UNIVERSITY OF GHANA

THE EFFECTS OF REVENUE DIVERSIFICATION AND CROSS BORDER BANKING ON RISK AND RETURN

BY

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DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other University. All references used in this work have been fully acknowledged.

I bear sole responsibility for any shortcomings.

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CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

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DEDICATION

With the help of the Almighty God, this work is dedicated to my parents, Chief Sheikh Mohammed Jibril Sissy and Hajiya Fatumah Mohammed Sissy for their motivation and support.

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‘‘To God be the Glory’’

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ABSTRACT

This study investigates the effects of revenue diversification and cross border banking on bank risk and return. Using a panel dataset of 320 banks across 29 African countries between the period of 2002- 2013 and a new methodological approach, System Generalized Method of Moments estimators (System GMM), the results in this thesis provide the following empirical evidence: first cross border banking increases revenue diversification as banks tend to diversify their revenue as a result of the competition they face when they engage in cross border banking. Second, while cross border banking does not influence the risk and return of banks revenue diversification increases the profitability of banks in Africa. Third, the sensitivity of cross border banking and revenue diversification not only improve bank profitability, it also enhance stability.

The major contribution of this thesis to literature are as follows: first, the use of System GMM in this thesis thoroughly, addresses the endogeneity issue related to the diversification strategy of banks. Second, this thesis is the first in considering the effect of cross border banking on revenue diversification in Africa. Furthermore, considering how the interaction of cross border banking and revenue diversification impact on risk and return of banks particularly in developing and emerging economies is also new in literature.

Finally, the empirical results provides important public policy considerations: The strong positive association between cross border banking and revenue diversification suggest there is no compelling reason to restrict banks activity. In addition, the role of cross border banking and revenue diversification on risk and return help in understanding the channels through which cross-border banking and revenue diversification can deepen financial systems, minimize risks from cross-border banking, while maximizing its benefit.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

There has been a dramatic move toward financial liberalisation and globalisation in banking institutions in recent years resulting in profits through cross- border banking[1] and other capital flows in the financial market of certain countries Ho (2003).The local financial market of both advanced and developing countries are opened to foreign bank increasing the rate at which many banks have ventured overseas and established existence in other countries. For instance in terms of credit deposits and returns, the market share of foreign banks on the average is 20 percent in Organisation for Economic Cooperation and Development (OECD) countries and almost 50 percent in developing and emerging countries Claessens and van Horen (2012). In terms of this study, cross border banking is refers to both cross border capital flow and cross border entry in banking. The terms Cross border banking and foreign bank will be used interchangeably.

The consequence of cross-border banking on domestic banks in the financial market is enormous. For instance, Ho (2003) opines that foreign banks will wane the domestic banks. In this case, the extreme influx of foreign banks may cause the domestic banking system to be exposed to the economic impact of foreign banks. These foreign banks will also wane the local currency and the authority which will affect the banking capacities of the home country. In the

[1] A cross border banking or bank is referred to as a bank with a commercial presence outside its home country, by way of at least one branch or subsidiary. Cross border banks are considered to be foreign owned if they are controlled by a shareholder or group of shareholders from outside the licensing jurisdiction. Control over a bank can be exercised if an individual or entity holds more than 50 percent of shares in a bank, subsidiary or branch. In case where there is no majority shareholder, the bank is still classified a foreign bank when a foreign minority shareholder has a controlling stake in the bank (Berk et al. 2014). For the purpose of this study cross-border bank is bank with commercial presence outside its home country.

case of a financial crisis, the foreign bank will lower the loans offered to certain sector of businesses (for instance, SMEs). Conversely,(Claessens, 2006; Chopra, 2007: Cull and Peria, 2011 and Peria and Sanchehez, 2003) considered that foreign banks add to competition, increase financial service access, bring about great stability and boost financial and economic performance of borrowers. In addition, (Dodon, 2005; Levine, 1996 and Mishkin, 2006) are of the view that foreign participation improves the development of the local banking supervision, legal regulations, increased transparency and the availability of international capital. Also it toughens inter-bank competition as well as greater use to advance technologies to improve their business skills and services, know-how, the quality and efficiency of financial system of the domestic bank. The effects of cross-border banking on the economic development, efficiency and performance of the banks appear to be varying and also dependant on some conditions.

However, regardless of the direction of cross border banking, it can deliver potential diversification benefits to the bank since cross border banking allows banks to diversify their operation in domestic countries. This activities means domestic banks will not be fully exposed to domestic shocks to the extent that their overall portfolio contain foreign asset claim or foreign capital inflow. Also, entry of foreign banks causes the banks to diversify their operations and increase their profitability and reduce risk.

Moreover, irrespective of the general concerns for riskiness and profitability of banking activities, there are several benefits to bank revenue diversification [2] (Froot et al., 1993; Froot

[2] Revenue diversification is an avenue through which credit risk, with will normally be concentrated in a banks loan portfolio; can spread to the other non-interest generating activities that a bank engages in. As in developed economies, revenue diversification in emerging economies means that banks are able to engage in diverse non-interest income activites such as securities underwriting, insurance and real estate investments.

and Stein, 1998; Landskroner et al., 2005 and Baele et al., 2007). Landskroner et al. (2005) provide evidence that diversification is a tool to boost profitability and operational efficiency of banks if the scale and scope of operation broadens. Kohler (2013) adds to the argument by noting that bank diversification provides stability to banks where banks' loan portfolio fail due to economic conditions. Froot et al., (1993) see diversification as a border against insolvency risk and reduction in the occurrence of a cost financial distress. Non – interest incomes causes drops in the recurring variations on profits if returns across banks activities are not perfectly correlated. Finally, diversification generates competition among banks across a wide range of market segments which bring about efficiency and innovation in the provision of banking services (Morgan and Samolyk 2003; Carlson, 2004; Landskroner et al.2005; Acharya et al. 2006; Lepetit et al. 2008). However further literature argue that the gains of diversification depend on the risk portfolio held by the bank (Froot and Stein, 1998; (Cebenoyan and Straham, 2004). The latter argues that diversified banks take up more risk and operates on financial leverage while the former finds that, banks that engage in credit risk management hold risky loans. Suggesting that it is not the issue of diversification strategy itself rather it is the choice made by the banks on how the diversification benefit is used and this predicts the amount of benefit to derive from diversification. Also as it is noted, diversification reduces vulnerability to idiosyncratic shocks which is a parallel exposure to systematic risk as a result of the number of financial market the banks are involved in (De Vries, 2005).

1.2 Problem Statement

Strands of literature around the globe have in no doubt being geared towards research into the area of bank revenue diversification and cross-border banking. Extensive studies support the view that the effects of diversification on performance are still empirically uncertain. Most studies based in the U.S, find that asset and/or geographic diversification improve bank

performance (Hughes et al., 1996; Deng et al., 2007; Deng and Elyasiani, 2008) or reduce bank risk Liang and Rhoades (1988) and Shiers (2002). Other studies support opposite results, asserting that, asset diversification harms bank performance Hughes et al., (1996) and Rose (1989). Acharya et al., (2006) reveal that asset diversification lowers bank returns and increases bank risk. Other studies also offer evidence that income diversity improves bank performance Stiroh and Rumble (2006) while others such as De Young and Roland (2001) and Stiroh, (2004) disagree. Some researchers such as (Grossman, 1994; Wheelock, 1995; Hughes et al., 1996; Berger et al., 1999; Reichart and Wall, 2000; Campa and Kedia, 2002; Landskroner et al., 2005 and Baele et al., 2007) agree that diversification increases bank stability, whereas others (Carlson, 2004; Stiroh, 2004; Acharya et al., 2006; Stiroh 2006 and Hirtle and Stiroh, 2007) find this evidence to be conflicting. (Lepetit et al., 2008: De Jonghe, 2010 and Fiordelisi et al., 2011) echo that income diversification increases banks' risk. Equally, Chiorazzo et al., (2008) reached the conclusion that banks' risk can be reduced through income diversification. Further literature show that diversification may worsen risk-adjusted performance, mainly because banks over expand into industries where they face higher competition or lack expertise Sanya and Wolfe (2010). The subsequent inability to effectively monitor loans may increase asymmetric information between a bank and its pool of borrowers (Carlson 2004 and Mercieca et al., 2007). In addition, the propensity to diversify beyond the risk optimum level causes an increase in idiosyncratic risk which could distort the relationship between diversification and stability.

Other studies analyses the impact of foreign banks on the first conditional moment of bank lending Galindo et al., (2005) and the impact of foreign banks on domestic lending (Goldberg et al., 2000; de Haas and van Lelyveld, 2010 and Barba Navaretti et al., 2010). Similarly, Nilsen and Rovelli, (2001) and Bekaert and Harvey (2002) emphasise that soundness of the banking

system in emerging economies is crucial to fostering stable capital flows, equality and economic convergence. The interaction of favourable global condition strands in financial markets foster a huge increase in cross-border activity, and an integration that has positive consequences for economic development, yet, increasingly vulnerable to credit shocks. Furthermore as a result of the superior risk evaluation systems, better screening devices and a more effective banking supervision, foreign banks are more likely to hold better quality assets Crystal et al., (2002). Foreign banks also have the potential to prevent a draining of total bank deposits in a state of shocks (De Haas and Van Lely- veld, 2004; Peek and Rosengren, 2000). More broadly, cross-border banking facilitates international risk sharing Van Wincoop (1999). The presence of cross-border banks can also increase competition for domestic banks, and significant strand of literature has argued that more competition is beneficial for stability (Boyd and De Nicoló, 2005; Berger et al. 2009; Turk-Ariss, 2010 and Amidu and Wolfe, 2013). A key benefit of cross-border banking arises due to diversification Markowitz (1952). Thus as a result of spreading bank activities over different countries, banks are less vulnerable to a single domestic or foreign shock. This may decrease the volatility of lending. Cross-border banking has an effect on efficiency and development of the local financial system (Garcia-Herrero and Martinez Peria, 2005 and Demirguc-Kunt et al., 2004), and access to financial services by firms and households and on the stability of the local financial system and the overall economy Claessens (2006). The indistinct relationship between either diversification or cross border banking on profitability (risk) remains a great puzzle and prompts more attention on this critical issue. The question of whether a greater diversification of business activities and cross border banking improves the performance of financial institutions is still a puzzle.

The study argues that cross-border banking creates revenue diversification and which affects the risk and return of the banks. The study thus examines the effects of revenue diversification

and cross-border banking on the insolvency risk and return by employing a dataset of banks in Africa. In particular, the study examines two related hypothesis. First, cross-border banking increases diversification. Second, increasing revenue diversification and cross-border banking reduces risk and increases bank profit. No previous study has examined both hypotheses; however several studies have examined the effect of diversification or cross border banking on risk and return contributing to the understanding of risk and return associated with diversification. This study focuses on developing countries where the capital market is weak and the banks are the main source of financing economic activities.

1.3 Objectives of the Study

The main objective of the study is to examine the extent to which cross-border banking and revenue diversification affects performance of banks in Africa. Specifically the study seeks:

i. to examine the determinants of cross-border banking and diversification of banks in Africa.
ii. to analyse how cross-border banking and diversification impact on bank risk and return in Africa.
iii. to analyse the sensitivity effect of cross border banking and diversification impact on banks risk and return.

1.4 Significance of the Study

The findings of this study contributes to the understanding of risk and return since no previous study has examined both hypotheses .However, various studies have examined either the effect of diversification or cross border banking on risk and return contributing to the understanding of risk and return. Also the extent of these studies focus on US or European economies (De Yong and Roland, 2001; Lepetit at al., 2008 and Fiordelisi et al., 2011). It is also to advance

the current debate on cross-border banking and diversification and how they affect stability and profit of banks. The results of this study creates very important insight for bank regulators, investors, policy makers and managers of these countries. Conducting this study in a developing economy is important as change in the financial system of developing countries coupled with changes in the prudential regulations will result in an increasing effect on the perception, pricing and the risk management behaviour of banks Borio and Zhu (2008). To regulators and policy makers this study argues for the relaxation of restrictions on the banking market to enable banks diversify their revenue base and product offerings. To investors, this study helps in the choice of investment portfolio since both interest based and non-interest based products have different risk implications.

1.5 Organisation of the study

The entire study is arranged into six main chapters, with each chapter addressing different issues of the study. Chapter one of the study is an introduction to the research topic. The chapter presents a background of the study and proceeds to state the problem underlying the conduct of the study. Other areas to be discussed under this chapter are the objectives, research questions, significance and scope of the study. Chapter two of this study provides the empirical and theoretical results of the study by review literature into bank methodologies, revenue diversification, cross-border banking, risk taking and profitability of banks in both emerging and developed economies. Chapter three of this study presents a review of literature on banking in Africa. Chapter four of this study examines the methodology used for identifying the data type and sources, measuring of variables, the specified model and the analysis of the study. Chapter five of this study provides the results of the study. Finally, the chapter six present summary of the findings and concludes the study based on the findings and proposes recommendations from findings of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This review is motivated by the ongoing tension in the literature about the benefits of diversification to banks. While it remains theoretically intuitive that the diversification of a bank's revenue base and cross border banking will be beneficial, there is no shortage of empirical evidence to suggest that this may not necessarily be the case. Each piece of research is however individually unique. The difference in methodology, analytical approach and dataset used in these studies to a certain extent becomes contributory in driving the different conclusions. Prior studies have so far been limited in bringing the current literature together in a consistent manner in order to identify the drivers of beneficial revenue diversification and cross border banking.

It is established in the literature that the benefits of diversification for medium to large banks are greater than for small banks that are less able to capitalize on diversification opportunities. Therefore, an inconsideration for the peculiarities of the dataset may lead to erroneous conclusions regarding diversification benefits. The rest of this chapter is organized as follows; section (2.2) briefly reviews cross border banking. Section (2.3) reviews revenue diversification.

