

UNIVERSITY OF GHANA

DETERMINANTS OF LOAN PORTFOLIO SIZE OF UNIVERSAL BANKS IN GHANA



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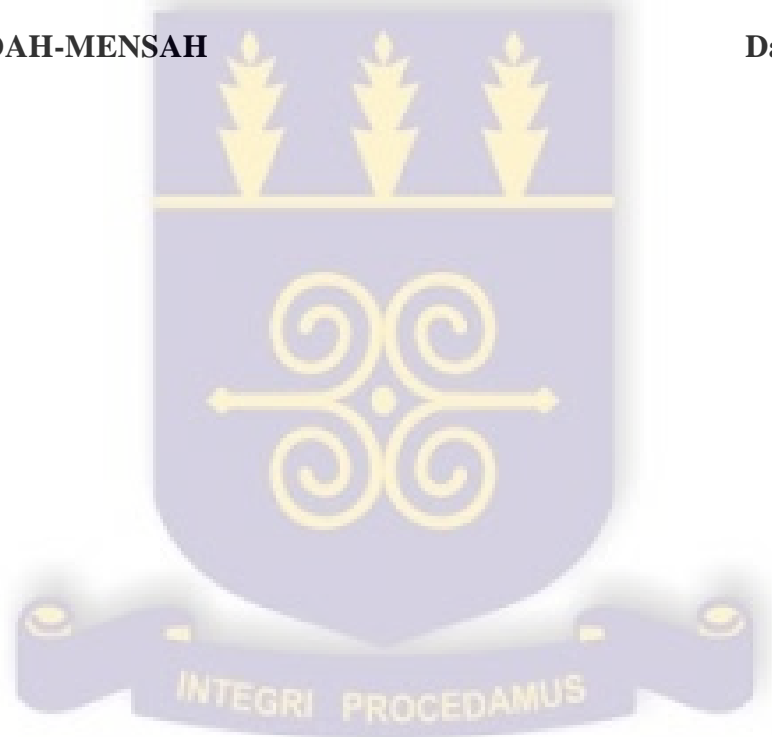
## DECLARATION

To the best of my knowledge and belief, this thesis has not been previously published by any person except previously published materials that have been duly acknowledged. This thesis has not been accepted for the award of any other degree or diploma in any university.

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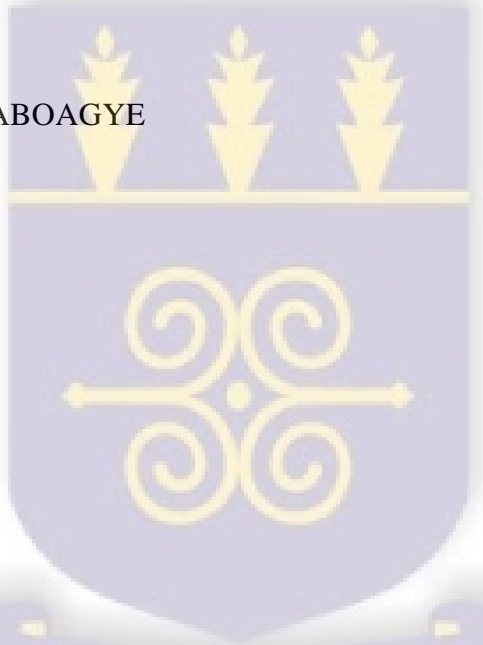
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### CERTIFICATION

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

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## DEDICATION

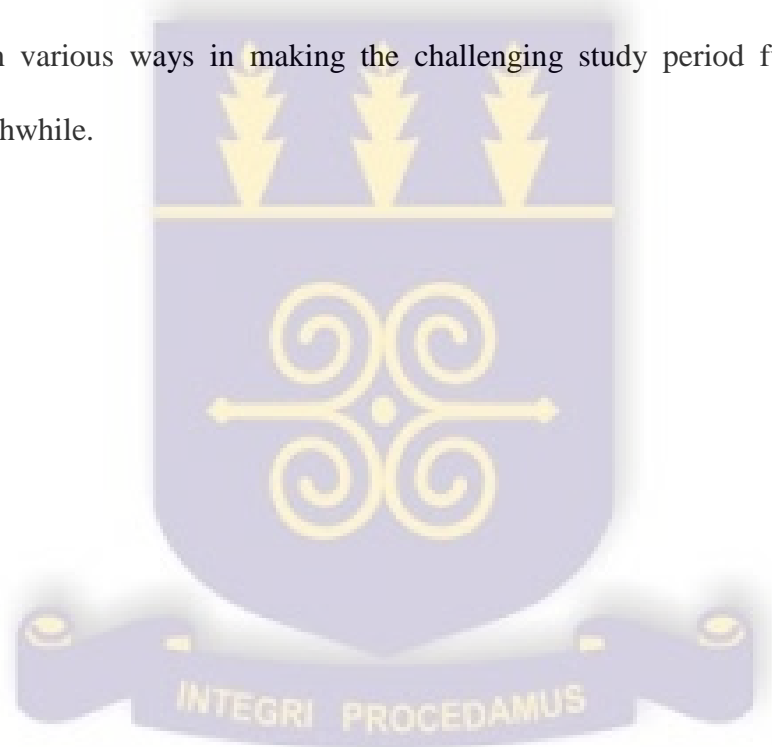
The ultimate dedication goes to the Almighty God for his abundant grace bestowed on me. I also dedicate this work to my lecturers, who continue to inspire me in every endeavour. I further dedicate it to my family and friends whose motivation helped and strengthened me throughout this project.



