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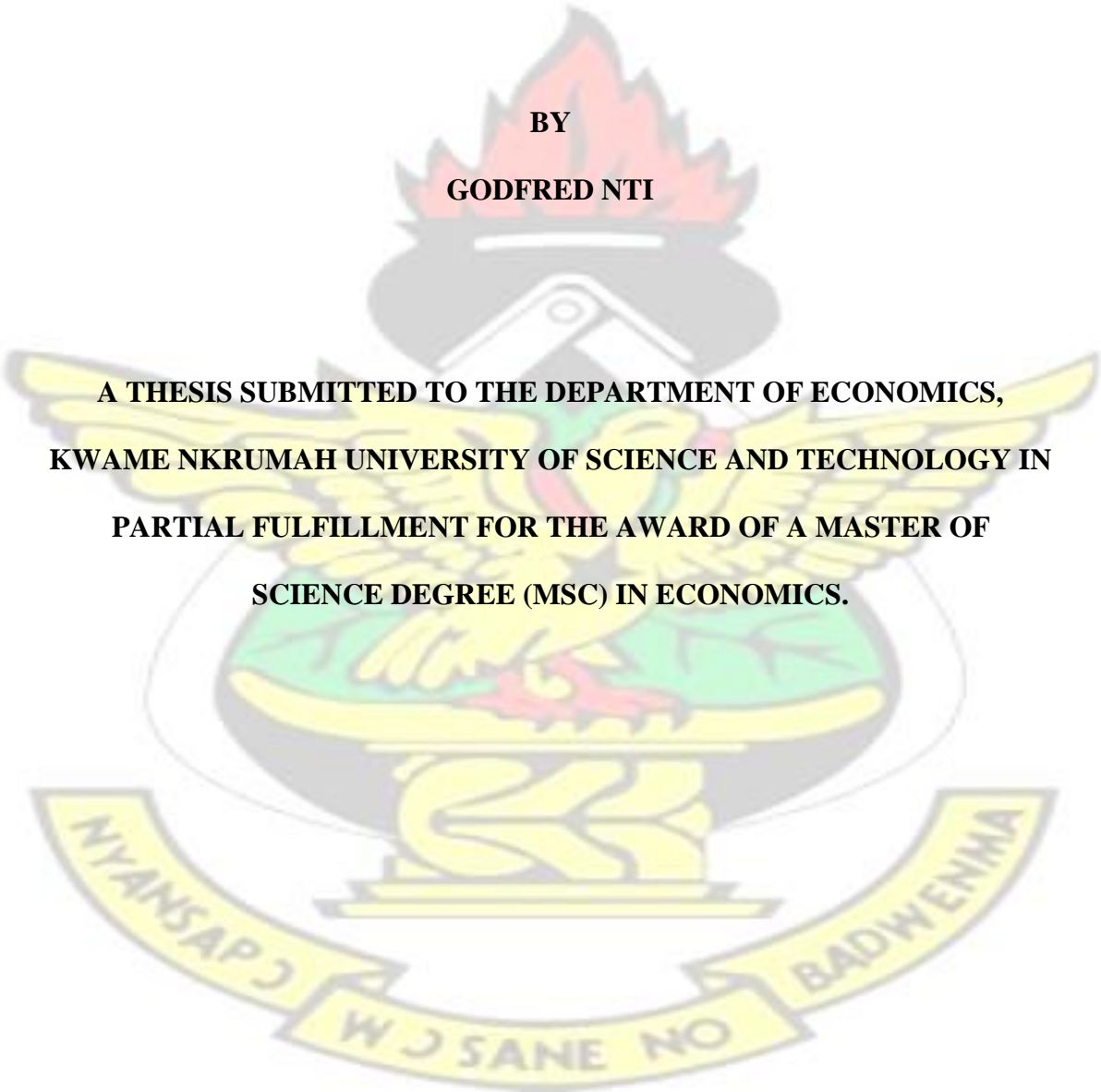
KUMASI, GHANA

**THE IMPACT OF NON-PERFORMING LOANS ON THE FINANCIAL
PERFORMANCE OF SOME SELECTED RURAL BANKS IN THE ASHANTI
REGION OF GHANA**

BY

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**A THESIS SUBMITTED TO THE DEPARTMENT OF ECONOMICS,
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PARTIAL FULFILLMENT FOR THE AWARD OF A MASTER OF
SCIENCE DEGREE (MSc) IN ECONOMICS.**



MAY, 2016.

DECLARATION

I hereby declare that this submission is my own work towards the degree of Master of Science (Economics) and that, to the best of my knowledge; it contains no material previously published by another person, nor material which has been accepted for the award of any other degree of the University, except where acknowledgement has been made in the text.

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ABSTRACT

The main objective of the study was to find the impact of non-performing loans (NPL) on the financial performance of some selected rural and community banks in the Ashanti region of Ghana. Specifically the study sought to find the trends in the profitability measured by the ROA of these banks and the impact of NPL, CAR and TD on their profitability. The outcome of the study was made possible by the use of the random effect model through the hausman test on annual dataset spanning the period 2008-2012. The study considered ten different rural and community banks due to the availability and accessibility of the data including Juaben rural bank, Sekyere, Bosomtwe, Akrofoam, AtwimaMponua, Kumawuman, Nwabiagya, KomfoAnokye, Adansi and Asokore rural and community banks in the Ashanti region of Ghana.

The study found non-performing loans (NPL) to be a statistically insignificant determinant of the financial performance of these rural banks despite an NPL percentage of 7% which is far above the requirement of 5% by the BOG. It implies that more loans are impaired than usual, thus having a negative effect on the profits and performance of the banks though very minute impact. However, the statistically insignificant state of NPL in explaining profitability of the banks is justified by the very scanty economic impact it has on the ROA of about 0.06%.

Furthermore Time deposit to loan ration was also insignificant but the capital Adequacy ratio (CAR) was found to be significant and have a positive impact on the profitability of the rural banks. The significance of CAR is justified by the higher capital adequacy ratio of these banks of 11% above the usual 10% which keeps the bank was robust and able to control any unexpected risk they face.

ACKNOWLEDGEMENT

Although the research is based largely on the result of my field work and research, I have obtained a great deal of guidance from a wide range of personality, books and publication, the sources of which are acknowledged in the text.



DEDICATION

I dedicate this project to GOD ALMIGHTY, for favoring me with wisdom to apply the knowledge and understanding he has bestowed on me. I also dedicate this paper to my parents for their support and prayers, and to my lecturers for their constructive criticism.



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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Profitability and performance are the life and blood of every organization since they are crucial components when it comes to their survival. The ability of any financial institution to withstand adversities depend on how strong their financial backings are irrespective of its size (Curak et al, 2013)

Rural and community banks do not see different through this lens. They were initially set up with the aim of providing to the rural populace banking services. The first rural bank in Ghana was put up in 1976 in the Central region of Ghana. It was established in Nyakrom, a farming community where Capital contribution was mainly from farmers in the community. According to the Bank of Ghana Register of Rural and Community Banks as of January 2013, there are 137 rural and community banks in Ghana. 25 in Ashanti Region, 21 in Central Region, 22 in Eastern Region, 20 in BrongAhafo Region, 14 in Western Region, 12 in Volta Region, 7 in Greater Accra Region, 5 in Upper East Region, 4 in Upper West Region and 7 in Northern Region.

Rural banks are relatively small financial institutions with average share capital of GH¢136,526 (US\$105,263), average assets of GH¢3.8million (US\$2.4 million) and average deposit of GH¢2.3 million (US\$1.77). The value of the indicators varies among the various rural and community banks in Ghana. Out of the 127 rural and community banks (RCBs) 75% have assets between GH¢1 million (US\$771,010) and GH¢8 million (US\$6.1 million), 20% have assets of less than GH¢1million and 5% have assets over GH¢10 million

(US\$7.7million). Similarly, 44% of RCBs have share capital of less than GH¢100,000 (US\$77,101) and only 6% have share capital of more than 250,000 (US\$192,752), Nair and Fissha (2010)

Currently, Rural banks total assets for the first quarter of the year as of March, 2014 were said to be GH¢1.9 billion. According to records from the central bank, this figure accounts for 3.86% of total assets for the banking industry, compared with 4.71% for 2013. This shows an insignificant decline of 0.85%. The Bank of Ghana recently came up with an upward review of the share capital required by all rural and community banks from GH¢150,000 to GH¢300,000 as part of efforts to improve the banking industry and environment. B&FT (June, 2014)

Proper management of credit portfolio is essential and critical for the survival and sustainability of financial institution of which rural banks are no exception. The issue of nonperforming loans is of a greater concern to all banks in Ghana.

Granting of credit facilities is one of the core activities of all rural and community banks in Ghana. It must however be noted that, loans form greater proportion of the operating assets of rural banks. Some proportion of loans granted by rural banks often result in non-performing and gradually result in bad debts with its adverse effects on the financial performance of rural banks.

Non-performing loans can adversely affect the operations of rural banks. The incidence of non-performing loans among financial institutions has been on the rise in the recent years as loan portfolio of the various financial institutions including rural banks keeps deteriorating despite the effort made by the banks to curb it. Credit management entails the establishment of legitimate formal policies and procedures to ensure that, the credit given out goes out to the appropriate customers, that the credit be used for the right purpose and productive sectors

(Asiedu-Mante, 2011).

Ampah (2010) in his article titled “Rural Banks in Ghana Collapsing” stated that, rural banks in Ghana are engulfed in varied and huge challenges when it comes to their loan management pertaining to the prevention of bad loans occurrence.

Non-performing loans, an indicator of credit risk can reduce the value of a bank and destabilizes the credit system as Padnabham (1998) and Agu (1998) put it; loan default reduces the resource base of a bank for further lending, weakens staff morale which can affect the borrower’s confidence. The cost of managing overdue debt can be very high and can reduce banks profitability.

Nair and Fissha (2010) indicated in a similar study of the Ghanaian rural and community banks that, loan portfolio is often considered the best leading indicator of the financial institutions performance. Nair and Fissha (2010) revealed that the percentage of a loan portfolio that was in default among some selected banks per one month was 16%. This is too high and unacceptable given the global average of 3% for the worldwide micro-banking industry (MIX, 2008). In addition the proportion of loans in default for more than one year was 3.5%, compared to 1.5% per the global micro banking industry. This according to Nair and Fissha (2010) an indicator of large loan losses which may never be paid back.

According to Hosna et al, (2009) non-performing loans is the proportion of loan losses amount in relation to total loan amount. Most research have proven that cause of banks failure is poor quality of loan portfolio which is statistically a major predictor of insolvency (Dermiquekunt,1989: Barr and Siems, 1994) with failing banks usually having high levels of non-performing loans prior to failure. Capario and Klingebiel (1996) indicated that nonperforming loans represented 75% of the total loan assets in Indonesia, which resulted in

the collapse of over sixty banks in 1997. With this in mind Non-performing Loans stands to be a threat when in the respect of performance and profitability.

