPNR. These results suggest that bigger board is more efficient for African banks in order to reduce bank risk. Board meetings has significant negative relationship with LLPNR and significant positive relationship with LLRGL. The relationship between CEO or role duality and bank risk, based on LLPNR, is found to be significant and negative and insignificant and positive based on LLRGL. Independent directors has significant negative impact on LLRGL and insignificant positive impact on LLPNR. Finally, the results revealed that female directors has significant negative association with bank risk, measured by LLPNR and significant positive association with bank risk, measured by LLRGL. The results show that board characteristics are important factors which determine bank risk levels of African banks.

CHAPTER EIGHT

EMPIRICAL RESULTS OF THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE AND BANK PERFORMANCE

8 Introduction

This chapter presents the empirical results of the relationship between corporate governance and bank performance. To be specific, this chapter presents the impact that corporate governance characteristics have on bank performance in Africa. In this relationship, our dependent bank performance measures are return on assets (ROA) and return on equity (ROE). Our independent corporate governance variables are board size (BSIZE), board meetings (MEETINGS), role duality (DUAL), presence of female directors (FEMALE) and presence of independent directors (INDEP). We use GMM as our main statistical model and OLS, fixed effect and 2SLS for our robustness analysis. We use GMM as the main estimator due to a number of advantages that go with such technique. These include resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which other techniques may not be able to resolve.

To achieve this, two econometric models are used and the results are presented in Tables 15 and 16. Below are the econometric models:

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (7)$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \delta 0 + \varepsilon_{it} \quad (8)$$

Table 15: Results of corporate governance and bank performance using ROA as performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
BSIZE	-0.0551***	0.0112	0.00437	-0.0397***
	(0.0204)	(0.0307)	(0.0251)	(0.00875)
DUAL	-0.0688	-0.785	-0.459	0.0614
	(0.360)	(0.670)	(0.413)	(0.0967)
MEETINGS	-0.0692**	-0.00211	-0.0147	-0.0896***
	(0.0281)	(0.0282)	(0.0246)	(0.00764)
FEMALE	0.00316	-0.00877	-0.00363	0.0129***
	(0.00617)	(0.00721)	(0.00611)	(0.00150)
INDEP	0.000814	0.00128	0.00206	-3.26e-05
	(0.00417)	(0.00378)	(0.00325)	(0.000841)
LNTA	-0.159***	-0.0789*	-0.117***	-0.0567***
	(0.0596)	(0.0468)	(0.0393)	(0.0170)
EQTA	0.0422***	0.0265***	0.0337***	0.0186***
	(0.00872)	(0.00895)	(0.00679)	(0.00189)
NLTA	-0.00708	-0.00659	-0.00914*	-0.0106***
	(0.00482)	(0.00616)	(0.00471)	(0.00135)
COST	-0.0533***	-0.0505***	-0.0513***	-0.0386***
	(0.00522)	(0.00395)	(0.00323)	(0.00111)
COR	-0.000721	0.00267	0.00180	-0.0143***
	(0.00384)	(0.0129)	(0.00548)	(0.00103)
LNGDP	0.0692**	-0.525	0.0354	-0.0525***
	(0.0317)	(0.525)	(0.0532)	(0.0124)

CRISIS7_8	0.0374	0.350*	0.391**	0.0883***
	(0.389)	(0.204)	(0.191)	(0.0245)
L.ROA				0.389***
				(0.00789)
Constant	6.200***	8.691**	5.226***	5.781***
	(0.579)	(3.524)	(0.654)	(0.113)
Observations	682	682	682	640
R-squared	0.426	0.291		

Notes: 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, CRISIS7_8 represents 2007/2008 financial crisis, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

Table 16: Results of corporate governance and bank performance using ROE as performance measure

MODEL	**(1)**	**(2)**	**(3)**	**(4)**
VARIABLES	**OLS**	**Fixed effect**	**2SLS**	**GMM**
BSIZE	-0.219	0.155	0.121	-0.297***
	(0.146)	(0.223)	(0.176)	(0.0466)
DUAL	0.771	3.061	0.180	-1.312*
	(2.434)	(4.886)	(2.785)	(0.779)
MEETINGS	-0.438**	-0.00973	-0.0538	-0.525***
	(0.171)	(0.206)	(0.174)	(0.0373)
FEMALE	0.123***	-0.0146	0.0209	0.0436***
	(0.0409)	(0.0525)	(0.0433)	(0.0126)
INDEP	0.00392	-0.00183	0.00753	-0.0666***

	(0.0257)	(0.0276)	(0.0230)	(0.00501)
LNTA	-0.653*	-0.198	-0.643**	-0.505***
	(0.364)	(0.341)	(0.282)	(0.0892)
EQTA	-0.210***	0.0319	-0.0718	-0.208***
	(0.0348)	(0.0652)	(0.0467)	(0.0173)
NLTA	-0.0459*	0.0789*	-0.0145	-0.0486***
	(0.0249)	(0.0449)	(0.0328)	(0.00884)
COST	-0.321***	-0.333***	-0.323***	-0.215***
	(0.0322)	(0.0288)	(0.0226)	(0.0139)
COR	0.0297	0.0548	0.0239	0.0227**
	(0.0239)	(0.0940)	(0.0357)	(0.0108)
LNGDP	0.108	-12.46***	-0.120	-0.531***
	(0.211)	(3.828)	(0.339)	(0.105)
CRISIS7_8	3.937	4.576***	5.937***	3.335***
	(2.872)	(1.489)	(1.400)	(0.112)
L.ROE				0.281***
				(0.0129)
Constant	42.35***	108.9***	36.36***	43.05***
	(3.640)	(25.69)	(4.376)	(1.439)
Observations	682	682	682	640
R-squared	0.341	0.288		

Notes: 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, CRISIS7_8 represents 2007/2008 financial crisis, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

8.1 Results of Independent variables

Tables 15 and 16 present the results of the association between corporate governance characteristics and bank performance under GMM regression model. The findings are as follows: Board size is significantly negative related to both ROA and ROE at 1% level of significance. The significant negative relationship between board size and bank performance implies that hypothesis ten, which expected statistically significant negative association between board size and bank performance in Africa, is well supported. Our results show that smaller board works better; it is effective and efficient to improve bank performance in Africa than bigger board size. It also means that bigger board is inefficient governance structure and has adverse effect on the performance of banks in Africa. Smaller boards in Africa with more experienced people are able to take better decisions to improve bank performance. Theoretically, this finding supports agency theory which suggests, that because of director's free rider problems, communication and coordination problems, and internal conflicts among directors, bigger boards are not efficient (Jensen, 1993). In addition, during decision making , it is difficult for bigger boards to organise board meetings, it is more difficult and requires a lot of effort for bigger boards to reach consensus ((Jensen 1993; Hoque et al, (2013), which could affect the performance of banks negatively. Contrary, the negative impact of board size on bank performance does not support resource dependency theory, which suggests that bigger board comes with greater expertise, quality advice and access to resources, which could improve bank performance. The negative effect of board size on bank performance is in line with previous studies (e.g. Liang et al., 2013; Mamatzakis & Bermpei, 2015; Mollah & Zaman, 2015; Sakawa & Watanabel, 2018). Contrary, this finding is opposite to previous empirical studies that report a significant positive relationship between board size and bank performance (e.g. Chahine & Safieddine, 2011; Salim et al, 2016; O'Sullivan et al, 2016; Adams and Mehran, 2012). Our finding is not in line with some other previous findings probably due to differences in sample size and differences in a way in which the variables are measured, not forgetting differences in the time frame in which the studies are conducted.

Duality has insignificant and positive relationship with ROE but significant and negative association with ROE at 10% significance level. The insignificant nature of our result may be caused by measurement error, autocorrelation and multicollinearity. The positive coefficient on duality implies that one person holding

the positions of CEO and chairman is better for bank performance improvement, but it is not significant in Africa. The positive impact of duality on performance provides supports to stewardship and resource dependency theories but this is not significant in the case of Africa. The insignificant positive impact of duality on bank performance is consistent with previous empirical findings (Liang et al., 2013; Bukair & Rahman, 2015; Carty & Weiss, 2012; Abdul Gafoor et al., 2018). However, it is not consistent with the previous empirical findings which record a significant positive impact of duality on bank performance (e.g. Al-Saidi & Al-Shammari, 2013). It is also not consistent with the significant negative impact of duality on bank performance recorded by past studies (e.g. Grove et al, 2011; Mollah & Zaman, 2015; Dong et al., 2017; Sarkar & Sarkar, 2018; AlManaseer et al. (2012).

However, the negative impact of duality on bank performance supports hypothesis eight, which postulated a significant association between role duality and bank performance in Africa. This result suggests that the situation whereby a single person holds the positions of CEO and chairman at the same time is not a good corporate governance practice that improves African banks performance. The result implies that the same person (CEO) reporting to himself (as chairman) brings conflict of interest which poses risk and subsequently causes adverse effect on bank performance. This result also suggests that it is beneficial for African banks to have a separate CEO from chairman in order to improve their performance. Our findings are in accordance with agency theory, which argues that CEO duality has adverse impact on firm performance, and that to prevent managerial entrenchment, management and boards should be independent from each other (Fama & Jensen, 1983a). It also lends some support to Rechner and Dalton (1991) who argue that assigning one person as CEO and chairman at the same time brings about a clear conflict of interest, which could adversely affect bank performance. This finding also supports the corporate governance recommendations by some corporate governance codes in Africa including King III in South Africa, which recommend a separation of Chairman and CEO roles. The significant negative impact of duality on bank performance is in line with some previous empirical findings (e.g. Grove et al, 2011; Mollah and Zaman, 2015; Dong et al., 2017; Sarkar and Sarkar, 2018; AlManaseer et al. (2012). However, this finding is not consistent with the positive impact of duality on bank performance recorded by prior empirical literature (e.g. Al-Saidi & Al-Shammari, 2013), probably due to the differences in the way in which the variables are measured.

The findings show that the relationship between board meetings and bank performance is statistically significant and negative based on both ROA and ROE at 1% level of significance. These results reject hypothesis seven, which predicted statistically significant positive association between board meetings and bank performance in Africa. These findings suggest that having smaller number of meetings is good to improve bank performance in Africa than having more meetings. The results could imply that agency cost in the form of travel expenses, refreshments, directors' meetings and time which go into more board meetings outweigh the advantages that more meetings bring to the banks in Africa. Although the market perceives frequent board meetings to be good corporate governance practice, board members may not always devote all the time to discuss critical issues relating to the welfare of the bank but rather discuss issues relating to their personal life and families. Therefore, such meetings will not benefit the bank but will only bring cost, which will affect the performance of banks negatively. As a result, some banks, for example those in Africa, do not benefit from more board meetings. These findings do not lend any support to agency theory (Jensen & Meckling, 1976), which suggests that frequent board meetings come with increased capacity to advise effectively, discipline management and monitor them, which could result to improvement in bank performance. These findings are not in accordance with the past empirical studies (e.g. Liang et al, 2013; Salim Arjomandi & Seufert, 2016; Grove et al, 2011; Abdul Gafoor, 2018) which find a positive relationship between board meetings and bank performance. The inconsistent of this finding and the findings of some previous studies may be due to differences in sample size, time frame and the way in which the variables are measured.

The findings show that the impact of female directors on bank performance, measured by ROA and ROE is significant and positive based on the two performance measures at 1% levels of significance. This result means that hypothesis nine, which predicted a significant positive association between the presence of female directors and bank performance in Africa, is well supported. These results suggest that the experience and qualities female directors bring to the board help in no small way to improve bank performance in Africa. It is perceived that females are more responsible, they do not take decisions unnecessary, and they make sure that their male counterparts do not take decisions which will cause adverse effect towards the bank. Therefore, more female directors in the boardroom help African banks to improve their performance. These findings lend support to

resource dependency theory, which suggests that board diversity, which includes the presence of female directors on a board, comes with distinct information sets which are available to management enhance decision making (Carter et al, 2010), which could increase bank performance. Our result is also in accordance with theoretical view, which suggests that female directors presence in the boardroom comes with a competitive advantage since females are more likely to possess non-business background and have advanced degrees (García-Meca, García-Sánchez & Martínez-Ferrero, 2015), which could improve bank performance. The positive association between female directors and bank performance is consistent with a number of previous empirical findings (e.g. Gulamhussen & Santa, 2015; Pathan & Faff, 2013; García-Meca et al, 2015; Dong et al., 2017).

The association between the presence of independent directors and bank performance, measured by ROA is statistically insignificant and negative. However, the association between the presence of independent directors and bank performance, measured by ROE is statistically significant and negative at 1% significant level. The significant negative impact of independent directors on bank performance rejects hypothesis eleven, which predicted a statistically positive association between independent directors and bank performance in Africa. The significant negative association between board independent and bank performance suggests that more independent directors on the board causes a reduction in bank performance in Africa.

This result can be explained by the fact that more independent directors are chosen by the bank for the purpose of regulatory and compliance purposes, and their presence do not bring anything good to the banks. The reason may also be that the independent directors may not have enough experience and skills to contribute during board meetings and their presence can bring cost rather that benefit to the banks. Therefore, smaller number of independent directors on board is better for improvement in bank performance in Africa. The market perceives more independent members on bank board to be best corporate governance practice because their presence could increase bank performance, but this is not the case in Africa. The theoretical prediction that independent board directors scrutinise the management decisions, advice and monitor management activities, which could improve bank performance is not the case in Africa. This support the argument by Nguyen and Nielsen (2010) who state, that adding more independent directors to a

board might not always be helpful. The significant negative impact of independent directors on bank performance lend support to the empirical findings of Pathan and Faff (2013) and Sarkar and Sarkar (2018) who report a significant negative association between independent directors and bank performance. However the finding does not lend support to some prior empirical findings (e.g. Abdul Gafoor et al, 2018; Dong, 2016; Liang et al, 2013; Pathan et al, 2007; Lee and Carlson, 2007), which report positive impact of board independent on bank performance, which may be due to differences in sample size and measurement difference of the variables.

8.2 Results of control variables

The results of control variables are presented in Tables 15 and 16. The results show that bank size (LNTA) has negative impact on both ROA and ROE at 1% significant levels. The negative coefficient on bank size implies that the smaller banks in Africa are easily managed to make more profit. It also implies that managers of the banks in Africa are more efficient when they concentrate on smaller number of businesses, which result to a higher banking performance. In addition, the results imply that, agency cost related to managing smaller banks and overhead bureaucratic processes associated with smaller banks in Africa are all reduced. The reduction in agency cost and bureaucratic processes increase the performance of smaller banks in Africa. The findings are consistent with the findings (e.g. Tan (2016); Al-Saidi & Al-Shammari (2013); Dietrich & Wanzenried (2011); Elyasiani & Zhang;2015; Doumpos et al, 2015) and contrary to positive impact of bank risk and performance recorded by prior empirical literature (e.g. Sakawa & Watanabel, 2018; Rahman et al., 2015; Tan et al., 2017; Shawtari, 2018; Hasanov et al., 2018).

EQTA has significant and positive relationship with ROA at 1% significant level. The result suggests that higher capital banks perform better in Africa. The findings also suggest that well capitalised banks in Africa are able to change their funds to higher income earnings. In addition, high capital banks in Africa are able to embark on more investment activities to make more profit. The finding supports the theoretical argument by Djalilov and Piesse (2016) and Athanasoglou et al., (2008) who argue that, the ratio of equity to total asset is expected to have positive impact on bank performance because it represents the amount of available funds to back operations of the bank, and for that matter serve as safety net in case of adverse events, which could increase bank performance. The result supports the findings of some previous empirical literature (e.g. Liang et al, 2013; Bougatef, 2017; Daly & Frikha, 2017;

Djalilov & Piesse, 2016; Hasanov et al., 2018). However, the finding does not support the findings of some previous empirical literature that find a significant negative relationship between equity to asset ratio and bank performance (e.g. Mollah & Zaman, 2015; Dietrich & Wanzenried, 2011).

In contrast, we find that equity to assets ratio has significant and negative relationship with ROE at 1% significant level. This result suggests that smaller capitalised banks in Africa make more profit. The result can be explained by the fact that the smaller capitalised banks manage their available little resources efficiently and effectively to make more profit. The significant negative impact of equity to assets ratio is consistent with the findings of Mollah and Zaman (2015) and Dietrich and Wanzenried (2011) but contrast with the significant positive impact found by prior literature (e.g. Liang et al, 2013; Bougatef, 2017; Daly and Frikha, 2017; Djalilov and Piesse, 2016; Hasanov et al., 2018).

The inconsistent of the results of impact of equity to assets ratio on ROA and ROE may be caused by the difference in the behaviour of equity and debt holders (ROA) and equity holders (ROE). Equity holders (ROE) are the real owners of the bank and for that matter may accept some level of risk and demand their returns only when the bank makes profit and has paid everybody. On the other hand, equity and debt holders (ROA) may not accept any risk and may demand their returns whether the bank makes profit or not. The difference in the behaviour can cause the result of ROA and ROE to be different.

The relationship between NLTA and bank performance is statistically significant and negative based on the two performance measures, ROA and ROE at 1% significant levels. A reduced net loans to assets ratio will resort to a lower record of default risk by the banks. As a result, the banks do not have to spend too much on managing default risk, which could help improve the performance of the banks in Africa. The money which would be spent on managing default risk by the banks could be used for investment activities for the banks to make more profit. Therefore, the banks in Africa make more profit with lower net loans to assets ratio. The findings are not in line with the findings of Daly and Frikha (2017), Dong et al., (2017), Mollah and Zaman (2015) who document a positive relationship between net loans to assets ratio and bank performance.

COST is statistically significantly negative related to both ROA and ROE at 1% significant levels. The negative impact on performance suggests that there is an

efficient and prudent operations management within the banks in Africa which help them to increase their performance. On the other hand, a lower percentage of cost to income ratio means that, the banks in Africa have more money left for investment purposes to increase their performance. Theoretically, this findings support Rahman et al, 2015) who mention that, when the ratio of cost-to-income is low the higher the performance of the bank, and the higher the cost-to-income ratio, the lower the bank performance. The significant negative association between cost to income ratio and bank performance is consistent with the findings of some previous empirical studies (e.g. Rahman, 2015; Syafri, 2012; Dietrich & Wanzenried, 2011; Goddard, 2013).

COR has significant and negative impact on bank performance, measured by ROA. This result suggests that as CPI decreases (an increase in corruption), banks performance increases. The result suggests that banks in Africa take advantage of corrupt activities to make connections and influence key decision and policy makers and politicians to make more profit. Some banks may take bribes to award more loans to people who do not actually qualify for the loans in order to make profit. Some banks in Africa may also pay bribes to engage in some unlawful investment activities to increase their profitability. Our finding is consistent with Aburime (2009) and Rizvi (2013), who find a negative relationship between corruption and bank performance.

However, the result shows a significant positive relationship between corruption and bank performance, measured by ROE. This result shows that as CPI increases (a reduction in corruption), banks performance in Africa increases significantly. The result suggests that the impact of corruption within institutions including banks in Africa is a threat to the activities of the banks. Therefore, a reduction in corruption help increase the performance of African banks. The result is consistent with Bougatef (2017) who find significant positive relationship between corruption and bank performance.

The inconsistence of the result of the impact of corruption on ROA and ROE may probably be due to the fact that the behaviour of debt holders (ROA) and equity holders (ROE) are different and for that matter we can expect the result of ROA to be different from ROE. .

The association between GDP and bank performance based on both ROA and ROE is statistically significant and negative at 1% level of significance. The findings show that, in a bad economic situation in Africa when GDP is low, the demand for loans

and other bank services in Africa can increases because individuals and companies will need support from banks to survive. The interest on the high demand for loans increases the performance of the banks, hence the negative relationship between GDP and performance. The result is consistent with the results of previous empirical findings (e.g. Boateng et al., 2015; Safrali and Gumus, 2010; Rashid & Jabeen, 2016) and contrary to Albertazzi and Gambacorta (2009), Mollah and Zaman (2015) and Shawtari (2018) who find a positive impact of GDP on bank performance.