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## ABSTRACT

This study examines the determinants of universal banks' loan portfolio size in Ghana using the system generalize method of moments (GMM) estimator. The study made use of data gathered from Universal banks from 2000 to 2011. It was discovered from the analysis of the study that the determinants of banks portfolio size of universal banks in Ghana are previous periods' loan size, total investments of the banks, total deposits, credit risk, money supply and the foreign or local ownership majority of the banks. The more foreign ownership dominated a universal bank is the less loans its gives out relative to local majority owned banks. However, these foreign ownership dominated banks tend to increase loans when they make good investments to complement it. It was also revealed that high credit risk discourages universal banks in Ghana from giving out more loans. It is recommended that in giving out loans universal banks' credit evaluation of borrowers must be more rigorous to reduce the credit risk so as not to discourage them from giving out more subsequent loans. Universal banks must put in measures to develop strong relationship with their loan clients to encourage them to service their loans and interest since previous year loans portfolio size affects current year loans portfolio size. Government must help improve the work of credit bureaus through enactment and enforcement of laws and also create a conducive environment to enable foreign dominated banks conduct the necessary research about the Ghanaian economy that gives them confidence, familiarity and comfort to create more loans.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Economic development is a very important issue to every country. Demircuc-Kunt, Feyen and Levine (2011) in their policy paper identified that financial institutions and markets are very important when it comes to the economic development of any country. According to Frankel (2001), a financial system should be able to offer the ability to function efficiently, to support adequate levels of investment smoothly, and to withstand adverse economic shocks. Said and Tumin (2011), Eroglu and Citozi (2010), Levy (2008), Saunders (1997) and Sinkey (1992), agree that banks perform an important role in the economy and consequently, require special regulatory treatment.

The Ghanaian banking industry has developed significantly over the years through the effects of structural reforms (Garr, 2013). The industry is currently one of the most buoyant and competitive yet profitable sectors of the economy (Garr, 2013). These notwithstanding, it is clear that the banking sector is still faced with some challenges. Among these challenges is the issue of bank risk. Bank risk may be classified into four main categories: business risks, financial risks, event risks and operational risks (Greuning & Bratanovic, 2003). Bank risk if not properly managed could lead to banking crisis which may have great effect on the economy as a whole. Although the level of risk that banks are exposed to may differ from bank to bank. Suetorsak (2007) identified the level of risk banks are exposed to is positively associated with the ratio of non-performing loans to capital, interest rate and private investment in residential construction and negatively related to the ratio of administrative expenses to average assets and money supply. Foos, Norden and Weber (2010) identified that loan growth leads to an increase in loan loss provisions during the subsequent three years, to a decrease in relative interest

income, and to lower capital ratios. Further analyses show that abnormal loan growth also has a negative effect on the risk-adjusted interest income (Foos et al, 2010). This shows that the size of loans a bank gives out is very important as far as its risk management is concerned.

Although banks are regulated to keep a statutory reserve of 9% of their deposit which is not to be given out as loans in Ghana, the size of loans that banks give out differ from bank to bank (Bank of Ghana, 2011). It is very important that the factors that determine the size of loans banks give out be identified since it could help in controlling and influencing the size of loans banks give out and for that matter their riskiness. Knowledge of these factors can help in economic development particularly in the area of the control of loans advanced by banks to economic agents. This study is therefore aimed at examining the determinants of banks loan portfolio size with reference to banks specific factors, industry factors and macroeconomic factors.

## **1.2 Statement of Problem**

The importance of banks to the development of every economy cannot be overemphasised considering their role as financial intermediaries (Sinkey, 1992). 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). In achieving this, universal banks are faced with risks particularly from the point of customers defaulting in their loan payments. The failure of customers to repay their loans can put banks into a very risky position in terms of repayment of deposits and other liabilities.

Although the size of loans a bank can give could lead to increase in profitability in the form of interest earned on loans, it could also lead to increase in its level of risk (Javaid, Anwar, Zaman & Gafoor, 2011). Whether the increase in loan portfolio size leads to increased risk or income depends on the loan quality of the bank, hence the more financial institutions are exposed to high risk loans, the higher the accumulation of unpaid loans and the lower the profitability (Miller & Noulas, 1997). Foss et al, (2010) have identified that the abnormal growth in loan portfolio leads to increased risk of banks which presupposes increase in bank risk also depends on the loan portfolio size of the bank.

Since increase in loan portfolio size leads to increase in the risks of banks (Foss et, 2010), it is important to identify the determinants of the loan portfolio size of banks in order to regulate its growth so as to control risk and ensure profitability. There is therefore still the need of literature with regard to the determinants of bank loan portfolio size in developing countries particularly Ghana. This study is hence aimed at examining the factors that determine the loan portfolio size of universal banks in Ghana.

### **1.3 Research Questions**

This study, with the aim of examining the factors that determine the loan portfolio size of universal banks in Ghana seeks to answer the following research questions;

- What bank specific factors of universal banks in Ghana determine their loan portfolio size?
- What banking industry factors determine the loan portfolio size of universal banks in Ghana?
- What macroeconomic factors determine the loan portfolio size of universal banks in Ghana?

- How does the foreign or local majority share ownership of universal banks in Ghana affect their loan portfolio size?

