Research Article

Lending Rate and Loan Portfolio of Banks in Ghana

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Abstract: Ghana has witnessed a tremendous increase in the number of Universal banks in the country. As a result, one will expect bank pricing (lending rate) to be competitive lending to low rates. However, this is not the case as lending rates continues to be high. This has become a disincentive to borrowing and repayment of loan, which ultimately affects both the loan portfolio quality and size of banks. The objective of this study was to examine the effects of lending interest rates on the loan portfolio of Universal Banks in Ghana. This study was largely a quantitative research. The study population was drawn from universal banks currently listed on the Ghana Stock Exchange. Since the number of banks is not so large, all the seven banks were targeted in the study. Data was collected from annual reports of the seven banks for the 7-year period between 2009 and 2016. Panel data techniques were employed. The findings from the analysis showed that there is a negative significant effect of lending rate on loan portfolio of the listed banks in the country. The major recommendation was that, great efforts should be made by banks' management to manage their operational cost, which will reduce lending rate and consequently reduce non-performing loans and increase portfolio size

Keywords: Lending Rate, Bank of Ghana, Fixed Effect Model, Ghana Stock Exchange, Management Efficiency, Non- Performing Loans, Operational Cost Efficiency, Portfolio Size and Random Effect Model.

INTRODUCTION

Background to the Study

Lending practice in the world has existed since the period of the Industrial revolution and was meant for commercial and production activities. This brought about the need for large capital investment with upturn in financial requirement of many companies and turn into banks for financial assistance. Lending represents one of the main services that universal banks perform. It is the means by which banks fulfill their financial intermediation function: that is to exchange funds between surplus and deficit economic units. In the process of carrying out this primary task, banks have found themselves performing a number of functions which include; the mobilization of savings and money transfer services (Reilly & Brown, 2011).

Banks are traditionally in the business of collecting deposits from customers and making out loans to various economic agents such as individuals, businesses, organizations and the government help them undertake viable investments and developmental initiatives that will help in the socioeconomic development of the country (Felicia, 2011). Banks lend for various maturity periods, ranging from short term, medium term, to the long term.

The higher lending rate has negative impact on the development of an economy as it affects the growth of the banking industry, by discouraging savings and investment. The higher lending rate affects business enterprises and encourages informality and increases the rate of acquiring funding. High cost of credit has negative impacts on small and big businesses, this result in a negative impact on the standard of living. Since acquiring capital through credit is expensive, this discourages the part of the people who want to enter into the world of business. A consequence of the high lending rate will result in an increased default rate (Kiptui, 2014). The resulting scenario is that productivity will reduce, while business and employment levels remain stagnant (Ezirim 2005).

According to Mensah and Abor (2011), the high lending rate tends to discourage savings due low returns on deposits and reduces demand for credit facilities due to the high cost of capital leading to a cut-down in investment in productive activities. In essence high interest rates lead to a reduction in economic growth. Ribinson (2002) explains that the lending rates charged by banks are set such that they cover the risk premium, and the interest rate paid to depositors. Thus a rise in risk premium or interest rates on deposits could also cause a rise in the interest rate spread of banks. There are currently about thirty- four (34) licensed universal banks in the Ghanaian banking industry. This is made up of sixteen (16) foreign banks and eighteen (18) local banks (Bank of Ghana, 2017). The banking industry of Ghana has seen a number of developments over the period of 2000 to 2014. These developments have been in the form of regulations and proliferation of banks in the industry. These have brought diverse levels of competition in the industry (Biekpe, 2011).

There is therefore a struggle by banks to attract large number of the unbanked population, which is evidently seen by banks spreading out sales personnel to go out in search for prospective customers, opening of more branch networks and the mobile phone banking services. As bank clients grew, so did their respective deposits and hence a growth in the need to grant loans to firms and households who are customers to the bank

(Yebaoh -Mensah, 2015). This is because for banks to make more profit and out-compete the others, granting of loans has been identified as one of the main business activities (Brown *et al.,* 2009). They pointed out that loan assets therefore play a very vital role in the operations of banks in every economy. The Bank of Ghana classifies loan assets into four grades of risk; standard, sub-standard, doubtful and loss.

According to the Bank of Ghana classification, loans are considered current if the payment of principal and interest are up to date. It specifies that an overdraft is classified as current or performing if there are regular activities in the account with no sign of hard core debt build-up (Bank of Ghana, 2008). It can therefore be inferred that loans that are up to date in terms of principal and interest payment are described as performing loans and they constitute the healthy asset portfolio. In other words, a loan that is not up to date in terms of principal and interest payments is described as a non-performing loan that is an unhealthy asset portfolio. Assets in risk grades according to Bank of Ghana classification are sub-standard, doubtful and loss and are therefore considered non-performing and no income may be accrued on them.

The term Non-Performing Loans is used interchangeably with Bad loans and impaired loans (Fofack, 2005). This ratio is often used to evaluate and compare bank loans portfolio quality (Festic *et al.,* 2009; Mendoza & Terrones, 2008), to analyze banking sectors' efficiency (Podpiera, 2006; Lízal & Svejnar, 2002), to foretell forthcoming failures of banks (Jin *et al.,* 2011). Alton & Hazen (2001) described non-performing loans as loans that are ninety days or more past due or no longer accruing interest. Fofack (2005) consider non-performing loans as loans which for a relatively long period of time do not generate income, that is both the principal and interest on these loans remain unpaid for at least 90 days.