2.2 Cross Border Banking

Possible benefits of diversification include greater operating efficiency, greater debt capacity, and lower taxes. The potential costs of diversification include the misuse of resources to

undertake value-decreasing investments, the tendency for poor segments to drain resources from better-performing segments, and agency costs imposed by the misalignment of incentives between various segment managers Berger and Ofek (1995). Geographic and revenue diversification are the two main aspects of diversification that has been examined in prior literature even though there is still no clear prediction about their overall effect on firm value. Geographic diversification or cross border banking or bank is referred to as a bank with a commercial presence outside its home country, by way of at least one branch or subsidiary. Cross border banks are considered to be foreign owned if they are controlled by a shareholder or group of shareholders from outside the licensing jurisdiction. Control over a bank can be exercised if an individual or entity holds more than 50 percent of shares in a bank, subsidiary or branch. In case where there is no majority shareholder, the bank is still classified a foreign bank when a foreign minority shareholder has a controlling stake in the bank Berk et al. (2014) whereas revenue diversification is an avenue through which credit risk, with will normally be concentrated in a bank's loan portfolio; can spread to the other non-interest generating activities that a bank engages in. As in developed economies, revenue diversification in emerging economies means that banks are able to engage in diverse non-interest income activates such as securities underwriting, insurance and real estate investments Sanya and Wolfe (2010).

Geographic diversification reduces the risk that a geographically focused idiosyncratic shock will affect a bank severely enough to cause it to fail, thus enhancing the banks stability Winton (1999). Recent work by Grossman (1994) is suggestive of the fact that countries with extensive branch networks were less likely to experience a banking crisis in the 1930's while Wheelock (1995) found that in the United States, states that had more branch banks (within state) had lower failure rates during the Depression. Most studies on geographic diversification are on the US where until the Riegle-Neal Interstate Banking and Branching Efficiency Act in 1994, there

were legal barriers preventing banks from accepting deposits outside their home state, Winton (1999) highlights the following three ways in which cross border banking can reduce bank risk. First, cross border banking expands investment opportunities in banks by increasing the types of industries and/or sectors banks lend to. Second, branching diversifies a bank's portfolio with respect to region specific shocks. While this two mechanisms influence the asset side of the balance sheet, cross border banking also offers opportunities for diversification on the liability side of the balance sheet as diversifying the depositor base reduces the effect that economic shocks, deposit withdrawal and bank panic may have on bank stability.

Grossman (1994) investigated bank stability during the Great depression in 25 countries around the world. The study establishes that cross border banking is not solely responsible for enhanced stability as banking systems in countries such as France and Belgium that did not have extensively branched banks were also stable during the Great Depression.

Hughes et al. (1996) investigates the role of cross border banking on bank performance and safety using 443 US bank holding companies data that are heterogeneous with respect to size. They find that the estimated effects of cross border banking on return and risk depend on the efficiency of the Bank Holding Companies. For inefficient Bank Holding Companies an increase in the number of branches is beneficial (lowers insolvency risk and increases efficiency), while an increase in the number of states in which Bank Holding Companies operates is not. For efficient Bank Holding Companies neither an increase in the number of states nor the number of bank branches is beneficial. Cross border banking has both benefit and cost from the financial stability viewpoint. It should realize maximum gain at its optimum point and minimize cost. However the current financial crisis shows that through cross border banking stocks are transferred from one country to another. Some other motives for cross border banking that literature outlines are: Levine (1996) argue that foreign bank participation

reinforce interbank competition and enable domestic banks to use advance technologies to develop business skills. Adding that, they can encourage the development of local bank supervisions, relevant legal framework and improve the use of international capital. Credit granted to foreign banks is more stable as compared to credit granted to local banks following the shocks of the domestic banks (Goldberg at al., 2000; de Hass and van Lelyveld, 2010 and Barba Navaretti et al., 2010). The existence of cross border banks can increase competition which is beneficial to bank stability Boyd and De Nicolo (2005). Cross border banking reduces the volatility of lending and facilitates international sharing among counties with different economical state Van Wincoop (1999).

Still, cross border banking is likely to boost diversification and efficiency in banking system and also has the possibility of averting the drainage of the total deposit of the bank in a situation of a shock since customers would prefer to redirect deposits to the foreign owned institution instead of withdrawing the deposits altogether from the banking system De Haas and Van Lelyveld (2004) and Peek and Rosengren (2000). While foreign participation to thought to have a positive impact on the development of the banking system, some literature find otherwise. Through cross border banking stocks may spread to other countries by direct exposure or asset prices Allen and Galev (2000) and Brunnermeir et al. (2009). Ho (2003) is also of the view that, cross border banking weakens the local currency causing the domestic country to be vulnerable to economic shocks of the foreign banks home country and the destabilisation of the local banking system. Additionally, as a result of a better risk evaluation system and more effective supervision and regulations, the foreign banks are more likely to hold better quality of assets Crystal et al. (2002). According to King and Levine (1993) and Levine et al. (2000) there is a positive link between financial development and economic advancement with bank failure being the result of an economic downturn. Likewise Nilsen and

Rovelli (2001) suggest that a weak macroeconomic environment will deter foreign investment, reverse capital flows and discourage financial innovation. On the contrary, financial instability may also increase during period of economic growth if banks find it more profitable to diversify rapidly during this period.

Carlson (2004) also tests the role of cross border banking on bank stability during the Great Depression. The results show geographically diversified banks are less likely to survive and the duration of survival is also relatively much shorter. However, further investigation showed banks failed not because they were geographically diversified but because they systematically held riskier portfolios than unit banks. More specifically, branched banks in the sample held fewer reserves and made more loans. The effect is an increased exposure to systematic shocks even though idiosyncratic shocks declined. The conclusion is therefore that branching per se is not detrimental. Conversely it is the choice made by individual banks about how to use their diversification opportunities that subsequently influences risk. The results of studies that have used more recent datasets remain mixed; Morgan and Salmolyk (2003) find that cross border banking does not increase profitability or reduce overall portfolio risk among Bank Holding Companies (BHC's) in the US since 1994-2001. However, increased diversification improves the lending capacity of banks.

Deng et al. (2007) investigates the relationship between geographic, asset and revenue diversification and the cost of debt during 1994-1998. They find diversification lowers the cost of debt particularly when the endogeneity of the diversification decision is controlled for. They attribute this to the fact that riskier Bank Holding Companies tend to choose to diversify, thus standard Ordinary Least Squares (OLS) regression procedures will incorrectly attribute the poor performance of diversifying banks to the diversification decision. Hyland and Diltz (2002)

also confirm the endogeneity problem in studies of diversification as diversified firms in their sample are poorly performing even before they diversify.

2.3 Revenue Diversification

Many financial institutions today are being encouraged to create new financial products with the ultimate goal of meeting the demands of the developing markets, promoting competition, growing business and encouraging liberalization and diversification of financial market.

According to the portfolio theory, banks may be able to benefit from diversification and reduce their risk in undertaking different uncorrelated activities (interest and non-interest income). Banks with a higher share of non-interest income are less open to income volatility, as negative shocks to interest income could be compensated by the increase in non-interest income since interest income is more sensitive to movements in interest rate and economic downturns. Based on this principle, Stiroh (2004) uses data during the period 1978 to 2001 to examine how non-interest income affects variations in bank profits and risk. Results from both aggregate and bank data provide little evidence that diversification benefits exist. He attributes this to the fact that potential diversification benefits are receding as the correlation between net and non-interest income growth increase for the average bank in their sample. This result is also corroborated when Stiroh (2006), use the same portfolio framework on equity market data for U.S. Bank Holding Companies during the period 1997 to 2004. Nevertheless, evidence confirms a positive correlation between interest and non-interest income. Extent literature focusing on the effect of diversification on performance or risk concentrates on income diversification in varied geographical areas. Income diversification measures different sources of income.

De Yong and Roland (2001) used a sample of commercial banks in U.S and estimated the effects of income diversification as increase earnings volatility and as the share of revenue generated from fee-based income activities increase. They found that bank risk does not decrease through diversification rather the shift toward fee-generating activates increase bank profitability compensating for the increase in risk. The fee-based activities gives banks an opportunity to increase leverage since they attract lower regulatory capital requirements compared to lending activities as banks are required to hold equity capital against outstanding loan balances. This in turn serves as revenue stability for the banks. Lepetit at al. (2008) finds that income diversified banks present higher risk than banks that mainly rely on loans using 734 banks in 14 European countries as a sample. Fiordelisi et al.(2011) using 1987 observations from 26 countries of the European union confirms that specialised banks benefit from scale and learning economies enabling them to reduce cost than the diversified banks.

Similarly, utilizing dataset from 15 European counties, income diversification increase banks risk De Jonghe (2010). Stiroh and Rumble (2006) confirm that diversification has a positive influence on numerous variable of risk-adjusted performance while the share of non-interest income has a negative influence. Acharya et al. (2006) measured by non-performing and doubtful loan find asset diversification lower bank profitability and increase risk. However another body of literature indicate that high degree of macroeconomic diversification improves market efficiency, production efficiency and decrease bank insolvency risk. Hughes et al. (1996). Landskroner et al. (2005) finds that diversification boost profitability and operational efficiency. According to Froot and Strein (1998) diversification is a hedge against insolvency risk and decreases financial distress. Also Sanya and Wolfe (2010) using a sample of 226 listed banks across 11 emerging countries, confirms that revenue diversification is beneficial to banks in emerging economies. They find that fee-generating activities compared to other income

sources of non-interest income are greatly beneficial for banks in emerging economies. Amidu and Wolfe (2013) indicating that competition increases stability of banks. They find evidence that banks diversify their portfolio across and within both non-interest and interest income in response to the competitive environment they operate there by increasing their stability.

There is a reported increased shift towards non-interest income in recent years aided by technological progress and deregulation. Banks look to non-interest income to increase revenue as well as lower bank risk especially when net-interest income and non-interest income are only weakly correlated. Boyd and Graham (1988), Rose (1989) and Boyd et al. (1993) analyse the effect of Bank Holding Companies expansion by simulating mergers between bank holding companies and non-bank firms. The studies jointly covered the period 1971-1987. The results show the most beneficial mergers were between of Bank Holding Companies and life insurance companies. In other words, mergers between these two types of institution reduce the risk of failure. The study further suggests that BHC's combination with securities or real estate development firms increases the risk of failure. Overall, maximizing diversification benefits will depend on which industry the bank enters into. Saunders and Walter (1994) replicate the study of Boyd and Graham (1988) using a similar data set and also find that the greater risk-reductions from diversification arises when banks expand into insurance as opposed to security activities. Using a sample of 23 domestic US bank holding companies with section 20 subsidiaries over the period of 1990-1997, Kwan (1998) show diversification into securities increased bank risk. Stiroh and Rumble (2006) comprehensively analysed balance sheet data for US financial holding companies during the period 1997-2002 using both panel and cross sectional analysis. This study also innovatively measures the net effect of diversification as the sum of the direct exposure effect to non-interest income plus the indirect diversification effect through changes in the institutions own degree of diversification. This analysis show the

double-edged nature of this phenomenon as revenue diversification does bring benefits however there are greater offsetting effects from a greater reliance on non-interest income, which are more volatile and not necessarily more profitable than interest generating activates.

Goddard et al. (2008) also use the net effect approach in their study of diversification for small US credit unions during the period 1993-2004 and find that the negative indirect effect outweighs the positive direct exposure effect for all but the largest credit unions. Acharya et al. (2006) study the effect of diversification of the loan portfolio on the return and risk of 105 Italian banks over the period of 1993-1999. The findings show that loan portfolio diversification in their sample of predominantly small banks is not necessarily beneficial for banks. Lang and Stulz (1994) find that diversification does not guarantee higher performance for the firms in their sample even though diversifying firms in their sample had previously been poor performers. It therefore appears that firms that have exhausted growth opportunities in their existing line of business seek growth through diversification. On the other hand, Templeton and Severiens (1992) find diversification to be beneficial for high-risk banks. Berger and Ofek (1995) find that diversification reduces value especially when the diversification is within unrelated industries.

Santomero and Chung (1992) use option pricing techniques to simulate the volatility of asset returns from diversification. Their study presents full support for diversification. They find diversification into similar lines of activity, related mergers to be beneficial. They also find BHC mergers with securities firms does not increase the riskiness of BHC's whilst BHC mergers with real estate increase risk but the returns from this combination is sufficiently high to compensate banks and not increase the risk of failure. De Long (2001) undertakes an event study methodology on US firms to measure the Cumulative Abnormal Returns (CAR) in

Mergers during the period 1988 to 1995 the results show that bank mergers into similar lines of business did not destroy value.

Baele et al. (2007) use stock market data to quantify the effect of diversification on bank risk and return in a cross country panel data study of 143 listed European banks over the period 1989-2004. Their results show diversification increases firm value and decreases idiosyncratic risk. Furthermore, they argue concisely that results from the European banking sector can differ from the US in that banks have been functionally diversified for longer and with fewer restrictions on the scope of activities they engage in compared to US banks.

To summarize, the fact that there is evidence that diversification can enhance bank performance does not necessarily mean that that these benefits exist for all banks. Given that the lack of consistency in data, methodology and measures of diversification used in prior literature will affect the results and conclusions.

CHAPTER THREE

BANKING IN AFRICA

3.1 Introduction

Banking in Africa has undergone an intense changes over the past 20 years. While dominated by government-owned banks in the 1980's and subject to restrictive regulation including interest rate ceilings and credit quotas, financial liberalization, institutional and regulatory upgrades and globalization have changed the face of financial systems across the region. Today, most countries have deeper and more stable financial systems, though challenges of concentration and limited competition, high costs, short maturities, and limited inclusion persist. Beck and Cull (2014). South Africa and Mauritius have fairly developed banking systems and capital markets. Smaller and poorer countries such as the Central African Republic and South Sudan have shallow banking systems offering only the most basic financial services, with few if any non-bank financial institutions or capital markets Honohan and Beck, (2007) and Beck et al. (2011).

Banking in Africa is difficult because, the small size of many economies does not allow financial service providers to reap the benefits of scale economies. The limited demand for savings, insurance, credit, or even simple payment transactions means that large parts of the population of African economies are not commercially viable customers. The dispersal of population in many African countries means that financial service provision outside urban centres is not cost effective. Likewise, governance problems continue to plague many private and government institutions throughout the region and weaken not only the market-based provision of financial services, but also reform attempts and government interventions aimed at fixing market failures.