#### **1.4 Objectives of the study**

This study is aimed at achieving the following objectives;

- To examine the determinants of universal banks' loan portfolio size in Ghana
- To examine the impact of foreign majority ownership of universal banks on the loan portfolio size of Universal Banks in Ghana

#### **1.5 Significance of the Study**

Academic research has a primary purpose of reengineering a new level of thought into any subject of study in order to build on the existing knowledge base to provide alternative routes in addressing social issues. This study as such attempts to add to existing knowledge on the topic. A conscious effort would be made to introduce a new level of thinking and outlook on the subject "The determinants of loan portfolio size of banks in the banking industry of Ghana". The findings of this study if made available for use would provide a wide stock of information for use by both regulators and managers of banks in their bid to create the necessary environment to realize their organizational mission statement. In this new era of information, where a spectrum of research findings serve as reference point for logical and resonant strategies, the storage and usage of the outcomes of this research would be reliable proxy for factual techniques in operations decision making.

In the real world of work, decision-making employs research findings largely to disentangle the intricate daily challenges. Research findings provide a pivotal role in making available a wide stock of alternative decision-making routes. It is therefore justifiable to emphasize that the outcome of the study if considered would validate decisions of the users who are interested in managing their loan portfolio size that would lead to higher firm value.

This academic research would also sharpen the skills of both the researcher and prospective researchers that want to revisit the subject matter. Attempts would be made to explore concepts, techniques and analytical approaches for a cognitive research. This exercise would in turn improve on research design skills that could even serve as a foundation block for a possible research career.

### **1.6 Scope and Limitations of the Study**

The study was restricted to banks in Ghana which have been in operation from 2000 to 2011. The premise for choosing this was influenced by the easy availability and accessibility of information as it would have been very difficult to gather prior to the year 2000. This notwithstanding, the researcher still encountered challenges with gathering data to conduct a meaningful research. The unavailability of data on some of the banks due to late incorporation, mergers and acquisitions and liquidation of some of the banks over the years. This posed a big challenge. In spite of these limitations the researcher took the needed measures to overcome these challenges.

## **1.7 Organization of the Chapters of the Study**

This thesis comprised of five chapters organized as follows:

**Chapter one** covered the background to the study, the problem statement, the limitations and delimitations of the study, the significance of the study, and the organization of the study.

**Chapter two** focused on the overview of the Ghanaian banking industry. The chapter also explored extant literature relating to the bank loan portfolio size and lending behaviour of banks in the banking industry of Ghana and other countries.

**Chapter three** shed lights on the data collection. Issues discussed were the econometric model adopted and modify and the definitions of the dependent and the independent variables.

**Chapter four** presents the results of analysis and its discussion in relation to existing literature.

**Chapter five** provides the findings of the study, summarize the entire study and proffer salient recommendations for policy makers.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents the profile of the banking industry of Ghana. The chapter reviews related and contemporary literature in the Ghanaian banking industry. In this regard, the chapter gives an overview of the banking industry of Ghana, banks penetration, overview of the regulatory body and finally banking market performance over the years. The chapter also examines theories of banking in relation to financial intermediation and explores empirical evidence on the determinants of bank loan portfolio size.

#### **2.2 Overview of Banking in Ghana**

There are currently about twenty-seven (27) licensed universal banks in the Ghanaian banking industry. This is made up of about fourteen (14) foreign banks and thirteen (13) local banks (Bank of Ghana, 2013). The banking industry of Ghana has seen a number of developments over the period of 2000 to 2011. These developments have been in the form of regulations and performances by the banks in the industry. These have had diverse impact on competition in the industry and performance of the industry players (Biekpe, 2011).

##### **2.2.1 Prudential Regulation and Supervision**

The banking industry of Ghana is regulated by the bank of Ghana which is mandated by the Bank of Ghana Act 2002 (Act 612) and the Banking Act, 2004 (Act 673). These Laws stipulate the role and powers of the Bank of Ghana by giving the legal and regulatory framework of the Bank of Ghana. It gives the Bank of Ghana the supervisory and regulatory authority in all issues

pertaining to banking and non-banking financial business. The Bank of Ghana uses this authority to ensure that players in the banking industry adhere to statutory and regulatory requirements. In doing this, the Bank of Ghana ensures that the solvency, good assets quality, adequate liquidity and profitability of banks are maintained to keep depositors' funds safe. The Bank of Ghana also ensure that there is fair competition among banks in order to maintain an efficient payment system through the setting of regulations to regulate the banks and supervising them to ensure that they adhere to the set regulations.

Banking intermediation in Ghana has therefore been enhanced over the years by the establishment of new prudential regulation and tighter supervision, an improvement of accounting and disclosure standards, the adoption of better techniques for risk evaluation and asset and liability management and, last but not least, the involvement of foreign investors (Garr, 2013). The rapid changes in the financial system over the past years has necessitated the pronouncement of new laws and regulations which has made regulation and supervision of the industry become more stringent. These laws and regulations mostly relate to monetary policy issues in relation to minimum capital requirement of banks, monetary policy rate, exchange rate, inflation and lending issues concerning banks.

Key issues in relations to regulations from 2000 to 2011 include the increase of the minimum capital requirement of commercial banks to GH¢7 million by 2006 in 2003. This was to enable commercial banks hold universal banking license (PWC, 2008). In holding universal banking license, commercial banks could engage in retail, merchant, development and investment banking without the need to acquire separate licenses for each form of banking. The abolishing of the maintenance, transaction and transfer fees charges by universal banks were also effected in 2003. In 2004, the replacement of the Banking Law 1989 (PNDCL 225) by The Banking

Act 2004 (Act 673) was the significant issue as far as regulation by the Bank of Ghana was concerned.