1.2 Statement of the Research Problem

The threatening nature of non-performing loans on banks has become a global topic of which rural and community banks in Ghana are inclusive. The issue of non-performing loans (NPLs) has increasingly become a major challenge that several financial institutions are battling with. According to Peterson and Wadman (2004) many countries are facing the problem of non-performing loans (NPLs) making most banks unable to get the required profit out of loans.

Loan portfolio constitutes the largest operating assets and major source of income to financial institutions. If loans are well managed it will increase the banks' profitability and sustainability in the future but can become a disaster if not well managed. Obiero (2002) argued that out of the 139 banks, which failed during the period 1984 and 2002, 37.8% collapsed mainly due to poor quality of lending. Laeven et al (2002) also indicated that nonperforming loans are closely associated with banking crises as profitability is the blood of the bank.

High nonperforming loans have the tendency of causing rural banks to increase their lending rates as proved by Matu (2001). The high lending rates results because the banks pass on their losses in the form of higher rates to other customers. This high lending rate puts loyal clients at the losing end since they have to bear the cost for those adversely selected and defaulters. This indirectly put banking activities at risk since customers would eventually and gradually check out of the bank in question.

The Bank of Ghana also revealed that the nonperforming loans (NPL) ratio, which measures the ratio of loan losses to gross loan advances, worsened from 16.2% in December 2009 to 17.6%. This high NPL ratio lead to the reduction of the market share of the country's top five banks from 49.5% in 2009 to 45% in 2010 (Bank of Ghana report, 2010). Bank's NPL to total

gross loans in Ghana according to the World Bank was measured at 14.10% and it declined marginally to 13.20 % at the end of 2012 (World Bank, 2011).

The NPLs affect the banks in so many ways especially in its liquidity and profitability which forms a major component of the banks efficiency. It must be informed that adverse effects of NPLs are attributable to banks managers' adverse selection of its borrowers (Brown bridge, 1998). Several strategies and policies have been meted out to mitigate this problem of adverse selection all in an attempt to reduce the rate of NPL; however, the NPL rate has been on the rise causing the bankruptcy of many banks.

Knowing that NPL moves in tandem with profitability is not enough to meet out solutions, it thus becomes a prerequisite to quantify the exact relationship and impact the NPL has on performance and profitability since it can be country or bank specific. Since the rural and community banks are the most vulnerable compared to the commercial banks Ampah, S.K (2010), this research seeks to assess the impact of non-performing loans on the financial performance of some selected rural and community banks in Ashanti region.

1.3 Objectives of the Study

The general objective of this research is to assess the impact of non-performing loans on financial performance of some selected rural and community banks in the Ashanti region. To meet this objective, the study specifically seeks to;

1. Examine the trends non-performing loans and profitability of the rural banks has taken so far.
2. Assess the extent to which non-performing loans affect profitability of rural banks.
3. Evaluate how loans and advances contribute to the profitability of the selected rural banks.
4. Examine the extent to which capital adequacy contribute to the profitability of the bank

1.4 Hypothesis Testing

The study attempts to test for the following alternate hypothesis

- Non-performing Loans do not affect profitability of rural banks
- Loans and Advances do not have any impact on the performance of the rural banks
- Capital Adequacy Ratio do not have any significant impact on the profitability of the selected rural banks.

1.5 Justification of the Study

It should be noted that this study is of great significance for policy designing process. One of the most important issues in banking arena is to ensure a good financial standing in order not to go bankrupt. Ghana's policy arena over the past years has been to ensure proper liquidity management of banks as demonstrated by successive budget and policy statements.

The study will therefore help policy makers as it would bring to the fore evidence on the relative importance non-performing loans and how they affect profitability of these rural banks in order to enable successful policy implementation to further improve rural banking. The academicians will also find the study to be very helpful as it will point critical areas for further research and also to add to existing knowledge

1.6 Scope and limitation of study

The study makes use of strictly secondary source of data obtained from the financial statements of the respective rural banks under study. The study bases its analysis on annual dataset spanning the period 2008 to 2012 of ten different rural and community banks in order to achieve its objectives. This time period was chosen due to the accessibility and availability of the data. A total sample of 50 observations is therefore made use of in the analysis of the study. The sample of rural and community banks under consideration are the Juaben rural bank, Sekyere and Bosomtwe rural banks, Odotobiri, AtwimaMponua and Kumawuman rural banks,

Nwabiagya, KomfoAnokye, Adansi and Asokore rural and community banks all in the Ashanti region of Ghana. The variables employed include the Return on Assets (ROA), Nonperforming loans (NPL), Capital adequacy Ratio (CAR) and loans and advances (TD).

1.8 Organization of the Study

The study is organized in five chapters as follows. Chapter one gives a general introduction including the background to the study, objectives of the study, problem statement of the study, methodology, limitation of the study , organization of the study and significance of the study. The chapter two would mainly review literature on the impact of non-performing loans as well as studies done in that respect. The chapter three is devoted to the presentation of research methodology and describes how the data has been collected and analyzed, and also tools used to analyze the data .Chapter four will focus on the analysis of the findings. Chapter four presents the empirical results and findings of the study through discussions and analysis. The final chapter deals with conclusions based on the findings and ends with policy implications and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the various literatures on the subject matter. It takes into account causes of non-performing loans, credit risk, and measurement of credit risk in banks, credit policy and documentation, Credit appraisal techniques, Loan classification and provision required.

The chapter further review various works explored by other authors in this respect.

2.2 Theoretical Literature

2.2.1 Explaining Loan Default

The Business Dictionary.Com defines Loan default as the failure to meet the terms of credit or a loan agreement. That is Failure to make repayment on the due date as scheduled in the repayment contract. Loan default can also be defined as the inability of a borrower to fulfill his or her loan obligation when loan is due for payment (Balogun and Alimi, 1990).

2.2.1.1 Causes of Loan Defaults

Ahmad, (1997), highlighted some key factors that cause loan defaults. These factors include; lack of willingness to pay loans, diversion of funds by borrowers, willful negligence and improper appraisal by Credit Officers. In addition to this, Hurt and Fesolvalyi (1998), corporate loan default increases as real gross domestic product decline, and that the exchange rate depreciation directly affects the repayment ability of borrowers. Balogun and Alimi (1988) also identified the major causes of loan default as loan shortages, delay in time of loan delivery, small farm size, and high interest rate, age of farmers, poor supervision, and nonprofitability of farm enterprises. According to Olomola (1999), loan disbursement lag and high interest rate can significantly increase borrowing transaction cost and can also adversely affect repayment performance. Poor monitoring of loans by project officers has contributed much to the incidence of NPLs in Rural Banks. Some loan officers do not often monitor the loans they have recommended for approval after disbursement of such credit facilities. Such loans which are often left not being monitored result in non-performing loan. Also, poor credit appraisal as indicated above result in non-performing loans in banks. Some customers may not be qualified for credit facilities when detailed appraisal is done. In view of this some officer, in their own narrow interest present such business in way worth financing to the credit committee for approval. When this happens the loans may often not be repaid either in the interest of principal amount. Often credit officer complain that, they are not fully resourced to do the monitoring.

It must also be established that, diversion of loan purpose as mentioned by Ahmad, (1997), is a major contributor of non-performing loans. As soon the purpose of credit facility is diverted it affects the repayment of such facilities. Another cause of non-performing loan is loan by speculation. When people go to the banks for loans based on speculation they often willingly do not want to pay back such loans. Some of them believe that, the money given to them as loans are from government and government money is their own money at all they pay tax to the government through the local assembly. Business failure is another cause of non-performing loans in rural banks in Ghana. Business failure in Ghana is attributable to several factors but in all forms whenever it happens it affects the banks especially when the collapsing business has taken credit facility from the banks

2.2.2 Loan Repayment

Any bank's ability to offer more loans is determined by the possibility of repayment of loans. This means that the more loans are repaid the more the banks become solvent hence its ability to grant more loans to others who may also apply. For the required profitability, banks must be careful in its management of loans. The possibility of adverse selection of customers is a very common outcome of many loans given. This is as a result of the fact that customer's records are used to determine the ability to service the loan; some customers have the tendency of hiding real position at hand. Bruck (1997) opines that, loan administration goes beyond just approval of loans. The repayment of loans by customers would be made possible through its control and supervision. Personal loans granted to salaried workers, records a higher percentage of repayments. For instance, the credit given to agricultural farmers should be clearly monitored to ensure that decision of loan acquisition and the purchasing of other assets at the expense of servicing the loan on maturity is avoided.

The possibility of loan repayment on group lending is due to the fact that joint and several liability clauses are put in place to serve as a respite for the lenders. This gives the mandate for serious action to be taken against the group even to the extent of selling their personal assets to recover the loan.

2.2.3 Credit Process, Policy and Documentation.

The credit processes, policy and documentation entail three (3) main functions which are listed below.

i. Business development and credit analysis:

Business development is the process of marketing bank services to existing and potential customers. With lending, it involves identifying new credit customers and soliciting their banking business as well as maintaining relationship with current customer and cross-selling non-credit services/product. Business development involves the following.

- Market research
- Advertising public relations
- Obtain formal loan request
- Interview Borrower
- Obtain final statements, Borrowing resolution and other related information.
- Evaluate management capability, collateral adequacy, industry dynamics and financial position.
- Credit officers make recommendation on accepting/rejecting loan request. ii.

Credit execution and administration

This involves the under listed

- Loan committee review proposal/recommendation
- Accept/reject decision made, terms negotiated

- Loan agreement, prepared with collateral documentation.
- Borrower signs agreement, turns over collateral, receives loans proceeds
- Perfect security interest.
- File materials in credit file.
- Process loan repayment; obtain periodic financial statements call on borrower.

iiiCredit Review.

- Review loan documentation
- Monitor compliance with loan agreement.
- Positive and negative loan covenants
- Delinquencies in loan requirements
- Discuss nature of delinquencies of other problems with borrower.
- Institute corrective action including modifying credit terms, obtaining additional capital, collateral, guarantees, etc and call loan.

2.2.4Credit Policy

Banking credit policy is the bank's written loan policy as determined by the Board of Directors. A loan policy formalizes lending guidelines that employees follow to conduct business. It identifies preferred loan qualities and establishes procedures for granting documentation and reviewing loans. The credit policies of banks including rural banks should address the following

- Who qualifying for credit and how much should be given.
- What type of credit is available?
- Information and documentation needed to approve new credit and renew facilities
- Target market
- Credit terms and conditions
- Credit limits

- Credit risk/how to manage credit issues
- Approval authorities, Collateral securities, Disbursement of funds, Repayment and rescheduling of credits, Credit supervision and Credit audit and reporting.

It must be noted that bank's sound credit policy would not only maintain sound credit granting standards but also ensures monitoring and control credit risk, properly evaluated new business opportunities and identifying, prevent and resolve credit problems.