Considering the fact that the main operation of banks is to accept deposits and give out loans, the loan portfolio size of banks is a very important element as far as the operation of banks is concerned. This is because the income of banks is mainly generated from the interest they charge on the loans they give out (Williams & Prather, 2010). The loan portfolio of banks thus plays a very important role in the assessment of the profitability, sustainability and growth of banks. The loan portfolio quality of banks can have a great impact on the profitability of banks. Kosmidou (2008) identified that poor loan portfolio quality of banks can have significant impact on its profitability by reducing interest income and increasing the provision cost of banks. The loan portfolio of banks is therefore an essential element in the banks' balance sheet as it affects the income generation and profitability of the bank.

The loan portfolio of banks is also important in the assessment of the stability or riskiness of banks. Foss *et al.* (2010) identified that abnormal increase in loan size can lead to increased risk of banks due to the default of customers which affect their profitability and survival. Dziobek & Pazarbasioglu (1997) in a study of banking crisis identified that 114 episodes of systematic banking crisis that occurred in 91 countries in the 1970s was due to high accumulation of non-performing loans. Fofack (2005) defined systematic banking crisis as a situation where problem loans account for 20 percent of total deposits of banks and financial institutions. They further identified that non-performing loans account for a sizable share of the total assets of insolvent banks and financial institutions, especially during episodes of systemic crises. Caprio & Klingebiel (2002) discovered that 75 percent of loan portfolios consisted of non-performing loans in over 60 banks which collapsed during the Indonesia banking crisis. Daumont *et al.,* (2004) identified that seven (7) out of eleven (11) audited banks were declared bankrupt due to about 41 percent of their loans to private borrowers being non-performing.

The importance of the loans portfolio to banks profitability and stability is evident with the association of banks' loan quality with banks' profitability and banking crisis as evident in many studies. Banks are therefore faced with the trade-off of risk and return in their operations as far as loan portfolio is concerned. Banks are faced with the risk of customer default on loans they give out and the returns in the form of the interest they will generate in giving out more loans. Although banks are faced with this trade-off, they try to optimize their returns by reducing the risk as much as possible although some banks take more risks compared to others.

As much as the operations of banks are risky due to the ability of loan default, banks still give out loans with the motivation of interest gains. Crowley (2007), lending rate is money a borrower pays for the use of money they borrow from a lender/financial institutions or fee paid on borrowed assets. According to Delong (2001), the rate of interest is the price at which the rate of purchasing power can be shifted from the future into the present- borrowed today with a promise to pay it back with interest in the future. Interest is not a single lump sum but an ongoing stream of payment. He defined interest rate as the price of money or the "per cent of premium paid on money at one date in terms of money to be in hand one year later". Therefore, interest on loans is the price the lender charges the borrower for using the borrowed funds.

This shows that lending rates has an impact on the loan portfolios of universal banks. Although all banks in Ghana set their lending interest rates based on the policy rate given by the Bank of Ghana (BOG), the

lending rate determined by the universal banks may differ from bank to bank. Therefore it is very important to know the effect of lending interest rate on the loan portfolio of banks since it could help in controlling and influencing the size and quality of loans banks give out and for that matter their riskiness. Knowledge of these effects can help in economic development in their area of the control of loans advanced by universal banks to their economic agents.The current study seeks to investigate the effect of lending rates on the loan portfolio of universal banks in Ghana, over a period of eight years (2009 to 2016).

STATEMENT OF THE PROBLEM

Due to the liberalization of the Ghanaian economy through various reforms over the years, the banking industry has experienced increases in terms of participants. This has led to intense competition among the banks (Biekpe, 2011). For universal banks, this means that their loan and deposit services must be properly priced and conveniently accessible to customers relative to those of their competitors (Garr, 2013). A survey in 2006 on the Ghanaian banking sector revealed that loans accounted for about 50 percent of total bank assets which had increased from 41.5 percent in 2005 (Infodata Associates, 2009). In 2007, the figure increased to 53 percent of the industry's total assets of GH¢ 7,795.6 million (Infodata Associates, 2009). In addition, a banking survey conducted by PricewaterhouseCoopers in 2014 revealed that loans and advances remained the most significant component of the industry's operating assets accounting for 43 percent of these assets. This is because of a sound loan portfolio.

With this development, one would have expected the lending rate of banks in the country to be relatively low. Notwithstanding this, lending rate among banks in the country remains competitively high (Bank of Ghana Financial Sector Report, 2014). Stiglitz & Weiss (1981) advanced arguments against high interest rates. They pointed out that attempt to charge higher interest rate negatively affects the quality of a bank's loan because of two effects: incentive and adverse selection effects. First, it raises the overall riskiness of the portfolio of assets. Secondly, banks have to screen borrowers. This is because at a high borrowing interest rate, borrowers may be less worried about the prospect of nonpayment (adverse selection effect).