The recent crisis in the developed world has shed doubt on the positive impact that the development of the banking system can have on economic development, in contrast to an extensive literature illustrating a positive finance-growth relationship Levine (2005). If Africa is to learn from the crisis, then the growth benefits of financial deepening can only be reaped in a stable macroeconomic environment and with the appropriate precautionary framework, both in terms of external regulation and supervision and internal bank governance. Nevertheless the recent negative experience in countries with the deepest financial sectors, banking systems in Africa can and must play a critical role in the economic development process of the region.

The level of financial development in Africa is low compared to other parts of the developing world, but it is also low relative to what would be predicted based on underlying factors that drive financial development. Though there are reforms to the financial system and real economy, financial development in Africa continues to lag behind other areas of the world Beck and Cull (2014). The lack of financial development is in itself a function of widespread poverty and large proportion of the population in many African countries being engaged in subsistence agriculture Honohan and Beck (2007). Moreover, the large concentration of population in subsistence production limits the financial resources available for intermediation. One common characteristic of African banking sector is that, a large number of banks invest in government securities instead of lending to the private sector. For example, in 2011, credit to the private sector averaged 78% of GDP (compared to 132.5% for other emerging markets in East Asia and Pacific). Prior to the 2008 financial crisis, the ratio of liquid to total liabilities of Sub-Saharan African (SSA) banks averaged around 30%, while that of other developing countries was around 4% Allen et al. (2014).

Nevertheless, Africa has made a lot of progress over the past years, not only in financial depth and inclusion, but also in the underlying macroeconomic and institutional framework. Specifically, macroeconomic stability has increased, with only few countries presenting double-digit inflation rates. Similarly, there has been some progress in the institutional framework, including in creditor rights, contract enforcement and credit information sharing. Africa has seen a lot of such innovation over the past years, as reported by Beck et al. (2011). Much of it comes from different net financial institutions, banks, NGO, and MFIs, both domestic and foreign-owned, often with support from donors. In many countries, regulators have reacted flexibly, opening space for innovation within existing regulatory frameworks or adjusting them where necessary.

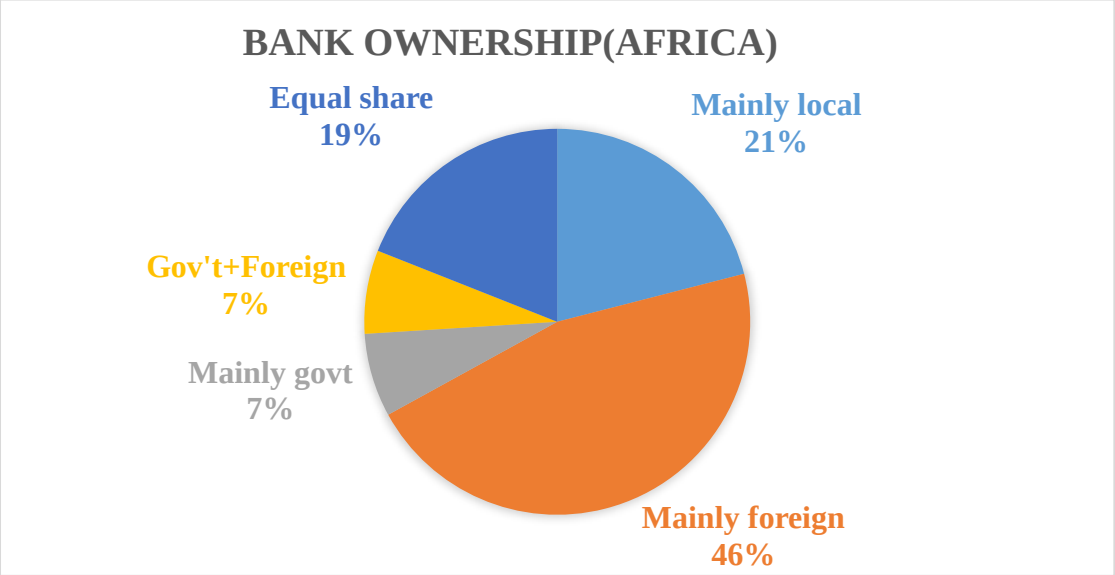
3.2 Trend of Cross Border Banking in Africa

Cross-border banking has been a critical part of Africa's financial history since colonial times. While failing state-owned and private banks after independence were sold mostly to global investors or multinational banks. Increasing international and regional economic integration, including of financial services, and deregulation further increased the number of foreign banks, and by the mid-2000's many African banking systems were yet again dominated by foreign banks.

The entry of non-traditional international banks, however, is dwarfed by the cross-border expansion of African banks, which have bolstered their physical and economic footprint on the African continent in an exceptional way over the past decade. Ecobank tripled its affiliate network in Africa between 2000 and 2013 from 11 to 32 countries, Nigeria's United Bank for Africa increased its footprint from 1 to 19 countries, Morocco's Attijariwafa Bank increased

its footprint from 1 to 12 countries and Morocco's BMCE went from 2 to 18 countries over the same period.

Figure 1: Ownership Structure of Banks in Africa



Source: Beck and Cull (2013)

While foreign bank penetration has increased from already high levels over the past decade, the composition of the foreign bank population has changed substantially. Banks from emerging markets and critically from inside Africa have gained importance over the past years. The influx of foreign bank seems to have several advantages that are specific to Africa: international banks can help foster governance; they can bring in much-needed technology and experience that should translate into increased efficiency in financial intermediation; and they can help exploit scale economies in small host countries.

Nonetheless, especially in Africa, with many very small, risky, and opaque enterprises, the dark side of foreign bank entry can become obvious, even more so in countries in which foreign banks have captured almost 100 percent of the banking market. The absence of a sound contractual and informational framework reduces the feasibility of small business lending

further and thus the positive effect of foreign bank entry Claessens and van Horen (2014). Finally, the small size of many financial markets in Sub-Saharan Africa may make foreign banks reluctant to incur the fixed costs of introducing new products and technologies.

Beck et al. (2005) show for Nigeria that the privatization of state-owned banks led to performance improvements, although those authors also found that maintaining a substantial minority government ownership share was detrimental to privatized banks' performance. In Uganda, UCB, the largest government-owned bank – and also the largest bank in the system was successfully privatized in the second attempt to the South African Standard Bank. In Kenya, the effect of cross-border banking might have been dampened by a continuous dominance by government-owned banks, which provided rents to the rest of the banking system, including foreign banks Beck and Fuchs (2004).

3.3. Reasons why banks Cross Border in Africa

The cross-border expansion of African banks is due to many factors, but the pursuit of business opportunities abroad, normally led by the banks' larger corporate clients, is generally the dominant driver. Economists distinguish between pull factors and push factors when assessing the drivers for cross-border business expansion. Push factors are circumstances in the home country that explain why banks decide to move beyond the borders of their home countries. Principal among them are declining opportunities in the home jurisdiction and regulatory requirements. Pull factors, in contrast, are opportunities in host countries that make it attractive for a bank to enter the new market. In other words, pull factors are the expected benefits that banks hope to reap by venturing into a particular foreign market. One of the most powerful push factors propelling banks to expand beyond their home markets are (perceived) declining or smaller profit opportunities in the home economy, especially relative to opportunities in potential host markets. This is also an important factor for African banks. For example, the end

of apartheid in South Africa provided the impetus for cross-border expansion by South African banks by opening up investment opportunities that had been precluded and providing opportunities to leverage the depth and capacity of the South African market. More recently, a similar process has developed in East Africa, where innovation and greater depth of the Kenyan market has provided Kenyan banks with the impetus to replicate their innovative business models across neighbouring countries. As assessments of profit opportunities are based on a comparison of a bank's home market with potential host countries, relatively larger profit margins abroad can also be seen as one of the most powerful pull factors for expansion.

Another important factor that has pushed African banks into new markets is regulatory change in the home country. In Nigeria, for example, the central bank drastically increased the minimum capital requirement from Naira 2 billion (around USD 14 million).The ownership share of South African ownership in Ecobank Transnational International will be greatly enhanced should Nedbank choose to exercise an equity conversion option for up to 20 percent of ETI's share capital to be exercised during the 12 month period ending November, 2014.

A wave of mergers and acquisitions reduced the number of licensed commercial banks from 89 to 25 within a year. The remaining banks raised large amounts of new capital, with some achieving capital levels of over Naira 100 billion, exceeding the decreed minimum level by a factor of four. The central bank encouraged this development by promising to make banks that accumulated more than Naira 100 billion in equity eligible to manage Nigeria's international reserves. The Nigerian banks deployed their capital to fund an explosive growth in the banks' loan portfolios (Berg et al., 2012). The search for yield due to the large amount of "excess capital" available in the domestic banking system was also the determining push factor driving the aggressive expansion of Nigerian banks across the region.

In Kenya, the authorities introduced a similar regulation, notwithstanding more gradual and considerably milder regulatory measure raising the minimum core capital requirement from Kenya Shilling 250 million (USD 4 million) in 2008 to Kenya Shilling 1 billion (USD 12 million) in 2012. While this much more measured rise in minimum capital (compared to Nigeria) may to some extent have contributed to the expansion of several Kenyan banks across East Africa, the impact here may well have been more to discourage expansion by banks domiciled in the smaller financial systems in neighbouring countries in East Africa from establishing themselves on the Kenyan market. The ambition to become a leading pan-African bank has influenced the strategic plans of some African banks and fuelled their expansion on the continent.

Ecobank was founded in 1985 with the vision to be a regional bank in West Africa. Partly for that reason, it was set up as a bank holding company with the status of an international organization, which was deemed necessary for it to operate as a regional institution rather than a bank in Togo. In the 2000s Ecobank expanded its vision to becoming a pan-African bank. This ambition was shared by a number of Nigerian banks, including Access Bank and UBA, which believed that their expansion across Africa would afford them a competitive advantage Lukonga and Chung (2010).

It is worth noting that Access Bank has since reversed course and announced to investors and analysts in early 2013 that it plans to dilute or divest its largely unprofitable holdings in six of the nine countries in which it has banking subsidiaries. Given their relatively competitive and well-developed home base, limited domestic opportunities for further growth and declining profit margins, as well as an encouraging, positive engagement by Bank Al-Maghrib,

Moroccan banks have expanded predominantly into French-speaking West and Central African countries that combine attractive business prospects and a high level of cultural proximity.

While Africa's banking systems are shallow, they have made substantial progress over the past decade, a trend that can only be partially captured in aggregate data. Decades of regulatory upgrades have borne fruit in the form of more stable banking systems and substantially less fragility. Financial innovation has helped broaden the share of the population with access to basic formal financial services, and technology has helped African financial systems leapfrog traditional delivery channels. However, for innovative approaches to financial service delivery to be adopted, a competitive environment and a flexible regulatory approach are needed Beck et al. (2014).

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter of the study looked at the methods employed to achieve the main objectives of the study, that is, the effect of revenue diversification and cross border banking on risk and return of banks Africa. The chapter looks at the variable measurement and justification, data source and estimation strategy.

4.2 Data Sources

This study employs financial information from the unconsolidated financial statements of banks in the most recent Bank scope database. The sample data includes development banks, saving banks, rural banks, commercial banks, mortgage bank and co-operative banks for which data are available for 2002-2013. Macro-economic data is obtained from World Bank: World Development Indicators database (2014). Regulatory and supervisory variable are obtained from Barth et al. (2014) and banking freedom and property rights index from Heritage Foundation (2014).

4.3 Variable Measurement

Diversification Measures: To measure revenue diversification in line with Mercieca at al. (2007), the Herfindahl Hirschman Indices (HHI) is computed for all banks to account for diversification between the two major types of income generating activities as follows:

$$DIV_{(rev)} = \left(\frac{NON}{NETOP}\right)^2 + \left(\frac{NET}{NETOP}\right)^2 \qquad (1)$$

Where $NETOP = NON + NET$

NON captures non-interest incomes, NET represent net interest income and NETOP is net operating revenue. A rise in the DIV shows increase in revenue concentration and less diversification. The measure of diversification allows for the breakdown of net operating income, a method which Mercieca et al. (2007) relied on to construct the measure of diversification from within non- interest activities:

$$DIV_{(non)} = \left(\frac{COM}{NON}\right)^2 + \left(\frac{TRD}{NON}\right)^2 + \left(\frac{OTOP}{NON}\right)^2 \quad (2)$$

Where $NON = COM + TRD + OTOP$

COM measures commission revenue, TRD captures trading income and OTOP represents other operating income. Higher valves of both $DIV_{(rev)}$ and $DIV_{(non)}$ indicates greater concentration

Insolvency Risk Measures: The main measure for insolvency risk is the Z-score which measures the number of standard deviations that a banks profit should fall to drive it into insolvency. Z-score is calculated as:

$$Z - score = \frac{ROA + Equity}{\sigma_{ROA}} \quad (3)$$

Where ROA is the ratio of profit after tax to total assets of a bank, *Equity* captures bank ratio of equity to assets and σ_{ROA} is the standard deviation of the return on assets. The value of Z-score is lagged to reduce the probability of simultaneous bias and improve the regression goodness of fit. The study use a four year rolling time window period for the calculation of the standard deviation of return on asset (σ_{ROA}). This is to allow for variation in denominator of the Z-score. This approach avoids that, the Z-score are exclusively driven by variation in the level of capital and profitability (Schaeck and Cihak, 2010)

Additionally, bank specific data is used to calculate the two risk adjusted performance measures of return on assets (RAROA) and return of equity (RAROE).The formulas for RAROE and RAROA are shown below;

$$RAROA = \frac{ROA}{\sigma_{ROA}} \quad \text{and} \quad RAROE = \frac{ROE}{\sigma_{ROE}} \tag{4}$$

Where ROE is ratio of profit before tax to total equity and ROA is return on assets. The risk – adjusted return on equity and asset is calculated by dividing the Return on Equity (ROE) and Return on Asset (ROA) by their respective standard deviations. Similar to the computation of Z-score in equation (3), the study employ a four year rolling time window period for the calculation of the standard deviation of return on asset (σ_{ROA}) and the standard deviation of return on equity(σ_{ROE}).