2.2.5 Credit Appraisal

The one various techniques used in appraisal of individual or corporate bodies. The most common techniques are the CAMPARI, and the 5c's (character, capital, collateral, condition and capacity)

2.2.6 Credit Monitoring

This is an act of closely observing the unit which the bank has financial and is expecting in return interest and principal payment. The main aim of credit monitoring is to detect changes in the customer's credit worthiness so that corrective measures can be seen to minimize losses.

2.2.7 Tools for loan monitoring

Branch records, the annual financial reports, progress reports and the visit to company are the available tools for monitoring of loans.

2.2.8 Credit Recovery

Kohansal and Mansoori (2009) are of the view that, lenders devise various institutional mechanisms aimed at reducing the risk of loan default. That is pledging of collateral, thirdparty credit guarantee, use of credit rating and collection agencies.

It must be noted that Banks advances such as loans and overdrafts have disbursement date and maturity or expiry date. Upon disbursement of credit facilities customers are given schedule of repayment which deprives the key component including disbursement date, expiry date, and monthly repayment amount if applicable guides the credit officer to effectively monitor and recover non-performing loans.

Credit recovery process involves the following

- Send a reminder letter, one month before due date.
- First demand notice on due date.
- Second demand notice, one after first demand notice.
- Third and final demand notice, one month after second demand notices.
- Refer to recovery unit if available finally between 90 and 180 days upon expiry should be reported to the legal unit.

2.3 Bank Profitability and its Measurement

The profitability of banks are examined in context as return on equity (ROE) and return on asset (ROA) which are commonly used to measure the profitability of banks. The efficiency of a bank can be properly evaluated on the basis of return on equity since it shows that banks reinvest its earnings to generate future profit. A bank makes profit by earning more money than what they pay in expenses. The bulk of a bank's profits come from the interest that it earns on its assets and fees that it charges for its service. Investors want to see where a bank is performing well before considering any potential investment. Thus, a high stock price alone cannot be a good measure to use but one has to look at some key things like the bank's financial statements to see how well a bank is performing. A strong measure of any company's performance is its return on equity (ROE), which is a measure of how well the bank uses its reinvest earnings to generate additional earnings.

2.3.1 Credit Risk

According to the Basel committee on banking supervision (2001) credit risk is simply defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms. In afterwards, credit risk is the possibility of losing the outstanding loan partially or totally, to conduct events or partial risk.

The Basel Committee proposes two methods for calculating the capital requirements for credit risk. The 1st one which measures the risk in standardized manner and the 2nd one subject to the explicit approval of the bank's supervision and allows banks to use the internal rating based (IRB)

Kay (2002) also defined credit risk as distribution of financial losses due to unexpected changes in the credit quality of counterparty in financial agreement. He highlighted that the probability of default is estimated by specifying a model of investor uncertainty; a model of the available information and its evolution overtime, and a model definition of the default event.

2.3.2 Components of Credit Risk in Banks.

There are three major components of credits risk in Banks. This include the following

- i. Transaction Risk. This risk looks at changes or availability in credit and earnings resulting from having to underwrite individual loan transaction.
- ii. Intrinsic Risk: This type of risk is inherent in certain lines of business and loans to certain industries.
- iii. Concentration Risk: This risk aggregate transaction and intrinsic risk within the portfolio and may result from loans to one borrower or one industry.

Credit represents an amount of money that will be paid at some future date, in return for benefits received earlier, such as goods and services now for payment in future. Bank lending involves a bank providing a loan in return for the promise of interest and principal repayment in future.

2.3.3 Measurement of Credit Risk in Banks

Credit risk management is very important in the banking industry. Banks can usually project the average level of credit losses it can reasonably experience. The parameters that are usually used to measure credit risk are referred to;

i) **Expected Losses (EL):** This is perceived as cost of business undertaking by financial institutions

ii) **Unexpected Losses (UL):** These are losses above the expected level when banks anticipate their occurrence, though the timing and severity cannot be reliably known with hindsight. Unexpected losses might be absorbed by the interest rate charged on credit exposure although the market will not support adequate prices to cover all unexpected losses.

iii) **Loss Given Default (LGD):** The amount of money which the bank can lose when the borrower defaults on a loan.

Thus, when losses occur, capital is needed to cover the risk of such losses. It is interesting to note that banks have the incentives to minimize capital they hold since reducing the capital releases more funds available which can be invested in profitable ventures. However, the lesser the bank's capital, the greater the likelihood that it will not be able to meet its own debt obligation as they fall due. That is losses in a given year will not be covered by profit available plus capital and therefore the bank becomes bankrupt or insolent. This means that banks must carefully balance the risks and rewards of having enough capital available. Thus, a bank must be able to determine how much capital it should hold.

2.4 EMPIRICAL REVIEW

Studies on credit risk management still remain very limited nevertheless some influential papers have evolved giving efforts to explaining the effect and impact of credit risk on the performance and profitability of banks either commercial, rural or microfinance. Diverse outcomes were concluded by these researchers making the exact relationship between these two aspects inconclusive.

Idowu&Awoyemi (2014) assessed the impact of credit risk management with focus on the commercial banks in Nigeria. The study found the significance of these credit risk variables on the profitability of the banks. This outcome was realized through the application of panel regression on seven different commercial banks over seven year period each from 2005 to 2011. Specifically, the study found the ascending rate of non-performing loans amongst the banks, an indication of very poor risk management practices within the country.

Curak et al (2013) further examined the determinants of non-performing loans with evidence from the southern Europeans banking systems. This study was realized with the use of dynamic panel analysis by the application of the General Method of Moment (GMM) on annual data from 2003 to 2010 for 69 banks in 10 different countries. The results found the decreasing economic growth of the countries, high inflation and higher interest rate to be the major causes of the non-performance of loans in the banking sector. Additionally, the credit risk is affected by bank-specific variables such as bank size, performance (ROA) and solvency. Wangai et al (2012) also undertook a study in Kenya on the some microfinance banks by assessing the impact of the NPL on their profitability. They employed primary source of data which the survey made use of due to the small target population of 66. The quantitative analysis found the negative impact of credit risk on profitability as a result of increasing NPLs.

Felix and Claudine (2008) in their findings, profitability measured by Return on Equity (ROA) and return on Assets (ROA) irrespective are negatively affected by the ratio of nonperforming loan to total loan of financial institutions therefore decreases profitability. Kithinji (2010), further emphasized an indirect nexus between profitability and non-performing loans in Kenya. Warue (2013) investigated the relationship between non-performing loans and bank-specific macroeconomic forces in driving profitability in commercial banks in Kenya. With time frame between 1995 and 2009 on annual frequencies, the study found the increasing impact of bank specific factors affecting the NPL compared to macroeconomic forces including per capita, GDP, inflation and interest rate. Effective bank management should thus be the focus of banks in minimizing the extent of non-performing Loans.

In the Ghanaian front, Afriyie & Akotey (2013) examined the credit risk management and profitability of rural banks in the Brong Ahafo region of Ghana. This research was made possible by the use of annual secondary data from 2006 to 2010 of 10 rural banks in the region. Through the panel analysis on the CAR and NPL as credit management tools, the study found only NPL to be the major determinant of profitability of these rural banks in the region. CAR per the study did not have any significant influence on profitability. The study found an increasing level of profits despite their poor credit risk management in the form of high NPL. This was attributed to the fact that, these banks transfer the risk of loan impairment to other customers in the form of high interests.

Mills & Amowine (2013) also worked on the rural bank profitability relationship in Ghana. With the application of quite a large sample of fifty rural banks over the period 2002 to 2011 and the use of panel regression, the study found the size of GDP and monetary expansion to be the major external forces that influence the profitability of rural banks in Ghana. To ensure the total transformation of the profitability of these banks, the government is thus encouraged to ensure economic growth and stability.

Also Nair &Fissha (2010) also analyzed the financial performance and the service delivery of 12 rural and community banks with evidence from Ghana. The financial performance they found to be mixed despite the good service delivered by these RCBs. This they attributed to the high and unacceptable percentage of NPL of about 16 percent which was far about the global average of 10 percent. An obvious indication that large amount of loans are never repaid by customers.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter presents more insight into the econometric techniques to be used in the analysis of the study in order to meet its objectives. The chapter is thus organized into three sections. The first section 3.2 brings to bare the discussion on the exact specification of the model as well as justification and priori expectations of the included regressors and regressant. The second section 3.3 presents the data type, sources and variable definitions while the final section 3.4 would capture the strategy to be used in our estimation taking into account the diagnostic test and their respective test procedures.

3.2 Model Specification

In assessing the impact of non-performing loans on the financial performance of some selected rural and community banks, it becomes a prerequisite to make use of panel data. Panel data as a means of analysis entails dataset where there is the observation of the behavior of entities or individuals across time. These entities can include countries, firms, institutions and others (Green, 2008). For the study, assessing ten different rural and community banks across time justify the need to use panel regression.

The regression model in panel can be specified as

$$C_{it} = f(X_{it}, Z_{it} \dots) + \mu_{it} \quad (3.1)$$

Where C_{it} the regressant or dependent variable per the study represents the financial performance of the rural and community bank i at time period t . Furthermore, X_{it}, Z_{it} are the vector of the characteristic variables of bank i also at time t . μ_{it} is the disturbance term which captures all other factors that are not included in the model.

Specifically, the study propose the model in the form,

$$ROA_{it} = f(NPL_{it}, CAR_{it}, TD_{it}) \quad (3.2)$$

$$\ln ROA_{it} = \gamma_1 + \gamma_2 \ln NPL_{it} + \gamma_3 \ln CAR_{it} + \gamma_4 \ln TD_{it} + \vartheta_i + \tau_t + \mu_{it} \quad (3.3)$$

γ_1 is a vector of constant terms, $\gamma_2, \gamma_3, \gamma_4$ are the vector of coefficients of the explanatory variables which measures the elasticity and magnitude of impact on the ROA since they are specified in log form. ϑ_i and τ_t captures the bank-specific and time-specific effects respectively while μ_{it} is the vector of error term which is assumed to be uncorrelated with the explanatory variables and the bank-specific effect.

ROA_{it} is Return on Assets is the regressant which is a proxy of the financial performance of each bank at time t . The regressors include NPL_{it} as the Non-Performing Loan of bank i at time t , CAR_{it}, TD_{it} which are the capital adequacy ratio and loan advance to time deposits for the i th bank at time t respectively.

The justification of the bank-specific effect is to account for all other possible factors aside NPL, CAR and TD which are specific to the respective banks likely to affect their profitability such as technology and other management practices. The time specific effect would also capture the relevance of time to the banks in their profitability.

The profitability of the rural and community banks is therefore assumed to be dependent on the non-performing loans, capital adequacy ratio and loan advance to time deposits.