The year 2005 did not witness significant regulation developments, however, 2006 witnessed the abolishing of the deposits reserves requirements of 15 percent. The Foreign Exchange Act 2006 (Act 723) and the Whistle Blowers Act 2006 (Act 720) also came into effect in 2006. These were to help improve the banking industry and ensure the economic growth of the economy as a whole. The year 2007 also witnessed the enactment of the Credit Reporting Act 2007 (Act 726) and the Banking (Amendment) Act 2007 (Act 738). The abolishing of the National Reconstruction Levy was also a significant regulatory issue in 2007. However, the most significant event as far as regulation in 2007 was concerned was the redenomination of the cedi (¢) to Ghana cedi (GH¢) where ten thousand cedis equated one Ghana cedi.

In February 2008, the bank of Ghana again increased the minimum capital requirement to GH¢60 million by 2009 for foreign majority ownership banks and by 2012 for local majority ownership banks. However, local majority ownership banks were required to meet the minimum capital of GH¢25 million by December 2010. As at December 2009 six local banks had met the requirement. The year 2008 also witnessed the Bank of Ghana directing all banks to adopt IFRS in their financial reporting. In the year 2009, the Bank of Ghana introduced the Ghana Inter-Bank Payment and Settlement Systems (GhIPSS) to help clear all cheques throughout the country within 48 hours, instead of the three days to three weeks.

In 2010, the GHIPSS was emphasised with the introduction of the Cheque Codeline Clearing (CCC) system. This enabled banks and other financial institutions to speed up the processing and settlement of cheque transactions. 2010 also witnessed the publishing of the guidelines for licensing and operations of Credit bureaus under the Credit Reporting Act 2007 (Act 726) by

the Bank of Ghana. This was to support the credit risk management function of the industry in gathering and maintaining data for the formation of credit histories, processing credit related data and delivering credit reports based partly or fully on information not in the public domain. As at the end of 2011, all deposit money banks had signed up for credit reference services and were sharing data.

The year 2011 was dominated with anti-money laundering/combating and financing of terrorism issues. Following the enactment of the Anti-Money Laundering Act, 2008 (Act 749), the Anti-Terrorism Act, 2008 (Act 762) and the subsequent passage of the Anti-Money Laundry Regulations, 2011 (LI 1987), the Bank of Ghana established the AML/CFT Office in January 2011. All these regulation issues had impact on the performance of the both macroeconomic indicators, competition in the banking industry and the performance of banks in the banking industry.

### **2.2.2 Macroeconomic Indicators**

The banking industry of Ghana is impacted by macroeconomic variables like the gross domestic product growth rate, the exchange rate (Ghana cedi to Dollar), the inflation rate and the monetary policy rate. These variables experienced changes over the years under study due to the changes and introduction of various regulations and policy guideline by the Bank of Ghana (Garr, 2013). In relation to exchange rate, the Ghana Cedi depreciated against the Dollar from GH¢0.70 in 2000 to GH¢1.55 in 2011 which represent a depreciation of 121.4% over the period. The inflation rate however was 40.50% in 2000 and reduced to 8.58% in 2011 (Bank of Ghana, 2011).

The GDP growth rate of the economy was 3.7% in 2000 but increased to 15% as at 2011 (WDI, 2011). The money supply (M2) per GDP over the period was 28.1 per GDP in 2000 and increased to 30.5 per GDP in 2011(WDI, 2011). The increase in money supply was supported by the monetary policy rate which was 27% in 2000 and reduced to 12.5% in 2011 (Bank of Ghana 2011). These macroeconomic variables impact the operations of banks in relation to competition and profitability of the industry.

### **2.2.3 Competition in the industry**

Due to the liberalisation of the Ghanaian economy through various reforms over the years, the banking industry has experienced increases in terms of participants (Biekpe, 2013). As at 2000 there was a total of fifteen (15) banks in Ghana, made up of ten (10) local banks and five (5) foreign banks. By 2011 the total number of banks had grown to twenty-seven, consisting of fifteen foreign-owned banks and twelve Ghanaian-owned banks (Bank of Ghana, 2011). The number of banks in the industry therefore grew by over 80.0 per cent over the 12 year period (2000 to 2011). The growth higher among the foreign majority-ownership banks of over 200 percent whilst local banks grew by only 20 percent.

Compared to 2000, it can be concluded that the competition in the industry has become keener especially with the entry of more foreign banks resulting in more foreign-owned banks than locally-owned banks by the end of 2011. The increase in the number of banks in the banking industry to a large extent led to increased competition in the industry in relation to total assets and loan portfolio size of the banks. The Herfindahl–Hirschman Index (HHI) in relation to total assets was 0.145 in 2000 and 0.059 in 2011 showing that the concentration of the market in terms of Assets reduced leading to increased competition over the period of study (Bank of Ghana, 2011). The story was no different in relation to HHI in relation to loan portfolio size.

The index recorded 0.166 in 2000 and 0.054 in 2011 also emphasizing the increase in competition over the period (Bank of Ghana, 2011).