2007/2008 financial crisis has significant positive impact on both ROA and ROE at 1% significant levels. The findings suggest that, during the crisis, the banks in Africa put more measures in place to manage their operations and risk very well. This avoided the adverse effect of the crisis on their performance, hence the banks in Africa were able to make profit during the crisis period.

It is important to note that, the inconsistencies of some of our findings with other previous empirical findings may be due to differences in measurement of the variables, sample size and time frame of the studies.

8.3 Robustness analysis

8.3.1 Results based on corporate governance variables and bank performance, measured by ROA

8.3.1.1 Results of independent variables

The results are presented in table 15. The negative sign of the coefficient on board size under the main model, GMM, remains the same under OLS but changed to positive under both fixed effect and 2SLS models. The significance level of board size shows some changes. While the 1% significant level of board size under GMM remains the same under OLS, it became statistically insignificant under fixed effect and 2SLS models. The sign of the coefficient on Duality changed from positive under GMM to negative under OLS, fixed effect and 2SLS. The significance level of duality which was statistically insignificant has not changed. The negative sign on coefficient of board meetings remains unchanged. However, there are changes in the level of significance. Specifically, the coefficient on board meetings which was statistically significant at 1% level under GMM is now significant at 5% level under OLS and insignificant under both fixed effect and 2SLS models. With regards to female directors, the sign on the coefficient which was positive under the main model remains the same under OLS model but changed to negative under fixed effect and 2SLS models. However, the sign on the coefficient of female directors

which was significant at 1% level based on the main model is now insignificant based on OLS, fixed effect and 2SLS models. The coefficient on independent directors which was statistically insignificant has not changed. However, the sign of coefficient on independent directors which was negative under the main model is now positive based on OLS, fixed effect and 2SLS models.

8.3.1.2 Results of control variables

The results of the control variables are presented in table 15. The direction of coefficient on bank size has not changed. However, the level of significance on coefficient of bank size which was 1% under the main model, GMM, remains the same under OLS and 2SLS but changed to 10% significant level under fixed effect model. The sign of the coefficient and the direction of significance on equity to total assets remains unchanged. The sign of the coefficient on net loans to assets ratio remains the same. However, the direction of significance of the coefficient on net loan to assets has changed. Specifically, the 1% significance level of coefficient on net loans to assets ratio under the main model is now 10% significant level under 2SLS and insignificant under OLS and fixed effect models. The sign of the coefficient and the direction of significance of coefficient on cost-to-income ratio remains the same. The negative impact of control of corruption on bank performance based on the main model remains the same under OLS but became positive under fixed effect and 2SLS models. The 1% significance level of the coefficient on control of corruption under the main model, GMM, has changed to insignificant based on OLS, fixed effect and 2SLS models. The negative impact of GDP on bank performance under GMM remains the same under fixed effect but changed to positive under OLS and 2SLS models. Moreover, the significance level of the coefficient on GDP which was 1% based on the main model, GMM, is now 5% based on OLS model and insignificant based on fixed effect and 2SLS models. Finally, the sign of coefficient on 2007/2008 financial crisis has not changed. However, there is a change in the significance levels. Specifically, the direction of significance level of coefficient on financial crisis which was 1% under GMM is now 5%, 10% and insignificant under 2SLS, fixed effect and OLS models respectively.

8.3.2 Results based on corporate governance variables and bank performance, measured by ROE

8.3.2.1 Results of independent variables

The results are presented in table 16. The negative impact of board size on bank performance under the main model, GMM, remains unchanged under OLS model but changed to positive under fixed effect and 2SLS models. The direction of significance level of coefficient on board size which was 1% under the main model is now insignificant based on OLS, fixed effect and 2SLS models. The sign on coefficient on Duality which was negative under GMM model changed to positive under OLS, fixed effect and 2SLS models. 10% significant level of DUAL under GMM became insignificant under OLS, fixed effect and 2SLS models. The direction of significance level of the coefficient on board meetings has not changed. However, there are changes in the direction of significance levels. Specifically, the 1% significance level of the coefficient on board meetings based on the main model has changed to 5% based on OLS model and insignificant based on both fixed effect and 2SLS models. The direction of the sign of coefficient on female directors under the main model, which was positive remains the same under OLS and 2SLS models and changed to negative based on fixed effect model. The significance level of the coefficient on female directors which was 1% under the main model remains 1% under OLS model but became insignificant under fixed effect and 2SLS models. Finally, the negative impact of independent directors on bank performance under the main model, GMM, remains unchanged under fixed effect model but changed to positive under OLS and 2SLS models. Moreover, the direction of the significance level of the coefficient on independent directors which shows 1% significant level under the main model is now insignificant under OLS, fixed effect and 2SLS models.

8.3.2.2 Results of control variables

The results of the control variable are presented in table 16. The direction of the sign of coefficient on bank size, which was negative under the main model has not changed. However, there are changes in the direction of significant levels. Specifically, the 1% level of significance of the direction of coefficient on bank size under the main model has changed to 10%, 5% and insignificant under OLS 2SLS and fixed effect models respectively. The negative impact of equity to assets ratio on bank performance based on the main model, GMM, remains unchanged under OLS and 2SLS models but changed to positive based on fixed effect model. The significance level of the coefficient on equity to assets ratio which was 1% has not

changed under OLS model but became insignificant under both fixed effect and 2SLS models. The direction of the sign of coefficient on net loans to assets which was negative based on the main model remains negative under OLS and 2SLS models but became positive under fixed effect model. The 1% significance level of the coefficient of the sign on net loans to asset has changed to 10% under both OLS and fixed effect models and became insignificant under 2SLS model.

The direction of significance level and the direction of the sign of coefficient on cost-to-income ratio under the main models remains unchanged. Specifically, the negative impact of cost-to-income ratio on bank performance under the main model has not changed and the 1% level of significance of the coefficient on cost-to-income ratio under the main model has also not changed. The positive impact of COR on bank performance under the main model remains the same. However, the 5% significance level of the coefficient on control of corruption under the main model became insignificant based on OLS, fixed effect and 2SLS models. The negative impact of GDP on bank performance under the main model, GMM, has not changed under fixed effect and 2SLS but changed to positive under OLS model. Moreover, the level of significance of the coefficient on GDP which was 1% under the main model remains the same under fixed effect model and changed to insignificant under OLS and 2SLS models. Finally, the sign of direction of coefficient on 2007/2008 financial crisis which was positive based on GMM remains the same. The direction of significance of coefficient on 2007/2008 financial crises which shows 1% significant level based on the main model remains the same under fixed effect and 2SLS but became insignificant under OLS model.

NB: The reason for the inconsistence of some of the results of the main statistical model, GMM, with some of the results of OLS, fixed effect and 2SLS, may be partly due to the fact that GMM possesses a number of advantages including, resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which the other techniques may not have.

8.4 Chapter summary

This chapter has focused on presenting and discussing the empirical results of the relationship between internal corporate governance structures and bank performance of African banks. Specifically, this chapter attempted to find out how different corporate governance structures help reduce or increase bank performance in Africa. This chapter addresses hypothesis 7 to 11. Two bank

performance measures were used namely, Return on Assets (ROA) and Return on Equity (ROE). Our independent corporate governance variables used are board size, board meetings, role or CEO duality, female directors and independent directors. Using GMM estimation, we recorded the following findings: First, board size has significant negative impact on both ROA and ROE. Second, board meetings has significant negative relationship with both ROA and ROE. Third, the relationship between CEO or role duality and bank performance, based on ROA, is found to be insignificant and positive but significant and negative based on ROE. Four, independent directors has insignificant negative impact on ROA and significant negative impact on ROE. Finally, the results revealed that female directors has significant positive association with bank performance, based on both ROA and ROE. Our empirical results suggest that board structures are important factors which determine African banks performance.

CHAPTER NINE

MODERATION EFFECT OF CORPORATE GOVERNANCE ON THE RELATIONSHIP BETWEEN BANK RISK AND BANK PERFORMANCE

9 Introduction

This chapter presents the empirical findings of the moderating effect of corporate governance on the relationship between bank risk and performance in Africa. In other words, the section presents the joint effect of board characteristics and bank risk on bank performance in Africa. The board characteristics under consideration are board size, role duality, board meetings, presence of female directors and presence of independent directors. We use GMM as our main statistical model and OLS, fixed effect and 2SLS for robustness tests. Tables 17, 18, 19 and 20 present these results. We use GMM as our main model due to a number of advantages that go with GMM. They include resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which other techniques may not be able to resolve.

9.1 Results based on LLPNR as bank risk, interacting variables and bank performance

Below is the econometric models used and the results are presented in tables 17 and 18.

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LPNR_{it} + \beta_{13}(LPNR*SIZE)_{it} + \beta_{14}(LPNR*MEETINGS)_{it} + \beta_{15}(LPNR*DUAL)_{it} + \beta_{16}(LPNR*FEMALE)_{it} + \beta_{17}(LPNR*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (9)$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LPNR_{it} + \beta_{13}(LPNR*SIZE)_{it} + \beta_{14}(LPNR*MEETINGS)_{it} + \beta_{15}(LPNR*DUAL)_{it} + \beta_{16}(LPNR*FEMALE)_{it} + \beta_{17}(LPNR*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (10)$$

Table 17: Results of moderating effect using LLPNR as bank risk measure and ROA as bank 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)
BSIZE	-0.0207	0.00413	0.00705	-0.0646***
	(0.0225)	(0.0306)	(0.0254)	(0.00206)
DUAL	0.215	-0.351	-0.140	-0.0416
	(0.395)	(0.716)	(0.429)	(0.0458)
MEETINGS	-0.0404*	0.00322	-0.00422	-0.0892***
	(0.0215)	(0.0309)	(0.0259)	(0.00144)
FEMALE	0.00539	-0.0109	-0.00312	0.00415***
	(0.00762)	(0.00727)	(0.00620)	(0.000363)
INDEP	0.00244	0.00696*	0.00767**	-0.00408***
	(0.00430)	(0.00387)	(0.00338)	(0.000282)
LLPNR*BSIZE	-0.000523	-0.000278	-0.000373	0.000306***
	(0.00107)	(0.000751)	(0.000699)	(3.32e-05)
LLPNR*DUAL	-0.0181*	-0.00398	-0.00720	0.0137***
	(0.0108)	(0.0131)	(0.0109)	(0.00472)
LLPNR*MEETINGS	-0.000144	0.000395	0.000467	0.00209***
	(0.00137)	(0.000956)	(0.000883)	(2.03e-05)
LLPNR*INDEP	-0.000172	-0.000286***	-0.000276***	4.08e-06
	(0.000197)	(0.000101)	(9.55e-05)	(5.73e-06)
LLPNR*FEMALE	0.000236	3.27e-05	8.41e-05	-3.21e-05***
	(0.000364)	(0.000195)	(0.000186)	(8.66e-06)

LNTA	-0.0436	-0.0580	-0.0689*	0.0664***
	(0.0525)	(0.0433)	(0.0361)	(0.00245)
EQTA	0.0467***	0.0412***	0.0448***	0.0229***
	(0.00800)	(0.00889)	(0.00660)	(0.000305)
NLTA	-0.00522	-0.00320	-0.00589	-0.00675***
	(0.00419)	(0.00583)	(0.00445)	(0.000292)
COST	-0.0469***	-0.0544***	-0.0522***	-0.0327***
	(0.00502)	(0.00399)	(0.00318)	(0.000261)
COR	-0.00508	-0.00698	-0.00525	-0.00347***
	(0.00335)	(0.0118)	(0.00495)	(0.000352)
LNGDP	-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		

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 18: Results of moderating effect using LLPNR as bank risk measure and ROE as bank performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	ROE	ROE	ROE	ROE
LLPNR	-0.0118	-0.00130	-0.00974	-0.240***
	(0.116)	(0.0755)	(0.0715)	(0.00498)
BSIZE	0.0980	0.0200	0.144	-0.144***
	(0.183)	(0.224)	(0.186)	(0.0102)
DUAL	3.080	7.548	3.372	1.593***
	(2.635)	(5.245)	(3.035)	(0.253)
MEETINGS	-0.187	0.0448	0.0660	-0.650***
	(0.159)	(0.227)	(0.190)	(0.0122)
FEMALE	0.102*	-0.0583	-0.0110	0.0463***
	(0.0541)	(0.0533)	(0.0457)	(0.00471)
INDEP	8.07e-05	0.0265	0.0360	-0.0178***
	(0.0285)	(0.0284)	(0.0249)	(0.00121)
LLPNR*BSIZE	-0.00983	-0.00868	-0.00706	-0.00457***
	(0.00796)	(0.00550)	(0.00522)	(0.000210)
LLPNR*DUAL	-0.122*	-0.0481	-0.0891	0.179***
	(0.0692)	(0.0957)	(0.0804)	(0.0268)
LLPNR*MEETINGS	-0.0214**	-0.00440	-0.00830	0.0134***
	(0.00933)	(0.00700)	(0.00657)	(0.000186)
LLPNR*INDEP	-0.000472	-0.00204***	-0.00192***	-0.000243***

	(0.00133)	(0.000744)	(0.000713)	(6.95e-05)
LLPNR*FEMALE	0.00324	0.00152	0.00142	0.00258***
	(0.00238)	(0.00143)	(0.00139)	(0.000128)
LNTA	0.0910	-0.0763	-0.276	0.369***
	(0.350)	(0.318)	(0.266)	(0.0160)
EQTA	-0.185***	0.137**	-0.0145	-0.147***
	(0.0385)	(0.0652)	(0.0474)	(0.00285)
NLTA	-0.0193	0.112***	0.0173	-0.0252***
	(0.0274)	(0.0427)	(0.0323)	(0.00184)
COST	-0.295***	-0.354***	-0.326***	-0.201***
	(0.0339)	(0.0292)	(0.0230)	(0.00197)
COR	-0.00299	0.0196	-0.0144	0.0359***
	(0.0238)	(0.0867)	(0.0342)	(0.00237)
LNGDP	-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		

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

9.1.1 Results of independent variables

From tables 17 and 18, bank risk, measured by LPNR, has significant and negative impact on both ROA and ROE at 1% significant level. However, when board size was interacted with bank risk, LLPNR*BSIZE, the coefficient became positive and significant, based on ROA. This implies that, board size moderate the relationship between bank risk and performance, supporting hypothesis twelve. The result can be explained by the fact that, under a good corporate governance system such as for example using smaller board size, can reduce bank risk and increase bank performance in Africa. African banks are able to benefit from strong board which is able to work effectively and board members bring ideas together to identify risk and able to minimise it to increase bank performance. The result could also mean that, the composition of the board which include the right number of people such as more female directors and more independent directors who contribute well during board meetings reduce risk and improve bank performance. In addition, the number of board members may not be more than what is required by the banks, therefore, they do not incur unnecessary agency cost, which could reduce bank performance. Moreover, the result can mean that, the banks in Africa are benefiting from the right size of board members and board members are able to have constructive discussions during meetings, which enable them to reduce risk and improve bank performance.

From tables 17 and 18 LPNR has significant negative impact on bank performance, measured by ROE, at 1% level of significance. LLPNR*BSIZE also has negative impact on bank performance, measured by ROE, at 1% level of significance. The coefficient of LLPNR on performance is -0.240 and the coefficient of LLPNR*BSIZE on performance is -0.005. This means that when board size interacted with bank

risk, there is a reduction of the negative impact on performance (from -0.240 to -0.005). This also implies that board size moderate the relationship between bank risk and performance, supporting hypothesis twelve. The result also suggests that African banks benefit from the size of their board to reduce bank risk to improve performance.

The inconsistence of our results of the positive impact of LLPNR*BSIZE on ROA and negative impact of LLPNR*BSIZE on ROE can be explained by the fact, that debt holders (ROA) are less likely to accept poor governance practices that may result to poor performance. On the other hand, equity holders (ROE) may seem to entertain or more tolerant to 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.

From table 17 and 18, LLPNR*DUAL has significant and positive impact on both ROA and ROE at 1% significance levels. This results mean that duality moderate the relationship between bank risk and performance, which supports hypothesis 12. The results suggest that a single person holding the positions of CEO and chairman is a good governance practice to reduce bank risk and improve bank performance in Africa. 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 the same person occupying the seats of chairman and CEO minimises conflicts during decision making (Syriopoulos & Tsatsaronis, 2012), strong and unified leadership with a good strategic direction is achieved, and timely and best decisions within a firm is made (Brickley et al. 1997), which could reduce bank risk and improve performance.

LLPNR*MEETINGS has significant and positive impact on ROA and ROE at 1% significant levels. The results support hypothesis twelve, which predicted a moderation effect of corporate governance on the relationship between bank risk and performance in Africa. This results suggest that, the bank boards in Africa meet regularly to resolve important issues such as risk in a timely manner and take appropriate action. In effect, bank risks could be reduced whiles performance is

improved. This findings can also mean that, board members of banks in Africa are able to focus and have constructive discussion at their meetings. This help them to make better decision without disagreement, which could reduce bank risk and improve performance. This lend some theoretical backing to agency theory (Jensen and Meckling, 1976), which suggests that, important of frequent board meetings is the increased capacity to advise effectively, discipline management and monitor them, which could reduce bank risk and improve performance.

The impact of LLPNR*INDEP on bank performance based on ROA is positive but not significant. This result implies that independent directors on the bank board influence the board decision to reduce risk and improve performance but this is not significant in the case of Africa, based on our result. The insignificant of our result may be due to measurement error, autocorrelation and multicollinearity. However, the impact based on LLPNR*INDEP on bank performance, measured by ROE is highly significant and negative at 1% significant level, supporting hypothesis twelve. The coefficients of LLPNR and LLPNR*INDEP are -0.240 and -0.0002 respectively. Although the sign on both coefficients are negative, the negative effect on bank performance has decreased 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. The result means that independent directors in Africa use their skills and experience to contribute during board sittings to scrutinise management decisions, which safeguard the banks against unnecessary risk taking and ultimately improve banks performance. It is good to note in addition that, the monitoring role and resources provided by independent directors on African bank board bring risk down and improve performance. The result support theoretical view which emphasises that independent directors reduce agency problems, gives unbiased decisions (Fuzi et al., 2016), and will provide proper monitoring to see to risk reduction of management inflicting danger on firms (Pathan, 2009; Chang et al, 2016), which could reduce bank risk levels and improve performance.

Finally, LLPNR*FEMALE has significant negative impact on bank performance, measured by ROA at 1% significant level. The sign of coefficients on both LLPNR and LLPNR*FEMALE are negative. The coefficient of LPNR on ROA is -0.040 and that of LLPNR*FEMALE on performance is -3.210. The result shows an increase in the negative effect from -0.040 to -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 in Chapter four, 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 board members. As a result, their presence on the board will not do anything good to reduce bank risk and improve performance.

Contrary, LPNR has significant negative impact on ROE while LLPNR*FEMALE has significant and positive impact on ROE at 1% significant level. The positive impact on ROE implies that female directors moderate the relationship between corporate governance and bank performance, which supports hypothesis twelve. This above result suggests that female directors in Africa bring their knowledge and experience to the board to help reduce bank risk and improve performance. The results also suggest that female directors in Africa are risk averse, they do not take risk unnecessarily, and even if they take risk, they consider the impact carefully to minimise the potential adverse effect on performance. Theoretically, these results are consistent with the resource dependency theory, which suggests 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.

The inconsistence of our results of the negative impact of LLPNR*FEMALE on ROA and positive impact of LLPNR*FEMALE on ROE may be caused by the differences in the behaviour of debt holders (ROA) and equity holders (ROE). As 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 to poor bank performance, equity holders (ROE) may seem to entertain or more tolerant to 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.