3.3 Data type and Sources

The study makes use of strictly secondary source of data obtained from the financial statements of the respective rural banks under study. The variables employed include the ROA, NPL, CAR and TD. The study bases its analysis on annual dataset spanning the period 2008 to 2012 of ten different rural and community banks in order to achieve its objectives. A total sample of 50 observations is therefore made use of in the analysis of the study. The sample of rural and community banks under consideration are the Juaben rural bank, Sekyere and Bosomtwe rural banks, Odotobiri, AtwimaMponua and Kumawuman rural banks, Nwabiagya, KomfoAnokye, Adansi and Asokore rural and community banks all in the Ashanti region of Ghana. This time period and the respective banks were chosen based on the accessibility and availability of the data at hand.

3.4 Variable Definition

With the above model specified in an attempt to determine the financial performance of these rural banks, the respective variables specified in the model are thus given a brief description in this section in conjunction with their measurement and expected signs.

3.4.1 Return on Asset (ROA)

An asset refers to anything valuable that belongs to an individual or entity. Return on Assets measures the amount of income or revenue that is earned by banks from the total assets they own. It measures the profitability of the banks since it brings to bear what the various banks can do with what they own (Ara et al, 2009). ROA has thus been used by various influential writers (see Awo&Akotey (2011), Haron (2004), Athanasoglou et al (2005), Mills &Amowine (2013)) as proxy for banks profitability. Per the study therefore, ROA is the dependent variable

thus a proxy for the measurement of the profitability of the rural banks under consideration. The ROA in this study is expressed as the ratio of the profit before interest and tax (PBIT) to the total assets (TA) by the banks. It spells out the efficiency and the level of management of funds in these banks.

$$ROA = \frac{PBIT}{TOTAL\ ASSETS} \quad (3.4)$$

3.4.2 Non-Performing Loan (NPL)

A non-performing loan measures the amount of loans or payments that are not yielding any profit or has totally gone bad in which case the loan was not repaid by the borrower. NPL in the study serves as an independent variable which is the major focus of the analysis and how it affects banks profitability. NPL is of major focus because it is a determinant which can never be ignored when it comes to accessing profitability (see: Afriye&Okatey (2011), Awo&Akotey (2011), Abiola&Olausi (2014)) and thus become the variable which has received much attention in recent years.

The proxy for the Non-performance of loans with respect to the study is given by ratio of loan impairment to the total loans and advances (LA).

$$NPL = \frac{LOAN\ IMPAIRMENT}{LA} \quad (3.5)$$

It is expected to have an inverse relationship with the performance and profitability of the rural banks. An increase in non-performing loans brings the banks to the losing end leading to a fall in their profitability.

3.4.3 Capital Adequacy Ratio (CAR)

CAR is the measure of the ratio of a bank's capital to its risk. It specifies the amount of capital that is readily available to absorb any form of risk such as losses. The Capital at the disposal of any bank can take two forms including the Tier one and tier two capitals. The tier one capital

has a higher level of protection for depositors as this type of capital can absorb losses without the bank having to cease operation. The tier two on the other hand absorbs losses in the phase of the total collapse of the banks and thus has a much lower protection for the cliental base.

The study employs the equation below for its CAR measurement.

$$CAR = \frac{\frac{EQUITY}{Y_t}}{TA} \quad (3.6)$$

Where e and Y_t represents the equity and shareholders' funds respectively whiles TA also connotes the total assets of the banks.

The CAR according to the study is also an independent variable and a proxy for the measurement of credit risk of the bank which can affect the profitability of the firm. It is thus expected that, an increase in the CAR would lead to an increase in the appreciable level of profitability thus positively related.

3.4.4 Loan and Advance to Time deposits (TD) Ratio

The ratio of loans and advances to time deposits tells the comparison between the loans that these rural and community banks makes to their customers and the actual deposits that these customers makes to the banks. It thus spells out the relationship between loans and deposits. It is specified by

$$TD = \frac{LA}{TIME DEPOSITS} \quad (3.7)$$

Where LA denotes the loans and advances made by the banks to customers as a ratio to time deposits made by customers.

It is expected to have a negative relationship with the profitability of the rural banks. This is because with an increase in the TD, it is an indication that the loans given out by the banks tend

to outweigh the deposits made by the customers leading to the overall decline in the profitability of the banks. The inverse is true.

3.5 Estimation Strategy

3.5.1 Diagnostic Test Procedure

The classical linear regression model (CLRM) estimates the value of a dependent variable Y expressed in terms of a set of independent variables X . Specifically, it can be expressed in the form;

$$y = \beta_0 + \beta_1 X + \varepsilon \quad (3.8)$$

Where the error term (ε) is assumed to be independently identically distributed (iid), with zero expected mean and constant variance.

Thus for a CLRM to be the best linear unbiased estimator, it has to stand the test of four underlying assumptions (Brook, 2008). These assumptions include the Normality assumption, the absence of multicollinearity, autocorrelation and heteroscedasticity, thus appropriate diagnostic test should be conducted for each to ensure a more robust outcome of any ordinary least square regression.

3.8 The Hausman Test for Fixed and Random Variables

In the analysis of panel data, there are two main approaches for modeling the variations in the regressions, that is the random effect and the fixed effect models.

The fixed effect comes to play when there is the need to analyze the effect of variables that tend to vary over time. Thus when there is heterogeneity of the variables implying that the characteristics of the variables are unique and thus should not be correlated with other individual variables (Torres-Reyna, 2007). However, under the fixed effect, the bank-specific effect is assumed to be random and allowed to correlate with the explanatory variables. The

random effect on the other gives a random variation in the entities under consideration where the bank-specific effect is uncorrelated with the explanatory variables.

The Hausman test is used as a statistical tool for determining whether the fixed or random model should be used in a panel analysis. The test is specified at a 5% level of significance to propose the relevant effects to be used. It is specified as;

$$H = (\widehat{B}_{RE} - \widehat{B}_{FE})' [Var(\widehat{B}_{FE}) - Var(\widehat{B}_{RE})]^{-1} (\widehat{B}_{RE} - \widehat{B}_{FE}) \quad (3.10)$$

Where \widehat{B}_{RE} and \widehat{B}_{FE} represents the estimated coefficient of the fixed and variable effects in a regression. The corresponding variances of the estimated coefficients also for the fixed and random are captured by $Var(\widehat{B}_{FE})$ and $Var(\widehat{B}_{RE})$ respectively.

The Hausman tests the null hypothesis that the random effect is the desired model as against the alternate where the fixed is the preferred model (Green, 2008). At the 5% level of significance, if the p value is found to be less than 0.05 it implies that the two effects are different such that the random effect is rejected in favor of the fixed effect. In contrast is the p value if greater than 0.05 ($p > 0.05$), the test fail to reject the null hypothesis and thus the random effect is chosen for the analysis.

The random effect is often seen to be a biased estimator of the coefficients as against the fixed effect which is usually an unbiased estimator. To this effect the widely used model is the fixed effect. However, there tend to be many instances where a biased estimator (random effect) is preferable over the unbiased (fixed effect). This is justified when the biased estimator is able to provide enough reduction in the variances of its outcome (Clark & Linzer, 2012).

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

This chapter presents the estimated results of the empirical models specified in Chapter Three with focus on the stated research problem, objectives and hypothesis outlined in Chapter One. First, we begin with the presentation of the descriptive and correlation analysis emphasizing on the variables at hand. This is followed by the trend analysis of focus variables. As a final step, we present our results on estimated relationships with discussions and interpretations thereof.

Table 4.1 Summary of the Descriptive Statistics

Variable	Observation	Mean	Stand deviation	Min value	Max Value
ROA	50	0.033786	0.011015	0.012	0.06111
NPL	50	0.072114	0.045542	0.007	0.2726
CAR	50	0.1155	0.030515	0.0657	0.1726
LA	50	0.520256	0.134723	0.2278	0.7919

Source: Author's estimation 2015

Over the 5-year period chosen for the study, it is revealed from the table above that, there were 50 observations in all with no missing observation. These 50 observations was an outcome of 10 different rural and community banks with each having a 5-year sample period.

The ROA ratio which is measured by the profit before tax and interest divided by total assets has a range from 0.012 to 0.61. It has a corresponding average of 3.3% which is the total profit percentage that was earned by the various banks from their total assets. This represents quite a menial profit percentage which is not the best any profit making entity would want to gain out of its entire assets.

Also, the maximum percentage value of all non-performing loans (NPL) was about 0.27 with about 0.007 minimum values. This is an indication that an average of about 7% of customers

is likely default in loan payments. Thus rural banks are likely to have about 7% of its total loans given out to be defaulted. This implies a high risk being faced by the rural banks because more loans are being given out to customers compared to the deposits being made by them.

With respect to the Capital adequacy ratio (CAR) from the results, these rural banks have a minimum value of 0.06 with a maximum value of 0.17. According to the statutory of the BOG, a minimum of about 10% capital adequacy ratio should be maintained by the rural and community banks in order to avoid financial losses and the total failure of the financial system. With an average of about 11% CAR per the results tells that the rural banks are above the minimum requirements to keep them in operation.

Furthermore, a maximum of about 79% of customers give loan advance with a minimum value of about 22%. On the average, the ratio of the total loans to total deposits is about 52%, with the highest possibility of deviation of about 39% from its mean.

4.2 Correlation Analysis

The analysis of correlation is justified as it checks the extent of multicollinearity among the independent variables. This would help clarify the highly correlated variables so as to avoid the use of the all the highly correlated variables in the regression. The result of the correlation matrix is presented in the table below.

Table 4.2 Pairwise Correlation Analysis

Variable	ROA	NPL	CAR	LA
ROA	1.000			
NPL	-0.1133	1.000		
CAR	0.7022	-0.2699	1.000	