In support of this, Mensah & Abor (2014) argued that as lending rates go up, banks on average attract a riskier pool of projects that require higher returns on investment. Higher interest rates they argued, also force many credit worthy borrowers to opt out of borrowing, explaining the fall in domestic credit to the private sector in Ghana.

However, according to Yebaoh-Mensah (2015)

with the proliferation of banks into the economy coupled with their economic activities on the Ghana Stock Exchange (GSE), the relationship between bank's interest rate and their profitability is too general in scope, making it very blur to really single out the effect of interest rates on the loan portfolio of banks in Ghana. It is from this that the study seeks to investigate the effect of lending rate on both the portfolio quality and portfolio size of the listed banks in Ghana.

Purpose of the Study

The main objective of the study was to assess the effect of Lending rate on the loan portfolio of banks in Ghana, using banks listed on the Ghana Stock Exchange. The specific objectives are:

- To examine the effects of lending rate on the loan portfolio quality of banks in Ghana
- To examine the effects of lending rate on the loan portfolio size of banks in Ghana.
- To describe the factors that determine interest rates in Ghana

Research Hypothesis

To achieve the above stated objectives, the study was supported by the following hypotheses were tested:

H0: Lending rates has no significant effect on the loan portfolio of listed banks in Ghana.

H1: Lending rates has a significant effect on the loan portfolio of listed banks in Ghana.

H0: Lending rates has no significant effect on the loan portfolio of listed banks in Ghana.

H1: Lending rates has a significant effect on the loan portfolio of listed banks in Ghana.

LITERATURE REVIEW

Introduction

This chapter brings to light a review of the relevant related literature. This section captures theoretical framework such as loan pricing and portfolio theories and empirical literature and other related issues to the study.

Theoretical Review

A survey of literature about the theories of loan portfolio and portfolio suggest that theories are commonly grouped according to the nature of variables relation between banks and their customers as;

The Loan Pricing Theory

Stieglitz & Weiss (1998) propounded the loan pricing theory. According to this theory, the interest rate set on loans could increase information asymmetry problems, particularly adverse selection and moral hazard. Overly high interest rates may create adverse selection challenges, in that high-risk customer rather are willing to go for a loans with high interest rates. In addition, adversely, selected customers are prone to develop moral hazard behaviour since they have a

higher tendency to misapply the loan to risk projects different from those specified in the loan contract (Chodechai, 2004). This theory will be essential us to know how the management of banks affects the level of credit risk and their competitiveness to assess the level of interest rate and its effect on loan quality portfolio.

Portfolio Theory

Portfolio theory of investment which tries to maximize portfolio expected return for a given amount of portfolio risk or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. Although portfolio theory is widely used in practice in the finance industry and several of its creators won a Nobel prize for the theory ,in recent years the basic portfolio theory have been widely challenged by fields such as behavioral economics (Markowitz 1952).

Portfolio theory was developed in 1950'sthrough the early 1970's and was considered an important advance in the mathematical modeling of finance. Since then, many theoretical and practical critics have been developed against it. This include the fact that financial returns do not follow a Gaussian distribution or indeed any symmetric distribution, and those correlations between asset classes (Sproul, 1998).

Markowitz showed that the variance of the rate of return was an important measure of risk under a reasonable set of assumptions and came forward with the formulas for computing the variance of the portfolio. The use of this formula revealed the importance of diversifying to reduce risk and also provided guidance on how to diversify effectively (Reilly, 1989).

Portfolio theory deals with the selection of portfolios that maximize expected returns consistent with the individual acceptable levels of risk. The theory provides a framework for specifying and measuring investment risk and to develop relationships between risk and expected returns. Its main basic assumption is that investors often want to maximize returns from their investments for a given level of risk. The full spectrum of investments must be considered because the returns from all these investments interact hence the relationship between the returns for assets in the portfolio is important (Reilly & Brown, 2011).

Role of Banks in the Economy

The financial system of every economy is very essential as far as the economic growth and development of the economy is concerned. Fundamental to the financial system of every economy is the banking industry. This is because the banking industry is one part of the financial system that is capable of facilitating capital accumulation and economic processes. Levy (2008), Eroglu & Citozi (2010); Said & Tumin (2011), postulate that banks play

an important function in the economy and therefore, need extraordinary regulatory treatment. Frankel (2001) argued that a financial system must be able to function efficiently, to support satisfactory levels of investment smoothly. Foss *et al.* (2010) pointed out that banks mainly accept deposits and give out loans and by so doing promote economic activities that propel economic growth and development. In doing this, banks provide all forms of financial services that help economic agents in the economy to effectively and efficiently function.

In support of this, Andries (2009) identified five main functions of financial intermediaries and for that matter banks. These are transaction cost reduction, liquidity risk reduction, information provision and debt renegotiation. In relation to transaction costs reduction, Diamond (1984) proved that banks help to avoid the duplication of auditing cost on the part of lenders. By carrying out their roles as financial intermediaries, banks help in the development of the economy by reducing the transaction cost through the transformation of the credit portfolio demanded by borrowers into a deposit portfolio desired by lenders. Again by providing information to borrowers and lenders the banks reduce the issues of moral hazard and adverse selection by their economies of scale and scope advantage. In so doing banks help in the free flow of surplus funds from where they are in excess to where they are needed to promote economic activities that lead to economic growth. In essence, the main role of banks in the economy is serving as a channel for the flow of funds, which incorporates all their other functions. The funds banks give out to deficit units to help facilitate their economic activity form the loan portfolio of the banks and is affected by many factors. The next section focuses on loan portfolio size or bank lending.