9.1.2 Results of control variables

9.1.2.1 Results based on individual corporate governance variables

These results are presented in table 17 and 18.The relationship between board size and bank performance is significant and negative based on both ROA and ROE at 1% significant levels. Our results show that board size which is small and effective is good to increase the bank performance in Africa. The results also imply that since the number of the board members is small, they can concentrate and focus fully during board meetings; and board members are able to debate on issues and able to reach consensus on time. Moreover, because expenses on bigger board size is high, African banks are able to take advantage of smaller board size to reduce expenses and agency cost to improve their bank performance.

The findings give theoretical support to agency theory which suggests that because of director's free rider problems, communication and coordination problems, and internal conflicts among directors, bigger boards are not efficient (Jensen, 1993). In addition, during decision making , it is difficult for bigger boards to organise board meetings, it is more difficult and requires a lot of effort for bigger boards to reach consensus ((Jensen 1993; Hoque et al, (2013), which could have negative impact on bank performance. Contrary, the negative impact of board size on bank performance does not support resource dependency theory which advocates for a bigger board. The negative impact of board size on bank performance is consistent with a number of previous empirical studies (e.g. Liang et al., 2013; Mamatzakis & Bermpei, 2015; Mollah & Zaman, 2015; Sakawa & Watanabel, 2018).

Duality is statistically insignificant and negative related to ROA, which may cause by measurement error and multicollinearity. Contrary, duality is found to be highly significant positive related to bank performance, measured by ROE, at 1% significant level. The positive relationship suggests that a single person holding CEO and chairman positions is better for improvement of bank performance in Africa. It also suggests, that when the same person holds the positions of CEO and Chairman in Africa, he acquires more experience because of the in-depth knowledge he has already gained in the banking business. Furthermore, the person holding the two important positions in Africa works harder to protect his reputation, he identifies issues within the bank and deal with them in a timely manner, which could improve performance. The findings support stewardship theory which suggests, that same person occupying the seats of chairman and CEO minimises conflicts during

decision making (Syriopoulos and Tsatsaronis, 2012), strong and unified leadership with a good strategic direction is achieved, and timely and best decisions within a firm is made (Brickley et al. 1997), which could increase performance. The significant positive impact of duality on bank performance is consistent with Al-Saidi and Al-Shammari (2013). However it is not consistent with the previous studies that record insignificant impact of duality on bank performance (e.g. Bukair and Rahman, 2015; Carty and Weiss, 2012; Abdul Gafoor et al., 2018) and significant negative impact of duality on bank performance (e.g. Grove et al, 2011; Mollah and Zaman, 2015; Dong et al., 2017; Sarkar and Sarkar, 2018; AlManaseer et al. (2012). The inconsistent of this result with the result of some previous studies may be due to differences in sample size and the way in which variables are measured.

The findings show that the relationship between board meetings and bank performance is significant and negative based on both ROA and ROE at 1% significant level. These findings suggests that smaller number of board meetings is better so far as improvement in African banks performance in concerned. Having fewer meetings could also reduce agency cost in the form of travel expenses and refreshments, which can increase banks performance in Africa. Again, the results suggest that board having fewer meetings but discusses important issues affecting the bank and able to reach consensus will help improve the performance of African banks. These findings are not consistent with the agency theory (Jensen & Meckling, 1976), which suggests that frequent board meetings come with increased capacity to advise effectively, discipline management and monitor them, which could result to improvement in bank performance. These findings are also not consistent with the previous empirical studies (e.g. Liang et al, 2013; Salim Arjomandi and Seufert, 2016; Grove et al, 2011; Abdul Gafoor, 2018) that find a positive relationship between board meetings and bank performance, probably due to differences in sample size and study period.

Independent directors is statistically significant negative related to bank performance, based on both ROA and ROE at 1% significant level. The significant negative relationship between independent directors and bank performance suggests that the presence of independent directors causes a decrease in banks performance in Africa. The results could mean 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. The results can also suggest that independent

directors in Africa are friends and family members of the management and do not have enough experience and skills to contribute during board meetings. Therefore, their presence can bring cost rather than benefit to the banks. Theoretically, the expectation that independent board directors scrutinise the management decisions, advice and monitor management activities (Knyazeva et al (2013, which could improve bank performance is not the case in Africa. This support the argument by Nguyen and Nielsen (2010) who state, that adding more independent directors to a board might not always be helpful. The significant negative impact of independent directors on bank performance lend support to the empirical findings of Pathan and Faff (2013) and Sarkar and Sarkar (2018) who report a significant negative association between independent directors and bank performance. However the finding does not lend support to some prior empirical findings (e.g. Abdul Gafoor et al, 2018; Dong, 2016; Liang et al, 2013; Pathan et al, 2007; Lee and Carlson, 2007), that report positive impact of board independent on bank performance, which may be due to difference in the way the variables are measured.

Presence of female directors is significant and positive related to both ROA and ROE at 1% level of significant. These results suggest that the ideas, experience and qualities female directors bring to the board help improve banks performance in Africa. Females are careful in their decision making, they advise their male colleagues on important issues and work towards the interest of the shareholders, and hence their presence improve the performance of African banks. Females are also considered as risk averse and for that matter do not take unnecessary risk which may jeopardize the performance of banks. These findings lend support to resource dependency theory, which suggests that board diversity, which includes the presence of female directors on executive board, comes with distinct information sets which are available to management enhance decision making (Carter et al, 2010), which could improve bank performance. Our results also lend some support to the theoretical view, which suggests that female directors in the boardroom comes with a competitive advantage since females are more likely to possess non-business background and have advanced degrees (García-Meca, García-Sánchez & Martínez-Ferrero, 2015), which could improve bank performance. The positive association between female directors and bank performance is in line with a number of previous empirical findings (e.g. Gulamhussen & Santa, 2015; Pathan & Faff, 2013; García-Meca et al, 2015; Dong et al., 2017).

9.1.2.2 Results based on bank specific and macroeconomic variables

Tables 17 and 18 show the results of the moderation effect of corporate governance on the relationship between bank risk (LLPNR) and bank performance, measured by ROA and ROE. LLPNR is statistically significant negative related to both ROA and ROE. The finding suggests that the overall risk incurred by the bank including risks from operations of the business and risks associated with bad loans have adverse effect on banks performance. This finding is consistent with the findings of previous empirical literature (e.g. Tan et al, 2017; Al-Tamimi, et al, 2015; I.Maghyereh and Awartani, 2014; Mamatzakis and Bermpei, 2014; Athanasoglou et al, 2008; Sufian, 2011; Liu and Wilson, 2010; Sufian and Chong, 2008; Zhang et al, 2013; Muriithi and Waweru, 2017) and contrary to positive impact of bank risk on performance (e.g. Ekinci, 2016; Tan et al, 2017; Sufian, 2009; Sufian and Habibullah; 2009a; Sufian and Habibullah, 2009b).

Bank size has significant and positive association with bank performance, based on ROA and ROE at 1% significant levels. The positive association between bank size and performance suggests that the economies of scale enjoyed by larger banks in Africa assists them to minimise cost and make higher profit. A reduction in cost can help the banks to improve their performance. Moreover, the positive coefficient could also suggest that the bigger banks in Africa get benefits through the diversification of the activities of their loan portfolios which leads to higher bank performance. This finding is consistent with the findings of prior literature which report a significant positive correlation between bank size and performance (e.g. Sakawa & Watanabel, 2018; Rahman et al., 2015; Tan et al., 2017; Shawtari, 2018; Hasanov et al., 2018); but inconsistent with the significant negative impact of bank size and bank performance (e.g. Tan, 2016; Al-Shammari, 2013; Dietrich & Wanzenried, 2011; Elyasiani & Zhang, 2015; Doumpos et al, 2015).

Equity to asset ratio has significant and positive association with ROA at 1% significant level. The result indicates that African banks with higher capital perform better. The finding also indicates that well capitalised banks in Africa are able to change their funds to higher income earnings. The finding supports the theoretical argument by Djalilov and Piesse (2016) and Athanasoglou et al., (2008) who indicate that, equity to total asset ratio is expected to have positive impact on bank performance because it represents the amount of available funds to back operations of the bank, and for that matter serves as safety net in case of adverse events, which

could increase bank performance. The result is in line with the findings of some previous empirical findings (e.g. Liang et al, 2013; Bougatef, 2017; Daly & Frikha, 2017; Djalilov and Piesse, 2016; Hasanov et al., 2018) and contrary to empirical literature that find a significant negative relationship between equity to asset ratio and bank performance (e.g. Mollah and Zaman, 2015; Dietrich and Wanzenried, 2011).

Contrary, equity to assets ratio is found to be significant and negative association with ROE at 1% significant level. This results means that banks in Africa with smaller capital make more profit. The result suggests that the smaller capitalised banks in Africa manage their available resources efficiently and effectively and make more profit. The result is consistent with the findings of Mollah and Zaman, (2015) and Dietrich and Wanzenried (2011) and contrast with the significant positive impact of equity to assets ratio on bank performance documented by the prior literature (e.g. Liang et al, 2013; Bougatef, 2017; Daly and Frikha, 2017; Djalilov and Piesse, 2016; Hasanov et al., 2018).

The association between net loans to asset ratio and bank performance based on both ROA and ROE is negative and significant at 1% level of significance. This suggests that the banks in Africa have a small number of bad loans resulting to a reduced level of net loans. As a result, the banks spend less on managing default loans. This left the banks with enough capital in the form of money for investment to make more profit. The findings are not in line with the findings of Daly and Frikha (2017), Dong et al., (2017), Mollah and Zaman (2015) who document a positive relationship between net loans to assets ratio and bank performance.

The relationship between cost-to-income ratio (COST) and bank performance based on ROA and ROE is significant and negative at 1% significant levels. The negative impact on performance suggests that the banks in Africa have efficient and prudent way of managing their operations, which help them to increase their performance. This gives theoretical support to Rahman et al, 2015) who posit that, when the ratio of cost-to-income is low the higher the performance of the bank, and a high cost-to-income ratio leads to lower bank performance. This finding is consistent with the findings of some previous empirical studies (e.g. Rahman, 2015; Syafri, 2012; Dietrich and Wanzenried, 2011; Similarly, Goddard, 2013).

Corruption is significantly negative associated with ROA at 1% significant level. This means that when CPI reduces (an increase in corruption), bank performance

increases. This indicates that banks take advantage of corrupt activities in Africa to influence key decision makers, policy makers, and politicians to make more profit. Contrary, corruption is significant and positive associated with ROE at 1% significant level. This means that as CPI increases (a reduction in corruption), banks performance increases. This suggests that African banks can take advantage to improve the performance of their banks when the corrupt activities in the continent are reduced. The result is consistent with Bougatef (2017) and contrary to Aburime (2009) and Arshad and Rizvi (2013) who find a significant negative relationship between corruption and bank.

GDP has significant and positive impact on performance, measured by both ROA and ROE. The findings indicate that higher growth causes a higher demand for lending which ultimately leads to higher bank profitability. The result also suggests that during a period of cyclical upswing, the probability of demand for lending is high, which may lead to higher bank performance. The positive impact of GDP on bank performance support the theoretical argument by Boateng et al., (2015) who posit that GDP growth leads to a higher demand. This encourages banks to borrow more to produce goods and services to meet the higher demand for goods, which subsequently increases banks performance. This result lend empirical support to the previous empirical findings of Albertazzi and Gambacorta (2009), Shawtari (2018). Contrary, this findings do not lend empirical support to Boateng et al., (2015), Safrali and Gumus (2010), Rashid and Jabeen (2016) who find significant negative impact of GDP on bank performance.

The financial crisis of 2007/2008 have significant and positive association with both ROA and ROE at 1% significant level. The result can be explained by the fact that the banks in Africa were able to manage their businesses and risks efficiently during the crises period, hence they were able to increase their performance. The result also suggests that the negative impact of the crisis hit more on the developed countries than African countries, therefore the African banks were able to improve their performance during the crisis period.

NB: The inconsistent of some of our results with some previous empirical results may be caused by differences in sample size, sample period and the way in which variables are measured. In addition, the inconsistent of the impact of equity to assets ratio and corruption on ROA and ROE may cause by the differences in the behaviour of debt (ROA) and equity (ROE) holders. Debt holders may not accept any level of

losses or risk while equity holders may accept some level of losses or risk. Debt holders may demand their returns when the bank makes profit or not while equity holders may demand their returns only when the bank makes profit, since the equity holders are the real owners of the bank. The difference in the behaviour of equity and debt holders can cause the results of ROA and ROE to be different.

9.2 Results based on LLRGL as bank risk measure, interacting variables and bank performance

Two econometric models were used to achieve this as mentioned in chapter four. The results are presented in Tables 19 and 20. Below are the econometric models

$$ROA_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE_{it} + \beta_{11} INDEP_{it} + \beta_{12} LLRGL_{it} + \beta_{13} (LLRGL*SIZE)_{it} + \beta_{14} (LLRGL*MEETINGS)_{it} + \beta_{15} (LLRGL*DUAL)_{it} + \beta_{16} (LLRGL*FEMALE)_{it} + \beta_{17} (LLRGL*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (11)$$

$$ROE_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 EQTA_{it} + \beta_3 NLTA_{it} + \beta_4 COST_{it} + \beta_5 COR_{it} + \beta_6 GDP_{it} + \beta_7 BSIZE_{it} + \beta_8 MEETINGS_{it} + \beta_9 DUAL_{it} + \beta_{10} FEMALE + \beta_{11} INDEP + \beta_{12} LLRGL_{it} + \beta_{13} (LLRGL*SIZE)_{it} + \beta_{14} (LLRGL*MEETINGS)_{it} + \beta_{15} (LLRGL*DUAL)_{it} + \beta_{16} (LLRGL*FEMALE)_{it} + \beta_{17} (LLRGL*INDEP)_{it} + \delta 0 + \varepsilon_{it} \quad (12)$$

Table 19: Results of moderating effect using LLRGL as bank risk measure and ROA as bank performance measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
LLRGL	-0.0689	0.112	0.0582	0.107***
	(0.105)	(0.0770)	(0.0682)	(0.00935)
BSIZE	-0.0420*	0.0586	0.0443	-0.0739***
	(0.0254)	(0.0370)	(0.0298)	(0.00331)
DUAL	0.451	-0.895	-0.690	0.200***
	(0.536)	(0.868)	(0.508)	(0.0424)
MEETINGS	-0.0679	0.0611	0.0227	0.0744***
	(0.0422)	(0.0473)	(0.0397)	(0.00318)
FEMALE	0.00746	-0.0122	-0.00677	-0.00461***
	(0.00887)	(0.00843)	(0.00733)	(0.000669)
INDEP	0.00336	0.00270	0.00528	0.00317***
	(0.00503)	(0.00472)	(0.00403)	(0.000524)
LLRGL*BSIZE	-0.00547	-0.0169***	-0.0143***	0.00247***
	(0.00661)	(0.00593)	(0.00488)	(0.000414)
LLRGL*INDEP	-0.000636	-0.000241	-0.000460	-0.00191***
	(0.000801)	(0.000644)	(0.000561)	(7.99e-05)
LLRGL*DUAL	0.00416	0.0578	0.0658	0.0319***
	(0.0849)	(0.0543)	(0.0468)	(0.00599)
LLRGL*FEMALE	0.000474	0.00184	0.00178*	0.000294***
	(0.00171)	(0.00116)	(0.00103)	(6.32e-05)
LLRGL*MEETINGS	0.00775	-0.00511	-0.000906	-0.0101***
	(0.00593)	(0.00604)	(0.00533)	(0.000328)

LNTA	-0.136**	-0.0652	-0.0851**	-0.00244
	(0.0558)	(0.0466)	(0.0384)	(0.00302)
EQTA	0.0467***	0.0378***	0.0394***	0.0233***
	(0.00997)	(0.0109)	(0.00802)	(0.000325)
NLTA	-0.00920**	-0.0186***	-0.0182***	-0.0100***
	(0.00454)	(0.00703)	(0.00516)	(0.000444)
COST	-0.0485***	-0.0525***	-0.0522***	-0.0208***
	(0.00551)	(0.00416)	(0.00333)	(0.000192)
COR	-0.00399	0.00551	-0.00125	0.00557***
	(0.00368)	(0.0141)	(0.00530)	(0.000266)
LNGDP	0.0206	-0.276	-0.00231	-0.0249***
	(0.0300)	(0.546)	(0.0498)	(0.00429)
CRISIS7_8	-0.119	0.456**	0.457**	0.314***
	(0.379)	(0.224)	(0.206)	(0.00568)
L.ROA				0.525***
				(0.00376)
Constant	6.478***	6.887*	5.561***	2.669***
	(0.688)	(3.707)	(0.692)	(0.0613)
Observations	614	614	614	576
R-squared	0.452	0.350		

Notes: 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, LLRGL*FEMALE represents interaction between loan loss reserve to gross loan and female directors, LLRGL*BSIZE represents interaction between loan loss reserve to gross loan and board size, LLRGL*INDEP represents interaction between loan loss reserve to gross loan 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 20: Results of moderating effect using LLRGL as bank risk measure and ROE as bank performance measure

MODEL	**(1)**	**(2)**	**(3)**	**(4)**
VARIABLES	**OLS**	**Fixed effect**	**2SLS**	**GMM**
LLRGL	-1.053	0.476	-0.0208	-0.473***
	(0.745)	(0.579)	(0.510)	(0.0517)
BSIZE	-0.291	0.271	0.232	-0.482***
	(0.203)	(0.278)	(0.220)	(0.0198)
DUAL	2.638	3.157	-1.041	-0.711***
	(3.643)	(6.522)	(3.664)	(0.218)
MEETINGS	-0.516*	0.215	0.0484	-0.576***
	(0.296)	(0.355)	(0.295)	(0.0219)
FEMALE	0.104	-0.0445	-0.0149	0.00943
	(0.0658)	(0.0633)	(0.0548)	(0.00578)
INDEP	0.0154	0.00880	0.0338	0.00752**
	(0.0337)	(0.0355)	(0.0300)	(0.00315)
LLRGL*BSIZE	-0.00289	-0.0971**	-0.0656*	0.0603***
	(0.0463)	(0.0446)	(0.0362)	(0.00265)
LLRGL*INDEP	-0.00552	-0.00745	-0.00825**	-0.0124***
	(0.00600)	(0.00484)	(0.00420)	(0.000587)
LLRGL*DUAL	0.246	0.181	0.305	0.706***
	(0.603)	(0.408)	(0.350)	(0.0328)
LLRGL*FEMALE	0.00972	0.00891	0.00834	-0.000252

	(0.0115)	(0.00868)	(0.00771)	(0.000698)
LLRGL*METINGS	0.0408	-0.0178	0.00381	0.0234***
	(0.0465)	(0.0454)	(0.0399)	(0.00248)
LNTA	-0.471	-0.0296	-0.401	0.140***
	(0.372)	(0.350)	(0.287)	(0.0357)
EQTA	-0.164***	0.176**	0.00994	-0.0448***
	(0.0506)	(0.0816)	(0.0583)	(0.00297)
NLTA	-0.0786**	-0.0112	-0.107***	-0.0439***
	(0.0330)	(0.0528)	(0.0378)	(0.00252)
COST	-0.299***	-0.349***	-0.333***	-0.130***
	(0.0382)	(0.0313)	(0.0245)	(0.00279)
COR	0.00348	0.0533	0.0135	0.0630***
	(0.0256)	(0.106)	(0.0371)	(0.00223)
LNGDP	-0.0750	-11.03***	-0.180	-0.165***
	(0.212)	(4.103)	(0.345)	(0.0210)
CRISIS7_8	3.051	5.466***	6.150***	3.816***
	(3.089)	(1.680)	(1.563)	(0.0532)
L.ROE				0.452***
				(0.00364)
Constant	49.22***	103.3***	42.53***	26.05***
	(4.733)	(27.86)	(4.980)	(0.565)
Observations	614	614	614	576
R-squared	0.378	0.342		

Notes: 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, LLRGL*FEMALE represents interaction between loan loss reserve to gross loan and female directors, LLRGL*BSIZE represents interaction between loan loss reserve to gross loan and board size, LLRGL*INDEP represents interaction between loan loss reserve to gross loan 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

9.2.1 Results of independent variables

These results are presented in Tables 19 and 20. LLR/GL has significant positive impact on bank performance, measured by ROA, at 1% significant level. LLRGL*BSIZE also has significant and positive impact on ROA at 1% significant level. The coefficient of LLRGL on ROA is 0.107 and that of LLR/GL*size on ROA is 0.002. It is clear from the above that the positive impact on performance has now been reduced from 0.107 to 0.002. This indicates that, even though the coefficient on LLRGL*BSIZE is positive, bank performance (ROA) has reduced compared to the direct impact of risk on ROA. The result suggests that board size interacting with bank risk has not cause anything good to influence bank risk to improve bank performance in Africa. The size of the board may be too big which is causing problems in effective interaction, communication and coordination among board members. Board members may not be able to organise meetings when it is needed. Inability of board members to come to consensus during board meetings probable due to the nature of the size of the board can also cause problems for African bank boards, which can lead to increase in bank risk and a reduction in bank performance. The composition of the board may also not help the board of African banks to reduce risk and improve performance, if there are fewer female and independent directors on the board.