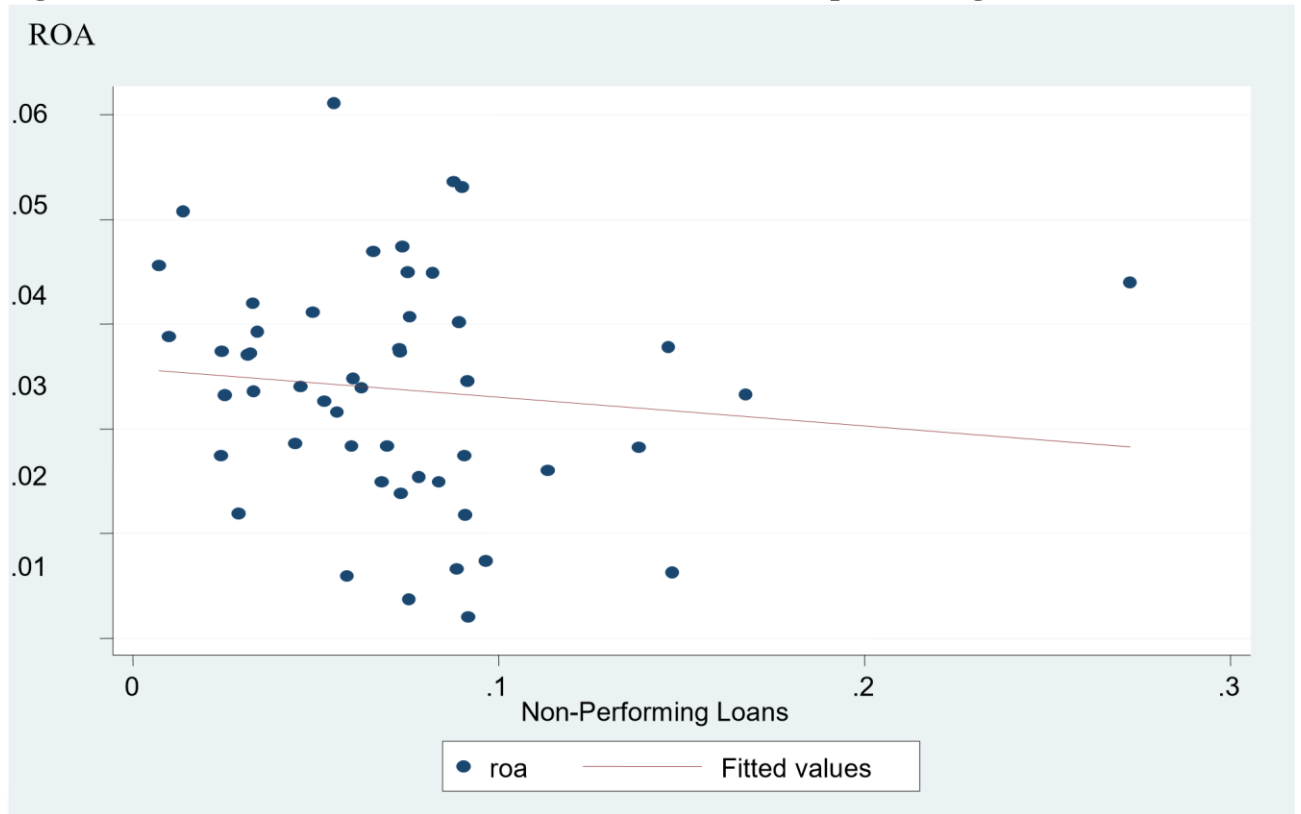
LA	0.2152	-0.3954	0.3584	1.000
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Source: Author's estimation 2015

From the table above, it can be seen that the principal diagonal tells the relationship between a variable and itself with a correlation coefficient of 1. Considering the off-diagonals or the bivariate correlation too, it can be seen that ROA and NPL has a weak negative correlation with coefficient of -0.1133. However, ROA is positively related with CAR and LA with correlation coefficient of about 0.7022 and 0.2152 respectively. Nevertheless, the strength of the positive relation is higher for CAR than for LA. But multicollinearity would not be a problem in the regression because multicollinearity only becomes a problem when there is high correlation between two independent variables.

Furthermore, NPL also has a weak negative correlation with CAR and LA whiles CAR is positively related with LA. Thus the best regression models are those in which the predictor variables (independent) each correlate highly with the dependent (outcome) variable but correlate at most only minimally with each other.

Figure 4.1 Scatter Plot for Return on Assets (ROA) and Non-performing Loans (NPL)



Source: authors own construction, 2015

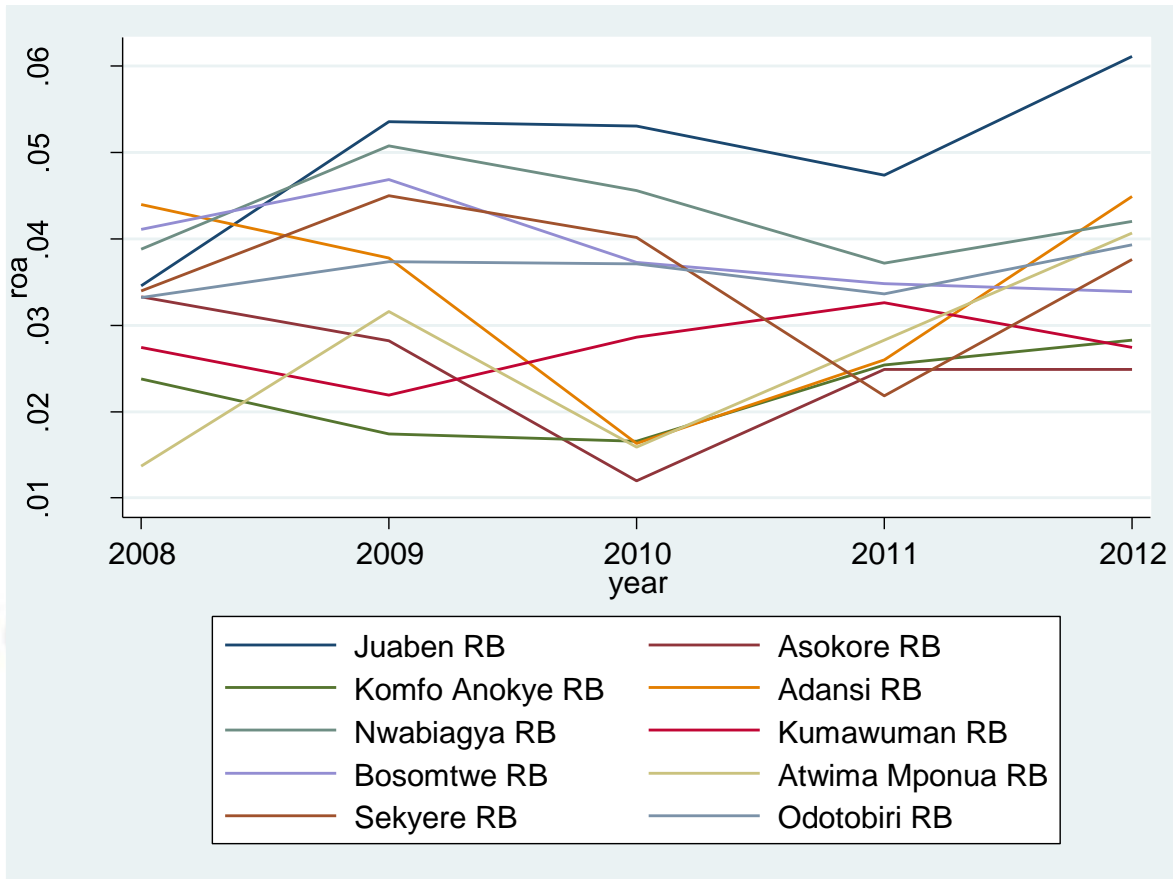
Fig 4.1 above gives a pictorial relationship between the principal variables of interest using the scatter plot diagram. The aim of the study is to find the impact of non-performing loans on the performance and profitability of these selected rural and community banks, thus the exact relationship between them is shown in the figure above. It is evident that there tend to be a negative relationship between these two variables of focus, however, the inverse relationship is very weak almost a horizontal relationship.

4.3 Trends Analysis

To meet the specified objective as stated in chapter one, it becomes necessary to plot the patterns ROA and NPL has taken since they are the main focus variables for the study. The relevance of the trend analysis is to explain the behavior of these variables since it gives an

informal way of checking for stability and fluctuations. The trends of the series are presented in Figure 4.1 and Fig 4.2 with emphasis on profitability (ROA) and NPL respectively.

Figure 4.2 Trends in Performance and Profitability of the Banks (ROA)

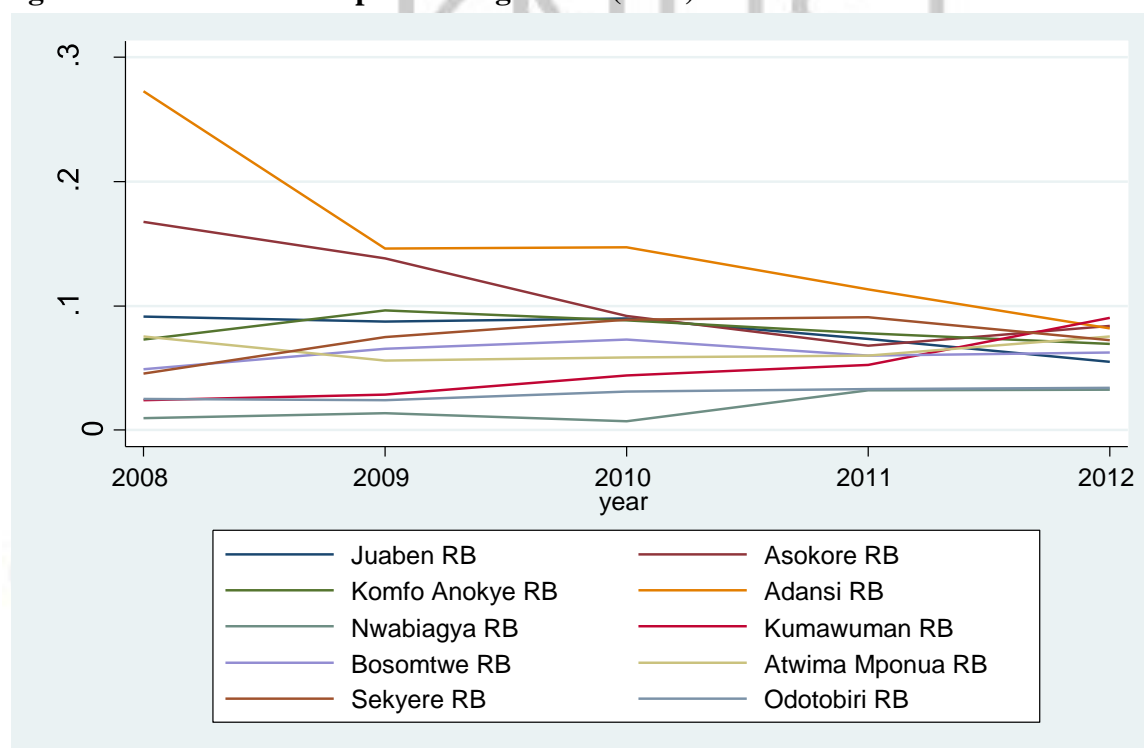


Source: Author's estimation 2015

The above trend analysis tells the turn profitability of the rural banks has taken so far. The profitability measured by the ROA which incorporated the ratio of the profit before tax and interest (PBIT) and the total assets of the company. From the trends, it is clear that the level of the various banks profitability has seen substantial downturns and upturns. These banks on the whole have not seen a stable level of dividends over the period under study. On average the major peak was experience in 2009, an indication that these rural and community banks did significantly well during this particular year. This increase in profitability can be attributes to the effective management and perhaps stability in the rate of loan defaults. Also, it can be seen

that some of banks had major troughs in 2010 while others also had their worst drawbacks in 2011. Notwithstanding these peaks and troughs profitability of these banks have been quite stable with a gradual and continuous increase in recent years.