The importance of bank loans to economic development is also evident from the preceding sections as a means of surplus funds to deficit units. The activity of banks help makes funds in the form of loans available for economic units to utilize in carrying out their economic activities (Demirguc-Kunt *et al.,* 2011). The collapse of the banking system due to banking crisis therefore hinders the channeling of funds from surplus units to deficit units and thus have a negative impact on the economy (Reinhart & Rogoff, 2010).

It can therefore be inferred that the loan portfolio is one of the most important elements in the operations of banks. The more loans banks give out, all things being equal, will make more funds available to economic for economic activities. The loans banks give out because of funds mobilized from surplus units represents the bank's loan portfolio size. Although bank loans make funds available for economic units to carry out their respective economic activities, the size and quality of a bank's loan portfolio is affected by the rates at which these banks give out loans. It is therefore very essential to examine the effect of lending rates on the

loan portfolio of banks.

Empirical Literature

In Nigeria, a study by Olokoyo (2011) on the lending behaviour of commercial banks using the multiple regression analysis of ordinary least square (OLS) and co-integration estimation techniques based on data gathered from 1995 to 2005. It identified that bank loan portfolio size is significantly (at 1%) and positively related to bank specific variables such as the volume of deposits and investment portfolio. The study also identified loan portfolio size to be significant and positively related to macroeconomic variables that is foreign exchange and gross domestic product. It was however found that there was insignificant but positive relationship between loan portfolio size and variables like the interest rate (bank lending rate), stipulated cash requirement and liquidity ratio. Elaborating on the results of the co-integration test, the study identified that there is a unique long-run positive relationship existing between loan portfolio size and volume of deposit, investment portfolio, foreign exchange rate and gross domestic product (GDP) growth rate. It concluded however, without considering the effects of lending rate on loan portfolio size of banks.

Nakayiza (2013) on interest rates and loan portfolio performance in commercial banks in Uganda, indicated that although Centenary Bank has tried to follow procedures and regulations in administering credit, there is still clients defaulting on loan repayments and increasing the effect of bad debts in the bank. This has created risk in loan portfolio performance and has affected profitability. The findings further revealed that there is lack of effective analysis on the impact of increasing interest rates on loan repayment trends. It concluded however, without considering the effects of lending rate on loan portfolio quality of banks.

Ladime *et al.* (2013) studied the determinants of lending or loan portfolio size in Ghana using the generalized method of moments (GMM) estimation technique based on data from 1997 to 2006. The study found a significant and positive relationship between loans and advances and bank specific variables like the lag of loans and advances, the size of the bank and capital structure. They argued that the relationship between the loan portfolio size and its lag implies a good relationship between banks and borrowers that could be reinforced by previous lending relationship, giving high probability that banks will lend more in a current period. In relation to macroeconomic variables, the study found a significant and negative relationship between loans and advances and exchange rates and the bank of Ghana policy rate. The study also found positive relationship between loans and advances and competition in the banking industry measured by the Herfindahl Hirschman Index (HHI).

Nkuah (2015) on a study titled the effect of loan portfolio quality on the financial performance of selected banks in Ghana found out that the net interest rate margin has a positive effect on the financial performance of the selected banks. The results of his analysis further established that a firm's size has a positive effect on the financial performance of the banks. Thus the larger the size of the bank the more profitable. In addition, the study established that cost-to-income ratio has a negative effect on bank financial performance. However, this study failed to assess how lending rates affect loan portfolio quality, which is a significant determinant of financial performance of banks.

Alhassan *et al.* (2013) on a study, does asset quality persistent on bank lending behavior? Empirical evidence from Ghana, examined the persistence of bank asset quality on bank lending behaviour in Ghana. Their estimations found that the effect of the deterioration of bank asset quality (ratio of non-performing loans) on bank lending behaviour is persistence and not contemporaneous. Additionally, bank deposit mobilization, intermediation spread and equity where also found to influence bank lending behaviour. This study flawed, as it did not establish whether the relationship between lending rate and asset quality had an effect on lending behaviour.

Onyekachi & Okoye (2013) examined the impact of bank lending rate on the performance of Nigerian Deposit Money Banks between 2000 and 2010. It specifically determined the effects of lending rate and monetary policy rate on the performance of Nigerian Deposit Money Banks and analysed how bank lending rate policy affects the performance of Nigerian banks. The study utilized secondary data econometrics in a regression, where time-series and quantitative design were combined and estimated. The result confirmed that the lending rate and monetary policy rate has significant and positive effects on the performance of Nigerian deposit money banks. Their finding did not consider the effect of lending rate on loan portfolio.