Contrary, our result shows that the impact of LLRGL on bank performance, measured by ROE is negative and significant at 1% significant level, whiles the impact of the interacting variable, LLRGL*BSIZE, on ROE is positive and significant at 1% significant level. This result implies that, board size moderate the relationship between bank risk and performance, which supports hypothesis twelve. The result suggests that different ideas, opinions, experience and suggestions brought together by board members help reduce bank risk and improve performance in Africa. The banks in Africa may also be benefiting from strong board with the right

composition of members including more independent directors and probably chief risk officer and people with higher qualification such as PhDs, who are able to help bring risk down to increase bank performance.

LLRGL*INDEP has significant and negative relationship with ROA at 1% significant level whiles the direct relationship between LLRGL and ROA is positive and significant at 1% significant level. This result means that independent directors moderate the relationship between bank risk and performance, which supports hypothesis twelve. The result suggests that the presence of independent directors in Africa do not contribute efficiently to reduce bank risk and improve performance. The result could mean that, the independent directors do not have enough monitoring experience and skills necessary to contribute at board meetings to reduce bank risk and improve performance. In addition, the independent directors may be recommended and appointed by friends and family members of the management and members who are already on the board. As a result, they will find it difficult to scrutinise the management decisions to reduce risk in order to improve bank performance. This result is inconsistent with the theoretical argument which suggest that, a large number of independent directors can decrease the behavior of bank's risk-taking (Wang et al, 2014; Chang et al, 2016), which could increase performance. In addition, the theoretical argument which suggests that, independent directors provide extra monitoring in order to reduce the risk of management inflicting danger on the firm (Pathan, 2009; Chang et al, 2016), which could increase bank performance, is not supported, based on our result.

On the other hand, both LLR/GL and LLRGL*INDEP have negative impact on ROE at 1% significant levels. However, the impact of LLR/GL on bank performance has coefficient of -0.473 and LLRGL*INDEP has coefficient of -0.0124. The result suggests an improvement in bank performance from -0.473 to -0.0124. These findings indicate that, independent directors moderate the relationship between LLRGL and ROE, supporting hypothesis twelve. The results suggest that independent directors in Africa play effective role on the board, they bring their experience and skills to contribute efficiently to reduce risk and improve bank performance in Africa. The effective monitoring by independent board members in Africa, and their effective scrutiny of management decisions to make sure they take the right decisions about the banks, actually improve the performance of the banks in Africa. The findings provide theoretical support that, independent directors

provide resources and extra monitoring in order to reduce the risk of management inflicting danger on the firm (Pathan, 2009; Chang et al, 2016), which could increase bank performance. Another theoretical support is that, independent directors are entrusted by the shareholders to represent them at the board meetings to provide an unbiased business decisions (Fuzi, et al, 2016) and to help reduce agency problems (Wang et al, 2014; Chang et al, 2016; Fuzi et al, 2016), which could reduce bank risk and increase performance.

The impact of both LLRGL and LLRGL*DUAL on ROA is positive and significant at 1% significant levels. However, the coefficient of LLRGL is 0.107 and that of LLRGL*duality is 0.0319, showing a reduction in performance from 0.107 to 0.0319. The results suggests that duality is not a good governance system which can decrease bank risk to improve bank performance in Africa. The results also suggest that, the same person may not have enough knowledge, experience and skills to hold CEO and chairman positions to minimise risk and improve bank performance in Africa. As a result, there is a high possibility that bank performance would be affected negatively, when using duality in African banks. In Africa, duality may be causing conflict of interest since the same person is reporting to himself. In addition, since the market perceives duality as a bad corporate governance practice, shareholders and investors may be discouraged to invest in banks that practice duality. Therefore, the performance of those banks will be affected negatively. The result is consistent with the agency theory, which argues that separating the CEO and chairman role is a good corporate governance practice when considering the interest of the shareholders and this aids effective control and monitoring of management (Jensen, 1993; Syriopoulos and Tsatsaronis, 2012), which could reduce bank risk and improve performance. Also, the performance of the chairman should not be assessed by the same person, otherwise it will be self-evaluated (Jensen, 1993; Syriopoulos and Tsatsaronis, 2012), which could increase risk and reduce performance.

Contrary, the relationship between LLRGL*DUAL and bank performance based on ROE is positive and significant at 1% significant level and that of LLRGL on ROE is negative and significant at 1% significant level. This result shows that duality moderate the relationship between bank risk and performance, supporting hypothesis twelve. The result suggests that the same person occupying CEO and chairman positions is a good corporate governance practice when it comes to bank

risk reduction and performance improvement in Africa. The finding could also suggest that, when the same person holds CEO and chairman positions, he acquires more experience because of in-depth knowledge already gained in the business of banking, he works harder to protect his reputation, and identifies risks and deal with them on time, which could minimise risk and improve performance. The finding is consistent with stewardship theory which argues, that a single person occupying chairman and CEO positions minimises conflicts during decision making (Syriopoulos & Tsatsaronis, 2012), strong and unified leadership with a good strategic direction is achieved, and timely and best decisions within a firm is made (Brickley et al. 1997), which could reduce bank risk and improve performance.

LLRGL*FEMALE is significant and positive related with ROA at 1% significant level. The coefficient of LLRGL*female on ROA is 0.0003 and the coefficient of LLRGL on ROA is 0.107. This means the positive impact on performance has reduced from 0.107 based on LLRGL to 0.0003, based on the interaction variable, LLRGL*female. In other words, the result implies that when female directors interact with bank risk, the performance of the banks goes down. On the other hand LLRGL*FEMALE has negative impact on performance, measured by ROE, even though, this is not significant. The results could mean that, female present on the board do not have enough experience, skills and risk management techniques which can help reduce the risk which is facing the banks to improve performance. The female directors may be friends and family or concubines of the management, who may not qualify to be bank board members. When this happens, their presence will rather reduce performance instead of increasing it. It may also mean that, because the number of female directors on African banks board is too small, it makes it quiet impossible for them to challenge their male counterparts on issues which the females consider it to be causing or will cause adverse effect on the bank. Therefore, the presence of female directors is just a token and will mean almost nothing. Theoretically, this result does not support the resource dependency theory, which posit that, the inclusion of female directors on board provides many different resources and benefits (Carter, 2010), which could reduce risk and improve bank performance.

The inconsistent of the impact of LLRGL*FEMALE on ROA and ROE may be the result of the differences in the behaviour of debt (ROA) and equity (ROE) holders. Whiles debt holders (ROA) may not accept any form of poor governance practices, which may lead to poor performance, such as for example fewer number of female

directors, equity holders (ROE) may appear to entertain poor governance practices to some extent. Due to the differences in the behaviour of equity and debt holders, ROA and ROE results can be expected to be different sometimes.

LLRGL*MEETINGS has significant and negative relationship with ROA at 1% significant level. Looking at the direct relationship between LLRGL and bank performance which is significant and positive, we conclude that hypothesis twelve is well supported. The result implies that the number of board meetings cannot influence bank risk to increase performance in Africa. On the other hand, meetings held by board of directors in Africa do not bring any positive outcome which can reduce their bank risk to improve performance. The reason may be that either the board members are not able to reach consensus at their meetings or the expenses incurred to organise such meetings outweigh the benefit that such meetings can bring to the bank, hence such meetings cause negative impact on performance. In addition, board members may spend long time to discuss about their personal life with little time to discuss issues affecting the banks. Also, the boards of African banks may lack frequent meetings, therefore, there may be some delays in organising meetings to discuss critical issues affecting the banks. As a result, the risk of the banks can increase and subsequently reduce performance. Theoretically, this result supports Vefeas (2008) argument that, firm performance can be affected by frequent board meetings through agency cost (refreshment, managerial time, travel expenses meeting fees, etc.).

Contrary, LLRGL has significant negative impact on ROE at 1% significant level while LLRGL*MEETINGS has significant positive relationship with ROE at 1% significant level. This finding indicates that board meetings moderate the relationship between bank risk and performance, supporting hypothesis twelve. The result shows that when board meeting interacts with bank risk, the performance improves. The result suggests that board members are able to discuss important issues affecting the banks, they are able to reach consensus, and able to reduce risk and improve performance. Overall, the benefits that African board meetings bring are more that the cost involve in organising such meetings, which helps to improve performance.

The inconsistent of the impact of LLRGL*MEETINGS on ROA and ROE may be the result of the differences in the behaviour of debt (ROA) and equity (ROE) holders. Whiles debt holders (ROA) may not accept any form of poor governance practices,

which may lead to poor performance, such as for example fewer board meetings by board of directors, equity holders (ROE) may appear to tolerate poor governance practices to some extent. As a result of differences in the behaviour of equity and debt holders, the results of ROA and ROE can be expected to be different sometimes.

9.2.2 Results of control variables

9.2.2.1 Results based on individual corporate governance variables

These results are presented in table 19 and 20. Board size has significant and negative correlation with both ROA and ROE at 1% level of significance. The results suggest that smaller board size is better and effective to increase banks performance in Africa. The results also suggest that the board which has got smaller number of members concentrate more and focus fully during board meetings; and board members are able to debate on issues and can easily reach consensus. Moreover, since the expenses on smaller board is low, African banks are able to take advantage of smaller board size to reduce expenses and agency cost associated with bigger board size and improve their bank performance.

The findings are consistent with agency theory which suggests that due to director's free rider problems, communication and coordination problems, and internal conflicts among directors, bigger boards are not efficient (Jensen, 1993). Also during decision making, it is harder for boards which are bigger to organise board meetings, it is also more difficult and demands a lot of effort for bigger boards to reach consensus ((Jensen 1993; Hoque et al, (2013), which could have negative impact on bank performance. Contrary, the negative impact of board size on bank performance is not consistent with resource dependency theory, which advocates for a bigger board. The negative impact of board size on bank performance is consistent with a number of past studies (e.g. Liang et al., 2013; Mamatzakis and Bermpei, 2015; Mollah and Zaman, 2015; Sakawa and Watanabel, 2018). However, it is inconsistent with the findings of some past studies (e.g. Chahine and Safieddine, 2011; Salim et al, 2016; O'Sullivan et al, 2016; Adams and Mehran, 2012).

Duality has significant and positive correlation with ROA at 1% significant level. This result implies that the same person holding Chairman and CEO positions is better for improvement of bank performance in Africa. The results suggests that, the same person holding the two positions may have a very good experience in the job, very confident, works well to protect his reputation and take decision and act on it on

time, which could improve performance. The finding is consistent with stewardship and resource dependency theories which advocates for duality and argue that CEO duality promotes leadership unity and organisational effectiveness (Gulick & Urwick, 1937; Krause et al, 2014), which could increase bank performance. The result is consistent with the significant positive impact of duality on bank performance (e.g. Al-Saidi & Al-Shammari, 2013). However it is not consistent with the negative impact of duality on bank performance reported by prior literature (e.g. Grove et al, 2011; Mollah & Zaman, 2015; Dong et al., 2017; Sarkar & Sarkar, 2018; AlManaseer et al. (2012). It is also not consistent with insignificant relationship between duality and bank performance reported by previous empirical studies (e.g. Bukair & Rahman, 2015; Carty & Weiss, 2012; Abdul Gafoor et al., 2018).

Contrary, duality has significant and negative impact on bank performance, measured by ROE, at 1% significant level. This result suggests that the situation whereby one person holding CEO and Chairman positions at the same time is not a good governance practice to improve bank performance in Africa. This result also suggests that duality brings about conflict of interest, self-evaluation, and inexperienced person holding the positions of Chairman and CEO can cause managerial problems within the bank. Therefore, it is beneficial for African banks to have a separate CEO from the chairman in order to increase their bank performance. The result is in line with agency theory, which posits that CEO duality has adverse impact on firm performance, and that to prevent managerial entrenchment, management and boards should be independent from each other (Fama & Jensen, 1983a). It also lends some support to Rechner and Dalton (1991) who argue that assigning one person as CEO and chairman at the same time brings about a clear conflict of interest, which could adversely affect bank performance. The result is consistent with some previous empirical findings (e.g. Grove et al, 2011; Mollah & Zaman, 2015; Dong et al., 2017; Sarkar & Sarkar, 2018; AlManaseer et al. (2012) and contrast with the positive impact of duality on bank performance that prior empirical literature find (e.g. Al-Saidi & Al-Shammari, 2013).

The inconsistent of the impact of duality on ROA and ROE may be caused by differences in the behaviour of debt (ROA) and equity (ROE) holders. Debt holders (ROA) may not accept any form of poor governance practices which can cause poor performance. On the other hand, equity holders (ROE) may appear to accept poor

governance practices to some extent. As a result of differences in the behaviour of equity and debt holders, the results of ROA and ROE can differ sometimes.

Board meetings has significant and positive relationship with ROA at 1% level of significance. The result suggests that having more meetings is a good governance practice to improve banks performance in Africa. The result also suggests that frequent meetings assist the board members to identify problems within the banks and resolve them on time. This can help minimise critical issues that could affect bank performance. As a result, the performance of the banks will not be negatively affected but rather will be improved. The result gives theoretical support to agency theory (Jensen & Meckling, 1976), which suggests that frequent board meetings come with increased capacity to advise effectively, discipline management and monitor them, which could result to improvement in bank performance. The result is consistent with the past empirical studies (e.g. Liang et al, 2013; Salim Arjomandi and Seufert, 2016; Grove et al, 2011; Abdul Gafoor, 2018) which find a positive relationship between board meetings and bank performance.

Contrary, the findings show that the relationship between board meetings and bank performance, measured by ROE is significant and negative at 1% level of significance. This finding implies that having smaller number of meetings is better for improvement in bank performance in Africa. The result also suggests that, because more meetings bring some expenses, the agency cost in the form of travel expenses, refreshments, directors' meetings and time which go into having more meetings is far more than advantages that more meetings bring to the banks. These findings do not lend any support to agency theory (Jensen & Meckling, 1976), which suggests that frequent board meetings come with increased capacity to advise effectively, discipline management and monitor them, which could result to improvement in bank performance. The finding is inconsistent with the past empirical studies which find a positive impact of board meetings on bank performance (e.g. Liang et al, 2013; Salim Arjomandi and Seufert, 2016; Grove et al, 2011; Abdul Gafoor, 2018).

FEMALE has significant and negative relationship with bank performance at 1% significant level. The result suggests that the presence of female directors do not bring any good to improve bank performance in Africa. This result could mean that the female directors on the board do not have the necessary qualifications, skills and experience needed to contribute during meetings to improve performance of

the banks. Due to corruption, some members of the management can recommend and appoint their fiancées who do not qualify to be board of directors, hence their contribution to the board will be meaningless. Therefore, the presence of female directors will bring cost rather than benefit to the bank. The result do not support the theoretical view, that female brings different views to the boardroom and have advanced degrees which aid firms to gain competitive advantage, which could improve performance. The result is not consistent with a number of previous empirical findings (e.g. Gulamhussen & Santa, 2015; Pathan & Faff, 2013; García-Meca et al, 2015; Dong et al., 2017) that document a positive impact of female directors on bank performance. Contrary, our results show that female directors has insignificant positive relationship with bank performance, measured by ROE.

Independent directors has significant and positive impact on ROA and ROE at 1% and 5% significant levels respectively. These results suggest that independent directors use their skills and experience and contribute during board meetings, which assist improve the bank performance in Africa. The results also suggest that, independent directors in Africa are able to use their experience to scrutinise the decisions of management and provide a good monitoring role to make sure that the right thing is done by the management, to ensure the success and improvement of financial performances of the banks. The results are in line with the theoretical prediction, that independent directors have technical experts in management and decision making that enables them to be effective monitors (Fama & Jensen, 1983; Nguyen & Nielson, 2010). Also CEOs are more likely to be removed by outside-dominated boards as a result of poor performance (Weisbach, 1988) and serves as a valuable monitoring role and positively affects firm profitability and operating performance. The findings are consistent with the findings of some prior empirical literature (e.g. Abdul Gafoor et al, 2018; Dong, 2016; Liang et al, 2013; Pathan et al, 2007; Lee & Carlson, 2007), and contrast with the significant negative impact of independent directors on bank performance reported by some prior studies (e.g. Pathan & Faff, 2013; Sarkar & Sarkar, 2018).

NB: The inconsistence of the results of MEETINGS, FEMALE and DUAL on ROA and ROE may cause by the differences in the behaviour of debt (ROA) and equity (ROE) holders. Debt holders may not accept any level of losses or risk while equity holders may accept some level of losses or risk. Debt holders may demand their returns when the bank makes profit or not while equity holders may demand their

returns only when the bank makes profit, since the equity holders are the real owners of the bank. The difference in the behaviour of equity and debt holders can cause the results of ROA and ROE to be different. Also, the inconsistent of some of our results with some previous empirical results may be caused by differences in sample size, sample period and the way in which variables are measured.

9.2.2.2 Results based on bank specific and macroeconomic variables

The results of bank specific and macroeconomic variables are presented in Tables 19 and 20. Using LLRGL as risk measure, the following results are obtained. LLRGL is significant and positively correlated with ROA and significant and negatively correlated with ROE.

With regards to the control variables the following findings were found: Bank size has insignificant and negative association with ROA. The insignificant nature of the result may be due to measurement error and autocorrelation. The negative association on performance suggests that smaller banks are more easily managed by managers to make profit in Africa than larger banks. It also suggests that banks in Africa are more efficient when they concentrate on smaller number of businesses, and make more profit to increase their performance. However this is not significant in the case of Africa. This finding is consistent with the finding of Bougatef (2017) who documents insignificant relationship between bank size and bank performance in Tunisia. However, the finding is not consistent with the findings of significant positive relationship between bank size and performance (e.g. Sakawa & Watanabel, 2018; Rahman et al., 2015; Tan et al., 2017; Shawtari, 2018; Hasanov et al., 2018) and significant negative relationship between bank size and performance reported by Tan (2016), Al-Shammari (2013), Dietrich and Wanzenried (2011), Elyasiani and Zhang (2015) and Doumpos et al (2015).

However, the results find that bank size has significant and positive relationship with ROE at 1% significant level. The positive relationship between bank size and performance indicates that the economies of scale enjoyed by larger banks in Africa help them to decrease their cost and make more profit. Moreover, the positive impact could also suggests that the bigger banks in Africa get benefits through diversification of the activities of their loan portfolios which leads to higher bank performance. This finding is consistent with the findings of previous literature (e.g. Sakawa & Watanabel, 2018; Rahman et al., 2015; Tan et al., 2017; Shawtari, 2018; Hasanov et al., 2018); and contrast with the findings of significant negative impact

of risk on bank performance (e.g. Tan, 2016; Al-Shammari, 2013; Dietrich & Wanzenried, 2011; Elyasiani & Zhang, 2015; Doumpos et al, 2015).