#### **2.2.4 Total Assets and Customer Deposit**

In 2000, local banks owned 50.9 percent of the assets of the industry with the rest (49.1%) going to the foreign banks. By 2011 this had changed with the local banks possessing only 48.3 percent of total assets of the industry whilst foreign banks own 51.7 percent. This shows that the foreign banks did not only grow in numbers but also in terms of asset base or size exhibiting more strength in the industry than the local banks. The total assets composition of the banking industry as at 2011 was 42.4 percent loan and advances, 21.1 percent others assets, 8.9 percent foreign assets and 27.6 percent investments (Bank of Ghana, 2011).

In relation to the share of deposits, foreign banks as at 2000 had under their control about 48.8 percent of total deposit whilst local banks 51.2 percent of all universal banks in Ghana. However, by 2011, the percentage holding of foreign banks had changed to 51.0 per cent whilst local banks reduced to 49.0 percent (Bank of Ghana, 2011). This confirms the gradual entry and dominance of foreign banks of the banking industry in Ghana. This is could be explained with the increase in the number of foreign banks over and above the number of local banks in Ghana. It can also be reasoned that the foreign banks particularly the Nigerian banks are more aggressive in terms of their marketing strategies.

### **2.2.5 Profitability**

The profitability of the banking industry is very important as far as its sustainability and growth is concerned. Being a very vibrant industry the profitability of the industry is very important as far as the economic growth of the country is concerned. The return on assets and the return on equity of the industry measure the profitability of the industry. In relation to the return on equity, the industry recorded 19.74 percent as at 2011 whilst it recorded 3.86 percent in relation return on assets. Figure 3.3 presents the graph of return on equity and return on assets from 2002 to 2011 in the banking industry (Bank of Ghana, 2011).

### **2.2.6 Gross Loans and Share of Loan Loss Provision**

Local banks in 2000 contributed about 71.6 percent to total loans of all universal banks in Ghana. In 2011, even though the level of contribution of local banks to total loans of universal banks dropped, it still had about 53.4 percent. This gives an indication that local banks tend to support local businesses through loans than the foreign banks. This is quite encouraging as the main reason for establishing local banks is to support the development of the business sector since the foreign banks are perceived to be shying away from the private business sector due to risk (Gar, 2013). The credit risk of the industry is measured by the ratio of loan loss provision (LLP) to Gross Loans. Over the past years under study, the ratio was 11.9 percent in 2000 and 14.1 percent in 2011. This shows that the quality of loans of banks in the industry deteriorated over the period and also signifies that the riskiness of banks in the industry increase over the period under study.

## **2.3 Theories of Banking as a Form of Financial Intermediation**

The contemporary theoretical principles underlying the role of financial intermediation and for that matter banks can be described in terms of four theories. These are the imperfect or asymmetric information theory, transaction cost theory, regulation theory and risk management theory. It is based on these theories that banks as financial intermediaries exist and for that matter accept deposits and give out loans which constitutes their loan portfolio size.

### **2.3.1 Imperfect or Asymmetric Information**

Neoclassical theory of economics presents a model of a perfect market for capital that is the Arrow-Debreu world. In this model, it is assumed that no individual party in the market can influence prices; conditions for borrowing/lending are equal for all parties under equal circumstances; there are no discriminatory taxes; absence of scale and scope economies; all financial titles are homogeneous, divisible and tradable; there are no information costs, no transaction costs and no insolvency costs; and all market parties have ex ante and ex post immediate and full information on all factors and events relevant for the (future) value of the traded financial instruments.

The Arrow-Debreu world is based on the paradigm of complete markets. In the case of complete markets, present value prices of investment projects are well defined. Surplus units and deficit units find each other because they have perfect information on each other's preferences at no cost in order to exchange savings against readily available financial instruments. These instruments are constructed and traded costlessly and they fully and simultaneously meet the needs of both surplus units and deficit units. The model also assumed that the supply of capital instruments is appropriately diversified so as to offer the possibility

of full risk diversification and as a result of complete information, market parties have homogenous expectations and act rationally.

However, this perfect market model of the neoclassical is not substantiated in the practical world phenomenon. The studies on economics of information as presented by Vickery (1961), Mirrless (1971), Grossman and Stiglitz (1980) and Stiglitz (2000) proves that markets are indeed imperfect. These studies argue that there is an information gap between deficit units and surplus units which makes it difficult for the free flow of funds from deficit units to surplus units and hence making the market imperfect. This information gap where one party (either the surplus units or the deficit unit) has more information than the other is referred to as information asymmetry. This information gap results in moral hazards and adverse selection making the market imperfect. Banks as financial intermediaries exist to help reduce this information asymmetry.

The role of banks with regard to overcoming the market imperfection due to information asymmetry is presented by various studies. Leland and Pyle (1977) interpret financial intermediaries as information sharing alliances. Diamond and Dybvig (1983) also considered banks as coalitions of depositors that provide households with insurance against idiosyncratic shocks that adversely affect their liquidity position. Banks also act as delegated monitors on behalf of ultimate surplus units (Diamond, 1984). That is, individual surplus units delegate their monitoring activities to banks and put their deposits with banks.

According to Scholtens and Wensveen (2003) information asymmetry can be in three forms; ex ante nature, generating adverse selection, interim nature, generating moral hazards and expost nature, resulting in auditing or costly state verification and enforcement. Information

asymmetry therefore creates market imperfect that is a deviation from the neoclassical perfect market framework. The imperfection of the market leads to specific forms of transaction cost for both deficit units and surplus units. Financial intermediaries and for that matter banks come into the situation to overcome the market imperfection due to information asymmetry at least partially.