Figure 4.3 Trends in Non-performing Loans (NPL) of the Banks



Source: Author's estimation 2015

Fig 4.2 above gives a pictorial representation of the trends non-performing loans (NPL) has taken so far for the various rural and community banks. The NPL as measured by the ratio of loan impairments to loan and advances over the five year periods between 2008 and 2012 has not seen substantial ups-wings or downswings except for Adansi rural bank. Adansi rural bank had an obvious sharp decline in loan default till 2009 which would be as a result of effective credit management but it began recording a gentle increase till 2010 but has since been declining. Even though there has not been any major decline in the NPL, the remaining banks have been quite stable which looks quite promising than a worse case where banks tend to experience continuous increase in their NPLs. This stable rate of NPL can thus be attributed to

the possibility that the rate at which customers default in their loan payments is stable and gradually declining or there has been improvement in loan quality leading to a low level of adverse selection. On the whole these rural banks are able to manage and maintain their level of NPL if not entirely able to decrease it; they ensure that it is neither increased.

4.4 Regression Results

In order to ensure the robustness and consistency in the outcomes of the results for this study's analysis, the impact of non-performing loans on the banks' profitability is reported and then the controlled variables are sequentially reported. The study commence the analysis by estimation using the pooled OLS reported in table 4.3 , the Fixed and Random effects of the Hausman test in table 4.4 and 4.5 respectively.

Table 4.3 Pooled OLS Estimation Results

Dependent Variable is the Log of Return on Assets			
	1	2	3
LnNPL	-.1327809 (.0672316) [0.055]*	-0.0104648 (0.0464705) [0.823]	-0.0051674 (0.0475076) [0.914]
LnCAR		.9433702 (.1254336) [0.000]***	.9742261 (0.1313893) [0.000]***
LnTD			-0.1058822 (0.1493277) [0.482]
Constant	-3.857047 (0.2658065) [0.000]***	-1.409501 (0.3453015) [0.000]***	-1.442969 (0.3584563) [0.000]***
Time Fixed Effects	Yes	Yes	Yes
Adjusted R ²	0.1558 50	0.5610 50	0.5656 50
No of observations	10	10	10
Number of Banks			

Note: Robust standard errors and the p values are reported in () and [] respectively. *, ** and *** indicates significance levels at 10%, 5% and 1% respectively.

The table above uncovers the estimation results from the impact of the non-performing loans on profitability of rural banks with the interactive variables introduced successively into the dynamic model. Model three has all three possible variables which can impact on the banks' performance incorporated in the model made up of NPL, CAR and TD. To account for business cycle effects, time fixed effects are included in all specifications to uncover the impact of time in the explanation of the profitability of these firms. Time was however found to play an insignificant role in determination of profitability respective of the bank (See appendix A)

Table 4.4 Fixed Effects Estimation Results

Dependent Variable is the Log of Return on Assets			
	1	2	3
lnNPL	-.0203368 (0.101703) [0.846]	-0.0010045 (0.138969) [0.994]	-.0064157 (0.1423411) [0.965]
LnCAR		1.058345 (0.2996795) [0.006]**	1.082059 (0.3636299) [0.016]*
lnTD			-.0774266 (0.535801) [0.888]
Constant	-3.532921 (0.3589566) [0.000]***	-1.188796 (0.9028851) [0.220]	-1.199226 (0.9005853) [0.216]
Time Fixed Effects	Yes	Yes	Yes
Adjusted R ²	0.1115	0.5596	0.5639
# observations	50	50	50
# Banks	10	10	10

Note: Robust standard errors and the p values are reported in () and [] respectively. *, ** and *** indicates significance levels at 10%, 5% and 1% respectively.

The estimate from the fixed effects was similar to the POLS as all coefficients of the variables maintained their respective signs. Noticeably, the partial adjustment or convergence coefficient is diminished across all the specifications in Table 4.3; thus, reflecting the fact that its POLS

estimates are upward biased. The FE technique takes into account the time and cross-sectional dimensions of the data and proceeds with a within transformation of the data to wipe out the country-specific fixed effects because of collinearity.

After accounting for heterogeneity across countries, we can observe that the size of the coefficient of our primary variable (ROA) experienced 0.64 percent growth rate with a rise by 1 percent in NPL which is higher than the results from the POLS. The economic impact of CAR on ROA turned out to be more and highly elastic compared to the initial results since a percentage change in CAR would lead to more than a hundred percent change in ROA. This increase in economic impact under all circumstances after accounting for heterogeneity implies the POLS underestimated the level of their respective impact on ROA. However, the significance level of all variables in each model increased with NPL still being statistically insignificant with a much higher confidence level of its inability to influence the level of ROA of the banks. TD on the other hand though rightly signed had a reduction in its economic impact compared to the other variables but resoundingly had a high level of significance and thus insignificant determinant of ROA.

4.5 The Hausman Test

The test from the hausman test nevertheless confirmed the use of the random effect model for this particular study. This was uncovered since the $\text{prob} > \chi^2 = 0.5$ (see appendix B). This use of the random effect is justified due to the homogeneous nature of the characteristics of the rural banks under consideration taking into account the banks specific and time specific effects.

Table 4.5 Random Effect Estimates

Dependent Variable is the Log of Return on Assets			
	1	2	3

lnNPL	-0.0203368 (0.1140318) [0.858]	-0.0010045 (0.1562833) [0.995]	-.0064157 (0.1605824) [0.968]
LnCAR		1.058345 (0.337017) [0.002]**	1.082059 (0.4102298) [0.008]**
lnTD			-.0774266 (0.6044651) [0.898]
Constant	-3.093872 (0.371361) [0.000]***	-.8690007 (0.9510922) [0.361]	-.8759787 (0.9550122) [0.359]
Time Fixed Effects	Yes	Yes	Yes
Bank-Specific Effects	Yes	Yes	Yes
R ²	0.6077 50	0.7073 50	0.7078 50
# observations	10	10	10
# Banks			
Rho			0.2168
F stat	0.000	0.000	0.001

Note: Robust standard errors and the p values are reported in () and [] respectively. *, ** and *** indicates significance levels at 10%, 5% and 1% respectively.

$$\ln ROA_{it} = -3.093872 - 0.00645157 \ln NPL_{it} + 1.082059 \ln CAR_{it} - 0.0774266 \ln TD_{it} + \mu_{it}$$

From the results, emphasis is placed on the coefficients of the explanatory variables which measures the elasticity of the explained variable in their respect and also their level of statistical significance measured by the P-value. From the results, the respective signs of the regressants are rightly placed with further increase in their economic impact and a more robust statistically significance compared to the fixed effects results. This outcome is consistent with the prior expectations of the study for each independent variable and the profitability of the firm.

In terms of consistency, NPL which is our main emphasis in all instances turned out not to be a culprit that influence the performance and profitability of the banks statistically per the results. The only culprit per the study was the Capital Adequacy Ratio as time to deposit ratio was also statistically insignificant in all circumstances.

Accounting for bank and time-specific effects, the study found the irrelevance of individualspecific effects for Asokore, Kumawuman and Odotobiri rural banks with the individual bank-specifics playing a major role in the performance of the other rural banks. This uncovers the fact that other unique feature of the individual banks is also an important factor to consider such as their level of technology, management practices, size of the bank amongst others. Time-specific was as usual not relevant statistically as evident from the initial regression results.

Furthermore, the study found an R-squared of 0.7 which explains the fact that about 70% of the variations in the profitability of the banks are explained by the selected independent variables including NPL, CAR and TD. Also, a rho of 0.2168 further brings to fore that about 21% of the variations in the ROA are due to the specific characteristics of the respective banks under consideration.

The F statistic is relevant as it test for the joint significance of the explanatory variables in explanation of the ROA. The value of 0.001 rejects the null hypothesis that the selected variables under study do not impact the profitability of the rural and community banks. This confirms the reliability and stability of the variables in explaining profitability.

4.6 Discussion on Regression Outcome

4.6.1 The impact of NPL on ROA

With an increase in the non-performing loans, this means that the total loan impairments tend to increase an indication that there is continuous default in loans by customers through bad

debts, failure to pay interest associated with loans and advances. This obviously should impact negatively on the profitability on the rural banks. Disappointingly, the insignificance of the NPL in profitability and performance of the banks could not be escaped irrespective of the regression technique used. This could be attributed to the minute economic impact NPL has on ROA of about 0.06% per the study. This outcome suggests that though NPL is a culprit for profitability amongst commercial banks, it should not be generalized for all banks.

This finding however contradicts the findings of Achou&Tenguh (2008) and Awo&Akotey (2011), thus making profitability more bank-specific or location specific. The main objective of finding the impact of NPL on ROA is now unfettered as it was found not to be a major culprit for the determination of performance and profitability of the banks under study.

4.6.2 The impact of CAR on ROA

With the confirmation of a positive relation between ROA and CAR implies and confirms the view that banks with good capital adequacy ratio have good profitability and financial performance (Afriyie&Akotey, 2013). This is because more of the banks are able to withstand any adversity and ensure high volumes of transactions in general. This is not surprising CAR turned out to be positively related to ROA and statistically significant. This is further supported by the fact that the minimum CAR requirements of 10% is exceeded by these banks contributing to their steadfast ability to handle unexpected risk the banks may encounter thus leading to higher profits. CAR is a major determinant of rural and community banks profitability as it impacts ROA positively and is statistically significant. The impact of CAR on ROA is now clear in the economic and statistical front making CAR the major point of focus in determining profitability and performance among these banks.

4.6.3 The impact of TD on ROA

TD which is the ratio of loans and advances to time deposit measures the liquidity of the banks as it tells a bank's ability to withstand deposit redrawals and ability to give out loans (Gizaw et

al, 2013). An instance when more loans are given out compared to the time deposits by customers spells doom as banks become more vulnerable leading to the negative impact on performance and thus profitability. This confirms the inverse relation between the TD and ROA. This is justified by the fact that the increasing TD of about 52% implies much focus being put on lending by the banks. However, with the focus on lending makes the banks liable to risk, though theoretically high risk is associated with high profitability via high interest rates leading to the increasing profitability. The question is the ability of the customers being able to pay the high interest being charged, nevertheless the possible outcome is non-payment given the characteristics of the region. Regardless of this increasing TD, it was statistically insignificant.

CHAPTER FIVE

SUMMARY AND RECOMMENDATION

5.1 Introduction

This chapter presents the conclusions of the study. The chapter further gives policy implications and recommends policy options that would ensure profitability of these rural and community banks. Last but not least, the chapters also explore the limitations encountered during the study.

5.2 Conclusion

The main objective of the study was to find the impact of non-performing loans (NPL) on the profitability of rural and community banks in the Ashanti region of Ghana. Specifically the study sought to find the trends in the profitability measured by the ROA of these banks and the impact of NPL, CAR and TD on their profitability. The outcome of the study was made possible by the use of the random effect model through the hausman test on annual dataset spanning the period 2008-2012. The study considered ten different rural and community banks due to the availability and accessibility of the data including Juaben rural bank,

Sekyere, Bosomtwe, Akrofoam, Atwima Mponua, Kumawuman, Nwabiagya,

KomfoAnokye, Adansi and Asokore rural and community banks in the Ashanti region of Ghana.