The inconsistent of the impact of bank size on ROA and ROE may be caused by the behaviour of debt (ROA) and equity (ROE) holders. Debt holders (ROA) may not accept any form of losses or risk but equity holders (ROE) may accept some level of risk and losses. As a result of differences in the behaviour of equity and debt holders, the results of the impact of bank size on ROA and ROE can differ sometimes.

Equity to asset ratio is significant and positive associated with ROA at 1% level of significance. The finding suggests that well capitalised banks in Africa are able to change their funds to higher income earnings to make more profit. The finding supports the theoretical argument by Djalilov and Piesse (2016) and Athanasoglou et al., (2008) who posit that, the ratio of equity to total asset is expected to have positive impact on bank performance because it represents the amount of available funds to back operations of the bank, and for that matter serve as safety net in case of adverse events, which could increase bank performance. The result supports the findings of some previous empirical literature (e.g. Liang et al, 2013; Bougatef, 2017; Daly & Frikha, 2017; Djalilov & Piesse, 2016; Hasanov et al., 2018). However, the finding does not support the findings of some past empirical literature that find a significant negative relationship between equity to asset ratio and bank performance (e.g. Mollah & Zaman, 2015; Dietrich & Wanzenried, 2011).

Contrary, the result finds equity to assets ratio to have significant and negative impact on bank performance, measured by ROE at 1% level of significance. This finding suggests that banks with small capital in Africa earn higher profit. The result can be explained by the fact that the smaller capitalised banks manage their available resources efficiently and make more profit. The result is consistent with the findings of Mollah and Zaman, (2015) and Dietrich and Wanzenried (2011) and contrast with the significant positive impact of equity to assets ratio on bank performance recorded by prior literature (e.g. Liang et al, 2013; Bougatef, 2017; Daly & Frikha, 2017; Djalilov & Piesse, 2016; Hasanov et al., 2018).

The inconsistence of the impact of equity to assets ratio on ROA and ROE may be caused by the behaviour of debt (ROA) and equity (ROE) holders. Debt holders (ROA) may not accept any form of losses or risk but equity holders (ROE) may accept some level of risk and losses. As a result of differences in the behaviour of

equity and debt holders, the results of the impact of equity to assets ratio on ROA and ROE can differ sometimes.

Net loans to assets is significant and negative related to both ROA and ROE at 1% significant levels. This result means that when the ratio of loans to assets decreases, it left the banks with enough liquidity to invest and cater for any unforeseen fund requirement. This gives confidence to depositors to deposit more funds. When more funds are deposited, the banks get opportunity to invest some of the deposits to make more profit. The result also suggests that African banks have the ability to manage, control and monitor their loans very efficiently, and subsequently reduce cost leading to higher bank performance. The findings are not in line with the findings of Daly and Frikha (2017), Dong et al., (2017), Mollah and Zaman (2015) who document a positive relationship between net loans to assets ratio and bank performance

Cost-to-income ratio have significant and negative association with bank performance, based on both ROA and ROE at 1% level of significance. These results mean that when ratio of cost to income ratio decreases the performance of the banks increases. The result suggests that banks in Africa manage their operations efficiently, reduce risk and for that matter make more profit. This findings lend some support to the theoretical argument by Rahman et al, (2015) who state that, when the cost to income ratio is higher, the less efficiency of the management become, which could reduce bank performance, and when it is low the more efficient the management become, which could increase bank performance. The significant negative relationship between cost to income ratio and bank performance is in line with the findings of previous empirical studies (e.g. Rahman, 2015; Syafri, 2012; Dietrich & Wanzenried, 2011; Goddard, 2013).

Corruption is significantly positive associated with ROA and ROE at 1% significant levels. The significant impact of corruption on performance means that as CPI increases (a reduction in corruption), bank performance significantly increases. The result shows that the impact of corruption within the institutions in Africa is harmful to the banks performance. On the other hand, a reduction in corrupt activities will help improve the performance of African banks. The result is consistent with Bougatef (2017) and contrary with Aburime (2009) and Arshad and Rizvi (2013) who find a significant negative relationship between corruption and bank performance.

The association between GDP and bank performance based on both ROA and ROE is statistically significant and negative at 1% level of significance. The findings show that, in a bad economic situation in Africa when GDP is low, the demand for loans and other bank services in Africa can increases, because individuals and companies will need support from banks to survive. The interest of the high demand from loans increases the performance of the banks, hence the negative relationship between GDP and performance. The result is consistent with the results of previous empirical findings (e.g. Boateng et al., 2015; Safrali & Gumus, 2010; Rashid & Jabeen, 2016) and contrary to Albertazzi and Gambacorta (2009), Mollah and Zaman (2015) and Shawtari (2018) who find a positive impact of GDP on bank performance.

Financial crisis of 2007/2008 is statistically significantly positive associated with ROA and ROE at 1% significant levels. The result indicates that banks in Africa were able to manage their businesses and risks efficiently and able to make more profit during the crisis. The result also suggests that there was little or no impact of the crisis on African banks and for that matter they were able to make more profit at the time of the crisis.

NB: Our empirical findings are not consistent with some previous empirical findings. The reason (s) may be that the way we measured our variables may be different from how the previous studies measured their variables. Our sample size and sample period are also different from the previous studies.

9.3 Robustness analysis

9.3.1 Results based on LLPNR as bank risk measure and ROA as bank performance measure

9.3.1.1 Results of independent variables

These results are presented in table 17. With regards to the interacting variables the following findings are reported: The impact of LLPNR*BSIZE on bank performance which was positive under the main model is now negative under OLS, fixed effect and 2SLS models. Moreover, LLPNR*BSIZE which was 1% significant under the main model is now insignificant under OLS, fixed effect and 2SLS models. The impact of LLPNR*DUAL on bank performance which was positive under the main model, GMM, is now negative under OLS, fixed effect and 2SLS models. The significance level of LLPNR*DUAL which was statistically significant at 1% level under the main model is now statistically significant at 10% based on OLS model and statistically insignificant based on fixed effect and 2SLS models.

The sign on coefficient of LLPNR*MEETINGS which was positive under GMM model has not changed under fixed effect and 2SLS models but changed to negative under OLS model. In addition, the significance level of LLPNR*MEETINGS which was 1% under GMM model is now insignificant under OLS, fixed effect and 2SLS models. The sign on coefficient of LLPNR*INDEP which was positive based on the main model is now negative based on OLS, fixed effect and S2LS models. Moreover, the statistically insignificant on coefficient of LLPNR based on the main model has not changed under OLS model but changed to 1% significant based on fixed effect and 2SLS models. Finally, the sign on coefficient of LLPNR*FEMALE which was negative under the main model is now positive under OLS, fixed effect and 2SLS models. The 1% significance level of LLPNR*FEMALE under the main model has become insignificant under OLS, fixed effect and 2SLS models.

9.3.1.2 Results of control variables

9.3.1.2.1 Results based on individual corporate governance variables

These results are presented in table 17. The sign on coefficient of board size which was negative under the main model remains the same under OLS model but changed to positive under fixed effect and 2SLS models. In addition, the level of significance of board size which was 1% based on the main model is now insignificant based on OLS, fixed effect and 2SLS models. The significant level of duality has not changed. However, the sign on coefficient of duality which was negative under GMM model remains the same under fixed effect and 2SLS models but changed to positive under OLS models. With regard to board meetings, the sign on coefficient which was negative based on the main model has not changed under OLS and 2SLS models, but changed to positive under fixed effect model. Also, there are changes in the significant levels. Specifically, the impact of board meetings, which was significant at 1% level under GMM model is now significant at 10% level under OLS model and insignificant under fixed effect and 2SLS models. The positive impact of female directors on bank performance based on the main model has not changed under the OLS model but changed to negative under the fixed effect and 2SLS models. In addition, the 1% level of significance of female directors under the main model became insignificant under OLS, fixed effect and 2SLS models. The presence of independent directors which was negatively related to bank performance based on the main model in now positively related to bank performance based on OLS, fixed effect and 2SLS models.

Moreover, the presence of independent directors which was 1% significant level under GMM is now significant at 5%, 10% and insignificant based on 2SLS, fixed effect and OLS models respectively.

9.3.1.2.2 Results based on bank specific and macroeconomic variables

The results of the bank specific and macroeconomic variables are presented in Table 17. The sign on coefficient of LLPNR which was negative under the main model has not changed. However, the level of significance has changed. Specifically, LLPNR which was statistically significant at 1% under the main model, GMM, is now insignificant under OLS, fixed effect and 2SLS models.

The sign on coefficient of bank size (LNTA) and the level of significance has changed. Specifically, the sign on coefficient of bank size which was positive under the main model, GMM, is now negative under OLS, fixed effect and 2SLS models. Bank size which was significant at 1% level under GMM model is now significant at 10% level under 2SLS model and insignificant under OLS and fixed effect models. The positive impact of equity to assets ratio on bank performance and 1% level of significance of equity to assets ratio under the main model remain unchanged. The negative impact of net loans to assets ratio on bank performance under the main model has not changed. However, the significance level of net loans to assets ratio which was 1% under the main model is now insignificant under OLS, fixed effect and 2SLS models. The direction of sign on coefficient and the level of significance of cost-to-income ratio remains the same. The sign on coefficient of control of corruption which was negative under the main model has not changed. However, the significant level of control of corruption which was 1% under GMM is now insignificant under OLS, fixed effect and 2SLS models. The positive impact of GDP on bank performance based on the main model has changed to negative impact based on OLS, fixed effect and 2SLS models. The 1% significant level of GDP under GMM model has changed to insignificant under OLS, fixed effect and 2SLS models. Finally, the sign on coefficient of 2007/2008 financial crisis which was positive remains the same. However, The level of significance of 2007/2008 financial crisis has changed. Specifically, the 1% level of significance of 2007/2008 financial crisis under the main model remains unchanged under 2SLS model but changed to 5% and insignificant under fixed effect and OLS models respectively.

9.3.2 Results based on LLPNR as bank risk measure and ROE as bank performance measure

9.3.2.1 Results of independent variables

These results are presented in table 18. The sign on coefficient of LLPNR*BSIZE which is negative has not changed. The significance level of LLPNR*BSIZE which was 1% under the main model, GMM, became insignificant under OLS, fixed effect and 2SLS models. The sign on coefficient of LLPNR*DUAL which was positive under the main model is now negative under OLS, fixed effect and 2SLS models. The 1% significance level of LLPNR*DUAL under the main model is now 10% under OLS and insignificant under fixed effect and 2SLS models. The direction on the sign of coefficient of LLPNR*MEETINGS has changed. Specifically, the positive impact of LLPNR*MEETINGS on bank performance under the main model is now negative under OLS, fixed effect and 2SLS models. Moreover, the level of significance of LLPNR*MEETINGS which was 1% based on GMM is now 5% under OLS and insignificant based on fixed effect and 2SLS models. The sign on coefficient of LLPNR*INDEP remains unchanged. However, the 1% significance level of LLPNR*INDEP remains the same under fixed effect and 2SLS models and became insignificant under OLS models. Finally, the positive impact of LLPNR*FEMALE on bank performance remains the same. However, the LLPNR*FEMALE was significant at 1% level of significance under GMM but became insignificant under OLS, fixed effect and 2SLS models.

9.3.2.2 Results of control variables

9.3.2.2.1 Results based on individual corporate governance variables

These results are presented in Table 18. The results of the corporate governance variables are as follows: First, the sign on coefficient of board size and independent directors under the main model, GMM, have changed from negative to positive under OLS, fixed effect and 2SLS models. The statistical level of significance of board size and independent directors have also changed. In particular, the coefficients of board size and independent directors, which was statistically significant at 1% under the main model, is now statistically insignificant under OLS, fixed effect and 2SLS models. Second, the sign on coefficient of duality remains the same. However, the coefficient of duality, which was statistically significant at 1% under the main model, is now statistically insignificant under OLS, fixed effect and 2SLS models. Third, the negative impact of board meetings on bank performance under the main model remains the same under OLS model but became positive

under fixed effect and 2SLS models. The coefficient of board meetings, which was statistically significant at 1% under the main model, is now insignificant under OLS, fixed effect and 2SLS models. Fourth, consistent with the main model, the sign on coefficient of female directors, which was positive, remains the same under OLS models, but became negative under fixed effect and 2SLS models. Moreover, the level of significance of female directors, which was 1% under the main model is now 10% under OLS and insignificant under fixed effect and 2SLS models.

9.3.2.2.2 Results based on bank specific and macroeconomic variables

The results of bank specific and macroeconomic variables are presented in table 18. Consistent with the main model, GMM, the sign on coefficient of LLPNR has not changed. However, there is a change is the significance level on coefficient of LLPNR. Specifically, the coefficient on LLPNR, which was 1% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models.

Consistent with the main model, the sign on coefficient of bank size, which was positive, remains the same under OLS models, but became negative under fixed effect and 2SLS models. In addition, the level of significance of bank size, which was 1% under the main model is now insignificant under OLS, fixed effect and 2SLS models. Consistent with the main model, the sign on coefficient of equity to assets ratio, which was negative based on the main model, has not changed based on OLS and 2SLS models but changed to positive based on fixed effect model. The direction of coefficient on equity to assets ratio has changed. In particular, the coefficient of equity to assets ratio which was statistically significant at 1% is now the same under OLS model and became 5% and insignificant under fixed effect and 2SLS models respectively. The negative impact of net loans to assets ratio under GMM, remains unchanged under OLS model but became positive under fixed effect and 2SLS models. In addition, the 1% significant level on coefficient of net loans to assets ratio based on the main model remains the same based on fixed effect model and changed to insignificant based on OLS and 2SLS models. Consistent with the main model, the sign on coefficient and the level of significance of cost-to-income ratio and 2007/2008 financial crisis have not changed. The positive impact of control of corruption on bank performance based on the main model, remains the same based on fixed effect model and became negative based on OLS and 2SLS models. The coefficient on control of corruption, which was 1% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models. The sign on

coefficient of GDP, which was positive based on GMM, is now negative based under OLS, fixed effect and 2SLS models. Also, the coefficient on GDP, which was 5% significant, remains unchanged under fixed effect model, but changed to insignificant under OLS and 2SLS models.

9.3.3 Results based on LLRGL as risk measure and ROA as performance measure

9.3.3.1 Results of independent variables

These results are presented in table 19. The sign on coefficient of LLRGL*BSIZE which was positive based the main model, is now negative based on OLS, fixed effect and 2SLS. The coefficient on LLRGL*BSIZE, which was statistically significant at 1% based on the main model, remains the same under fixed effect and 2SLS and became insignificant under OLS model. The sign on coefficient of LLRGL*INDEP and LLRGL*DUAL has not changed. However, the coefficient on LLRGL*INDEP and LLRGL*DUAL, which was statistically significant at 1% based on the main model, is now insignificant based OLS, fixed effect and 2SLS models. The sign on coefficient of LLRGL*FEMALE remains positive. However, the coefficient on LLRGL*FEMALE, which was significant at 1% based on the main model, is now 10% based on 2SLS and insignificant based on OLS and fixed effect models. LLRGL*MEETINGS, which was negatively related to bank performance under GMM model remains the same under fixed effect and 2SLS models but changed to positive under OLS. In addition, the significance level on the coefficient of LLRGL*MEETING, which was 1% under GMM, is now insignificant under OLS, fixed effect and 2SLS models.

9.3.3.2 Results of control variables

8.3.3.2.1 Results based on individual corporate governance variables

These results are presented in table 19. The coefficient on board size, which was negative based on the main model remains negative under OLS model and became positive based on fixed effect and 2SLS models. The coefficient on board size, which was statistically significant at 1% based on the main model, is now significant at 10% based on OLS and insignificant based on fixed effect and 2SLS models. The coefficient on duality, which was positive based on the main model, remains unchanged under OLS and became negative under fixed effect and 2SLS models. The coefficient on duality, which was 1% significant, is now insignificant under OLS, fixed effect and 2SLS models. The positive impact of board meetings on bank performance based on the main model remains unchanged based on fixed effect

and 2SLS models and became negative based on OLS. Moreover, the coefficient on board meetings, which was 1% significant under the main model, is now insignificant based on OLS, fixed effect and 2SLS models. The negative impact of female directors on bank performance, based on GMM, remains unchanged under fixed effect and 2SLS models and became positive under OLS model. The coefficient on female directors, which was 1% significant based on the main model, is now insignificant based on OLS, fixed effect and 2SLS models. The positive coefficient on independent directors remains unchanged. However, the coefficient on independent directors, which was 1% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models.

9.3.3.2.1 Results based on bank specific and macroeconomic variables

These results are presented in table 19. The sign of coefficient on LLRGL, which was positive based on the main model, GMM, remains the same based on fixed effect and 2SLS models and changed to negative based on OLS model. The coefficient on LLRGL, which was 1% significant under the main model, GMM, is now insignificant under OLS, fixed effect and 2SLS models.

The sign of coefficient on bank size (LNTA), which was negative, based on the main model, GMM, has not changed. The coefficient on bank size, which was statistically insignificant based on the main model, is now 5% significant based on OLS and 2SLS models and insignificant based on fixed effect model. The signs of coefficients and statistical significance on equity to assets ratio and cost-to-income ratio have not changed. The sign of coefficient on net loans to assets ratio, which was negative based on the main model, remains the same. The coefficient on net loans to assets ratio, which was 1% significant under the main model, remains the same under fixed effect and 2SLS models and changed to 5% significant under OLS. The impact of control of corruption, which was positive under the main model, remains the same under fixed effect and became negative under OLS and 2SLS models. Moreover, the coefficient on control of corruption, which was 1% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models. The impact of GDP on bank performance, which was negative under the main model, remains the same under fixed effect and 2SLS models but changed to positive under OLS model. In addition, the coefficient on GDP which was 1% significant, is now insignificant based on OLS, fixed effect and 2SLS models. Finally, the sign of coefficient on 2007/2008 financial crisis, which was positive, based on the main

model, remains the same under fixed effect and 2SLS models and became negative under OLS. The coefficient on 2007/2008 financial crisis, which was 1% significant, under the main model, is now 5% significant under fixed effect and 2SLS models and insignificant under OLS model.

9.3.4 Results based on LLRGL as bank risk measure and ROE as bank performance measure

9.3.4.1 Results based on independent variables.

These results are presented in table 20. The sign on coefficient of LLRGL*BSIZE of the main model, GMM, which was positive, is now negative under OLS, fixed effect and 2SLS models. The coefficient on LLRGL*BSIZE, which was statistically significant at 1% based on the main model, is now statistically significant at 10%, 5% and insignificant based on 2SLS, fixed effect and OLS models respectively. The sign on coefficient of LLRGL*INDEP, which was negative, remains the same. The coefficient on LLRGL*INDEP, which was 1% significant based on the main model, is now significant at 5% under 2SLS and insignificant under OLS and fixed effect models. The sign on coefficient of LLRGL*DUAL, which was positive under the main model, has not changed. However, there is a change in the level of significance of LLRGL*DUAL. Specifically, the coefficient on LLRGL*duality, which was significant at 1% under the main model, is now insignificant under OLS, fixed effect and 2SLS models. The impact of LLRGL*female on bank performance, which was negative under the main model, is now positive under OLS, fixed effect and 2SLS models. However, the significance level of LLRGL*female, which was insignificant based on the main model, has not changed. The impact of LLRGL*meeting on bank performance which was positive under the main model, remains the same under OLS and 2SLS models and changed to negative under fixed effect model. The coefficient on LLRGL*MEETINGS, which was 1% significant under GMM, changed to insignificant based on OLS, fixed effect and 2SLS models.