### **2.3.2 Transaction Cost**

The theory of transaction cost is closely related to the theory of information asymmetry. Championed by Benston and Smith (1976), Campbell and Kracaw (1980) and Fama (1980), this theory does not contradict the assumption of complete markets. This theory is based on nonconvexities in transaction technologies. Here, the financial intermediaries act as coalitions of individual lenders or borrowers who exploit economies of scale or scope in the transaction technology. The notion of transaction costs encompasses not only exchange or monetary transaction costs (Tobin, 1963; Towey, 1974; Fischer, 1983), but also search costs and monitoring and auditing costs (Benston & Smith, 1976). Here, the role of the financial intermediaries is to transform particular financial claims into other types of claims (so-called qualitative asset transformation). As such, they offer liquidity (Pyle, 1971) and diversification opportunities (Hellwig, 1991). The provision of liquidity is a key function for savers and investors and increasingly for corporate customers, whereas the provision of diversification increasingly is being appreciated in personal and institutional financing. Holmström and Tirole (2001) suggest that this liquidity should play a key role in asset pricing theory. The result is that unique characteristics of bank loans emerge to enhance efficiency between borrower and lender. In loan contract design, it is the urge to be able to efficiently bargain in later (re)negotiations, rather than to fully assess current or expected default risk that

structures the ultimate contract (Gorton & Kahn, 2000). With transaction costs, and in contrast to the information asymmetry approach, the reason for the existence of financial intermediaries, namely transaction costs, is exogenous. This is not fully the case in the third approach.

### **2.3.3 Regulation Theory**

Financial regulation is seen by many as exogenous to the financial industry, however, the operations of banks indirectly require regulation. Merton and Bodie (1993) assert that banks regulation is due to the fact that the operations of banks which is mostly qualitative asset transformation makes them inherently insolvent and illiquid. Money and its value; the key raw material of the financial services industry, to a large extent is both defined and determined by the nation or state through regulating authorities par excellence (Scholtens & Wensveen, 2003). Kareken (1986), Goodhart (1987) and Boot and Thakor (1993) assert that safety and soundness of the financial system as a whole and the enactment of industrial, financial, and fiscal policies are regarded as the main reasons to regulate the financial industry. Again, financial history shows a clear interplay between financial institutions and markets and the regulators, be it the present-day specialized financial supervisors or the old-fashioned sovereigns (Kindleberger, 1993).

Regulation of financial intermediaries, especially of banks, is costly. There are the direct costs of administration and of employing the supervisors, and there are the indirect costs of the distortions generated by monetary and prudential supervision. Regulation however, may also generate rents for the regulated financial intermediaries, since it may hamper market entry as well as exit. So, there is a true dynamic relationship between regulation and financial

production. It must be noted that, once again, most of the literature in this category focuses on explaining the functioning of the financial intermediary with regulation as an exogenous force.

Guttentag and Lindsay (1968), Fama (1980), Mankiw (1986) and Merton (1995b) in their studies argued that banks exist as a result of the regulation of money production and of saving and financing of the economy. They postulate that the liquidity and solvency of banks are affected by regulation. Bank regulation also affects the capital of banks which in turn affects the banks' safety, ability to refinance and ability to extract repayment from borrowers or the willingness to liquidate them (Diamond & Rajan, 2000). Regulation is therefore a very crucial factor that shapes the financial economy (La Porta et al, 1998).

#### **2.3.4 Risk Management (Value Added) Theory**

Scholten and Wensveen (2003) critically examine the *raison d'être* of financial intermediaries and for that matter banks and posits that banks do not primarily exist to alleviate or eliminate the problem of information asymmetry. They argued that banks exist to create value for their stakeholders, particularly deficit units and surplus units. In their opinion it is risk and risk management that drives this value creation. They postulate that transaction cost is incurred to create value. This value is financial services embedded in financial instruments, to surplus units and deficit units that is banks translate the needs and preferences of surplus units and deficit units to appropriate financial services.

Financial services comprise of payment services, asset transformation, risk management and information processing, and borrowers monitoring. These financial services are aimed at the active offering of financial services and instruments to market parties according to their needs

and preferences. Banks therefore provide all kinds of products to market parties through innovation and the use of innovation to create value. Innovations, however, after sometime are imitated especially when they are homogenise and made tradable in open markets, strong competition then threatens all offering market parties. The purpose of these innovations or products according to this theory is to create value and the value created is for the reduction if not the elimination of risk of market parties.

Risk is seen to result in adverse selection, credit rationing and moral hazards leading to the frustration of the optimal allocation of savings. The absorption of risk is seen by this theory as the central function of banking because it bridges the lacuna between the supply of savings and the demand for investments as surplus units are on the average more risk averse compared to deficit units. Managing risks such as maturity risk, counterparty risk, market risk, amongst others is the real business of banks. Banks can absorb risk on the scale required by the market because their scale permits a sufficiently diversified portfolio of investments needed to offer the security required by savers and policyholders. Banks are not just agents who screen and monitor on behalf of surplus units. They are active counterparts themselves offering a specific product that cannot be offered by individual investors to savers, namely the cover for risk. They use their reputation and their balance sheet and off-balance items, rather than their very limited own funds, to act as such counterparts. This theory therefore argues that risk transformation, not dealing with information and agency problems, is at the heart of financial intermediation.