Ekow (2011) studied the Impact of Bank of Ghana Policy Rate on Commercial Bank Lending Rate and concluded that there was an evidence of a very strong positive relationship between the Bank of Ghana Policy Rate and the Lending Rate. This means that as the Bank of Ghana Policy Rate increases, the Commercial Bank Lending Rate also increase and as the Bank of Ghana Policy Rate decreases the Commercial Bank Lending Rate also decreases. The study failed to assess the extent to which this bank lending rate affect the bank's loan portfolio.

Ongweso (2005) carried out a study on the relationship between interest rates and nonperforming loans. The study covered the period 2000-2004.The findings indicated a declining trend of average interest

rates ranging from 12.00 percent in 2000 to 2.96 percent in 2004, does indicating improved macro-economic variables over the period. Further, the level of non-performing loans on average declined for all the commercial banks for the period under review. Although the study found out a positive relationship between the level of interest and non-performing loans, whereby an increase in interest rates increased non-performing loans, a test of significance however revealed a weak relationship between the two.

METHODOLOGY

The study employed a quantitative approach with a panel research design in nature. The population of this study is the 34 banks operating in the country. The study was largely concerned with the banks listed on the GSE. Considered are the listed banks on the GSE as at 2016. Purposive sampling was adopted to select listed firms on the GSE with all financial reports from 2009 to 2015 (up to date). The study was predominantly based on secondary data, which was collected from the annual and financial reports of the sampled banks. The panel analysis approach was also employed by the researcher to assess the effects of lending rates on the loan portfolio of universal banks in Ghana. With the aid of STATA version 14.0, multiple regression was used to analyse the data collected.

Specification of the Empirical Model

In the estimation of the effect of lending rates on the loan portfolio of banks in Ghana, the panel data regression was employed. According to Balgati (2001) cited by Gujarati (2004), by combining the time series of cross-section observations, the panel data will give a more informative data, more variability, more degrees of freedom and more efficiency. Since the panel data relate to firms (banks) over time, there is bound to be heterogeneity in these units. Following the standard linear specification for a panel regression model, the researcher used the model specified below:

$$Y_{it} = \beta_0 + \beta' X_{it} + \varepsilon_{it} \dots \dots \dots \dots \dots \dots (1)$$

Where Y_{it} is the dependent variable of bank i in time t, with $i = 1 \dots N$ (Number of observations) and $t = 1 \dots T$ (Time periods), X_{it} is a vector of the explanatory variables for bank i in time t, then $\beta 0$ is constant, and β' are co-efficient which represent the slope of the variables, and ε_{it} is the error term.

Following Saunders & Cornett (2006), and Shen *et al.,* (2009), the researcher then specified the functional form of the model as follow:

$$NPL_{it} = \beta_0 + \beta_1 LR_{it} + \beta_2 DP_{it} + \beta_3 CA_{it} + \beta_4 AG_{it} + \beta_5 BS_{it} + \beta_6 ME_{it} + \varepsilon_{it} \dots (1)$$

$$PFS_{it} = \beta_0 + \beta_1 LR_{it} + \beta_2 DP_{it} + \beta_3 CA_{it} + \beta_4 AG_{it} + \beta_5 BS_{it} + \beta_6 ME_{it} + \varepsilon_{it} \dots (2)$$

From the equations above, NPL_{it} and, PFS_{it} are the dependent variables of bank i in time t, with $i = 1 \dots N$ (Number of observations) and $t = 1 \dots T$ (Time periods). LR_{it} is the independent variables for bank i in time t, whiles $DP_{it}, CA_{it}, AG_{it}, BS_{it}, ME_{it}$ are the controlled variables, then $\beta_1 - \beta_6$ are the co-efficient which represents the slope of the variables, and ε_{it} is the error term to control hetroscedescity..

Where:

LR: Lending Rate, β_0: the regression constant, *NPL*: Non Performing Loans, *PFS*: Portfolio Size, *DP:* Deposit levels of bank, *CA:* Bank's Capital, *AG:* Age of bank, *BS:* Bank Size, *OPE*: Operational Cost Efficiency.

Table-1: Variables measurement, expected sign and data source

Variable	Scale	Predicted Sign	Source
LR Lending Rate	The Lending rate was measured as the annual lending rates of bank i in time t. This is the main independent variable.	Varies depending on the model	Annual reports of banks
BS Bank size	This was measured as the natural logarithm of total assets of bank i in time t.	+	Financial reports of banks
PS Portfolio Size	This was measured as the natural logarithm of total loans and advances given within a year t of bank i.	-	Financial reports of banks
CA Bank Capital	This was measured as the natural logarithm of capital of banki in time t.	Varies depending on the model	Financial reports of banks
AGE Bank Age	This was measured as the age of bank i in time t since the date of incorporation.		Financial reports of banks
PQ Portfolio Quality	This was measured as the ratio of non-performing loans to total loans of bank i in time t. This is the dependent variable for model 1.	+	Financial reports of banks

OPE Operational Cost Efficiency	This was computed as ratio of operating costs to total net operating income of bank i in time t.	+	Financial reports of banks
DP Deposit from Customers	This was measured as the natural logarithm of deposit collected from customers of bank i in time t.	Varies depending on the model	Financial reports of banks

RESULTS AND DISCUSSIONS

Introduction

This chapter presents analysis and findings of the study. In this section, the collected data is analyzed with the view of finding the effect between the study variables. Also, a descriptive statistic, test for the classical linear regression model assumptions, regression results and discussions were carried out in this chapter. The results are discussed and compared with existing literature on the subject.