9.3.4.2 Results of control variables

9.3.4.2.1 Results based on individual corporate governance variables

These results are presented in table 20. The sign on coefficient of board size, which was negative under the main model, GMM, remains the same under OLS and became positive under fixed effect and 2SLS models. The coefficient on board size, which was significant at 1% based on the main model, is now insignificant based on OLS, fixed effect and 2SLS models. The sign of coefficient on duality, which was

negative under the main model remains the same under 2SLS and became positive under OLS and fixed effect models. The coefficient on duality, which was 1% significant level under the main model, is now insignificant under OLS, fixed effect and 2SLS models. The impact of board meetings on bank performance, which was negative under GMM, remains the same under OLS, and changed to positive under fixed effect and 2SLS models. The sign on coefficient on board meetings, which was significant at 1% under the main model, is now significant at 10% under OLS and insignificant under both fixed effect and 2SLS models. The impact of female directors on bank performance, which was positive remains the same under OLS model and became negative under fixed effect and 2SLS models. However, the significance level of female directors, which was insignificant remains the same. Finally, the sign on coefficient of independent directors which was positive based on the main model has not changed. However, there is a change in the significance level of independent directors. Specifically, the coefficient on independent directors, which was 5% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models.

9.3.4.2.2 Results based on bank specific and macroeconomic variables

The results of bank specific and macroeconomic variables are presented in table 20. The sign on coefficient of LLRGL, which was negative under the main model, GMM, remains the same under OLS and 2SLS and became positive based on fixed effect model. The sign on coefficient of LLRGL, which was 1% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models.

The sign on coefficient of bank size (LNTA), which was positive under the main model, GMM, is now negative under OLS, fixed effect and 2SLS models. The sign on coefficient of bank size, which was 1% significant under the main model, is now insignificant under OLS, fixed effect and 2SLS models. The negative impact of equity to assets ratio under the main model remains the same under OLS and became positive under fixed effect and 2SLS models. The coefficient on equity to assets ratio, which was significant at 1% based on the main model remains the same under OLS model and changed to 5% and insignificant based on fixed effect and 2SLS models respectively. The negative sign on the coefficient of net loans to assets ratio has not changed. However, there is a change in the significance level on the coefficient of net loans to assets ratio. Specifically, the coefficient on net loans to assets ratio, which was 1% significant under the main model remains the same

under 2SLS and became 5% and insignificant under OLS and fixed effect models respectively. The sign on coefficient and significance level of cost-to-income ratio has not changed. The sign on coefficient of control of corruption remains the same. However, the coefficient on control of corruption, which was significant at 1% under the main model, is now insignificant under OLS, fixed effect and 2SLS models. The sign on coefficient of GDP which was negative has not changed. However, the coefficient on GDP, which was significant at 1% under the main model, remains unchanged under fixed effect and changed to insignificant under OLS and 2SLS models. Finally, the sign on coefficient of 2007/2008 financial crisis has not changed. The coefficient on 2007/2008 financial crisis, which was significant at 1% under the main model remains the same under fixed effect and 2SLS models and changed to insignificant under OLS model.

NB: The reason for the inconsisten of some of the results of the main statistical model, GMM, with some of the results of OLS, fixed effect and 2SLS, may be partly due to the fact that GMM possesses a number of advantages including, resolving the problems of endogeneity, unobserved heterogeneity, autocorrelation and profit persistence, which the other techniques may not have.

9.4 Chapter summary

The chapter has focused on presentation of results and discussion of examination of the moderation effect of corporate governance on the relationship between bank risk and bank performance in Africa. The main objective is to find out the joint effect of bank risk and corporate governance on bank performance in Africa. Two dependents bank performance proxies used are return on assets (ROA) and return on equity (ROE). Our two bank risk proxies are loan loss provision to net interest revenue (LLPNR) and loan loss reserve to gross loan (LLRGL). The corporate governance variables used are board size (BSIZE), board meetings (MEETINGS), role or CEO duality (DUAL), female directors (FEMALE) and independent directors (INDEP). The empirical results reported based on LLPNR and corporate governance variables are as follows: LLPNR*BSIZE has significant positive impact on ROA and significant negative impact on ROE. LLPNR*DUAL has significant positive impact on both ROA and ROE. Similarly, LLPNR*MEETINGS has significant positive impact on ROA and ROE. The impact of LLPNR*INDEP on bank performance is insignificantly positive based on ROA and significantly negative based on ROE. Finally, our results show that LLPNR*FEMALE has significant

negative impact on bank performance, based on ROA and significant positive impact on bank performance, based on ROE.

When bank risk, measured by LLRGL interacted with the corporate governance variables, we reported the following results: LLRGL*BSIZE has significant positive relationship with both ROA and ROE. Similarly, LLRGL*DUAL has significant positive relationship with both ROA and ROE. The relationship between LLRGL*MEETINGS and bank performance is significant and negative based on both ROE and ROE. LLR/GL*INDEP has significant and negative relationship with both ROA and ROE. LLR/GL*FEMALE has significant positive impact on ROA and insignificantly negative pact on ROE. Our results suggest that corporate governance moderate the relationship between bank risk and bank performance in Africa.

Table 21: A summary of hypothesis and findings of the impact of bank risk, corporate governance and interacting variables on bank performance

Dependent variables			**ROA**			**ROE**		
Risk variables	Hyp No.	Expected sign	Finding sign	Findings significance	Hypothesis status	Finding sign	Finding significance	Hypothesis status
LLPNR	1	-	-	Significant at (1%)	Accepted	-	Significant at (1%)	Accepted
LLRGL	1	-	-	Insignificant	Rejected	-	Insignificant	Rejected
MEETINGS	7	+	-	Significantat (1%)	Rejected	-	Significant at (1%)	Rejected
DUAL	8	-	+	Insignificant	Rejected	-	Significantat (10%)	Accepted
FEMALE	9	+	+	Significant at (1%)	Accepted	+	Significant at (1%)	Accepted

BSIZE	10	-	-	Significantat (1%)	Accepted	-	Significant at (1%)	Accepted
INDEP	11	+	-	Insignificant	Rejected	-	Significant at (1%)	Rejected
LLPNR*MEETINGS	12	+/-	+	Significant at (1%)	Accepted	+	Significant at (1%)	Accepted
LLPNR*DUAL	12	+/-	+	Significant at (1%)	Accepted	+	Significant at (1%)	Accepted
LLPNR*FEMALE	12	+/-	-	Significant at (1%)	Accepted	+	Significant at (1%)	Accepted
LLPNR*BSIZE	12	+/-	+	Significant at (1%)	Accepted	-	Significant at (1%)	Accepted
LLPNR*INDEP	12	+/-	+	Insignificant	Rejected	-	Significant at (1%)	Accepted
LLRGL*MEETINGS	12	+/-	-	Significant at (1%)	Accepted	+	Significant at (1%)	Accepted
LLRGL*DUAL	12	+/-	+	Significant at (1%)	Accepted	+	Significant at (1%)	Accepted
LLRGL*FEMALE	12	+/-	+	Significant at (1%)	Accepted	-	Insignificant	Rejected
LLRGL*BSIZE	12	+/-	+	Significant at (1%)	Accepted	+	Significant at (1%)	Rejected
LLRGL*INDEP	12	+/-	-	Significant at (1%)	Accepted	-	Significant at (1%)	Accepted

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, 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 represents interaction between loan loss reserve to gross loan and role duality, LLRGL*FEMALE represents interaction between loan loss reserve to gross loan and female directors, LLRGL*BSIZE represents interaction between loan loss reserve to gross loan and board size, LLRGL*INDEP represents interaction between loan loss reserve to gross loan and independent directors

Table 22: A summary of hypothesis and findings of the impact of corporate governance on bank risk

Dependent variables			**LLPNR**			**LLRGL**		
Corporate governance variables	Hyp No.	Expected sign	Finding sign	Findings significance	Hypothesis status	Finding sign	Finding significant	Hypothesis status
BSIZE	2	+	-	Insignificant	Rejected	-	Significant at (1%)	Accepted
FEMALE	3	-	-	Significant at (1%)	Accepted	+	Significant at (1%)	Rejected
INDEP	4	-	+	Insignificant	rejected	-	Significant at (1%)	Accepted
DUAL	5	-	-	Significant at (1%)	Accepted	-	Insignificant	Rejected
MEETINGS	6	-	-	Significant at (1%)	Accepted	+	Significant at (1%)	Rejected

Notes: 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, and MEETINGS represents the number of board meetings per year

CHAPTER TEN

SUMMARY AND CONCLUSIONS

10 Introduction

As indicated in chapter one, Africa financial institutions is quiet diversified and the banking sector is more developed at some part than the other. However, the banking services are not accessible to many households. One of the major problems facing the continent of Africa is corruption and the enforcement to tackle this problem is also weak. The banking sector in Africa like every part of the globe faces the problem of risk especially credit risk through non-performing loans which has adverse effect on the performance of the banks. However, the separation of ownership and control in modern corporations such as banks has called for attention to be given to corporate governance not within the developed countries but developing African countries as well. Over the past and due to weak governance systems, many institutions including banks in Africa have suffered tremendously which needs proper attention. As a result, many African countries have come out with different corporate governance codes which companies are expected to comply. These codes contain a number of recommendations which organisations need to follow in order to make sure that organisations are managed properly and also to mitigate issues related to agency problems.

Many studies have been conducted in the developed countries to look at the relationship between bank risk and performance; relationship between bank risk and corporate governance; and the relationship between corporate governance and bank performance. It has become important also to apply this to see the results of these relationships in developing Africa, where the empirical evidence is lacking. In the first place, this study looked at how the risks facing the banks in Africa impact on bank performance. The study uses panel data analysis to investigate the impact of bank risk on bank performance in Africa. Unlike many studies that conduct a single country, for example Tan (2016), this study uses cross country study involving 635 banks from 48 countries between 2000 to 2016, giving a total of 10795 firm year observations. Secondly, the study investigated how corporate governance characteristics affect bank risk in Africa. Based on data availability, five board characteristics namely board size; board meetings, role duality, independent board directors and female board directors were chosen to examine such relationship with ban risk. Third, this study provided an examination into the relationship that exists between corporate governance and bank performance. To be specific, the study

attempted to find out the impact of corporate governance structures on bank performance in Africa. The same board characteristics mentioned above were used to find such relationship. Finally, using the same board characteristics, this study attempted to find out the moderation effect of corporate governance on the relationship between bank risk and performance in Africa. In order words, the study finds out the joint effect of bank risk and corporate governance on bank performance in Africa.

10.1 Summary of main findings

This section provides a summary of the empirical results of the impact of bank risk on bank performance in Africa; the impact of corporate governance on bank risk in Africa; the impact of corporate governance on bank performance in Africa; and the moderating effect of corporate governance on the relationship between bank risk and bank performance in Africa. The rest of this section provide discussions on policy implications, recommendations based on this study, contributions and limitations of the study as well as recommendations for further research.

NOTE: Although all the above findings represent Africa as a monolithic whole, the researcher recognises that there are differences in the banking and corporate governance systems among individual African countries. Such differences include population size, security systems, employment levels, bank regulations, culture and the judiciary systems. These differences can affect the governance systems differently among individual countries. Such differences can also impact on the bank risk and performance of banks in individual countries differently. As recommended in avenues for future research in this chapter, future research can look at individual countries or different African regions (north, south, east and west) separately to see whether any significant differences are observed.

10.1.1 Findings based on bank risk and performance

This subsection presents the summary of the empirical results related to bank risk and performance which have been discussed earlier in chapter six. This subsection in particular seeks to answer the first research question; what is the relationship between bank risk and performance in Africa? The answer to this question relates to the first hypothesis which states that “there is a significant and negative association between bank risk and bank performance in Africa”. Two risk measures, LLPNR and LLRGL and two performance measures, ROA and ROE were used.

First, the empirical results show that LLPNR is significantly negative associated with both ROA and ROE, bank performance measures, at 1% level of significance. This result supports hypothesis one. The result indicates that bank risk has significant adverse impact on bank performance in Africa, and has implications for governments, policy makers and regulatory bodies in Africa. However, the result shows that LLRGL is insignificantly negative associated with both ROA and ROE, which rejects hypothesis one.

10.1.2 Findings based on corporate governance and bank risk

The objective here is to investigate the relationship that exists between corporate governance and bank risk**.** The empirical findings relate to five hypothesis (hypothesis 2-6) tested to find the relationship between corporate governance characteristics and bank risk which have been discussed earlier in chapter seven. The two bank risk measures used are LLPNR and LLRGL; and corporate governance variables used are board size, female directors, independent directors, role duality and board meetings. The summary of these findings are as follows:

The second hypothesis examined whether there is a statistically significant positive association between board size and bank risk in Africa. The result shows that the relationship between board size (BSIZE) and bank risk, measured by LLPNR, is found to be negative and insignificant. However board size is found to be highly significant and negative when bank risk is measured by LLRGL at 1% significant level. The significant negative relationship between board size and bank risk supports hypothesis two. The result means that bigger board is good for risk management and reduction in Africa compared to smaller board.

The third hypothesis tested whether there is statistically significant negative association between the presence of female directors and bank risk in Africa. The empirical result indicates that female directors (FEMALE) has statistically significant negative impact on bank risk, LLPNR, at 1% significant level. This result supports hypothesis three, and shows that the presence of more female directors on African banks board is good to reduce bank risk. However, the impact of female directors (FEMALE) on bank risk became significant and positive at 1% significant level when risk was measured by LLRGL, rejecting hypothesis three. This finding means that the presence of more female directors in the boardroom increases bank risk in Africa. The contradicting results of the impact of female directors on LLPNR and LLRGL has been explained in chapter seven.

The fourth hypothesis tested whether there is a statistically significant association between board independent and bank risk. The result shows that independent directors (LLPNR) is insignificant and positive associated with LLPNR but significant negatively associated with LLRGL at 1% level of significance. The significant negative association between board independent and bank risk (LLRGL) supports hypothesis four. This result implies that the presence of more independent directors contributes to minimising bank risk in Africa.

The fifth hypothesis examined whether there is a statistically significant negative association between duality and bank risk in Africa. The result indicates that DUAL has significant negative impact on bank risk, measured by LLPNR at 1% level of significance. This result supports hypothesis five. This result indicates that one person holding CEO and chairman role at the same time is a good governance practice for bank risk reduction in Africa.

The sixth hypothesis provided an examination to find out whether there is a statistically significant negative association between board meetings and bank risk. The finding reveals that board meeting (MEETINGS) has significant negative impact on bank risk, measured by LLPNR, at 1% significant level. This finding supports hypothesis six. This result shows that more board meetings is better to reduce bank risk in Africa than less meetings. However, the result indicates a significant positive relationship between board meetings and bank risk, measured by LLRGL at 1% significant level. This finding rejects hypothesis six, and show that less board meetings is better to reduce bank risk in Africa than more board meetings. The reason for these contracting results has been given in chapter seven.

10.1.3 Findings based on corporate governance and bank performance

The main objective here is to investigate the correlation between corporate governance and bank performance in Africa**.** The empirical findings relate to five hypothesis (hypothesis 7-11) tested to find the relationship between corporate governance characteristics and bank performance, which has been discussed earlier in chapter eight. The two performance measures used are ROA and ROE; and corporate governance variables used are board size, female directors, independent directors, role duality and board meetings. The result of the main findings are summarised below:

The seventh hypothesis examined whether there is a statistically significant positive association between board meetings and bank performance. The finding shows that

the association between board meetings and bank performance is significant and negative based on both ROA and ROE at 1% level significance level. This result rejects hypothesis seven. These findings imply that having less meetings is effective to improve bank performance in Africa than having more meetings.

Hypothesis eight provides examination whether there is a significant and negative association between duality and bank performance. The empirical result shows that, duality is negatively associated with bank performance, supporting hypothesis eight. This result suggests that the situation whereby a single person holds the positions of CEO and chairman at the same time is not good corporate governance strategy that improves banks performance in Africa. Therefore the two posts should be separated.

Hypothesis nine tested whether there is a significant positive association between the presence of female directors and bank performance in Africa. These findings indicate that female directors and bank performance, measured by ROA and ROE is significant and positively associated at 1% significant level. These findings mean that, hypothesis nine is well supported. The findings indicate that more female directors in the boardroom improves bank performance in Africa.

The tenth hypothesis tested whether there is a statistically significant negative association between board size and bank performance in Africa. The result shows that board size is significantly and negative related to both ROA and ROE at 1% significant level. The findings indicate that hypothesis ten is supported. Our results show that smaller board works better; it is more effective and efficient to improve bank performance in Africa than bigger board.

Finally, Hypothesis eleven examined whether there is a significant positive association between board independent and bank performance in Africa. The results show that board independent has insignificant negative impact on bank performance, measured by ROA. However, independent directors has significant negative impact on bank performance, measured by ROE, at 1% significant level, rejecting hypothesis eleven. This suggests that more independent directors in the boardroom causes a reduction in bank performance in Africa.

10.1.4 Findings based on moderation effect of corporate governance on the relationship between bank risk and bank performance.

The rationale here is to find the joint effect of corporate governance and bank risk on performance of African banks. The empirical results relate to hypothesis twelve, which tested the moderation effect of corporate governance on the relationship between bank risk and bank performance in Africa, which has been discussed earlier in chapter nine. Bank risk measures used are LLPNR and LLRGL; the corporate governance variables used are board size, board meetings, role duality, female directors and independent directors. ROA and ROE are used as proxies for bank performance.

10.1.4.1 Summary of findings of the effect of corporate governance and bank risk (LLPNR) on bank performance, ROA and ROE.

LLPNR*SIZE has significant and positive impact on bank performance, based on ROA. Contrary, LLPNR*BSIZE has significant and negative impact on bank performance, measured by ROE, at 1% level of significance. These results suggest that board size moderate the relationship between bank risk and bank performance in Africa, which supports hypothesis twelve. The reason for the inconsistent results based on ROA and ROE is given in chapter nine. LLPNR*DUAL has significant and positive impact on both ROA and ROE at 1% significant levels, supporting hypothesis twelve. The results suggest that a single person holding the positions of CEO and chairman is a good governance practice to reduce bank risk and improve performance in Africa.

LLPNR*MEETINGS has significant and positive impact on ROA and ROE at 1% significant levels. The results support hypothesis twelve. These results suggest that, board meetings help in reducing bank risk to improve bank performance in Africa. This implies that when board meetings in Africa interact with bank risk, it is able to reduce bank risk and improve performance. The impact of LLPNR*INDEP on bank performance based on ROA is positive but not significant. However, the impact based on LLPNR*INDEP on bank performance, measured by ROE is highly significant and negative at 1% significant level, supporting hypothesis twelve. The significant negative impact on bank performance suggests that independent directors can reduce bank risk to increase bank performance in Africa.

The result shows that Female directors (LLPNR*FEMALE) has significant negative impact on bank performance, measured by ROA at 1% significant level. However

LLPNR*FEMALE has significant and positive impact on ROE at 1% significant level. Both results suggest that female directors moderate the relationship between bank risk and bank performance in Africa, which support hypothesis twelve. The reason for the inconsistent of the results has been provided in chapter nine.

10.1.4.2 Summary of findings of the effect of corporate governance and bank risk (LLRGL) on bank performance, ROA and ROE.

The result shows that LLRGL*SIZE has significant and positive impact on both ROA and ROE at 1% significant levels. These results mean that board size moderate the relationship between bank risk and performance in Africa, which supports hypothesis twelve. LLRGL*INDEP has significant and negative relationship with both ROA and ROE at 1% significant levels, indicating that independent directors moderate the relationship between bank risk and bank performance in Africa. LLRGL*FEMALE has positive impact on ROA at 1% significant level, suggesting that LLRGL moderate the relationship between bank risk and bank performance in Africa. LLRGL*FEMALE has insignificant negative impact on ROE. The impact of LLRGL*DUAL on bank performance, measured by both ROA and ROE is positive and significant at 1% significant levels. These results show that duality moderate the relationship between bank risk and bank performance. Our findings support hypothesis twelve, which predicted that corporate governance moderate the relationship between bank risk and bank performance. Finally, LLRGL*MEETINGS has significant and negative relationship with ROA and positive with ROE at 1% significant levels. These findings indicate that board meetings moderate the relationship between bank risk and bank performance, supporting hypothesis twelve.