Cross-Border Banking Measure: Cross border banking or foreign bank is measured as a dummy variable: it takes the value of 1 when the shareholding proportion of the local banks by foreign banks is above 50%, otherwise, it is 0. Cross border banks are considered to be foreign owned if they are controlled by a shareholder or group of shareholders from outside the licensing jurisdiction. Control over a bank can be exercised if an individual or entity holds more than 50 percent of shares in a bank, subsidiary or branch. (Beck et al. 2014).

Some control variables are employed to reflect bank specific characteristics and characteristics of the macroeconomic and monetary environment that studies have shown to affect the relationship among diversification, cross-border banking and performance (Mercieca et al., 2007: Sarah and Wolfe, 2010 and Amidu and Wolfe, 2013).

A ratio of Equity to total Assets ***equity/asset*** is used as a measure of the level of capitalization and control for the relationship between bank fragility and levels of capitalization. Capital absorbs large shocks and shields banks when asset values decline reducing the likelihood of failure (Lehar, 2005). The natural logarithm of banks' total assets is used as a proxy for ***bank size***. To allow for the probability that bigger bank are inherently more stable since idiosyncratic risk tends to decline with size (Baele et al. 2007). Also larger banks may have better diversification opportunities and as a result less income volatility from entering into new markets (Demsetz and Strahan, 1997). Cost to gross income ratio is used as a proxy for ***Efficiency***. The increase in efficiency will have a negative effect of performance and risk. Banks that are efficient in their normal operations are less likely to diversify their revenue base or engage in cross border banking since they are able to generate enough income to support their activities. GDP growth and Inflation is included in the regression to account for difference in macroeconomic environments. ***GDP growth and Inflation*** is used to control for general economic development, macroeconomic stability and institutional frameworks that are likely to affect bank performance in a country. Weak macroeconomic environment will deter foreign investments, reverse capital flows and discourage financial innovation. On the contrary, financial instability may also increase if banks find it more profitable to diversify during periods for economic growth (Nilsen and Rovelli, 2011). According to Levine et al. (2000), here is a positive link between financial intermediary development and economic growth with bank failures themselves being a consequence of economic downturn.*GDP growth* is measured as the annual rate of growth in GDP and *Inflation* is the annual growth rate of the Consumer Price Inflation (CPI) index. ***Property right*** measures the degree of legal protection on private property and the judicial efficiency in enforcing laws. It uses an Index from the Heritage Foundation (2014) and scaled from 0 to 100 with high levels indicating certainty of legal protection and expropriation risk. ***Banking freedom*** provide for the overall influence of bank

sector openness and the extent to which banks are free to operate their business. It also measures if any banks activities have a restricted effect on the banks performance and stability using the Heritage Foundation Index (2014). ***Capital stringency*** measures the influence of the regulatory capital stringency on bank stability and performance. Higher values indicate more capital stringency and there is an expectation that this will reduce bank risk and increase performance.

My expectations are that revenue diversification and cross border banking will have a positive effect on risk adjusted performance and insolvency risk in banks in Africa. In that cross border banking increase revenue diversification and this increasing diversification increases insolvency risk and improves performance. This is because the rapid rate of growth in these economies provides potential diversification opportunities. Additionally, diversification remains a valuable technique for reducing portfolio risks particularly when economic conditions are unstable. Furthermore, non-interest income remains a prudent way of improving banks revenues.

4.5 Estimation Strategy: The dynamic panel model approach

Concerning the cross-country determinants of revenue diversification of banks, Equation (5) is estimated using random effect model depending on the Hausman test proposed by Hausman (1978).

$$Div_{it} = \alpha_0 + \alpha_1 CBB_{it} + \alpha_2 Efficiency_{it} + \alpha_3 Equity_{it} + \alpha_4 Size_{it} + \alpha_5 Bankingfreedom_{it} + \alpha_6 propertyright_{it} + \alpha_7 Capitalstringent_{it} + \alpha_8 GDPgrowth_{it} + \alpha_9 Inflation_{it} + \varepsilon_{it} \quad (5)$$

The Equation (6) and (7) follows the argument put forward by Carbo Valverde and Rodriguez Fernandez (2007) that banks maximise wealth by considering both initial and end- of –period information and that previous values of bank performance may affect current performance values. This is because banks need to match the random deposit supply function and the random demand of lending activities and non-traditional activities across the period. Therefore the dynamic model technique is employed to estimate the implication of revenue diversification and cross border banking on risk and return.

$$Risk_{it} / return_{it} = a_1 risk_{it-1} / return_{it-1} + a_2 Div_{it} + a_3 Efficiency_{it} + a_4 Equity_{it} + a_5 Size_{it} + a_6 GDPgrowth_{it} + a_7 Inflation_{it} + e_{it} \quad (6)$$

$$Risk_{it} / return_{it} = a_1 risk_{it-1} / return_{it-1} + a_2 CBB_{it} + a_3 Efficiency_{it} + a_4 Equity_{it} + a_5 Size_{it} + a_6 GDPgrowth_{it} + a_7 Inflation_{it} + e_{it} \quad (7)$$

$$\varepsilon_{it} = \mu_i + v_{it}$$

$$E(\mu_i) = E(v_{it}) = E(\mu_i v_{it}) = 0$$

Where $risk_{it} / return_{it}$ is the insolvency risk or return of bank i at period t, $risk_{it-1} / return_{it-1}$ is the observation on the same bank in the previous year. Div_{it} is revenue diversification of bank i at a period t, CBB_{it} is a dummy variable; it is set at 1 when the shareholding proportion of the local banks by foreign banks is above 50%, otherwise it is set as 0, $Efficiency_{it}$ is cost efficiency of a bank i at time t, $Equity_{it}$ is equity of bank i at time t, $Size_{it}$ is bank size of bank i at time t, $Bankingfreedom_{it}$ is banking freedom of bank i at time t, $propertyright_{it}$ is property right of bank i at time t, $Capitalstrigency_{it}$ is capital stringency of bank i at time t, $GDPgrowth_{it}$ is the annual rate of growth in GDP of bank i at time t, $Inflation_{it}$ is annual

growth rate of consumer price inflation of bank i at time t, $\alpha's$ are the parameter vectors and ε_{it} are the unobserved disturbances.

The study uses the System Generalised Method of Moment estimator (System GMM) as previous studies identified the need to control for endogeneity of diversification decisions since banks may choose to diversify mainly as a reaction to the available business opportunities.(Stiroh and Rumble, 2006; Acharya et al., 2006 and Baele et al., 2007). The problem with applying OLS in estimating Equation (6) are that $risk_{it}$ and $return_{it}$ which are the dependent variables cause a correlation between the previous observations $risk_{it-1}$ and $return_{it,c-1}$ and the error term, which gives rise to a dynamic panel bias. There is also evidence to support that OLS produces bias when attempts are made to control for heterogeneity. In addition, if significant events such as mergers and acquisition are not explicitly modelled, they will remain embedded in the error term and continue to influence subsequent contemporaneous observations. This autocorrelation is a violation of an assumption necessary for the consistency of OLS.

Therefore Blundell- Bond (1998) and Alvarez and Bover (1995) proposed an alternative estimator, System Generalised Method of Moment estimator (System GMM) to address the persistence of endogeneity bias. System- GMM is more robust to missing data since lagged observations enter the equation as instrument instead of as regressors. System- GMM also creates a possible instance to include time- invariant repressor's for instance specific regulators which would have otherwise disappeared in the first-difference GMM. Furthermore System-GMM uses a windmeijer correction to the standard errors which improves robustness to heteroskedasticity.

CHAPTER FIVE

ANALYSIS AND INTERPRETATION OF THE RESULTS

5.1 Introduction

In this chapter, the results of the study of the study is analysed using the models specified in the previous chapter. Section 5.2.3 looked at measuring the effect of cross border banking on revenue diversification on banks in Africa using the random effect model. Section 5.2.4 and 5.2.5 then looked the effect of revenue diversification and cross-border banking on risk and return using the System Generalised Method of Moment estimator (System GMM).

5.2 Empirical Results

5.2.1 Descriptive Statistics

Table 5.1, shows summary statistics for key variables used in the study. All bank specific variables are averaged by bank during 2002-2013. The countries are grouped into zones. The zones are North, Central and South. Within the sample period, the variations between the measure of diversification across revenue income and diversification within non-interest income are examined. The mean of (0.57) for DIV (rev) show a relative concentration of bank revenue towards interest generating activities. The banks however appear diversified within non-interest income activities they are engaged in with a mean of (0.49) and a median of (0.48).

There is significant variation in size of the banks in the sample. The mean of total assets is $2.08bn which ranges from $0.2m to $123.2bn reflecting the benefits of diversification and cross border banking is not solely to large bank size. The 15% equity ratio aggregate suggest that just less than a sixth of the assets of the selected banks are financed by equity capital. Regarding the bank performance the sample included both high and low performing banks as indicated in the summary statistics of (RAROA and RAROE). The sample mean of 52% of

cross border banking implies that the banks are diversified geographically. Banks in the south zone are more geographically diversified with a mean of (63.1%). This could be as a result of the high level of banking freedom (52.3) signifying banks enjoys higher freedom from government control. Even though there is a high level of regulatory capital requirement (3.37) mean, it is compensated by the higher property right (41.8) mean indicating certainty of legal protection and limited expropriation risk.

The mean value of efficiency is 40.3% implies the Banks are efficient in the activities however banks in the Central zone are more efficient with a mean of (45.5%) and those in the North zone being the least efficient with a mean value of (31.5%). The mean of (46.8) banking freedom shows high freedom from government control. The banks however appear to have high capital stringent of (3.6) and property right of (39.2) implying more legal protection right and limited expropriation risk. The average (GDP growth) is 3.1% with the consumer price index at 8.7%.

Table 5.1
Descriptive Statistics

Table 5.1 presents summary statistics on key bank specific, macroeconomic and other variables used in the study. Diversification is measured by diversification across revenue income **DIV (rev)** and within non-interest generating income **DIV (non). Cross-border banking** is measured as a dummy variable taking the value of 1 where the shareholding proportion of the local banks by foreign banks is 50% or more and 0 otherwise. Cost to gross income ratio is used as a proxy for **efficiency**. A ratio of banks equity capital to total assets is used as a proxy to measure the level of capitalization. The **bank size** is proxied by the natural logarithm of banks' total assets valued in US dollars. The higher value of **banking freedom** signifies the higher freedom from government controls. Higher scores of ***property risk*** indicate certainty of legal protection of property right and limited expropriation risk. **Capital stringent** is the regulatory capital requirement. **GDP growth** account for the difference in economic development across countries. **Inflation** is the rate of inflation based on CPI.

		Mean	Median	SD	Min	Max
Diversification						
Diversification across revenue Income, **DIV(rev)**	Aggregate	0.574	0.532	0.105	0.178	1.000
	North	0.588	0.548	0.124	0.178	0.999
	Central	0.565	0.527	0.092	0.500	1.000
	South	0.576	0.531	0.104	0.500	0.998
Diversification within non-Interest income, **DIV(non)** .	Aggregate	0.494	0.479	0.149	0.010	0.992
	North	0.537	0.511	0.160	0.010	0.979
	Central	0.458	0.420	0.136	0.025	0.979
	South	0.518	0.505	0.145	0.157	0.992
Bank risk and return						
Risk adjusted return on Asset **(RAROA)**	Aggregate	5.884	3.553	10.131	-5.328	160.849
	North	5.612	3.222	11.060	-4.305	150.913
	Central	5.898	3.812	7.856	-3.557	87.180
	South	6.101	3.418	12.087	-5.328	160.849
Risk adjusted return on equity **(RAROE)**	Aggregate	5.580	3.480	8.308	-5.303	111.600
	North	5.023	3.280	6.953	-4.569	59.931
	Central	5.897	3.438	8.327	-2.471	65.051
	South	5.589	3.664	9.266	-5.303	111.600
Insolvency risk	Aggregate	39.259	23.755	47.875	-21.064	474.811
	North	48.445	30.626	57.948	-5.309	474.811
	Central	32.806	21.841	38.363	-21.064	457.417
	South	40.867	22.764	49.523	-1.541	340.368
Cross-border banking	Aggregate	0.528	1.000	0.499	0.000	1.000
	North	0.407	0.000	0.492	0.000	1.000
	Central	0.525	1.000	0.500	0.000	1.000
	South	0.631	1.000	0.483	0.000	1.000
Bank-specific control variable						
Equity ratio	Aggregate	0.158	0.113	0.163	-0.454	0.998
	North	0.121	0.096	0.086	0.000	0.598
	Central	0.133	0.120	0.074	-0.454	0.610
	South	0.229	0.120	0.260	0.021	0.998

Table 5.1(Continued)

		Mean	Median	SD	Min	Max
Efficiency	Aggregate	0.403	0.386	0.166	0.014	0.999
	North	0.315	0.296	0.150	0.018	0.921
	Central	0.455	0.442	0.147	0.122	0.983
	South	0.405	0.376	0.175	0.014	0.999
Bank size	Aggregate	2078.62	347.65	7288.96	0.200	123214
in US$ million	North	3746.33	1576.10	5918.47	22.10	45164.50
	Central	561.84	210.20	1228.35	0.800	12967.20
	South	2971.77	265.20	12211.68	0.200	123214
Macroeconomic variables						
GDP growth	Aggregate	0.031	0.032	0.036	-0.175	0.218
	North	0.034	0.036	0.019	-0.005	0.086
	Central	0.027	0.028	0.033	-0.081	0.218
	South	0.034	0.038	0.047	-0.175	0.191
Inflation	Aggregate	0.087	0.076	0.086	-0.031	0.982
	North	0.059	0.045	0.043	0.010	0.183
	Central	0.093	0.092	0.070	-0.031	0.444
	South	0.102	0.080	0.124	0.014	0.982
Banking freedom	Aggregate	46.750	50.000	14.131	10.000	90.000
	North	39.352	30.000	13.795	20.000	90.000
	Central	46.643	50.000	11.757	20.000	70.000
	South	52.338	50.000	14.963	10.000	70.000
Property right	Aggregate	39.189	30.000	12.996	5.000	75.000
	North	41.318	40.000	9.875	30.000	70.000
	Central	36.247	30.000	9.656	10.000	50.000
	South	41.796	40.000	17.417	5.000	75.000
Capital stringent	Aggregate	3.552	4.000	1.587	0.000	6.000
	North	3.067	3.000	1.563	1.000	5.000
	Central	3.977	4.000	1.383	0.000	5.000
	South	3.367	3.000	1.715	1.000	6.000

Source: Bankscope and author's estimation. The data comprises of 320 banks across 29 countries over the period 2002-2013.