Descriptive Statistics

The results showed that portfolio size (PFS) had a mean of 7.5697 with a minimum of 5.14076, a maximum of 9.6595 and standard deviation of 1.57419. This depicts that on average, the listed banks have been giving out huge loans within the seven-year period base on the minimum and maximum values. Maximum value of 9.6595 showed that some of the banks experienced very high portfolio size. This is attributed to the fact that the main source of interest income is from the loans advanced to customers.

Non-performing loans (NPL) had a mean of 2.740 with a minimum of 0.265, a maximum of 17.4488 and standard deviation of 2.7878. This depicts that on average, the listed banks have been experiencing huge loans default within the seven-year period base on the maximum value whiles others are faced with as low as 0.26. This is also shown by standard deviation value, which was higher than the mean value that depicts a high variability in loan repayment. Maximum value of 17.4488 showed that some of the banks experienced very high non-performing loans. This is attributed to the fact that there are no stringent policies to evaluate, monitor and enforce the credit worthiness of the borrowers.

Lending rate had a mean of 0.2452, minimum of 0.1051, maximum of 0.3806 and a standard deviation value of 0.0495. This shows that on average, the universal banks charged high lending rates of 24.5 percent. Some banks charged lending rates as high as 38 percent while others charged as low as 10.5 percent. There was less variability in lending rate charged from one bank or from one period to the next given a standard deviation value of 4.9 percent. This is because the universal banks set their lending rates based on the policy rate given by the Bank of Ghana.

Management efficiency had a mean of 0.02218, minimum of 0.0143, maximum of 0.037944 and standard deviation value of 0.0087. Thus, the Banks generally incurred non-interest expense of GH₵ 0.02 on every loan granted customers irrespective of their economic activities. However, while some banks incurred as low as GH₵ 0.01 others incurred as high as GH₵ 0.03 on every loan granted customers. As depicted by the variance between minimum and maximum values, standard deviation value of 0.0087, which is lower than the mean shows that there was low variance in management efficiency and this, is because while some banks are efficient, some were not efficient in managing their loan portfolio.

Deposit had a mean of 8.524, minimum of 5.427 and maximum of 9.737. The descriptive statistics show that on average, the banks are able to mobilize deposit of about 8.524 and as high and low as 9.734 and 5.427 respectively. Standard deviation value of GH₵ 1.197 show high variability in the listed banks' deposits mobilized from customers and other financial institution.

Total Assets had a mean of 0.288, minimum of 0.331 and maximum of 1.279. Standard deviation value of 0.412 show high variability in the listed banks' total assets. Age had a mean of 0.1289, minimum of 0.0858 and maximum of 0.177. Standard deviation value of 0.0389 show low variability in the ages listed banks. Capital had a mean of 0.1943, minimum of 0.1067 and maximum of 0.2579. Standard deviation value of 0.05457 show low variability in the listed banks' capital.

Tests for the Classical Linear Regression Model Assumptions

In this study, some diagnostic tests were carried out to ensure that the data fits the basic assumptions of classical linear regression model. Therefore, the test results for each assumption regarding the data are presented as follows.

Breusch-Pagan Lagrangian multiplier Test

The Breusch - Pagan Lagrangian multiplier test was carried out to enable the researcher to select between a random effect regression and ordinary least square (OLS) regression. This method tests the null hypothesis that no significant difference across units thus, no panel effect. The decision rule for Lagrangian multiplier test states for the null hypothesis that when the Prob. > chibar2 is greater than 0.05, then we select the OLS regression. However, when it is less than 0.05,

then we select the random effect regression. The test showed significant Prob.> chibar2 0.0000 and 0.0000 for model 1and 2 respectively. Thus, the alternative hypothesis is accepted and the researcher concluded that random effect regression is most appropriate for the estimation for both models (see appendix).

Tests for Multicollinearity

Multicollinearity is an indication for a linear relationship between independent variables (Gujarati, 2003). To test the existence or not-existence of multicolliniarity problem, Variable Inflation Factor (VIF) technique was employed. The variance inflation factor, VIF, is a measure of the reciprocal of the complement of the inter-correlation among the predictors: $VIF=1/ (1- r^2)$ where r^2 is the multiple correlations between the predictor variable and other predictors. A decision rule for multicolliniarity test of the model states a variable whose VIF values are greater than 10 indicate the possible existence of problem of multicolliniarity. Tolerance, defined as 1/VIF is used by many researcher to check on the degree of co-linearity (Gujarati, 2003). The table 3 shows the VIF and Tolerance of the variables.

Table-3: Multicolliniarity Statistics

Variable	VIF	Tolerance (1/VIF)
LR	1.11	0.900004
DP	1.04	0.957850
BS	1.02	0.976265
AGE	3.24	0.308330
CA	2.34	0.427655
OPE	2.19	0.457659
Mean VIF	1.82	

The result on model 1 and 2 from Table 4.2 showed that VIF values for all variables became less than the tolerable value i.e. VIF values of all variables are less than 10. It indicates that this model is free from multicolliniarity and there is no problem of multicolliniarity between the variables in this model.