10.1.5 Results based on robustness analysis

As discussed earlier, a number of robustness analysis have been carried out to find out the extent to which the results of the main technique, GMM, are robust or sensitive to the results of other techniques. Different techniques used to check the robustness of the results of our main technique are OLS, fixed effect and 2SLS. In all, the results from the analysis of these different techniques suggest that the results of this study are robust. The results are summarised below.

First, we test for the relationship between bank risk and performance in Africa. Firstly, to check whether the results are robust, two alternative risk measures, LLRGL and LLPNR and two performance measures, ROA and ROE were used. Our

findings show similar results whether ROA or ROE and whether LLPNR or LLRGL was used. Secondary, we use GMM as the main technique and re-regressed using OLS, fixed effect and 2SLS techniques. The results of the three alternative techniques are similar to the results of the main technique.

Second, we test for the relationship between corporate governance and bank risk in Africa. Firstly, two alternative risk measures, LLPNR and LLRGL were used to test such relationships. Secondly, we use GMM as the main technique and re-regressed using three different alternative techniques, OLS, fixed effect and 2SLS. The results of our main technique, GMM are similar to the results of the three alternative techniques whether LLPNR or LLRGL was used as risk measure, although there are some sensitivities in some of the signs and significance levels of coefficient on some of the variables.

Third, we test for the relationship between corporate governance and bank performance in Africa. Firstly, two alternative performance measures, ROA and ROE were used to test for such relationships. Secondly, we use GMM as the main technique and re-regressed using three different alternative techniques, OLS, fixed effect and 2SLS. The results of the three alternative techniques, whether ROA or ROE was used as performance measure, are similar to the results of the main technique, although there are some sensitivities in some of the signs and significance levels of coefficient on some of the variables

Four, we test for the moderation effect of corporate governance on the relationship between bank risk and performance in Africa. Firstly, two alternative performance measures, ROA and ROE, and two risk measures LLPNR and LLRGL were used to test for such relationships. Secondly, we use GMM as the main technique and re-regressed using three different alternative techniques, OLS, fixed effect and 2SLS. The results of the three alternative techniques, whether ROA or ROE as performance measure, and whether LLPNR or LLRGL as risk measure , are similar to the results of the main technique, although there are some sensitivity in some of the signs and significance levels of coefficient on some of the variables.

10.2 Policy implications of the research findings and recommendations

10.2.1 Bank risk and bank performance, Policy Implications and Recommendations

Some form of implications can be drawn from the impact of bank risk on performance in Africa. The analysis of the impact of bank risk on bank performance indicates that, both risk measures, LLPNR and LLRGL have negative impact on the two performance measures, ROA and ROE. The results imply that the risk activities taken by the banks in Africa, such as the administration of bad loans have adverse impact on performance of African banks. These results are consistent with a number of previous studies. The result have many policy implications for African governments, bank managers and regulatory authorities to enhance bank performance. A high negative impact of bank risk on performance may discourage investors, especially foreign investors from investing in the banking industry in Africa. It will also have negative impact on the socio-economic development on African countries. A number of recommendations have been made. (1) Management of African banks should do well to find appropriate bank risk management strategies to minimise the impact of risk on performance in order to improve bank performance in Africa, to make it attractive business to both local and foreign investors. (2) African government should do well to help banks by reducing their rate of tax. (3) Proper background check should be done on each loan applicant to gather enough information before any loan is granted. This will help to reduce default risk to improve bank performance. (4) Companies and individuals who take loans from banks should be well informed on the importance of loan insurance to cover them, in the event of difficulties in the loan repayment. The purchase of loan insurance will minimise the negative impact of default risk on bank performance (5) Banks to recruit experienced staff and provide regular training opportunities for existing staffs; banks should use well trained and skilled personnel to assess loan applications. (6) To achieve efficient risk management in Africa, bank risk management teams should be highly educated and be trained to do their job. (7) Anti-corruption campaign should be strengthened in Africa to discourage bribery and corruption to avoid the negative impact of corruption on banks and financial sector as a whole. In addition, loans should not be granted to individuals or companies based on to whom you know, but to those who qualify for the loans. (8) Inflation rate is a big concern across the length and breadth of Africa, therefore appropriate fiscal

and monetary policies must be implemented to control inflation within African banking industry.

10.2.2 Corporate governance and bank risk, Policy Implications and Recommendations

This study attempts to find out the relationship that exists between corporate governance and bank risk in Africa. The empirical result shows that corporate governance characteristics namely, board size, board meeting, duality, female directors and independent directors have significant relationship with bank risk. Overall, the results find evidence that corporate governance characteristics play important roles in bank risk in Africa. The results have policy implications for bank management, government and regulatory bodies in Africa to reduce bank risk.

In the first place, board size has insignificant negative impact on LLPNR and significant and negative relationship with bank risk, based on LLRGL. The significant negative result means that bigger board is effective for reducing bank risk in Africa. Even though having smaller board size is perceived to be better governance practice by the market and it is supported by agency theory, it increases bank risk in Africa. It is therefore advisable for African banks to use bigger board size so that board members can bring different ideas together to help the banks to reduce risk. If the banks in Africa prefer to use smaller board size, then it is highly recommended that they use board members who are highly educated and trained with high record of experience so that they can work efficiently to reduce the risk being faced by the banks.

Secondly, duality has insignificant negative relationship with bank risk, measured by LLRGL and significant negative relationship with LLPNR. The significant negative impact of duality on bank risk suggests that the same person holding the positions of Chairman and CEO roles is the best way to reduce bank risk in Africa. Even though the market perceives the split roles of CEO and Chairman positions to be better corporate governance practice, which could help reduce bank risk, this is not the case in Africa. The advantages associated with duality, such as quick decision making, which could reduce bank risk is manifested in Africa banking system. This sends signal to regulatory bodies and policy makers, that policies which allow the split roles of chairman and CEO positions is not appropriate in Africa. Thus, within African context, CEO duality allows charismatic, experienced and hardworking CEO to have a good focus and hardworking attitude to work effectively and bring bank

risk to a minimum. Therefore, based on our result, duality must be allowed to practice in African banking industry.

Thirdly, our findings reveal that the presence of independent directors has insignificant positive impact on bank risk, measured by LLPNR. Contrary, the result shows that the presence of independent directors has significant negative impact on bank risk, measured by LLRGL. This result indicates that more independent directors on the board is beneficial to reduce bank risk in Africa. More independence directors on the board is also perceived by the market to be good corporate governance practice which must be encouraged by management and regulatory bodies. The monitoring role and resources provided by more independent directors' help in a long way to reduce the risk of banks in Africa. Therefore, management and regulatory bodies and policy makers must ensure that more independent directors are hired on the board of African banks to scrutinise and monitor the decisions and activities of management so that any decision that is taken by the management which will increase the risk of the banks are brought to minimum. More independent directors on corporate board is supported by agency theory, and it is also perceived by the market to be a good corporate governance practice which must be encouraged to attract more investors to invest in African banks. More investment means more resources to minimise the risk of the banks.

Fourthly, the presence of female directors is found to be significant and negative related to banks risk, measured by LLPNR. This result implies that a higher proportion of female directors on the bank board of directors is effective corporate governance practice to reduce bank risk. The ideas female directors may have to bring to the board to support their male counterparts on the board will be vital during decision making, which can help in no small way to reduce bank risk of the banks. As females are perceived to be risk averse, they will scrutinise and challenge the male directors so that they will not take decisions which will increase the risk of the banks. The inclusion of more female board directors on company boards is being encouraged in some developed countries such as France and Norway. Therefore, government and policy makers should also enforce this and encourage banks to hire more female directors to the bank boards in Africa. Since the inclusion of female directors on the board is perceived by the market as good corporate governance practice, more female directors on the bank board in Africa will not only reduce bank risk but will attract more investors

However, our results finds that female directors has significant and positive relationship with bank risk, measured by LLRGL. This result implies that the inclusion of more female directors on the banks board of Africa is not good as it increases bank risk. The reason may be that female directors on the board are just appointed to come to the board just to fulfil the regulatory requirements, they may be friends and family members of the management who do not actually qualify to be board members. Another reason may be that, the female directors on the board may lack the necessary qualifications, skills and experience needed to be a member on the board. Therefore, their presence on the board will increase the risk of the bank rather than helping to reduce it. The management and regulatory bodies should emphasize that, every female appointed to the board possesses the necessary qualification and experience needed to be a member of the board. In addition, female directors on the board should be given regular training to enable them work effectively on the board. These will give them the qualities needed to work effectively on the board to help reduce the risk facing the banks.

Finally, our findings indicate that board meetings has significant negative impact on bank risk measured by LLPNR. This finding indicates that smaller number of board meetings is not good for African banks so far as bank risk reduction is concerned, because it increases bank risk. The market perceives more board meetings to be a good corporate governance practice, which could be used to reduce bank risk. The use of more board meetings is supported by agency theory (Jensen & Meckling, 1976), which states that frequent corporate board meetings is the increased capacity to advise effectively, discipline management and monitor them, which could reduce bank risk and improve financial performance. Moreover, frequent board meetings will help identify problems on their early stages and find appropriate solutions to them on time to avoid any catastrophic events to the banks. Therefore, the regulatory bodies and management of the banks should organize more board meetings every year to ensure that they resolve issues within the banks in order to reduce the risks facing the banks. More board meetings will also help to identify any misconduct or self-interested activities by management which may cause the risks of the banks to increase.

Contrary, our findings show that board meetings have significant and positive impact of bank risk, measured by LLRGL. This finding suggests that more board meetings is harmful to African banks because they increase the risk of the banks. This is

supported by the fact that the expenses incurred to organise more board meetings are more than the benefits that more board meetings bring to the bank and for that matter increase the risk of the banks. Moreover, the meetings may not be effective enough and members may only be interested in the sitting allowance they get from attending meetings, which in effect, will not reduce the risk of the banks in any way. In addition, they may organise more board meetings just to satisfy the regulatory requirements without discussion any important issues at the meeting. In this regard, it is advisable for management to consider small number of board meetings per year. Organising smaller and effective meetings which can reduce bank risk and improve performance is far better than organising more meetings which will not help the banks. Organising smaller number of meetings will also cut the expenses of the banks.

The results of female directors and board meetings on LLPNR and LLRGL are contradicting since the impact of more female directors and more board meetings or less females or less board meetings increase bank risk. This suggests that female directors and board meetings are sensitive to bank risk, and female directors and board meetings have different impact on different measures of bank risk. Therefore, banks management and policy makers should consider different measures of bank risk when they are assessing the impact of female directors and board meetings on bank risk. Moreover, it is recommended that, if more female directors are appointed to the board, and if they are appointed through the right channel and possess good qualifications, the necessary skills and experiences, given that female are risk averse, they can help to minimise the risk of the bank. More board meetings can also assist in resolving important issues affecting the bank in a timely manner to minimise adverse effect on the bank

As mentioned earlier, more female directors and more board meetings are perceived by the market as good governance practices, therefore, appointment of more female directors and having more board meetings can attract investors which can bring more resources to the bank. As a result, bank managers and policy makers are encouraged to include more female directors on African bank board, not forgetting more board meetings.

10.2.3 Corporate governance and bank performance, Policy Implications and Recommendations

The study attempts to find the impact of corporate governance on bank performance in Africa. The results indicate that corporate governance characteristics, board size, board meetings, role duality, presence of female directors and presence of independent directors have impact on bank performance. The result have many policy implications for African government, bank managers and regulatory authorities to improve bank performance.

First, board size has significant negative impact on bank performance, based on both ROA and ROE. This result suggests that smaller board is effective for improving bank performance in Africa. This finding is consistent with agency theory which suggests that due to communication problems and internal conflicts among directors, bigger boards are inefficient (Jensen, 1993). In this regard, it is advisable for management and policy makers' to recommend smaller board to the banks in Africa. Smaller board size which is effective and the board members are experienced is better than bigger board with many members who are unable to contribute effectively to the bank. Management should refrain from increasing the number of members on the board through adding friends and family who are not experienced or who do not qualify to be board members. Quality is better than quantity, therefore, it is important for management to be selective when it comes to who becomes a board member on their bank board. Government and regulatory bodies should come out with effective corporate governance codes that advise firms including banks on effective selection of board members onto their board. The codes can also set out the maximum number of board members that every firm should have and strict selection criteria that firms should follow to select their board members.

Second, based on the result, board meetings has significant negative impact on bank performance, based on both ROA and ROE. This implies that smaller number of board meetings is effective for increasing bank performance in Africa. This finding is not in line with the agency theory. It is argued that corporate board gives advice, supervision, and seek accountability from management so that the interest of shareholders is pursued by managers (Jensen and Meckling (1976). Corporate board meetings play important role in which companies are managed and governed, and this subsequently help to improve bank performance. As a result, Management

should ensure that regular meetings that is suitable to sort issues out within the bank must be encouraged. Meetings should be organised immediately to address issues that need urgent attention. Therefore, management should not push issues which require urgent attention to next meeting, even if this will increase the number of meetings arranged for the year. However, based on our result, too many meetings is not beneficial to improve the performance of African banks. The cost associated with organising many board meetings may outweigh the benefit that more meetings will bring to the banks in Africa. Therefore, it is recommended that too many meetings should be discouraged or avoided. It is also important for management and regulatory bodies to ensure that the banks comply with the advice on board meetings stipulated in their corporate governance codes, in order to improve Bank performance.

Third, our result shows that duality is significant and negative related to bank performance, measured by ROE. This finding supports agency theory which posits that duality has adverse impact on firm performance. The codes of corporate governance of African countries advises firms, including banks, to separate the positions of Chairman and CEO, it is important for management and regulatory bodies to ensure that the banks abide by this regulation. Due to the adverse effect that duality can bring to firms such as banks, many corporate governance codes around the globe, such as the UK corporate governance code (2012), recommends that organisations to separate the role of Chairman and CEO. Duality may constitute a clear conflict of interest; it also causes self-evaluation and a reduction of monitoring, which may affect performance of banks negatively. Therefore effective supervision of banks by regulatory bodies and policy makers to make sure the banks in Africa do the right thing and management comply with the rules and regulations are important determinants to improve bank performance in Africa. In addition, agency cost of banks can be reduced in the situation where decision management is separated from decision control, hence the need for management of African banks to appoint two separate individuals to hold the positions of CEO and Chairman to increase bank performance.

Fourth, our findings show that female directors has positive impact on bank performance, based on both ROA and ROE. This implies that, the experience and contributions female directors bring to the board help improve bank performance in Africa. To increase women empowerment for them to contribute towards the socio-

economic development of African countries, it is important for regulatory bodies and bank management to add more women to the bank board. Women who have banking experience and those who are interested in working in the banking industry should be encouraged and supported to acquire higher qualifications, they must be given the necessary training and acquire the skills required. Diversity in the boardroom, including adding women to the board to improve bank performance is supported by resource dependency theory. This is because, due to distinct information held by diverse directors, diversity have the opportunity to enhance the information delivered by the board to managers to improve performance. In addition, with the inclusion of female directors on the board, transparency and better decision making is likely to come during board meetings, due to different views female add to their male counterparts. Many developed countries including France and Norway are promoting, encouraging and increasing the number of female directors in the boardrooms, it is important for Africans to emulate such good practice and add more female directors to their bank boards to increase performance.

Fifth, our result indicates that, the presence of independent directors has significant negative impact on bank performance, measured by ROE. This finding suggests that more independent directors on the bank board in Africa do not contribute to improvement of bank performance. The finding is inconsistent with Fuzi et al (2016) who posit that board independence reflects the ability of the board to provide independent monitoring and oversight role of management actions so as to reduce moral hazard. Our findings may mean that, the independent directors on the board of African banks, one reason or the other, are not able to monitor the management and scrutinise their decisions effectively to improve bank performance. It is therefore recommended, that bank management should ensure that they do not appoint their friends and families who do not have the necessary skills and experience to the board. Management and regulatory bodies should make sure that all banks follow the right procedure to appoint the independent directors who have the necessary experience and skills needed on the board. In the interest of shareholders, banks in Africa are encouraged to appoint more independent directors who can effectively represent the interest of shareholders during board meetings. Also, government and regulatory bodies in Africa should make sure that the directions and rules contain in the codes of corporate governance which advises and directs banks on their business activities are enforced to improve bank performance in Africa.

10.2.4 Moderation effect of corporate governance on the relationship between bank risk and performance, Policy Implications and Recommendations

This study attempts to find the moderation effect of corporate governance on the relationship between bank risk and performance. Empirical results show that corporate governance moderate the relationship between bank risk and performance in Africa. The findings have policy implications for government, management of the banks, and regulatory bodies in Africa.

Bank risk, measured by LPNR, has significant negative impact on ROA and ROE with coefficients of -0.0395 and -0.2403 respectively. Bank risk, measured by LLRGL, has significant positive impact on performance measured by ROA with coefficient of 0.1072. However, LLRGL has significant and negative impact on ROE, with coefficient of -0.4728.

The interacting between LPNR and board size (LPNR*BSIZE) has significant and positive impact on performance, measured by ROA and significant and negative impact on performance, measured by ROE. The interaction between board size and risk (LLRGL*BSIZE) has significant and positive impact on performance, measured by both ROA and ROE. The results indicate that board size moderate the relationship between bank risk and performance. This suggests that board size is important and has policy implications for bank management and policy makers of African banks. This result indicates that a good board size with a reasonable amount of numbers will work well to reduce bank risk and improve performance. The management and regulatory bodies should ensure that the banks comply with the codes of corporate governance within their countries and use the size of the board specified in the codes. They should emphasize on the board size that work for them and include the right people who have the qualifications, knowledge and experience to be on the board to reduce the risks and improve performance of the banks. The composition of the size of the board should also be taken into account when aiming at minimising bank risk to increase performance. Bank board which include people with good accounting and finance background, female directors , more independent directors and people with higher qualifications like PhDs are expected to reduce bank risk and improve performance. In addition, the number of people on the board should include chief risk officer, who is expected to scrutinise management decision

on risk taking activities so that management refrain from any risk taking activities that will not benefit the bank.

LLPNR*MEETINGS has significant positive impact on both ROA and ROE with coefficients of 0.0021 and 0.0134 respectively. LLRGL*MEETINGS has significant negative impact on ROA and significant positive impact on ROE with coefficients of -0.0101 and 0.0234 respectively. The results show that board meetings moderate the relationship between bank risk and performance. In other words, board meetings can influence bank risk to increase or decrease it, which could affect bank performance in Africa. Bank management and policy makers should ensure that banks in Africa have the right number of meetings every year to ensure that important issues are discussed on time and resolved, in order to reduce the risk of the banks to improve performance. The board should meet regularly to discuss critical issues that may affect the effective functioning of the bank. If issues are left too long before they are discussed, the implication is that, the effective functioning of the bank may be endangered, which may increase risk and reduce performance. If a particular issue is not resolved at a meeting, another meeting should be scheduled as soon as possible to ensure that the issue is resolved completely. Meetings should not focus on personal issues of board members but rather critical issues relating to the business of the bank. If misunderstanding occurs at a meeting, members should not take it personal but can have a vote on it. Constructive discussions at board meetings is vital for risk reduction and performance improvement in every organisation. Therefore, is it important for board members to understand the issues they are discussing at the meeting in order for everyone at the meeting to contribute to achieve the goal of the bank.