5.2.2 Pair-Wise Correlation Coefficients

Table 5.2, presents pair-wise correlation coefficients as a preliminary analysis of the relationship between the key variables. The correlation coefficients between *DIV(rev), DIV(non)*, and the corresponding risk and performance measure *(Z-score and RAROA)* suggest some benefits of diversification into new markets exists compared to diversifying within the markets the bank is already present in. As *DIV(rev)* increase risk –adjusted return on asset and *DIV(non)* decrease risk. Since banks will intensify exposure in markets which seem profitable and will prefer to diversify by exploring new markets as opposed to increasing activities in markets already found to be less profitable. These may well be some point of inflection where further exposure to non-interest income decrease bank performance and stability. Stiroh and Rumble (2006) argue that the costs of financial distress, search costs for new management, as well as increased exposure to systematic shocks are some of the reasons for this relationship. With correlation coefficients between *cross border banking* and the corresponding risk measure *(Z-score)* suggesting that no benefit in diversifying geographically into new markets. In addition, coefficients between ***cross*** border banking and *DIV(rev)* suggest banks that diversify geographically are more likely to diversify their revenue base.

Regarding bank characteristics, the relationship between the capitalization ratio *Equity ratio* and both *RAROA and RAROE* respectively is negative and significant. The capitalization ratio is also positively correlated with the Z- score, the *DIV(rev) and DIV(non).* Taken together this result suggests that highly capitalized banks are able to diversify across revenue income and *within* the non–interest income activities they already engage in. This is consistent with evidence that banks with high value, may adopt aggressive investment strategies in order to increase profitability and hence more stable. However, this extreme risk taking may reduce bank profitability. The correlation coefficient between Efficiency and the diversification

measures and the risk and performance measures are negative and significant. However it is positive and significant with cross border banking. The pair-wise correlation coefficient between bank size *(Bank size)* and the diversification measures and cross border banking suggest larger banks are more diversified in terms of their revenue and perform better but are not able to diversify geographically. This is because a bank will quickly exhaust the risk mitigating benefits of diversification if it is frequently moving into new markets.

The relationship between banking freedom and both diversification, cross border banking and *RAROA* is positive and significant but negative to the Z-score. Taken that banks are not able to diversify their revenue activities but are able to cross borders if there is the freedom of operation and less government controls and increase their performance and increase their risk. In addition, *Property right* are positively and significant with the diversification measures and the risk and performance measures. Showing that banks that enjoy high legal protection property right and limited expropriation risk are not able to diversify across revenue income and within the non–interest income activities. However they are able to increase their performance and reduce risk. Also the relationship between capital stringent is positive and significant with *DIV(rev)* and *RAROA*, negative with *DIV(non)*, *cross-border banking and the Z-score*. Banks with high regulatory capital requirements are able to diversify within the non-interest income activities but not able to diversify across revenue activities by so doing reducing their risk.

Table 5.2
Pair wise correlation coefficient

The pair wise correlation coefficient between selected variables. The data set comprises of 320 banks in 29 countries during the period 2002-2013. * implies significant at 5% or more. The **Z-score** is a measure of insolvency risk and its defined as the number of standard deviations that a bank rate of return has to fall for the bank to become insolvent. ***Equity ratio*** is used as a proxy to measure the degree of capitalization, ***Bank size*** is the natural logarithm of the total assets, ***RAROA,*** risk adjusted return on asset, ***RAROE,*** risk adjusted return on equity. ***DIV(rev)*** diversification between interest and non-interest income. ***DIV (non)*** measures diversification within non-interest income generating activities. **Cross-border banking** is measured as a dummy variable taking the value of 1 where the shareholding proportion of the local banks by foreign banks is 50% or more and 0 otherwise. Cost to gross income ratio is used as a proxy for **efficiency**. The higher value of ***banking freedom*** signifies the higher freedom from government controls. Higher scores of ***property right*** indicate certainty of legal protection of property right and limited expropriation risk. ***Capital stringent*** is the regulatory capital requirement.

	DIV(rev)	DIV(non)	Z-score	RAROA	RAROE	cross border banking	Equity	Efficiency	Bank size	Bank freedom	Exploration risk	Capital stringent
DIV(rev)	1											
DIV(non)	0.012	1										
Z-score	-0.032	0.073*	1									
RAROA	-0.070*	0.003	0.710*	1								
RAROE	-0.012	-0.008	0.357*	0.424*	1							
Cross border banking	-0.086*	-0.016	-0.095*	-0.029	-0.001	1						
Equity	0.149*	0.053*	0.225*	-0.067*	-0.079*	-0.074*	1					
Efficiency	-0.120*	-0.075*	-0.155*	-0.156*	-0.156*	0.138*	0.028	1				
Bank size	-0.017	0.096*	0.164*	0.123*	0.083*	-0.102*	-0.126*	-0.380*	1			
Bank freedom	0.093*	0.040*	-0.004	0.044*	0.036	0.111*	-0.044*	0.056*	-0.166*	1		
Exploration risk	0.040*	0.147*	0.019	0.021	0.012	-0.021	-0.087*	-0.198*	-0.063*	0.446*	1	
Capital stringent	0.048*	-0.076*	-0.042*	0.024	-0.007	0.007	-0.038*	0.158*	-0.031	0.137*	0.200*	1

Source: bank scope and author's estimation. The data comprises of 320 banks across 29 countries over the period 2002-2013.

5.2.3 Determinants of revenue diversification

Table 5.3 reports the key empirical results base on the estimation of Random Effect (RE) model for panel data. The primary goal is to investigate the cross country determinants of revenue diversification in Africa. Across all regression specifications, the measure of cross border banking is found to have significant negative effect on revenue diversification. In other words cross border banking increases diversification across revenue generating activities and *within* non-interest income generating activities. Showing that as banks cross borders into other countries, they are able to diversify the revenue base in order to be more profitable depending on the competitive environment they find themselves. This findings support the position of Amidu and Wolfe (2013).

Regarding the control variables used, the coefficients of *(Efficiency)* is negative. The negative relationship is to show that banks that are cost efficient in their operation are able to diversify their revenue base. The *(Bank size)* proxied by total assets are also negative to DIV(rev) and positive to DIV(non). This negative relationship is also reported in prior studies by Grossman (1994), Demsetz and Strahan (1997) and DeYoung and Rice (2004) who find the relative advantage that large banks have in making larger loans of better quality is another way in which large banks can be more profitable and stable. For this reason they arein the position to diversify since they have the capacity to absorb the shocks. Also, with the positive relationship banks with asset based diversification strategy may ignore non-interest income, make more loans, and grow faster regardless of the profitability of loans to other earning assets Stiroh and Rumble (2006).The coefficients for levels of capitalization *(Equity ratio)* are at best significant and positive in the revenue diversification regressions. Although the conventional view is that high levels of capitalization place banks in a better position to absorb losses hence diversify.

According to Carlson (2004), equity is a relatively costly way of financing banks operations, especially since it can imposes agency costs between bank managers and owners. The level of capitalization may also decrease diversification if equity owners prefer conservative investment strategies to protect their value.

The measure of (*Banking freedom)* is at best *insignificant* to revenue diversification. Meaning banking freedom cannot reliably explain the dependent variable. The measure of expropriation risk (*Property right*) is significant and positive. Showing that banks that operate in countries with high legal protection on property right and limited expropriation risk do not engage in revenue diversification. Also the measure of *(Capital stringent*) is positive and significant to revenue diversification. High capital requirements will either require existing shareholders to increase investment in the bank, or that the number of shareholders increases. Both of these options increase the agency problem between bank managers and owners and can be costly if risk aversion of the large shareholders prevents banks from venturing into new sectors to diversify their revenue base. High capital requirements can also reduce the availability of operating capital necessary to undertake new investment strategies.

Regarding the macroeconomic controls, the rate of inflation *(Inflation)* is insignificant to the dependent variable so cannot explain the effect on revenue diversification. In addition, the coefficients of *(GDP growth)* are negative and significant in column (1) to (6) suggesting that banks diversify in other sectors more during periods of high economic. This is because economic booms can fuel credit expansion and undiscriminating diversification strategies. The need for banks to reduce vulnerabilities to macroeconomic shocks as well as boosting operating revenue when interest-income declines may be a valid reason why banks diversify.

Table 5.3
Determinants of revenue diversification

The dependent variable is the revenue diversification across revenue generating income ***(Div_{rev})*** and within non-interest generating income ***(Div_{non})***. ***Cross-border banking*** is measured as a dummy variable taking the value of 1 where the shareholding proportion of the local banks by foreign banks is 50% or more and 0 otherwise. Cost to gross income ratio is used as a proxy for ***efficiency.*** A ratio of banks ***equity*** capital to total assets is used as a proxy to measure the level of capitalization. The ***bank size*** is proxied by the natural logarithm of banks' total assets valued in US dollars. The higher value of ***banking freedom*** signifies the higher freedom from government controls. Higher scores of ***property right*** indicate certainty of legal protection of property right and limited expropriation risk. ***Capital stringent*** is the regulatory capital requirement. ***GDP growth*** account for the difference in economic development across countries. ***Inflation*** is the rate of inflation based on CPI. The parameters are estimated using random effect with standard error in parenthesis. ***, ** and * indicates the statistical significance at 1%, 5% and 10% respectively. The diagnostic test: the R^2 measures the goodness of fit, the Hausman test allows the hull hypothesis of absence of correlation between individual effects and the explanatory variable to be rejected in all cases, thus the fixed effect model being inconsistent.

	Diversification					
	Across revenue income (Div_{rev})			**Within Non-interest Income (Div_{non})**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Cross border banking	-0.0184*	-0.0172*	-0.0203**	-0.0141	-0.0105	-0.0097
	(0.0101)	(0.0102)	(0.0101)	(0.0130)	(0.0122)	(0.0130)
Efficiency	-0.0528***	-0.0493***	-0.0379**	-0.0156	-0.0017	-0.0236
	(0.0170)	(0.0170)	(0.0171)	(0.0266)	(0.0262)	(0.0262)
Equity ratio	0.1125***	0.1184***	0.0953***	0.0701**	0.1034***	0.0702**
	(0.0234)	(0.0236)	(0.0239)	(0.0330)	(0.0317)	(0.0331)
Bank size	-0.0098***	-0.0088***	-0.0097***	0.0065**	0.0104***	0.0061**
	(0.0021)	(0.0022)	(0.0021)	(0.0031)	(0.0030)	(0.0030)
Banking freedom	0.0001			0.0003		
	(0.0001)			(0.0003)		
Exploration risk		0.0005**			0.0025***	
		(0.0003)			(0.0004)	
Capital stringent			0.0060**			-0.0028
			(0.0025)			(0.0035)
GDP growth	-0.1737***	-0.1671***	-0.1182**	-0.1519*	-0.1502*	-0.1832**
	(0.0562)	(0.0561)	(0.0597)	(0.0882)	(0.0877)	(0.0895)
Inflation	0.0003	0.0003	0.0002	-0.0001	-0.0001	-0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0002)
Constant	0.6477***	0.6201***	0.6252***	0.4353***	0.3162***	0.4644***
	(0.0195)	(0.0235)	(0.0207)	(0.0298)	(0.0336)	(0.0297)
Diagnostic test						
Observation	1913	1913	1913	1665	1665	1668
R^2	0.0601	0.619	0.0653	0.044	0.1957	0.0314
Random effect	Y	Y	Y	Y	Y	Y
Hausman test	43.81***	29.93***	31.57***	26.52***	31.65***	30.13***
Wald test	67.37***	71.93***	57.04***	15.21**	57.49***	15.88**

5.2.4 Evaluating bank risk and return: Cross border banking

The primary goal is to investigate the relationship between cross border banking, risk and return in Africa Table 5.4 reports a panel regression and empirical results of the canonical model. In Table 5.4 below, across all regression specifications, measure of cross border banking is positive but not significant to the risk *Z-score* and performance measures *(RAROA)* with coefficients negative to *(RAROE).* Cross border banking increases stability and risk adjusted return on asset and decrease risk –adjusted return on equity but not significant in predicting the performance and stability of banks.

As suspected there is evidence of autoregressive properties in the dataset as first-year lags of *Z-score*, *RAROA* and *RAROE* (*Z-score lag*, *RAROA lag* and *RAROE lag* respectively) are strongly related to their contemporary levels. Showing that the previous year risk and return is a factor in estimating the current year stability and performance. The coefficients of (*Bank size*) proxied by total assets are insignificant in the risk and performance regression. Efficiency is insignificant in the *Z-score* and *RAROA* regression however the relationship between efficiency and risk-adjusted return on equity *(RAROE)* is negative. Indicating that as the cost efficiency of the bank decreases, the risk adjusted return on equity and asset increases.

The coefficients for levels of capitalization *(Equity ratio)* are at best insignificant in the regressions. Although the conventional view is that high levels of capitalization will reduce risk, by placing banks in a better position to absorb losses, the relationship between equity capital, bank risk and performance is ambiguous. According to Carlson (2004), equity is a relatively costly way of financing banks operations, especially since it can imposes agency costs between bank managers and owners. The level of capitalization may also decrease bank performance if equity owners prefer conservative investment strategies to protect their value.