Results of Regression Analysis

This regression analysis is based on the data collected on each universal banks, from GSE. It depicted the effect of lending rate on loan portfolio using the seven listed banks over the study period. Both regressions thus model 1 and model 2 were analyzed using random effect Generalized Least Square (GLS) regression with robust control for any hetroscedasticsicty to avoid any bias results. The Tables 4 and 5 showed the regression output of the dependent variable and the explanatory variables of models 1 and 2 respectively.

Analysis and Results of Effect of Lending Rate on Portfolio Quality

The first model estimates the effect of lending rate on loan portfolio quality using non-performing loans as portfolio quality indicator. In this model, the control variables are added to examine their effect on the loan portfolio of the selected banks. First, the B-P test was used to confirm the random effect GLS model with robust. The result is captured in the Table 4.

The random effect GLS model result in Table 4 shows that the results of the independent variables entered into the regression model. The overall model is strongly significant (P> Chi2 = 0.0000) and with R² of 0.5694. This shows that the independent variables have been able to explain 56.94 percent of the variance in the dependent variable. The overall regression result showed that the independent variables are all significant.

The result also shows that all the coefficients in the mode are different from zero, according to the F-Statistics, which is expressed by the rho, statistics and this shows that 0.9533 of the variance in the outcome and predictor variables is due to differences across panels. This means that 95.33 percent variation in the dependent variable is cause by the variation in the independent variables jointly put together. The result indicates that Lending Rate (LR) and Deposit from customers (DP), has a positive significant impact on the Portfolio quality of the selected banks in Ghana. These variables were statistically significant at $p< 0.05$.

Table-4: Effect of Lending Rate on Portfolio Quality

	Coef.	Robust Std. Err.	z	P>|z|
LR	34.2357	10.76382	3.18	0.001
DP	1.158794	0.4770716	2.43	0.015
CA	1.437922	22.17469	0.06	0.948
AG	-.0132108	43.14552	-0.00	1.000

BS	0.7834506	0.606283	1.29	0.196
OPE	-42.79157	77.63551	-0.55	0.582
_cons	-16.46038	3.975271	-4.14	0.000
rho / 0.9533145	*Prob>chi2= 0.000*	*R-sqd = 0.5694*		*Num. of obs = 56*

Analysis and Results of Effect of Lending Rate on Portfolio Size

This sub-section presents the result of the effect of lending rate on loan portfolio size. The result is captured in the Table 5.

In this model, the control variables were also added to examine their effect on the loan portfolio of the selected banks. First, the B-P test was used to confirm the random effect GLS model with robust. The random effect GLS model result in Table 4 shows that the results of the independent variable and the control variables entered into the regression model. The overall model is strongly significant (P> Chi2 = 0.0000) and with R^2 of 0.7932 percent. This shows that the independent variables have been able to explain 79.32 percent of the variance in the dependent variable. The overall regression result showed that the independent variable is significant and two controlled variables are insignificant. The result also shows that all the coefficients in the mode are different from zero, according to the F-Statistics, which is expressed by the rho statistics, and this shows that 0.994 percent of the variance in the outcome and predictor variables is due to differences across panels.

This means that 99.4 percent variation in the dependent variable is cause by the variation in the independent variables jointly put together. The result indicates that Lending Rate (LR), Deposit (DP), Capital (CA) and Operational Cost Efficiency (OPE) has a significant impact on the loan portfolio Size (PFS) of the selected banks in Ghana with lending rate with a negative significant impact. Deposits, Capital and operational cost have a positive significant impact on the portfolio size of the selected universal banks in Ghana. The result below showed that all statistically significant variables are at $p< 0.05$.

Table-5: Effect of Lending Rate on Portfolio Size

	Coef.	**Robust Std. Err.**	**Z**	**P>|z|**
LR	-1.341652	0.4672482	-2.87	0.004
DP	0.1709535	0.0701598	2.44	0.015
CA	0.9266726	0.5432595	1.71	0.088
AG	-0.9189858	0.9393784	-0.98	0.328
BS	0.0917326	0.4777894	0.19	0.848
OPE	21.21203	3.938382	5.39	0.000
_cons	5.882999	0.9572267	6.15	0.000
rho / 0 .99491035	*Prob>chi2= 0.000*	*R-sqd = 0.7932*		*Num. of obs = 56*

DISCUSSION OF RESULT

Relating Results to Research Objectives and Hypothesis

Based on the two models developed because of the dependent variables being portfolio quality (non-performing loans) and portfolio size we then recall our objectives and our hypothesis to examine the effect of lending rate on loan portfolio of universal banks in Ghana.

For the first objective which states; to assess the effect of Lending rate on the loan portfolio quality of banks in Ghana with its hypothesis,
H$_0$: Lending rates has no significant effect on the loan portfolio quality of listed banks in Ghana.
H$_1$: Lending rates has a significant effect on the loan portfolio quality of listed banks in Ghana.

The researcher found that their research supported the alternative hypothesis thus; lending rate has a positive significant effect on the loan portfolio quality. We therefore reject the null hypothesis and conclude that lending rates has a significant effect on loan portfolio quality.