LLPNR*DUAL has significant positive relationship with both ROA and ROE. LLRGL*DUAL has significant positive relationship with both ROA and ROE. The result shows that duality moderate the relationship between bank risk and performance in Africa. Our analysis show surprise results since interaction of duality and bank risk improves performance. The market perceives duality as bad corporate governance practice. As a result, many corporate governance codes around the world, including those in Africa encourage the split roles of CEO and chairman. However, our result gives a new evident that, duality can interact with bank risk to improve bank performance. In African context, the advantages associated with duality outweighs the advantages of splitting the roles of CEO and Chairman, based

on our result. Therefore, management and policy makers in African banks must revise their regulations and corporate governance codes and make it flexible to allow banks that wish to practice duality to do so.

LLPNR*INDEP has insignificant positive impact on ROA and significant and negative impact on ROE. LLRGL*INDEP has significant negative relationship with both ROA and ROE. Our results shows that independent directors moderate the relationship between bank risk and bank performance. The market perceives more independent directors on bank board to be good corporate governance practice. More independent members on bank board can boast confidence in both investors and shareholders. Corporate governance codes recommends the inclusion of more independent directors on bank board. Their monitoring role on the board help shape the activities and decisions of the management, so management do not deviate from doing the right thing which will help reduce bank risk and improve performance. Like any other banks in the world, the inclusion of more independent directors will benefit African banks to monitor management activities to reduce risk and improve bank performance. Therefore regulatory bodies and management of African banks should comply with all codes of corporate governance and include more independent directors. The right procedure must also be followed to appoint independent directors on the board. This ensures that independent directors appointed have got the right education, knowledge and experience required, so that they can contribute at all board meetings. Management should desist from all corrupt activities and also refrain from all unethical activities such as appointment of family and friends who do not have qualifications and experience to the board. Once the board is strong, it is guaranteed that bank risk will be minimised to increase performance.

LLPNR*FEMALE has significant negative relationship with bank performance, measured by ROA, and significant and positive relationship with bank performance, measured by ROE. LLRGL*FEMALE has significant positive relation with ROA and insignificant negative relationship with ROE. The results suggest that female directors moderate the relationship between bank risk and performance. The market perceives the inclusion of female directors on bank board to be good corporate governance practice, which is supported by resource dependency theory. The ideas, experience and contribution female directors bring to the board can help minimise bank risk and increase performance. Therefore, the banks in Africa should appoint more female directors on their board. Female directors are perceived to be

risk averse and therefore do not take risk unnecessarily. This means, they will serve as a guide and challenge their male counterparts on the board when it comes to risk taking decisions. This will help minimise the risk of the banks and improve performance. Female directors are also perceived to be more responsible of their actions and bring distinct information sets which are available to management improve decision making, which could help reduce bank risk and improve performance. However, like the appointment of independent directors, the right procedure should be followed to appoint female directors to the board. Management should not appoint female directors who are their family and friends who do not qualify to be board of directors. When this happens, their presence will add more risk and cost to the bank, which could increase risk and reduce bank performance. The inclusion of more female directors on bank board has been seen as blessing to banks and also serve as a way of empowering women to contribute to socioeconomic development in many developed countries such as France and Germany, so African can benefit from this practice as well to reduce their bank risk and improve performance.

10.3 Research contributions

This study is distinct from previous studies in general and those who examine bank risk, corporate governance and bank performance relationship. This study makes a number of new contributions to the extant bank risk, corporate governance and bank performance literature.

First, the study uses an unbalanced panel data of 635 banks from 48 countries from 2000 to 2016 providing a total of 10795 firm year observations over 17 year period. This study provides a very detailed empirical evidence on the impact of bank risk on bank performance in Africa; the impact of corporate governance on bank risk in Africa; the impact of corporate governance on bank performance in Africa; and the joint effect of bank risk and corporate governance on bank performance in Africa. In addition, unlike many previous studies, the study does not only use large sample or listed banks, all banks including small, medium, large, listed and or unlisted with sufficient data were selected for this study. Moreover, unlike the majority of the previous studies which include only one country or few countries in their sample, banks from 48 countries in Africa are included in this study. Due to the above, the findings of this study can be used to generalise bank risk, corporate governance and bank performance relationships in Africa.

Secondly, unlike the previous studies, this study offers the first time evidence of the impact of bank risk on performance using a large sample size and cross country study consisting of 48 countries. Consistence with the results of some past studies (e.g. Tan and Floros, 2012; Arif and Nauman Anees, 2012; I.Maghyereh and Awartani, 2014; Al-Tamimi, et al, 2015; Boadi et al, 2016; Tan et al.; 2017)), the findings indicate that bank risk is statistically significant negative relation with bank performance in Africa.

Third, this study offers first time cross-country study in Africa with a large sample size involving over 40 countries on the relationship between bank risk and corporate governance. In addition, using corporate governance data which was tapped directly from banks annual report, the study offers the first time evidence on the relationship between corporate governance and bank risk. The findings reveal some evidence that corporate governance characteristics affect bank risk in Africa.

Fourth, this study offers first time cross-country study in Africa with a large sample size involving over 40 countries on the relationship between corporate governance and bank performance in Africa. The findings show that corporate governance characteristics significantly affect bank performance in Africa.

Fifth, using a cross country studies, this study fills the existing gap within the literature by offering the first time evidence on the moderating effect of corporate governance on the relationship between bank risk and performance in Africa. The results show that corporate governance characteristics moderate the relationship between bank risk and bank performance in Africa.

10.4 Research limitations

Although the results of this study are fairly robust, it suffers from some weaknesses which need to be mentioned. The corporate governance data was extracted manually from annual reports of individual banks at the banks websites.

One, as mentioned earlier, the sample excludes banks with less than five years information. These banks were considered as not having enough information to be included in the final sample. This may be described as sample selection bias. Two, this study may also suffer from omitted variable bias. The study relies on the available data during data collection. This means, the model may be over specified or under specified. Thus, the variable selected for the study may not be enough or were too much. In addition, due to data limitations, using alternative measures of

many variables was impossible. Three, in a cross country study like this, bank performance may be determined by many other factors which are not included in this study. The factors may include culture, population, the number of people in employment and political stability. Therefore, corporate governance and bank specific variables alone may not be the main determinants of bank performance in Africa.

Four, Corporate governance variables were manually collected from the annual reports, and all annual reports were manually downloaded one after the other. This made it very time consuming and labour-intensive activity. 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. In addition, some banks either did not provide the detailed corporate governance information in their annual reports or did not provide the corporate governance information at all in their annual report. Therefore, the corporate governance data was quiet limited. As a result, the findings based on corporate governance characteristics may not be a true reflection of corporate governance within African banks.

Overall, a large sample size of 635 banks, which generate a total of 10795 firm-year observations, is very significant. Banks from 48 countries in Africa means that at least a bank was selected from almost every country in Africa for the study. In addition, using data from 2000 to 2016 (17 year span) is also considered as very good enough. These make this study a unique cross-country study and therefore the results can be trusted.

10.5 Avenues for future research and improvement

There are many important avenues for future research and improvement. First, as mentioned earlier, due to limited data availability at the time of data collection, this study may be subject to omitted variables. Future studies in this area may include other determinants of bank risk and bank performance in addition to those examined in this research. Specifically, more bank specific, corporate governance characteristics and macro-economic factors may be considered in addition to the ones examined in this research in order to resolve the issue of omitted variables. Second, this study employs only quantitative methodology to do the analysis and this can limit how to interpret the results. If possible, future research can add other methodologies such as qualitative (for example survey and or interview) to help overcome this problem.

Third, this study provides the examination of how only internal corporate governance characteristics impact on bank performance in Africa. Future studies can examine how external corporate governance characteristics such as managerial labour market and law impact on bank performance. Four, it will be interesting for future research to focus on how risk governance characteristics such as the presence of risk committee, risk committee size and the number of risk committee meetings affect bank risk and performance in Africa.

Fifth, as voluntary corporate disclosure can affect bank performance, future studies can focus on the examination of the association between corporate disclosure and bank performance in Africa. Sixth, this study concentrates only on the examination of the impact of risk on bank performance in Africa. Future research can improve this study by adding the main factors that cause the major risk to banks in Africa. In addition, Future research can examine the main bank risk management strategies that can help mitigate the banking risks which will lead to better bank performance in Africa.

Seventh, it is evident that corruption is prevalent in almost every country in Africa in addition to political instability in some African countries. As a result, future researchers can look at these two major issues (corruption and political instability) and examine their impact on the performance of banks in Africa. Finally, this study removes many African banks from the final sample because of data unavailability. In addition, many banks also either did not provide their corporate governance information at all or did not provide enough of their corporate governance information in their annual reports. Moreover, some annual reports of many of the banks were not found at all. This, in fact, can affect the generalisability of the results of this study. Therefore, future studies can combine other methods such as questionnaire to tap the information direct from the affected banks to improve the generalisability of the findings.

Eighth, instead of treating African as a monolithic whole, it would be interesting if future research considers different African regions (north, south, east and west) separately to see whether any significant differences are observed.

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Appendix 1

Table 23: Bank Risk and Performance using Zscore As Risk and ROA As Performance Measure

MODEL	(1)	(2)	(3)	(4)
VARIABLES	OLS	Fixed effect	2SLS	GMM
ZSCORE	0.457***	1.054***	0.826***	0.443***
	(0.0212)	(0.0200)	(0.0177)	(0.0902)
LNTA	-0.0137	-0.0340*	-0.0183	-0.00149
	(0.0175)	(0.0183)	(0.0160)	(0.0379)
EQTA	0.0476***	0.0648***	0.0578***	0.0320**
	(0.00313)	(0.00271)	(0.00239)	(0.0155)
NLTA	-0.0128***	0.00414**	-0.00264*	0.0177
	(0.00134)	(0.00164)	(0.00148)	(0.0108)
COST	-0.0400***	-0.0342***	-0.0379***	-0.0332***
	(0.00154)	(0.00106)	(0.00102)	(0.00767)
LNGDP	0.0319***	0.208**	0.0348	0.430***
	(0.0116)	(0.0888)	(0.0226)	(0.101)
COR	-0.00465***	-0.00311	-0.00805***	-0.0129*
	(0.00129)	(0.00272)	(0.00199)	(0.00739)
CRISIS7_8	0.0909	-0.109**	-0.0342	-0.0421
	(0.143)	(0.0492)	(0.0512)	(0.0866)
L.ROA				0.239***
				(0.0242)
Constant	3.209***	-0.527	1.905***	-1.262
	(0.209)	(0.616)	(0.225)	(1.218)
Observations	6,230	6,230	6,230	5,543
R-squared	0.504	0.589		

Notes: ZSCORE denotes Z-score, 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,

L.ROA represents lagged of return on assets, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

APENDIX 2

Table 24: Bank Risk and Performance Using Zscore As Risk And ROE As Performance

Models	**(1)**	**(2)**	**(3)**	**(4)**
Variables	**OLS**	**Fixed effect**	**2SLS**	**GMM**
ZSCORE	4.315***	11.24***	8.945***	3.342***
	(0.174)	(0.124)	(0.121)	(0.608)
LNTA	0.599***	-0.00808	-0.0170	0.0385
	(0.131)	(0.115)	(0.108)	(0.285)
EQTA	-0.135***	0.135***	0.0515***	0.0274
	(0.0139)	(0.0169)	(0.0163)	(0.132)
NLTA	-0.129***	0.0122	-0.0435***	-0.195***
	(0.00906)	(0.0102)	(0.0101)	(0.0712)
COST	-0.240***	-0.159***	-0.192***	-0.152**
	(0.0107)	(0.00659)	(0.00687)	(0.0608)
LNGDP	0.0140	-0.811	0.0955	0.109
	(0.0806)	(0.553)	(0.163)	(0.685)
COR	-0.0333***	-0.00395	-0.0630***	-0.132**
	(0.00876)	(0.0170)	(0.0138)	(0.0539)
CRISIS7_8	4.584***	-1.126***	-0.205	1.229**
	(1.007)	(0.308)	(0.342)	(0.611)
L.ROE				0.188***
				(0.0206)
Constant	24.95***	5.467	11.62***	27.18***
	(1.445)	(3.836)	(1.587)	(8.304)
Observations	6,246	6,246	6,246	5,556

R-squared	0.515	0.722

Notes: ZSCORE denotes Z-score, 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, L.ROE represents lagged on return on equity, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis.

Appendix 3

Table 25: Bank Risk and Performance Using Tier 1 As Risk And ROA As Performance Measures

Models	**(1)**	**(2)**	**(3)**	**(4)**
Variables	**OLS**	**Fixed effect**	**2SLS**	**GMM**
TIER1	0.00855	0.0286***	0.0244***	0.0135
	(0.00682)	(0.00603)	(0.00509)	(0.0158)
LNTA	-0.0566*	-0.0312	-0.0657**	-0.0419
	(0.0321)	(0.0345)	(0.0278)	(0.0569)
EQTA	0.0293***	0.0368***	0.0259***	0.0297
	(0.0100)	(0.00790)	(0.00624)	(0.0252)
NLTA	-0.00774***	0.0158***	0.00621**	-0.0423***
	(0.00278)	(0.00354)	(0.00290)	(0.00968)
COST	-0.0647***	-0.0712***	-0.0681***	-0.0691***
	(0.00233)	(0.00199)	(0.00174)	(0.00544)
LNGDP	0.110***	-0.331	0.0940***	0.315***
	(0.0220)	(0.216)	(0.0331)	(0.0869)
COR	0.000964	-0.000765	-0.00101	0.0342***
	(0.00246)	(0.00630)	(0.00343)	(0.00747)
CRISIS7_8	0.398*	0.303***	0.358***	0.265**
	(0.233)	(0.0849)	(0.0838)	(0.115)

L.ROA				0.176***
				(0.0333)
Constant	5.014***	6.822***	4.424***	3.924***
	(0.358)	(1.618)	(0.380)	(0.998)
Observations	2,095	2,095	2,095	1,964
R-squared	0.482	0.453		

Notes: TIER 1 denotes Tier 1 denotes Z-score, 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, L.ROA represents lagged of return on assets, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

Appendix 4

Table 26: Bank Risk and Performance Using Tier 1 As Risk And ROE As Performance Measures

VARIABLES	(1) OLS	(2) Fixed effect	(3) 2SLS	(4) GMM
TIER1	-0.00994	0.174***	0.112***	0.459***
	(0.0351)	(0.0475)	(0.0388)	(0.137)
LNTA	0.252	-0.193	-0.479**	-0.264
	(0.251)	(0.272)	(0.212)	(0.414)
EQTA	-0.189***	-0.0631	-0.155***	-0.641**
	(0.0460)	(0.0623)	(0.0471)	(0.256)
NLTA	-0.0998***	0.105***	-0.00201	-0.0532
	(0.0215)	(0.0279)	(0.0219)	(0.0702)
COST	-0.419***	-0.479***	-0.445***	-0.424***
	(0.0178)	(0.0157)	(0.0132)	(0.0411)
LNGDP	0.359**	-7.109***	0.349	0.373
	(0.161)	(1.704)	(0.232)	(0.624)

COR	0.0423**	0.0716	0.0540**	0.237***
	(0.0182)	(0.0497)	(0.0248)	(0.0504)
CRISIS7_8	7.811***	3.588***	4.529***	2.924***
	(1.620)	(0.669)	(0.659)	(0.814)
L.ROE				0.0924***
				(0.0329)
Constant	40.07***	84.58***	38.42***	31.59***
	(2.571)	(12.76)	(2.759)	(7.621)
Observations	2,095	2,095	2,095	1,964
R-squared	0.437	0.373		

Notes: TIER 1 denotes Tier 1 denotes Z-score, 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, L.ROE represents lagged of return on equity, ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

Appendix 5

Table 27: Bank Risk and Corporate Governance Using Zscore As Bank Risk Measures

VARIABLES	(1) OLS	(2) Fixed effect	(3) 2SLS	(4) GMM
BSIZE	0.0625***	-0.00101	0.00809	0.0542***
	(0.0231)	(0.0196)	(0.0180)	(0.00467)
FEMALE	0.0188***	0.00241	0.00193	-0.00144
	(0.00624)	(0.00461)	(0.00423)	(0.00102)
INDEP	-0.00402	-0.00212	-0.00230	0.00352***
	(0.00363)	(0.00242)	(0.00227)	(0.000652)
DUAL	-0.675***	0.261	0.0541	0.110
	(0.241)	(0.429)	(0.341)	(0.103)

MEETINGS	-0.0454*	0.00812	-0.000744	-0.0339***
	(0.0253)	(0.0181)	(0.0170)	(0.00447)
LNTA	-0.246***	-0.0281	-0.0672**	-0.0732***
	(0.0569)	(0.0300)	(0.0265)	(0.0122)
EQTA	-0.0248***	0.00227	-0.000324	0.00290**
	(0.00412)	(0.00573)	(0.00510)	(0.00136)
NLTA	0.0149***	-0.000547	3.57e-05	0.000238
	(0.00383)	(0.00394)	(0.00343)	(0.000782)
COST	-0.0314***	-0.0240***	-0.0252***	-0.00565***
	(0.00330)	(0.00253)	(0.00233)	(0.000930)
COR	0.0215***	-0.000424	0.0126**	-0.00200***
	(0.00379)	(0.00825)	(0.00521)	(0.000733)
LNGDP	0.0179	-0.964***	-0.0144	-0.0312***
	(0.0299)	(0.336)	(0.0589)	(0.0100)
CRISIS7_8	0.226	0.626***	0.716***	0.410***
	(0.482)	(0.131)	(0.123)	(0.0129)
L.ZSCORE				0.732***
				(0.0103)
Constant	3.736***	10.35***	3.539***	0.872***
	(0.610)	(2.255)	(0.601)	(0.133)
Observations	682	682	682	640
R-squared	0.275	0.247		

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 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, L.ZSCORE represents lagged of Z-score ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis

Appendix 6

Table 28: Bank Risk and Corporate Governance Using Tier 1 as Risk Measures

VARIABLES	(1) TIER1	(2) TIER1	(3) TIER1	(4) TIER1
BSIZE	0.0421	0.353**	0.129	-0.0320
	(0.0987)	(0.150)	(0.121)	(0.0195)
FEMALE	-0.102**	-0.0485	-0.0639**	0.0268***
	(0.0517)	(0.0382)	(0.0325)	(0.00570)
INDEP	-0.0362**	-0.0368*	-0.0262	-0.0355***
	(0.0181)	(0.0211)	(0.0178)	(0.00246)
DUAL	-5.025***	-5.918*	-5.679***	0.734***
	(1.351)	(3.330)	(2.004)	(0.262)
MEETINGS	0.347***	0.128	0.117	0.102***
	(0.0983)	(0.124)	(0.110)	(0.0104)
NLTA	-0.285	-0.0307	-0.0931	0.781***
	(0.384)	(0.267)	(0.218)	(0.0425)
EQTA	0.425***	0.371***	0.363***	0.270***
	(0.160)	(0.0632)	(0.0481)	(0.0253)
NLTA	-0.222***	-0.269***	-0.226***	-0.136***
	(0.0478)	(0.0410)	(0.0292)	(0.00398)
COST	-0.0156	-0.0200	0.00261	-0.0649***
	(0.0268)	(0.0244)	(0.0177)	(0.00265)
COR	0.0435**	0.0567	0.0297	0.0216***
	(0.0216)	(0.0726)	(0.0268)	(0.00281)
LNGDP	0.123	4.177	-0.00853	-0.00887

	(0.162)	(2.998)	(0.254)	(0.0540)
CRISIS7_8	-3.429*	0.364	-0.0769	-0.839***
	(1.826)	(1.178)	(1.089)	(0.0759)
L.TIER1				0.577***
				(0.00557)
Constant	24.64***	-4.509	24.41***	12.16***
	(4.717)	(20.78)	(3.351)	(0.894)
Observations	379	379	379	331
R-squared	0.409	0.289		

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 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, L.TIER1 represents lagged of Tier1 ***, **, * indicate significance at 1, 5 and 10% respectively, Robust standard errors in parenthesis