In summary, the existence of banks have been argued to be necessitated by the imperfection of the real world due to information asymmetry, the ability of banks to minimize transaction cost, the regulation of money production and financing of the economy and creation of value in effort to reduce the risk of market parties. The goal of banks irrespective of the theory that one

will adopt is mainly to transform liquid assets like deposits of surplus units to illiquid assets like loans for deficit units. Majority of the innovations in the banking industry which are presented in the form of products are aimed at accumulating funds from surplus units in order to transform them into illiquid assets for deficit units. Through this, banks help reduce information asymmetry and transaction cost. They also help in regulation of money production, the economy financing, value creation and risk absorption as expounded by the various theories of financial intermediation.

#### **2.4 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 and Citozi (2010) and Said and 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.

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 a lot of factors. The next section focuses on loan portfolio size or bank lending.

## **2.5 Overview of Bank Loans**

Brown, Fazzari and Petersen (2009) pointed out that a stable banking system is a requirement for an efficient financial intermediation to channel excess funds from surplus units to deficit units to ensure rapid economic growth. This is achieved through the transformation of funds raised from surplus units into loan assets for deficit units. 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 goes further to specify 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). These types of loans are also referred to at times as problem loans (Berger & De young, 1997). Berger and De young (1997) defined non-performing loans as loans that are outstanding in both interest and principal for a period of time contrary to terms and conditions spelt out in the loan agreement. Alton and Hazen (2001) described non-performing loans as loans that are ninety days or more past due or no longer accruing interest. Caprio and Klingebiel (1997) cited in 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 play 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 and 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. Fofack (2005) 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 and 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, Gall and Leroux (2004) identified that seven (7) out of eleven (11) audited banks were declared bankrupt due to about 41% 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 optimise 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.

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 make funds in the form of loans available for economic units to utilise in carrying out their economic activities (Demirguc-Kunt, et al, 2011). The collapse of the banking system due to banking crisis therefore hinders the channelling 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 as a result of funds mobilised 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 of a bank's loan portfolio is determined by a lot of factors. It is therefore very essential to identify the factors that determine the loan portfolio size of banks.

## **2.6 Determinants of Bank Loan Portfolio Size**

From the foregoing, it can be seen that the loan portfolio of banks plays a vital role in its operations considering its association to profitability and stability of banks. As much as the banking system of a country is very important, its main importance lies not only in the profitability and stability of its banks but in its ability to channel excess funds from surplus units to deficit units to promote economic activities and ensure economic growth in the country (King & Levine, 1993). Banks for that matter are most important to the economy because they help channel surplus funds from surplus units to deficit units (Brown et al, 2009). These funds are used by economic units (deficit units) to finance their economic activities to ensure economic growth. It is therefore important ensure that banks give out loans to make funds

available for economic growth. In order to ensure that banks continue to give out loans there is the need to determine the factors that impact the loan portfolio size of banks.

The main source of income of universal banks is the interests they charge on the loans they give out (Williams & Prather, 2010). As a result, banks mainly aim at increasing the size of their loan portfolio with the aim of increasing their interest income. However, this increase in loans could also lead to increased risk when customers default in their principal and interest payment. Studies conducted show that these bad or non-performing loans caused by customers defaulting is as a result of both bank specific and macroeconomic variables (Boss et al., 2009; Podpiera & Weill, 2008; Berge & Boye, 2007; Rinaldi & Sanchis-Arellano, 2006). Reinhart and Rogoff (2010) have identified non-performing loans to be used to mark the onset of banking crisis. It is therefore of great importance that non-performing loans be reduced or controlled as much as possible. Foss et al, (2010) have 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. It is therefore of great importance that the size of loans banks give be controlled in order to control the growth of the loan portfolio size to ensure that it leads to an increase in interest income and not risk.

In controlling the size of bank loan portfolio or the lending behaviour of banks, one must be able to identify the factors that determine it. Banks' loan portfolio size or bank lending behaviour has been identified to be determined by macroeconomic, industry and firm specific variables by various studies (Ladime, Sarpong-Kumankoma & Osei, 2013; Olokoyo, 2011; Vazakidis & Adamopoulos, 2009; Berger & Udell, 2006; Borio & Fritz, 1995; Blinder & Stiglitz, 1983). In relation to macroeconomic determinants of loan portfolio size of banks, exchange rate, central bank policy rate and exchange rate have been found to affect the loan

portfolio size of banks. At the industry level, the level of competition in the banking industry has been found to have impact on the loan portfolio size of banks. Bank specific variables that have been found to determine the loan portfolio size of banks include the size of banks, the lending rate of the bank, the volume of deposits, investment portfolio, liquidity ratio and the capital structure of banks.

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 was identified in the study 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.

Another study in Nigeria conducted by Olusanya, Oyebo and Ohaebere (2012) using co-integration based on data from 1975 to 2010 found a positive relationship between loans portfolio size and the volume of deposits. On the macroeconomic variables, they found a positive relationship between loan portfolio size and average annual exchange rate and cash requirement reserve requirement ratio. Olusanya et al (2012) however found a negative relationship between loan portfolio size and investment portfolio and interest rate (bank lending

rate). They argued that banks choose between giving the funds they mobilise out as loans and investing it in other investments hence loans portfolio and investment portfolio are substitutes as far as banks are concerned. Therefore as the banks' loan portfolio size increases, the funds available for investment reduces representing a negative relation between the two. In relation to the lending rates, 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.

Ladime, et al, (2013) studied the determinants of lending or loan portfolio size in Ghana using the generalised 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 fairly 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).