Furthermore, if banks decrease loans as a means of increasing regulatory capital to cover non-performing assets, then performance and stability will not increase in response to the higher capital ratios.

Regarding the macroeconomic controls, the rate of inflation *(Inflation)* increases bank stability and decreases bank performance. This is particularly so since; inflation can erode the value of assets, worsen the balance sheet position of a bank, and may reverse essential capital-flows necessary for economic development. The diagnostics tests used are reported. The robustness of the System GMM estimation are examined by *Hansen test* for the validity of the instruments. The results of the *Hansen test* is insignificant as shown by the p-values in table 5.3, suggesting the model do not suffer from over identification and the System GMM have been correctly specified, while the F-test confirms the joint significance of the independent variables. The insignificant *AR (2)* means the null of the second order serial correlation cannot be rejected.

Table 5.4
Evaluating bank risk and return: Cross border banking

Table 5.4 reports the two stage System GMM regression result, Windmeijer- correct standard error, small sample adjustment and orthogonal deviation. All regressions are conducted using dynamic panel data estimation. The dependent variables are the measures of bank risk ***(Z-score)*** risk adjusted return in asset ***(RAROA)*** and risk adjusted return on equity ***(RAROE). Cross border banking*** measured as a dummy taking the value of 1 where shareholding proportion of the local banks by foreign banks is 50% or more and 0 otherwise. The bank specific controls included in the regression are; ***Z-score lag, RAROA lag*** and ***RAROE lag*** are the first lags of the dependent variables included as regressors. ***Bank size*** is the natural logarithm of total Asset in millions of US$, ***Efficiency*** is a proxy to cost to gross income ratio; ***Equity ratio*** is the ratio of equity to total Asset used as a proxy for capitalization. Two macroeconomic controls included are ***GDP growth*** is the annual growth rate of Gross Domestic Product and ***Inflation*** is the annual consumer price inflation. Constant term included but not reported. Standard errors are reported in parenthesis,***,** and *indicates statistical significance at 1%, 5% and 10% respectively. The following diagnostic tests are reported. (1)The instrument count,(2)number of banks used in the sample (3)the F-test for joint significance of instruments, (4)the Hansen test of over identifying restrictions which the null hypothesis is that instruments are exogenous, (5)the Arellano-Bond test for first and second order serial correlation in the residuals which the null hypothesis is there is no serial correlation..

	Z-Score	**RAROA**	**RAROE**
	(1)	(2)	(3)
Z-Score lag	0.571***		
	(0.148)		
RAROA lag		1.264*	
		(0.146)	
RAROE lag			0.5233***
			(0.1961)
Cross border banking	0.107	0.136	-0.4325
	(0.234)	(0.616)	(0.9254)
Efficiency	-0.679	-1.427	-2.9488**
	(0.795)	(1.005)	(1.1654)
Equity ratio	0.415	-0.201	-0.5193
	(0.395)	(0.316)	(0.5186)
Bank size	0.021	0.001	-0.0831
	(0.041)	(0.471)	(0.0537)
GDP growth	1.039	-0.393	-0.2551
	(0.748)	(1.625)	(2.5851)
Inflation	0.565**	-2.74	-0.6257
	(0.274)	(0.752)	(0.9378)
Diagnostic test			
Number of instruments	57	57	57
Number of Groups	308	304	303
F-test	7.96***	2.37***	4.17***
Hansen test	54.96	45.17	53.21
P value	0.104	0.369	0.137
AR(2) test	1.33	1.43	0.34
P value	0.183	0.154	0.733

5.2.5 Evaluating bank risk and return: Revenue diversification

The primary goal is to investigate the link between revenue diversification risk and return in Africa. Panel regressions are estimated and empirical results of the canonical model. Table 5.4 reports that both measures of diversification *DIV (rev)* and *DIV (non)* are found to increase risk-adjusted return on asset but insignificant to both the Z- score and risk adjusted return on equity. In other words, diversification *across* and *within* non-interest income generating activities is beneficial for banks. These results show diversification benefits exists for banks in Africa and therefore supports the diversification view in the literature. According to Baele et al. (2007) these benefits may originate from either improved income generating capacity of the bank, reduced operating costs from operational synergies or a combination of both. The implication of this phenomenon for banks is that banks exploiting non-interest income sources for a relatively longer period of time will only obtain very marginal benefits from further diversification which may well increase bank risk Acharya et al. (2006) and Stiroh (2006). Additionally, banks that choose to use up the risk mitigation benefits of non-interest income by taking on additional risks will end up increasing their financial leverage and well its risk of failure Morgan and Salmolyk (2003) and Cebenoyan and Strahan (2004).

The coefficients of bank size *(Size)* proxied by total assets are also positive. This positive relationship is also reported in previous research such as Grossman (1994), Demsetz and Strahan (1997), and DeYoung and Rice (2004) who find the relative advantage that large banks have in making larger loans of better quality is another way in which large banks can be more profitable and stable. The relationship between the levels of capitalization and risk-adjusted returns on assets are negative and positive to Z-score, however the coefficients for levels of capitalization *(Equity ratio)* are insignificant in the (*RAROE)* regressions. Supporting the

conventional view is that high levels of capitalization will reduce risk, by placing banks in a better position to absorb losses. According Lehar (2005) capital absorbs large shocks and shields banks when asset values decline reducing the likelihood of failure. According to Carlson (2004), the level of capitalization may also decrease bank performance if equity owners prefer conservative investment strategies to protect their value. Furthermore, if banks decrease loans as a means of increasing regulatory capital to cover non-performing assets, then performance and stability will not increase in response to the higher capital ratios. (*Efficiency)* is negative to risk and performance when banks diversify within non-interest income however efficiency is insignificant when banks diversify across revenue income. Showing that as the cost of operation increases, insolvency risk and performance decreases.

Regarding the macroeconomic controls, the rate of inflate on *(Inflation) and (GDP growth)* are insignificant in predicting the dependent variables of risk and performance. As suspected there is evidence of autoregressive properties in the dataset as first-year lags of *Z-score, RAROA* and *RAROE* (*Z-score lag, RAROA lag* and *RAROE lag* respectively) are strongly related to their concurrent levels. Suggesting that the previous year's values is a factor in estimating the current year dependent variable values of risk and performance.

The *Hansen test* is insignificant as shown by the p-values, suggesting the model do not suffer from over identification, while the F-test confirms the joint significance of the independent variables. The insignificant *AR (2)* means the null of the second order serial correlation cannot be rejected, a finding which is expected in the first difference, where it is assumed that the original disturbance terms are not serially correlated.

Table 5.5
Evaluating bank risk and return: Revenue diversification

This table reports the two stage System GMM regression result, Windmeijer- correct standard error, small sample adjustment and orthogonal deviation. All regressions are conducted using dynamic panel data estimation. The dependent variables are the measures of bank risk ***(Z-score***) risk adjusted return in asset (***RAROA***) and risk adjusted return on equity (***RAROE). DIV (rev***) and ***DIV (non)*** measures revenue diversification across and within non- interest generating income. The bank specific controls included in the regression are; ***Z-score lag***, ***RAROA lag*** and RAROE lag are the first lags of the dependent variables included as regressors. ***Bank size*** is the natural logarithm of total Asset in millions of US$, ***Efficiency*** is a proxy to cost to gross income ratio; ***Equity ratio*** is the ratio of equity to total Asset used as a proxy for capitalization. Two macroeconomic controls included are ***GDP growth*** is the annual growth rate of Gross Domestic Product and ***Inflation*** is the annual consumer price inflation. Constant term included but not reported. Standard errors are reported in parenthesis, ***, ** and *indicates statistical significance at 1%,5% and 10% respectively. The following diagnostic test is reported. (1)The instrument count,(2)number of banks used in the sample (3)the F-test for joint significance of instruments, (4)the Hansen test of over identifying restrictions which the null hypothesis is that instruments are exogenous, (5)the Arellano-Bond test for first and second order serial correlation in the residuals which the null hypothesis is there is no serial correlation.

	Diversification					
	Diversification across income			**Diversification within non-interest income**		
	Z-Score (1)	**RAROA** (2)	**RAROE** (3)	**Z-Score** (4)	**RAROA** (5)	**RAROE** (6)
Z-Score lag	0.458***			0.608***		
	(0.124)			(0.094)		
RAROA lag		1.829***			0.393***	
		(0.692)			(0.112)	
RAROE lag			0.636***			0.444***
			(0.127)			(0.119)
Div(rev)	-0.350	-7.183*	-0.507			
	(0.596)	(3.962)	(0.924)			
Div(non)				-0.426	-0.872*	-0.259
				(0.315)	(0.511)	(0.575)
Efficiency	-0.526	0.165	-2.364	-0.879*	-2.019*	-3.303***
	(0.614)	(4.221)	(0.996)	(0.529)	(1.064)	(1.041)
Equity ratio	1.020***	-2.687***	-0.0443	0.746***	-0.135	-0.276
	(0.289)	(1.038)	(0.294)	(0.220)	(0.242)	(0.316)
Bank size	0.063**	0.326	-0.060	0.029	-0.007	-0.081*
	(0.027)	(0.259)	(0.039)	(0.028)	(0.045)	(0.043)
GDP growth	0.367	-3.390	-0.864	-0.294	-0.822	-0.323
	(0.808)	(6.352)	(1.649)	(0.931)	(1.474)	(1.924)
Inflation	0.461	3.193	-1.210	0.301	0.039	-0.548
	(0.314)	(3.340)	(0.702)	(0.347)	(0.574)	(0.660)
Diagnostic test						
Number of instruments	84	84	84	84	84	84
Number of Groups	312	311	308	304	293	293
F-test	22.83***	3.02***	3.45***	25.25***	4.62***	4.76***
Hansen test	79.62	58.91	53.87	75.89	75.38	82.22
P value	0.202	0.825	0.923	0.294	0.309	0.151
AR(2) test	0.73	-0.20	-0.09	0.73	0.90	-0.18
P value	0.467	0.839	0.925	0.464	0.369	0.857

5.3 ROBUSTNESS TESTS

Using the same methodology described in the previous section robustness checks to control for other factors that may drive measures of insolvency risk. The aim is to eliminate alternative explanations for the relationship between revenue diversification and cross border banking on stability.

5.3.1 Regulatory and supervisory controls

To draw precise conclusions regarding the relationship of diversification and cross border banking on risk and return, the regulatory and supervisory framework in Africa needs to be thoroughly considered. This is because banks in Africa may be deriving benefits from institutional reforms in a way that overemphasizes the impact of diversification and cross border banking if these structures are not explicitly incorporated in the estimation. It is impossible to isolate the effects of all institutional reforms, as there is an expectation that they are deeply embedded in the bank fundamentals. Therefore only aspects of the regulatory environment that may directly bias the findings are controlled for. What follows is a brief summary of the specific regulatory initiatives as well as the resulting impact that holding these constant may have on the relationships of revenue diversification and cross border banking on stability and performance. Examining the relationship between bank regulations and banking system stability is also independently valuable since countries implement regulations to promote banking system stability. Isolating the effect of these regulatory tools ensures that the separate channels through which regulation influence stability are independently captured.

5.3.2 Banking freedom

The Heritage Foundation index of banking and financial freedom *"Banking freedom"* which measures the security of the banking system as well as its independence from government

controls is included. This country specific annual index captures the following aspects of bank regulation: ―whether foreign banks and financial services firms are able to operate freely, how difficult it is to open domestic banks and other financial services firms, how heavily regulated the financial system is, the presence of state-owned banks, whether the government influences allocation of credit, and whether banks are free to provide customers with insurance and invest in securities and vice-versa" (The Heritage Foundation (2014). Higher values indicate greater freedom to carry out banking operations. The result of the base regression with the inclusion of *"Banking freedom"* is reported in table (5.6 and 5.7). There is some evidence that higher banking freedom increase bank stability in Africa. In relation to cross border banking, it does not on its own affect risk but greater banking freedom ,does influence other variables like equity which in turn has an effect of risk of banks. The measure of capitalization becomes significant showing that it increases stability. However with diversification measure *Efficiency* loses its significance and bank size was significant suggesting that high banking freedom encourage banks to diversify and increase stability. Banking freedom is positive and significant. Indicating higher banking freedom increases stability of banks.

5.3.3 Regulatory capital stringency

Furthermore, the influence of the regulatory capital stringency on bank stability is considered by including the capital regulatory index. Higher values indicate more capital stringency and there is an expectation that this will reduce bank risk. In this regression, the base model is re-estimated by including the index *"Capital stringent"* as an additional explanatory variable. The results are shown in table (5.6 and 5.7). The regulatory capital stringency is not significantly linked in both cases meaning it does explain the dependent variable. *Equity ratio* - the bank level measures of capitalization in that it is significantly linked to both diversification and cross border banking and increases bank stability. Also the bank size in positive and significant for

banks that diversify both their revenue base and geographically. The measures of diversification *DIV(rev)* and *DIV(non)* however lose their significance suggesting that higher regulatory capital requirements may discourage diversification across revenue income activities and *within* non-interest income activities. These results are intuitive, particularly considering high capital requirements, will either require existing shareholders to increase investment in the bank, or that the number of shareholders increases. Both of these options increase the agency problem between bank managers and owners and can be costly if risk aversion of the large shareholders prevents banks from venturing into new sectors to diversify their revenue base. High capital requirements can also reduce the availability of operating capital necessary to undertake new investment strategies.

5.3.4 The risk of Expropriation

In addition, the fact that the legal protection on private property as well as the judicial efficiency in enforcing these laws influences bank performance and stability in Africa. Lower risk of expropriation is crucial to the volume and stability of the flow of foreign capital, a key driver of economic growth development and in Africa. The findings in La Porta et al. (1998) and Klapper and Love (2002) suggest the law that protects investors differs significantly across countries and within firms in the same country. This is based on the assumption that firms can augment state protection levels by implementing mechanisms that increases disclosure and prevents the deliberate expropriation of minority shareholders. The latter study which find investors positively value this additional firm level protection in countries where state level protection is low. Based on this argument, limiting expropriation risk will have an independent positive effect on bank performance and stability especially if it promotes low volatile cash flows, enhances stable ownership patterns in banks and increase access to capital. In this section the independent effect of state level investor protection is controlled for by including

(*Property right)* an index that measures expropriation risk as shown in table (5.6 and 5.7). Higher scores indicate certainty of legal protection and limited expropriation risks (The Heritage Foundation, 2014).