The study found the general trends of the rural and community banks' profitability to have seen major upswings and downswings over the years. On average these banks had major peaks in 2009 amidst troughs in subsequent years; however, they are experiencing gradual increase in profitability as it stands. Looking at their NPL trends, it was found that nonperforming loans have been quite stable for these banks following a steady trend except for Adansi rural bank which experienced some major upturns and downturns.

The study found non-performing loans (NPL) of 7% to be far above the minimum requirement to of 5% by the BOG. It implies that more loans are impaired than usual, thus having a negative effect on the profits and performance of the banks though very minute impact. However, the statistically insignificant state of NPL in explaining profitability of the banks is justified by the very scanty economic impact it has on the ROA of about 0.06%.

Also, CAR and TD was found to have a positive impact on the profitability of the rural banks. But CAR was the only significant determinant of profitability in contrast to TD which was insignificant. The significance of CAR is justified by the higher capital adequacy ratio of these banks of 11% above the usual 10% which keeps the bank was robust and able to control any unexpected risk they face.

5.3 Policy Implication

The main explanatory variable (NPL) for the determination of profitability (ROA) per the study was found to be statistically insignificant. It implies that if policy makers should target the non-performing loans as a tool for increasing the level of profitability of the rural and community banks would be impotent. This is because it does not have any significant impact on the rural banks profitability per the study.

Rather policy makers should target capital adequacy ratios (CAR) since it is the main culprit to ensure sound rural bank performance and profitability since it was the only variable found to significantly affect the profitability.

5.4 Policy Recommendation

RCBs are admonished to reduce their focus on the increasing rate of giving out loans since it makes them more liable to loan default. The ratio of time depositing should be accurately monitored in order not for the amount of loans given out to outweigh the deposits made by customers.

Since CAR was significant, it becomes a necessity for these rural banks to ensure that their capital adequacy does not fall below the 10% requires by the Bank of Ghana to avoid losing their license. Proper liquidity management such as investment in government securities so as to ensure a fallback position in times of liquidity challenges is highly recommended for these rural and community banks.

5.5 Limitations of the Study

The relevance of this study could not be overestimated due to the handful of works in this area of research in Ghana. However the robustness of the findings of this study could be underestimated due to certain limitations encountered.

First and foremost, the availability of an up-to-date data to aid in rigorous analysis for the various banks was a crucial problem. The study was limited by a very small sample year period of 4 from 2008 to 2012 which in fact was the only data available at the time being.

Furthermore the ease to retrieve data from these rural banks was also a great limitation. Most of these banks were reluctant to give out data to outsiders. This affected the further inclusion of more other rural banks as well as comparison of other variables and their impact on

profitability.

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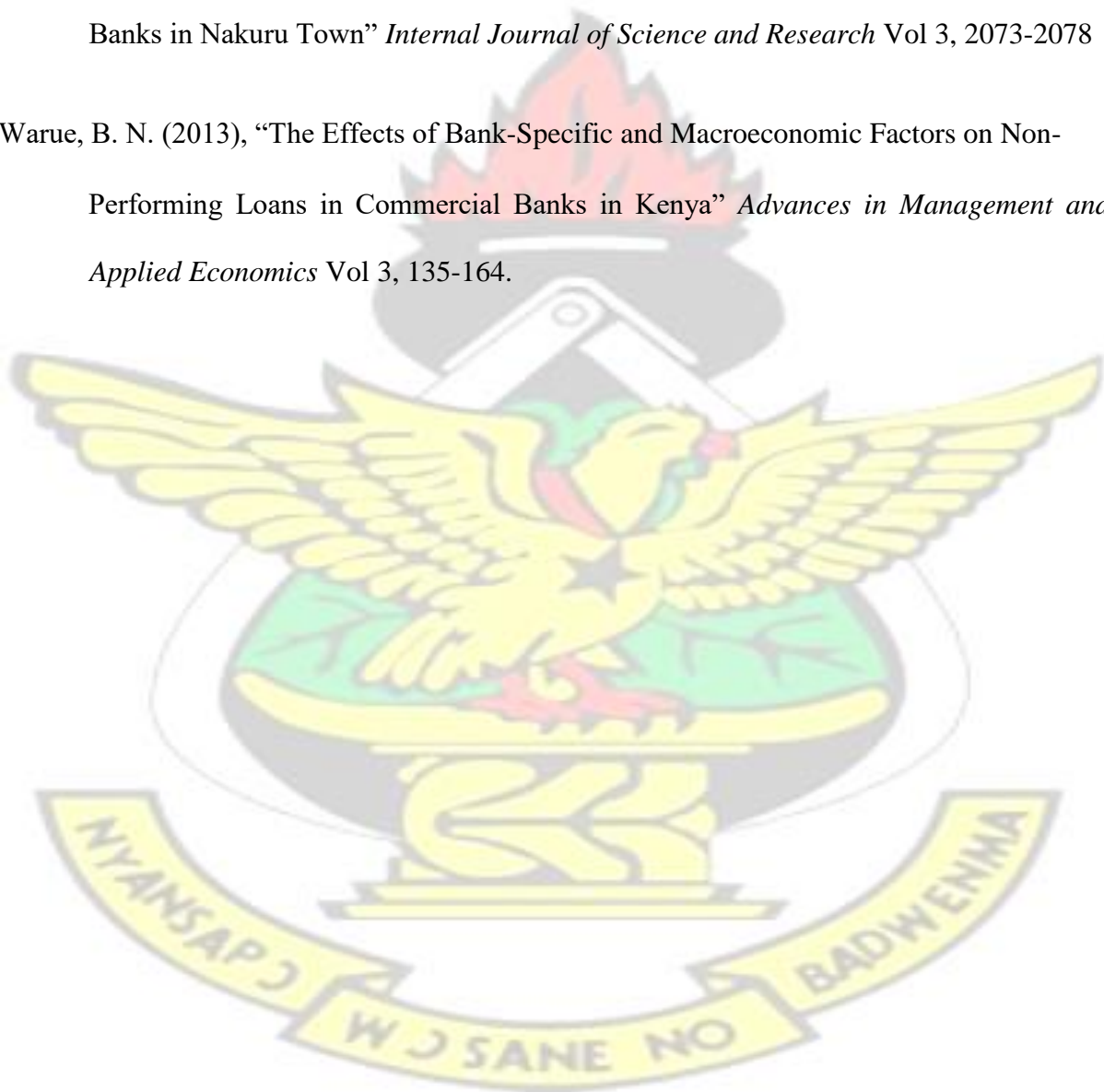
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APPENDICES

APPENDIX A

POOLED OLS RESULTS reglnroalnnpli.year,

r

Linear regression

Number of obs = 50

F(5, 44) = 1.60

Prob> F = 0.1805

R-squared = 0.1558

Root MSE = .35437

```

-----
               |               Robust lnroa |               Coef.   Std. Err.       t
P>|t|          [95% Conf. Interval] -----+-----
-----+-----+-----+-----+-----+-----+-----+-----
lnnpl | -.1327809   .0672316   -1.97   0.055
-.2682772   .0027154
      | year
      |
2009 | .1270901   .1658354   0.77   0.448   -.2071292   .4613093
2010 | -.1375032   .1947939  -0.71   0.484   -.5300846   .2550781
2011 | -.0048957   .1363481  -0.04   0.972   -.2796872   .2698957 2012
      | .1862237   .1435744   1.30   0.201   -.1031315   .4755789
      |
      | _cons | -3.857047   .2658065  -14.51   0.000   -4.392745   -3.321349
-----

```

. reglnroalnnpllncari.year, r

Linear regression

Number of obs = 50

F(6, 43) = 12.46

Prob> F = 0.0000

R-squared = 0.5610

Root MSE = .2585

```

-----
               |               Robust lnroa |               Coef.   Std. Err.       t
P>|t|          [95% Conf. Interval] -----+-----

```



```

----- lnnp1 | .0104648 .0464705 0.23 0.823
-.083252 .1041816 lncar | .9433702 .1254336 7.52 0.000
.6904091 1.196331
| year
|
2009 | .1546955 .1230249 1.26 0.215 -.0934078 .4027988
2010 | -.0737926 .1503796 -0.49 0.626 -.377062 .2294768
2011 | .0300102 .1241171 0.24 0.810 -.2202958 .2803162 2012
| .1936527 .1192643 1.62 0.112 -.0468666 .434172
|
_cons | -1.409501 .3453015 -4.08 0.000 -2.105868 -.7131341
-----

```

```

. reglnroalnnpllncarlmlatdi.year, r

```

```

Linear regression                               Number of obs =      50
F( 7, 42) = 10.81
Prob> F = 0.0000
R-squared = 0.5656
Root MSE = .26017
-----

```

```

| Robust lnroa | Coef. Std. Err. t
P>|t| [95% Conf. Interval] -----+-----
----- lnnp1 | -.0051674 .0475076 -0.11 0.914
-.1010415 .0907068 lncar | .9742261 .1313893 7.41 0.000
.7090719 1.23938 lnlatd | -.1058822 .1493277 -0.71 0.482 -
.4072376 .1954732
| year
|
2009 | .1425279 .1271419 1.12 0.269 -.1140547 .3991106
2010 | -.1057009 .1639406 -0.64 0.523 -.4365464 .2251446
2011 | .0064046 .1340586 0.05 0.962 -.2641366 .2769459 2012
| .1790683 .1244029 1.44 0.157 -.0719869 .4301236
|

```

```

_cons | -1.442969   .3584563   -4.03   0.000   -2.166363   -.7195755
-----

```

FIXED EFFECTS RESULTS

```

. xtreglnroalnnpli.year, fe r

```

```

Fixed-effects (within) regression           Number of obs   =          50
Group variable: bankname                   Number of groups =          10
R-sq:  within = 0.1923                     Obs per group:  min =           5
                                         avg   =          5.0
                                         max   =           5
between = 0.1460
overall = 0.1115

```

```

F(5,9) = 1.61 corr(u_i, Xb) = 0.0375

```

```

Prob> F = 0.2511

```

(Std. Err. adjusted for 10 clusters in bankname)

```

-----+-----
|               Robust lnroa |      Coef.   Std. Err.      t    P>|t|
| [95% Conf. Interval] -----+-----
|               lnnpl |   -.0203368   .101703   -0.20   0.846
|               year
|

```

```

-.2504049   .2097313

```

```

| year
|

```

```

2009 |   .122693   .1196991   1.03   0.332   -.1480852   .3934712
2010 |  -.1405323   .1702446  -0.83   0.430   -.5256524   .2445878
2011 |  -.0158821   .1298912  -0.12   0.905   -.3097165   .2779522
2012 |   .1738567   .1377764   1.26   0.239   -.1378151   .4855285

```

```

_cons | -3.532921   .3589566   -9.84   0.000   -4.344937   -2.720905
-----+-----

```

```

sigma_u| .26883726 sigma_e| .27085358 rho | .49626399 (fraction of variance
due to u_i)
-----