For the second specific objective which states; to assess the effect of Lending rate on the loan portfolio size of banks in Ghana with it hypothesis as,
H$_0$: Lending rates has no significant effect on the loan portfolio size of listed banks in Ghana.
H$_1$: Lending rates has a significant effect on the loan portfolio size of listed banks in Ghana.

The researcher found that their research supported the alternative hypothesis thus; lending interest rate has a negative significant impact on the loan portfolio Size. We reject the null hypothesis and conclude that lending rates has a significant effect on portfolio size.

Relating Finding to Prior Studies and Theories

From the result on effect of lending rate on loan portfolio quality, lending rate has a significant impact on the loan portfolio quality. When there is 1 percent increase in lending rates of the banks, these banks will experience 34.24 percent increase in non-performing loans of the banks and thus decrease portfolio quality. This was in line with researcher's expectation. This is attributed to the fact that most banks in Ghana face the problem of adverse selection when granting loans forgetting that high lending rate only attract only risky borrowers. Therefore, when the interest is high, only those who have the ability to repay the loan will accept the credit facility. However because of the issue of adverse selection they lend to risky borrowers who has less capacity to honour their loan repayment and this contribute to the high loan default in the country. The result is in support to other findings such as Ongweso (2005) whose study found out a positive effect between interest and non-performing loan, an increase in interest rate leads to an increase in non-performing loans, a test of significance however revealed a weak relationship between the two.

Deposit had a positive statistically significant (5%) effect on loan default. Empirically, this implies that 1 percent increase in Deposit leads to 1.16 percent increase in loan defaults because as banks collect more deposit from surplus units they intend to give out more loans as it is their major source of revenue. The empirical results were consistent with the study's expectation, which stated there is a positive relationship between deposit and loan default. Olokoyo (2011); Olusanya *et al.* (2012) identified that bank deposits have a significantly positive relationship with loan default. They argued that banks are able to give out more loans if they are able to mobilize more deposits and the higher the loans given out without stringent monitoring the higher the rate of default.

In addition, from the result of effect of lending rate on portfolio size, lending interest rate has a significant negative impact on the loan portfolio Size. In other words, 1 percent increase in lending rates of the banks leads to 1.34 percent decrease in portfolio size of the banks. Contrary to the above findings, Olokoyo (2011) found that there was insignificant but positive relationship between loan portfolio size and interest rate (bank lending rate). However, in support of the researcher's findings, Olusanya *et al.* (2012) found a negative relationship between loan portfolio size and interest rate (bank lending rate). They argued that with the increase in the lending rate of banks, borrowers will tend to find other sources of finance and hence reduce their level of borrowing leading to a reduction in the loan portfolio size of banks hence the negative relationship between the two.

Furthermore, from the result above on portfolio size, deposit from customers has a significant positive impact on the loan portfolio Size. In other words, 1 percent increase in customers deposits of the banks leads to 1.15 percent increase in portfolio size of the banks. This is because as banks are able to mobilise more funds from surplus customers, they will then have more to lend to the deficit units. The finding supports the view of Olokoyo (2011) and Olusanya *et al.* (2012) identified that bank deposits have a significantly positive relationship with loan portfolio size. They argued that banks are able to give out more loans if they are able to mobilise more deposits. In fact, banks' interest rate spread is gained from the difference between the interest banks pay on the deposits they receive from savers and the interest they receive on the loans they give out to borrowers.

Moreover, from the same result, Bank capital has a significant positive impact on the loan portfolio Size. In other words, 1 percent increase in banks capital leads to 0.09 percent increase in portfolio size of the banks. This means that banks with higher capital base are able to give out huge loans all other things being equal.

Finally, from the same result, operational cost efficiency has a significant positive impact on the loan portfolio Size. In other words, 1 percent increase in operational cost efficiency leads to 0.09 percent increase in portfolio size of the banks. This means that if banks are more cautious about how to minimize their cost, it will eat up into their mobilized fund to reduce the amount of loans to be given out.

CONCLUSION

Based on the empirical results, the following conclusions could be deduced. Lending rate has a positive effect on the loan portfolio and this can be attributed to an increase in Lending rates. An increase in lending rate will attract few customers who are highly risky to default, this will force the banks to invest their excess funds in other avenue other than granting huge loans, and this will result in reducing the portfolio size of the universal banks.

Operational cost efficiency has a positive effect on portfolio size. Therefore, we conclude that operational Cost efficiency has a significant effect on loan portfolio size. In addition, deposit and capital had a significant effect on portfolio size. The results of the regression revealed that all significant variables were at 1 percent, 5 percent and 10 percent significance levels respectively in both models.

Policy Recommendation

Firstly, Universal banks are to find the best ways of managing their operational cost in order to reduce their Lending rates.

Secondly, the study recommends that Universal banks in Ghana should assess their clients

and charge lending rates accordingly. Ineffective lending interest rate policies reduces their portfolio size. The study also recommends that these banks should apply stringent regulations on lending rates charged to regulate their lending interest rates and enhance periodic/regular credit risk monitoring of their loan portfolios to reduce the level of Loans performance

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