The results on tables (5.6 and 5.7) does not support the notion that property right index improves bank stability. However with the inclusion of property right in table 5.6, both Equity ratio and bank size gain significance and it positive which increases bank stability.

Table 5.6
Evaluating Bank Risk: Cross border banking controlling for banking freedom, property right and capital stringency

Table 5.6 reports the two stage System GMM regression result, Windmeijer- correct standard error, small sample adjustment and orthogonal deviation. All regressions are conducted using dynamic panel data estimation. The dependent variables is measure of bank risk ***(Z-score).*** ***Cross border banking*** measured as a dummy taking the value of 1 where shareholding proportion of the local banks by foreign banks is 50% or more and 0 otherwise. The bank specific controls included in the regression are; ***Z-score lag*** is the first lags of the dependent variables included as regressors. ***Bank size*** is the natural logarithm of total Asset in millions of US$, ***Efficiency*** is a proxy to cost to gross income ratio, ***Equity ratio*** is the ratio of equity to total Asset used as a proxy for capitalization. Two macroeconomic controls included are ***GDP growth*** is the annual growth rate of Gross Domestic Product and ***Inflation*** is the annual consumer price inflation. Constant term included but not reported. Standard errors are reported in parenthesis, ***, ** and *indicates statistical significance at 1%, 5% and 10% respectively. The high value of ***Bankingfreedom*** signifies higher freedom from government controls. Higher scores of property rights indicates certainty of legal protection and limited ***Expropriation risk***. ***Capital stringent*** is the regulatory capital requirement. The following diagnostic test are reported. (1)The instrument count,(2)number of banks used in the sample (3)the F-test for joint significance of instruments, (4)the Hansen test of over identifying restrictions which the null hypothesis is that instruments are exogenous, (5)the Arellano-Bond test for first and second order serial correlation in the residuals which the null hypothesis is there is no serial correlation.

	Banking freedom (1)	**Expropriation risk** (2)	**Capital stringent** (3)
Z-Score lag	0.566***	0.652***	0.549***
	(0.094)	(0.085)	(0.119)
Cross border banking	-0.008	0.239	0.058
	(0.214)	(0.211)	(0.221)
Efficiency	0.336	0.559	-0.664
	(0.441)	(0.515)	(0.622)
Equity ratio	0.721*	0.882***	0.781**
	(0.401)	(0.309)	(0.324)
Bank size	0.040	0.079***	0.066*
	(0.033)	(0.028)	(0.038)
Banking freedom	0.004		
	(0.003)		
Expropriation risk		0.003	
		(0.006)	
Capital stringent			0.026
			(0.043)
GDP growth	0.752	-0.838	0.829
	(0.517)	(1.035)	(0.797)
Inflation	0.415	-0.129	0.469*
	(0.274)	(0.300)	(0.263)
Diagnostic test			
Number of instruments	84	77	72
Number of Groups	299	296	302
F-test	13.12***	23.43***	28.25***
Hansen test	74.42	75.41	64.83
P value	0.306	0.118	0.223
AR(2) test	1.6	1.67	1.29
P value	0.11	0.095	0.197

Table 5.7
Evaluating Bank Risk: Revenue diversification controlling for banking freedom, Property right and capital stringency

Table 5.7 reports the two stage System GMM regression result, Windmeijer- correct standard error, small sample adjustment and orthogonal deviation. All regressions are conducted using dynamic panel data estimation. The dependent variables are the measures of bank risk ***(Z-score)***. ***DIV(rev)*** and ***DIV(non)*** measures revenue diversification across and within non- interest generating income. The bank specific controls included in the regression are; ***Z-score lag*** is the first lags of the dependent variables included as regressors. ***Bank size*** is the natural logarithm of total Asset in millions of US$, ***Efficiency*** is a proxy to cost to gross income ratio, ***Equity ratio*** is the ratio of equity to total Asset used as a proxy for capitalization. Two macroeconomic controls included are ***GDP growth*** is the annual growth rate of Gross Domestic Product and ***Inflation*** is the annual consumer price inflation. Constant term included but not reported. Standard errors are reported in parenthesis, ***, ** and *indicates statistical significance at 1%, 5% and 10% respectively. The high value of ***Banking freedom*** signifies higher freedom from government controls. Higher scores of property rights indicate certainty of legal protection and limited ***Expropriation risk***. ***Capital stringent*** is the regulatory capital requirement. The following diagnostic test are reported.(1)The instrument count,(2)number of banks used in the sample (3)the F-test for joint significance of instruments, (4)the Hansen test of over identifying restrictions which the null hypothesis is that instruments are exogenous, (5)the Arellano-Bond test for first and second order serial correlation in the residuals which the null hypothesis is there is no serial correlation.

	Z-score					
	Diversification across revenue income			**Diversification within non-interest income**		
	Banking freedom	Expropriation risk	Capital stringent	Banking freedom	Expropriation risk	Capital stringent
	(1)	(2)	(3)	(4)	(5)	(6)
Z-Score lag	0.589***	0.591***	0.468***	0.619***	0.659***	0.593***
	(0.0934)	(0.093)	(0.114)	(0.074)	(0.089)	(0.088)
Div(rev)	-0.4385	-0.5826	-0.109			
	(0.5373)	(0.529)	(0.490)			
Div(non)				-0.476	-0.224	-0.536
				(0.299)	(0.295)	(0.342)
Efficiency	-0.277	0.123	-0.586	-0.272	0.137	-0.650
	(0.4475)	(0.485)	(0.586)	(0.364)	(0.416)	(0.470)
Equity ratio	0.961***	0.887***	0.956***	0.898***	0.717***	0.817***
	(0.265)	(0.297)	(0.258)	(0.188)	(0.226)	(0.237)
Bank size	0.0595**	0.0611**	0.066***	0.049**	0.046**	0.040
	(0.025)	(0.025)	(0.025)	(0.019)	(0.022)	(0.026)
Banking freedom	0.0064**			0.006**		
	(0.003)			(0.003)		
Exploration risk		-0.005			-0.003	
		(0.006)			(0.006)	
Capital stringent			-0.003			0.008
			(0.038)			(0.043)
GDP growth	0.214	-0.0427	0.451	0.055	-0.226	-0.765
	(0.765)	(1.064)	(0.620)	(0.892)	(1.060)	(1.031)
Inflation	0.284	-0.094	0.478*	-0.043	-0.207	0.198
	(0.294)	(0.361)	(0.256)	(0.263)	(0.310)	(0.362)
Diagnostic test						
Number of instruments	111	104	99	111	104	99
Number of Groups	303	303	306	296	296	298
F-test	29.43***	22.85***	21.01***	38.75	34.40***	25.00***
Hansen test	107.19	103.61	89.51	100.81	99.02	85.86
P value	0.204	0.138	0.320	0.349	0.220	0.423
AR(2) test	0.96	1.06	0.72	0.90	0.87	0.73
P value	0.337	0.289	0.474	0.368	0.383	0.468

5.3.5 Sensitivity of revenue diversification and cross- border banking

The possibility of important factors being overlooked or critical combination of input factors neglected decreases with the level of exploration of the space of the input factor Farrell (2007). The attention paid in global methods to interaction effect is also a protection against type II errors. Sensitivity analysis also help apportion uncertainty not only among factors but also among sets of factors. When the sensitivity analysis show that the overall result and conclusions are not affected by the different decisions that could be made during the review process, the results of the review can be regarded with a higher degree of certainty.

In reference to the result from the above regressions, using the same methodology described in the previous section robustness check to estimate the effect of the sensitivity of both revenue and geographical diversification. The aim is to eliminate alternative explanations for the relationship between the sensitivity of revenue diversification and cross border banking on stability and performance of banks.

In table 5.8 across all regression specifics, revenue diversification increases risk- adjusted return on equity and increases risk. However the sensitivity of revenue diversification and cross-border banking is positive and significant to the risk and return measures. The interaction *(CBB*DIV(rev))* and *(CBB* DIV(non))* increases risk adjusted return on asset*(RAROA)* and risk adjusted return on equity*(RAROE)* and risk (Z-score). Indicating, that banks benefit truly from diversification when it cross- borders and engage in revenue diversification simultaneously. Efficiency decrease bank performance while Equity ratio, a measure of capitalization increases stability.

Table 5.8
Sensitivity analysis of revenue diversification and cross border banking on risk and return controlling for property right

Table 5.8 reports the two stage System GMM regression result, Windmeijer- correct standard error, small sample adjustment and orthogonal deviation. All regressions are conducted using dynamic panel data estimation. The dependent variables are the measures of bank risk ***(Z-score***), risk adjusted return in asset (***RAROA***) and risk adjusted return on equity (***RAROE). DIV(rev***) and ***DIV(non)*** measures revenue diversification across and within non- interest generating income. ***Cross border banking*** measured as a dummy taking the value of 1 where shareholding proportion of the local banks by foreign banks is 50% or more and 0 otherwise. The bank specific controls included in the regression are; ***Z-score lag***, ***RAROA lag*** and RAROE lag are the first lags of the dependent variables included as regressors***. (CBB*DIV(rev))*** is the interaction of cross border banking and diversification across revenue and ***(CBB*DIV(non))*** is the interaction of cross border banking and diversification within non-interest generating income. ***Bank size*** is the natural logarithm of total Asset in millions of US$, ***Efficiency*** is a proxy to cost to gross income ratio, ***Equity ratio*** is the ratio of equity to total Asset used as a proxy for capitalization. Two macroeconomic controls included are ***GDP growth*** is the annual growth rate of Gross Domestic Product and ***Inflation*** is the annual consumer price inflation. Constant term included but not reported. Standard errors are reported in parenthesis, ***, ** and *indicates statistical significance at 1%, 5% and 10% respectively. Higher scores of ***property rights*** indicate certainty of legal protection and limited Expropriation risk. The following diagnostic test are reported.(1)The instrument count,(2)number of banks used in the sample (3)the F-test for joint significance of instruments, (4)the Hansen test of over identifying restrictions which the null hypothesis is that instruments are exogenous, (5)the Arellano-Bond test for first and second order serial correlation in the residuals which the null hypothesis is there is no serial correlation.

	Z-Score	**RAROA**	**RAROE**
Z-Score lag	0.590***		
	(0.089)		
RAROA lag		0.453***	
		(0.113)	
RAROE lag			0.592***
			(0.118)
DIV(rev)	-0.517	-1.783	-2.208*
	(0.628)	(1.203)	(1.179)
DIV(non)	0.953*	0.753	1.035
	(0.511)	(0.790)	(0.690)
CBB*DIV(rev)	0.673	1.736*	2.934***
	(0.558)	(1.039)	(1.079)
CBB*DIV(non)	1.357*	-1.183	-2.221**
	(0.738)	(1.265)	(1.224)
Efficiency	-0.570	-1.521*	-3.055***
	(0.634)	(0.808)	(1.065)
Equity ratio	0.869*	-0.068	0.027
	(0.234)	(0.353)	(0.413)
Bank size	0.033	0.026	-0.061
	(0.033)	(0.047)	(0.045)
GDP growth	0.445	-0.141	-0.902
	(0.699)	(1.726)	(1.730)
Inflation	0.280	0.451	-0.425
	(0.304)	(0.495)	(0.585)
Property right	0.007	0.003	-0.004
	(0.005)	(0.009)	(0.010)
Diagnostic test			
Number of instruments	111	111	111
Number of Groups	292	282	282
F-test	26.26***	6.56***	10.02***
Hansen test	105.68	100.95	97.24
P value	0.174	0.269	0.361
AR(2) test	-0.66	0.72	-0.12
P value	0.508	0.470	0.902

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1Introduction

The chapter presents the summary and conclusion drawn from the entire study. This entails explanations of the models and approaches used in meeting the expectation of the study. Here, also recommendations are made for policy implementation as well as recommendations for future possible research. This study examined the effect of revenue diversification and cross border banking on risk and return of banks in Africa. A panel data set was then used to achieve our objectives.

6.2 Summary of Findings

This study primarily sort to examine the effect of revenue diversification and cross border banking on risk and return in Africa. The investigation covers the period between 2002 to 2013 for twenty-nine countries across 3 zones, (central, north and south). The variable used included revenue diversification, cross border banking, efficiency, equity, bank size, inflation and GDP growth; however other variables such as banking freedom, property right and capital stringency were used in the study. The determinants of revenue diversification were estimated using the RANDOM EFFECT model while the effect of revenue diversification and cross border banking on risk and return was estimated using System GMM. The study accessed whether cross border banking increases revenue diversification and this increasing revenue diversification and cross border banking reduces risk and increase profitability.

This study provide empirical evidence of the impact of the observed shift towards non-interest income generating activities on insolvency risk and bank performance. The core finding is that diversification across and within both interest and non-interest income generating activities and

cross border banking increase stability and enhance profitability. The results also show that these benefits are largest for banks with moderate risk exposures. Banks need to engage in both cross border banking and revenue diversification simultaneously in order to attain the maximum gain in both cases. That is increasing performance and reducing risk. By extension, these results have significant strategic implications for bank managers, regulators and supervisors who share a common interest in boosting bank performance and stability.

6.3 Conclusion

Using the random effect modal to determine the determinants of revenue diversification in reference to cross border banking, there is indication that cross border banking increases revenue diversification. In that as banks cross borders into other countries they turn to diversify their revenue into interest and non-interest income to be more profitable. Also using the systems Generalized Method of Moments estimator (System-GMM) to determine the impact of revenue diversification and cross border banking on bank performance and risk, there is evidence that diversification benefits exist for banks in Africa. More specifically, diversification across and within business lines increase risk adjusted profitability measures but could not explain the effect to insolvency risk as measured by the *Z-score*. The need to reduce defenselessness to macroeconomic and other systematic shocks may thus represent reasons why banks diversify and are less reliant on interest-income.