```

```
. xtreglnroalnnpllnrcari.year, fe r
```

```
Fixed-effects (within) regression      Number of obs      =      50
Group variable: bankname               Number of groups   =      10
R-sq:  within  = 0.3974                Obs per group: min =       5
between = 0.7181                      avg =             5.0
overall = 0.5596                      max =             5
```

```
F(6,9) = 3.42 corr(u_i, Xb) = -0.2156
```

```
Prob> F = 0.0482
```

(Std. Err. adjusted for 10 clusters in bankname)

```
-----+-----
            |               Robust lnroa |               Coef.   Std. Err.      t
P>|t|      [95% Conf. Interval] -----+-----
-----+-----+-----+-----+-----+-----
lnnpl | .0010045   .138969    0.01    0.994
-.3133651   .3153741 lncar | 1.058345   .2996795    3.53    0.006
.380423     1.736267
            | year
|
2009 | .1591126   .0993782    1.60    0.144   -.0656965   .3839216
2010 | -.0653026   .143696   -0.45    0.660   -.3903656   .2597603
2011 | .0368945   .1263635    0.29    0.777   -.2489597   .3227487 2012
            | .1975187   .1270081    1.56    0.154   -.0897936   .484831
            |
            _cons | -1.188796   .9028851   -1.32    0.220   -3.231264   .8536722
-----+-----
sigma_u| .15012109 sigma_e| .23736179 rho | .28571514 (fraction of variance
due to u_i)
-----+-----
```

```
. xtreglnroalnnpllnrcarlndi.year, fe r
```

```
Fixed-effects (within) regression      Number of obs      =      50
Group variable: bankname               Number of groups   =      10
```

R-sq: within = 0.3983

Obs per group: min = 5

between = 0.7253

avg = 5.0

overall = 0.5639

max = 5

F(7,9) = 3.85 corr(u_i, Xb) = -0.2102

Prob> F = 0.0322

(Std. Err. adjusted for 10 clusters in bankname)

```
-----+-----
            |               Robust lnroa |               Coef.   Std. Err.      t
P>|t|      [95% Conf. Interval] -----+-----
-----+-----+-----+-----+-----+-----+-----+-----
lnnpl |   -.0064157   .1423411   -0.05   0.965
-----+-----+-----+-----+-----+-----+-----+-----
-.3284136   .3155822 lncar |   1.082059   .3636299   2.98   0.016
-----+-----+-----+-----+-----+-----+-----+-----
.2594715   1.904647 lnlatd |  -.0774266   .535801   -0.14   0.888   -
-----+-----+-----+-----+-----+-----+-----+-----
1.289493   1.134639
            | year
-----+-----+-----+-----+-----+-----+-----+-----
2009 |   .1500987   .1513754   0.99   0.347   -.1923363   .4925337
2010 |  -.0886613   .2787868  -0.32   0.758   -.7193208   .5419982
2011 |   .0193006   .2382405   0.08   0.937   -.5196368   .5582381 2012
            |   .186441   .1988798   0.94   0.373   -.2634563   .6363383
            |
_cons |  -1.199226   .9005853  -1.33   0.216   -3.236492   .8380391
-----+-----+-----+-----+-----+-----+-----+-----
sigma_u|   .14795418 sigma_e|   .24074949 rho |   .27414191 (fraction of variance
due to u_i)
-----+-----+-----+-----+-----+-----+-----+-----
```


APPENDIX B

RANDOM EFFECT RESULTS

```
. xtreglnroalnnpli.banknamei.year, re r
```

```
Random-effects GLS regression           Number of obs   =       50
Group variable: bankname                Number of groups  =       10
R-sq:  within = 0.1923                   Obs per group: min =        5
between = 1.0000                         avg =       5.0
overall = 0.6077                         max =        5
```

```
corr(u_i, X)   = 0 (assumed)             Wald chi2(5)      =      .
Prob> chi2      =      .
```

(Std. Err. adjusted for 10 clusters in bankname)

```
-----+-----
|               Robust lnroa |      Coef.   Std. Err.      z
P>|z|    [95% Conf. Interval] -----+-----
-----+-----+-----+-----
| lnnp1 |   -.0203368   .1140318   -0.18   0.858
-.243835   .2031614
| bankname
|
2 |   -.7360696   .0323465  -22.76   0.000   -.7994676   -.6726717
3 |   -.8104995   .0034163 -237.24   0.000   -.8171955   -.8038036
4 |   -.4277944   .0667739   -6.41   0.000   -.5586688   -.2969199
5 |   -.1741885   .1821564   -0.96   0.339   -.5312085   .1828314
6 |   -.5969173   .0685921   -8.70   0.000   -.7313554   -.4624793
7 |   -.2473882   .0272274   -9.09   0.000   -.300753   -.1940234
8 |   -.7204688   .0219715  -32.79   0.000   -.7635322   -.6774054
9 |   -.3480892   .0084519  -41.18   0.000   -.3646547   -.3315238 10 |   -
.3290685   .1123866   -2.93   0.003   -.5493421   -.1087949
| year
|
2009 |   .122693   .1342095    0.91   0.361   -.1403528   .3857387
2010 |  -.1405323   .1908823   -0.74   0.462   -.5146548   .2335902
2011 |  -.0158821   .1456371   -0.11   0.913   -.3013257   .2695614
```

```

2012 | .1738567 .1544781 1.13 0.260 -.1289149 .4766283
      |
      +-----+
      _cons | -3.093872 .371361 -8.33 0.000 -3.821727 -2.366018
-----+-----
sigma_u | 0 sigma_e | .27085358 rho | 0 (fraction of variance
due to u_i)
-----+-----
. xtreglnroalnnplncari.banknamei.year, re r

```

```

Random-effects GLS regression      Number of obs      =      50
Group variable: bankname           Number of groups   =      10
R-sq:  within = 0.3974              Obs per group: min =      5
      between = 1.0000                      avg =      5.0
      overall  = 0.7073                      max =      5

```

```

Wald chi2(6) = .
corr(u_i, X) = 0 (assumed)      Prob> chi2 = .
(Std. Err. adjusted for 10 clusters in bankname)
-----+-----

```

```

      | Robust lnroa | Coef. Std. Err. z
P>|z| [95% Conf. Interval] -----+-----
-----+----- lnnp1 | .0010045 .1562833 0.01 0.995
-.3053051 .3073141 lncar | 1.058345 .337017 3.14 0.002
.397804 1.718887

```

```

      | bankname

```

```

2 | -.2007082 .1609046 -1.25 0.212 -.5160755 .1146591
3 | -.3948845 .1308466 -3.02 0.003 -.651339 -.1384299
4 | -.31982 .0847523 -3.77 0.000 -.4859315 -.1537086
5 | -.3949348 .2313845 -1.71 0.088 -.8484402 .0585705
6 | -.2453517 .1678262 -1.46 0.144 -.5742851 .0835816
7 | -.4974885 .0754683 -6.59 0.000 -.6454036 -.3495734
8 | -.4843786 .0897296 -5.40 0.000 -.6602454 -.3085117

```

```

9 | -.403239 .0173713 -23.21 0.000 -.4372862 -.3691918 10 | -
    .2571474 .1608763 -1.60 0.110 -.5724591 .0581642
    | year
|
2009 | .1591126 .1117598 1.42 0.155 -.0599327 .3781579
2010 | -.0653026 .1615993 -0.40 0.686 -.3820315 .2514262
2011 | .0368945 .1421073 0.26 0.795 -.2416308 .3154198 2012
    | .1975187 .1428322 1.38 0.167 -.0824273 .4774647
    |
    _cons | -.8690007 .9510922 -0.91 0.361 -2.733107 .9951058
-----+-----
sigma_u | 0 sigma_e | .23736179 rho | 0 (fraction of variance
due to u_i)
-----+-----
. xtreglnroalnnpllnlncarlntlatdi.banknamei.year, re r

Random-effects GLS regression           Number of obs   =       50
Group variable: bankname                 Number of groups  =       10
R-sq:  within = 0.3983                   Obs per group: min =        5
      between = 1.0000                      avg =       5.0
      overall = 0.7078                      max =        5

                                           Wald chi2(7)      =      .
corr(u_i, X) = 0 (assumed)               Prob> chi2        =      .

                                           (Std. Err. adjusted for 10 clusters in bankname)
-----+-----
    | Robust lnroa | Coef. Std. Err.
z    P>|z|    [95% Conf. Interval] -----+-----
-----+----- lnnp1 | -.0064157
.1605824    -0.04    0.968    -.3211514    .30832 ln car | 1.082059
.4102298     2.64    0.008     .2780238    1.886095 lnlatd | -.0774266
.6044651    -0.13    0.898    -1.262156    1.107303

```

```

      | bankname
|
2 | -.2454459 .3739029 -0.66 0.512 -.9782822 .4873903
3 | -.3736859 .2239039 -1.67 0.095 -.8125295 .0651577
4 | -.3216808 .0864923 -3.72 0.000 -.4912025 -.152159
5 | -.3992419 .2310672 -1.73 0.084 -.8521252 .0536415
6 | -.232601 .2053872 -1.13 0.257 -.6351525 .1699504
7 | -.5072001 .1128713 -4.49 0.000 -.7284237 -.2859765
8 | -.4787141 .1057983 -4.52 0.000 -.6860749 -.2713533
9 | -.4129453 .0788131 -5.24 0.000 -.5674162 -.2584744 10 | -
      .2609626 .1592943 -1.64 0.101 -.5731737 .0512484

```

```

      | year
|
2009 | .1500987 .1707745 0.88 0.379 -.1846132 .4848106
2010 | -.0886613 .3145139 -0.28 0.778 -.7050972 .5277746
2011 | .0193006 .2687715 0.07 0.943 -.5074819 .5460831 2012
      | .186441 .2243666 0.83 0.406 -.2533095 .6261915
|
      _cons | -.8759787 .9550122 -0.92 0.359 -2.747768 .9958109

```

```

-----+-----
sigma_u | 0 sigma_e| .24074949 rho | 0 (fraction of variance
due to u_i)

```

```

hausman fixed
random

```

```

----- Coefficients -----
      | (b) (B) (b-B) sqrt(diag(V_b-V_B))
| fixed random Difference S.E. -----+-----
-----+----- lnnp1 | -.0064157
-.0064157 -2.35e-15 . lnacar | 1.082059 1.082059
-1.59e-13 . lnlatd | -.0774266 -.0774266 3.34e-14
.

```


2009bn.year	.1500987	.1500987	-1.39e-15	.
2010.year	-.0886613	-.0886613	-3.33e-16	.
2011.year	.0193006	.0193006	7.46e-16	.
2012.year	.186441	.186441	2.08e-15	. -----

b = consistent under H_0 and H_a ; obtained from xtreg B =
inconsistent under H_a , efficient under H_0 ; obtained from xtreg

Test: H_0 : difference in coefficients not systematic

$\chi^2(7) = (b-B)'[(V_b-V_B)^{-1}](b-B)$

= -0.00 $\chi^2 < 0 \implies$ model fitted on these
data fails to meet the asymptotic assumptions of the Hausman test;
seesuest for a generalized test