The lure of over diversification does not necessarily apply to banks in Africa, as there is no link between high exposures to non-interest income and bank profitability. This limits the scope for banks to adopt an indiscriminate diversification strategy to boost profits. There is evidence that the benefits of revenue diversification is greatest for banks with medium risk exposures, however, these banks are also in the position to be adversely affected by over reliance on non-

interest income particularly if diversification opportunities are irresponsibly used to gamble for profitability. Cross border banking on the other hand does not have any significant effect of risk and profitability of banks in Africa. There is evidence that banks that cross border do not significantly benefit from it by reducing their risk and increasing their profitability.

The results are robust to necessary controls for bank specific characteristics such as size and the macroeconomic conditions in Africa. Furthermore, various regulatory initiatives that can obscure the impact of diversification and cross border banking on performance and risk are controlled for. Also the results are robust to the effect of the interaction between cross border banking and revenue diversification. There is evidence that the sensitivity of cross border banking and revenue diversification increases risk adjusted performance and reduces risk of banks in Africa. Thus banks in Africa can derive absolute benefit from diversification if they cross border and diversify their revenue base concurrently.

This chapter highlight the fact that cross border banking and revenue diversification within banks in Africa can create value, an important insight for both bank regulators, and managers of banks in these countries. The results presented advance the current debate in the literature by considering how bank monitoring incentives, and the composition of portfolio held, affects the benefits diversification.

6.4. Recommendation

The fact that cross border banking and revenue diversification within banks in Africa can create value is an important insight for bank regulators in these countries. The strong positive association between cross border banking and revenue diversification suggests there is no negative balance between the diversification strategies. There is no compelling reason to restrict banks activity. Also, the weak link between cross border banking and risk and return is

evidence that regulators and supervisors foster real channels through which cross-border banks can threaten financial stability by minimize risks from cross border banking while maximizing its benefit. In addition, the role of cross border banking and revenue diversification on risk and return help in understanding the channels through which cross-border banking and revenue diversification can help deepen financial systems.

More importantly, it suggests that further research on this issue can be replicated on country basis in order to show the country dynamics and can also focus on other financial institutions like insurance. To see if the same result applies on country bases and in other financial institution. Also abandon the implied assumption that a diversified bank will always hold a risk efficient portfolio. This is a modification in the right direction since any negative effects of over reliance on non-interest income would no longer be incorrectly attributed to the lack of diversification benefits, but will in its place query internal managerial inefficiencies or other factors that approve biased investment decisions. This will therefore create building blocks for a new body of empirical research that moves the diversification argument forward.

REFERENCES

Acharya, V., Hasan, I., and Saunders, A., (2006), Should banks be diversified? Evidence on individual bank loan portfolios, *Journal of Business*, 79 (3), 1355-1412

Amidu. M. and Wolfe. S. (2013) ''Does bank competition and diversification lead to greater stability? Evidence from emerging markets'', *Review of Development Finance*, 3(3), 152-166.

Arellano, M., and Bond, S., (1991), 'Some tests of specification for Panel data: Monte carlo evidence and an application to employment equations', *The Review of Economic Studies*, 58 (2), 277-297.

Arellano, M., and Bover, O., (1995), 'Another look at the instrumental variable estimation of error-components models', *Journal of Econometrics*, 68, 29-52.

Baele, L., De Jonghe, O., and Vennet, R.V., (2007), 'Does the Stock Market value bank diversification?' *Journal of Banking and Finance*, 31, 1999–2023.

Barba Navaretti, G., G. Calzolari, A. F. Pozzolo and M. Levi (2010), 'Multinational Banking in Europe—Financial Stability and Regulatory Implications: Lessons from the Financial Crisis', *Economic Policy*, 25, 703–53.

Beck, T and Fuchs, M.(2004), "Structural Issues in the Kenyan Financial System: Improving Competition and Access," *World Bank Policy Research Working Paper* 3363, Washington DC.

Beck, T. and Cull, R. (2013), 'Banking in Africa', World Bank Policy Research Working Paper 6684. Washington, DC.

Beck, T. Fuchs, M., Singer, D. and Witte, M. (2014). 'Making cross-border banking work in Africa', The World Bank: Washington, DC.

Beck, T.,Maimbo, M.S., Faye, I and Triki, T.(2011). Financing Africa: Through the Crisis and Beyond. Washington, DC: The World Bank.

Beck, T, Cull, R. and Jorome, A. (2005). "Bank Privatization and Performance: Empirical Evidence from Nigeria", *Journal of Banking and Finance* 29, 2355-2379.

Bekaert G, Harvey G (2002) ''Research in emerging markets finance: looking to the future'' *Emerging Mark Rev* 3,429–448

Berg, G., Fuchs, M., Iacovone, L., Jaeggi, T., Lovegrove,A. and Villegas,C.S.(2012). "Financing Small- and Medium-Sized Enterprises in Nigeria." *Unpublished working paper, The World Bank*, Washington, DC.

Berger, A.N., Demsetz, R.S., Strahan, P.E. (1999) ‘‘The consolidation of financial services industry; causes, consequences, and implications for the future’’. *J Bank Finance* 23,135–194.

Berger, P.G., Ofek, E. (1995) ‘‘Diversification’s effect on firm value’’. *J Finance Econ* 37(1), 39–65.

Blundell R, Bond S (1998) ‘‘Initial conditions and moment restrictions in dynamic panel data models’’. *J Economy* 87(1), 115–143.

Bond, S.R. (2002) ‘‘Dynamic panel data models: a guide to micro data methods and practice’’. *Port Econ J* 1, 141– 162.

Brunnermeier, M., A., Crocket, C., Goodhart, A., Persaud,D and Shin.H. (2009), ‘The Fundamental Principles of Financial Regulation’. *11th Geneva Report on the World Economy*, ICMB, Geneva, and CEPR, London.

Campa, J.M, and Kedia, S. (2002) ‘‘Explaining the diversification discount’’. *J Finance* 57, 1731–1762

Carlson, M.A. (2004) ‘‘Are branch banks better survivors? Evidence from the depression Era’’. *Econ Enquiry* 42 (1), 111–126.

Cebenoyan, S., and Strahan, P, E., (2004), ‘Risk management, capital structure and lending at banks’, *Journal of Banking & Finance*, 28, 19–43.

Claessens,S. and van Horen,N. (2014). “Foreign Banks: Trends and Impact.” *Journal of Money, Credit and Banking.*

Cull, R. and Spreng, C.P. (2011) ‘‘Pursuing Efficiency while maintaining outreach: Bank Privatization in Tanzania’’ *Journal of Development Economics,* 94(2), 254-261

De Haas, R. and Van Lelyveld, I. (2010), ‘Internal Capital Markets and Lending by Multinational Bank Subsidiaries’, *Journal of Financial Intermediation*, 19(2), 1–25.

De Nicoló, G., Honohan, P., and Ize, A., (2003), ‘‘Dollarization of the Banking system: Good or Bad?’’ *WB Policy Research Working Paper*, 3116, (Washington D.C: World Bank).

De Vries, C. G., (2005), ‘‘The simple economies of bank fragility’’, *Journal of Banking and Finance*, 29, 803-825.

De Young, R. and Rice, T. (2004) ‘’Non-interest income and financial performance at U.S commercial banks’’. *Journal of Finance Review* 39, 101–207

De Young, R., and Roland, K.R., (2001), ‘‘Product mix and earnings volatility at commercial banks: evidence from a degree of total leverage model’’, *Journal of Financial Intermediation*, 10, 54-84

Demsetz R.S, Strahan P.E. (1997) ‘‘Diversification, size, and risk at bank holding companies’’. *Journal of Money, Credit Banking* 29(3), 300–313.

Deng, S., Elyasiani, E., and Mao, C.X., (2007), ‘’Diversification and the cost of debt of bank holding companies’’, *Journal of Banking & Finance,* 31, 2453–2473.

Froot, K.A., and Stein, J.C., (1998), ‘Risk management, capital budgeting, and capital structure policies for financial institutions: an integrated approach’, *Journal of Financial Economics,* 47, 55-82.

Froot, K.A., Scharfstein, D.S., and Stein, J.C., (1993), ‘Risk Management: Coordinating Corporate Investment and Financing Policies’, *The Journal of Finance,* 48 (5), 1629 1658.

Goddard J, Mckillop D, Wilson, J.O.S. (2008) the diversification and performance of US credit unions. *Journal of Bank Finance* 32, 1836–1849

Goldberg, L., Dages, B.G. and Kinney, D. (2000), ‘Foreign and Domestic Bank Participation in Emerging Markets: Lessons from Mexico and Argentina’. *NBER Working Papers 7714, National Bureau of Economic Research, Inc.*

Grossman, R.S., (1994), ‘The Shoe That Didn't Drop: Explaining Banking Stability During the Great Depression’, *The Journal of Economic History,* 54(3), 654-682.

Hirtle, J., and Stiroh, K.J., (2007), ‘The return to retail and the performance of US banks’, *Journal of Banking & Finance,* 31, 1101–1133

Ho, S.Y., (2003), ‘Foreign bank entry- the impact of experience, mean detection on local market of developing vs. developed country’. *Master Dissertation, National Chengchi University.*

Honohan, P. and Beck, T. (2007). ‘Making Finance Work for Africa’. The World Bank: Washington, DC.

Hughes, J.P., Lang, W., Mester L.J., and Moon C., (1996), ‘Safety in numbers? Geographic diversification and bank insolvency risk’, *Federal Reserve Bank of Philadelphia Working Paper* No 96-14.

Hyland, D. and Diltz, J. (2002) ‘Why banks diversify: an empirical examination’. *Journal of Financial Management* 31, 51–81

Klapper, L.F., Love, I (2002) ‘Corporate governance, investor protection, and performance in emerging markets’. *World Bank Policy Research Working Paper*, No.2818.

Kwan, S.H. (1998) ‘Securities activities by commercial banking firms’ section 20 subsidiaries: Risk, return, and diversification benefits’. *Federal Reserve Bank of San Francisco Working Paper,* 98–10.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A and Vishney, R. (1998) ‘*Law and finance’, Journal of Political Economics* 106, 1113–1115.

Laeven, L. and Levine, R. (2007) 'Is there a diversification discount in financial conglomerates?' *Journal Finance Economics* 85, 331–367.

Landskroner, Y., Ruthenberg, D. and Zaken, D (2005) 'Diversification and performance in banking: the Israeli case'. *Journal Financial Service* Res 27(1), 27–49.

Lang, L. and Stulz, R. (1994) 'Tobin's q, corporate diversification, and firm performance'. *Journal Political Economics* 102(6), 1248– 1280.

Lehar, A. (2005) 'Measuring systemic risk: a risk management approach', *Journal of Banking and Finance* 29, 2577–2603.

Lepetit, L., Nys, E., Rous, P., and Tarazi, A., (2008), 'Bank income structure and risk: An empirical analysis of European banks', *Journal of Banking and Finance*, 32, 1452 1467.

Levine, R., Loayza, N. and Beck, T (2000) 'Financial intermediation and growth: causality and causes'. *Journal of Monetary Economics* 46(1):31–77.

Levine, R. (2005). "Finance and Growth: Theory and Evidence." *In Handbook of Economic Growth*, Philippe Aghion and Steven N. Durlauf, 865–934. Amsterdam: Elsevier.

Lukonga, I. and Chung, K. (2010). "The Cross-Border Expansion of African LCFIs." IMF Research Paper, Washington, DC.

Markowitz, H. (1952), 'Portfolio Selection', *Journal of Finance*, 7, 77–91.

Mercieca, S., Schaeck K., and Wolfe, S., (2007), 'Small European banks: benefits from diversification?' *Journal of Banking and Finance*, 31 (7), 1975-1998.

Morgan, D.P. and Samolyk K (2003) 'Geographic diversification in banking and its implications for bank portfolio choice and performance', *Federal Reserve Bank of New York, Working Paper,* (February)

Nilsen, J.H., and Rovelli, R., (2001), 'Investor risk aversion and financial fragility in emerging economies', *Journal of International Financial Markets Institutions and Money*, 11, 443-447.

Reichart, A.K and Wall, L.D (2000) 'The potential for portfolio diversification in financial services', *Federal Reserve Bank of Atlanta Economic Review*, Third Quarter 35–51.

Roodman, D., (2006), 'How to do xtabond2: An introduction to difference‖ and system GMM in Stata', *Centre for Global Development Working Paper*, 103.

Rose, P. S., (1989), 'Diversification of the Banking Firm', *The Financial Review,* 24, 251-280.

Santomero, A.W. and Chung, E.J. (1992) 'Evidence in support of broader banking powers'. *Financial Market Instrument* 1, 1–69.

Sanya, S. and Wolfe, S. (2010) 'Can Banks in Emerging Economies Benefit from Revenue Diversification'. *J Finance Service Res*.

Stiroh, K., and Rumble, A., (2006), 'The dark side of diversification: The case of US financial holding companies', *Journal of Banking and Finance*, 30, 2131-2161.

Stiroh, K.J., (2004), 'Diversification in banking: is noninterest income the answer?' *Journal of Money Credit and Banking*, 36(5), 853-882.

Templeton, W.K, and Severiens, J.T (1992),'The effect of non-bank diversification on bank holding companies'. *Journal of Business Economics* 31(4):3–16.

The Heritage Foundation Index of Economic Freedom (2014), 'the link between economic opportunity and prosperity', Washington, DC: The Heritage Foundation and Dow Jones and Company.

Wheelock, D.C., (1995), 'Regulation, Market structure, and the Bank Failures of the Great Depression', *Federal Reserve Bank of Saint Louis Review*, 27-38.

Winton, A. (1999) 'Don't put all your eggs in one basket? Diversification and specialization in lending', *Wharton School Centre for Financial Institutions Working Papers*, 00–16

World Bank, (2014), World development Indicators (database), accessed online from www.esds.ac.uk on the 31st of January 2014.