Concerning the impact of competition on bank lending it is argued that in the presence of market power, banks have more incentives to invest in the acquisition of soft information by establishing close relationships with borrowers over time thereby, enhancing the supply of credit and consequently reducing firms' financial constraints (Dell'Araccia and Marquez, 2008). Fungacova, Solanko and Weill (2014) examined how competition influences the bank

lending channel in the euro area countries. Using a large panel of banks from twelve (12) euro area countries for the period 2002-2010 they analyzed the reaction of loan supply to monetary policy actions depending on the degree of bank competition. They found that the effect of monetary policy on bank lending is dependent on bank competition: the transmission of monetary policy via the bank lending channel is less pronounced for banks with extensive market power. Further investigation shows that banks with less market power were more sensitive to monetary policy.

Boot and Thakor (2000) argued that, even though a borrower runs the risk of paying higher interest rates in a context of non-competitive banking markets, the borrower can benefit from a greater availability of finance. It is also argued that in a market characterized by competitive conditions, lending rates are lower hence more financing for firms. In other words, concentration heightens financing obstacles to firms, especially from developing countries (Beck, Demirguc-Kunt & Maksimovic, 2004).

In a related study Diamond and Rajan (1999) showed that there is a positive relationship between loan and advances and capital requirements of banks. Contrary to this, Ehrmann et al (2003) argued that monetary policy tightening has a severe negative impact on undercapitalised banks' lending. Berger and Udell (2006) in developing a conceptual framework for small and medium-scale enterprise (SME) finance pointed out that the size of banks is considered as an important determinant of their lending decision. They argued that large and complex banks tend to lend loans to small scale firms. This emphasises the argument of Stein (2000) that small banks have comparative advantage in producing soft information whereas large banks have comparative advantage in lending based on hard information. Stein (2000), however, pointed

out that when large banks are able to process soft information about small scale firms through their technical expertise, there would be a positive relationship between size and lending.

Vazakidis and Adamopoulos (2009) on credit market development and economic growth using vector error correction model based on data from 1965 to 2007 found that economic growth had a positive effect on credit market development or bank lending. They argued that promising economic growth shows that businesses are doing well and hence are profitable. All things being equal the businesses will be able to pay back loans they take from banks and this gives confidence to banks to give out more loans and hence increase their loan portfolio size. Additionally, Zukarnain (2008) in his study of the level of economic development and the impact of financial structure on economic growth using GMM estimation technique based on panel data from 1975 to 1997 from 41 countries pointed out that if banks are able to raise capital from the capital market, it is most likely that it will enhance their lending decision and economic development because the banks and the stock market play complementary roles in economic growth.

The ownership of banks has also been identified to play a vital role in determining the lending behaviour of banks. Micco and Panizza (2006) investigated the relationship between state-owned banks and lending behaviour over the business cycle and found that their lending was less responsive to macroeconomic shocks compared to private-owned banks. Allen, Jackowicz and Kowalewski (2013) using 400 banks across Europe showed that foreign owned banks provide credit during domestic banking crisis in the host countries, while government-owned banks contracted. They pointed out that although foreign banks can help in the stability during domestic crisis periods, they are also likely to increase the risk of importing instability from abroad during crisis in their home country. Wu, Luca and Jeon (2011) examined the penetration

of foreign banks and lending channel in emerging economies and found evidence that foreign banks are less responsive to monetary shocks in host countries, as they adjust their outstanding loan portfolios and interest rates to a lesser extent than domestic private banks, independent of their liquidity, capitalization, size, efficiency, and credit risk, and although there exists a bank lending channel in the emerging economies, it is declining in strength due to the increased level of foreign bank penetration.

From the foregoing empirical evidence, it is clear that the loan portfolio size of banks is a very important issue in both developed and emerging markets. The reviewed literature points to the fact that the size of the loan portfolio of banks which depicts their lending behaviour is determined by macroeconomic, industry and firm specific variables. In Ghana, few studies have been conducted on the loan portfolio size of banks or their lending behaviour. Most studies tend to focus on the profitability and asset qualities of banks in Ghana (Amidu & Harvey, 2014; Alhassan, Kyereboah-Coleman & Andoh, 2014; Boahene, Dasah & Agyei 2012; Saka, Aboagye & Gemegah, 2012; Aboagye 2012; Isshaq & Bokpin 2012; Odonkor, Osei & Abor, 2011; Biekpe 2011; Aboagye et al. 2008a; Aboagye et al. 2008b; Amediku, 2006; Bawumia et al. 2005). The only study to the best of the knowledge of the researcher in relation to bank loan portfolio size in Ghana is the study of Ladime et al (2013). This study therefore aims at building upon the study of Ladime et al (2012), by examining the determinants of loan portfolio size of banks in Ghana using the GMM estimation technique based on data gathered from the year 2000 to 2011. This study by way of addition, introduces total investment, total deposits, loan loss provision and money supply into the model. The study also introduces a dummy variable to ascertain the impact of foreign and local majority ownership of banks on their loan portfolio size.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter deals with the detailed description of the methodological approaches of the study including the formal methods used to carry out the empirical investigations on the determinants of the loan portfolio size of universal banks in Ghana. The chapter looks at the overall research design by describing the econometric model, explanation of dependent and independent variables, nature and sources of data, research population and sample design and the data analysis technique adopted for the study. Reinstating the stance of this study, the primary intent of this study is to examine the determinants of loan portfolio size of universal banks in Ghana; so as to know the nature of loan portfolio size decisions in the entire banking industry.

#### **3.2 Research Design**

The research design of the study outlines the research procedures necessary for obtaining the information required to address the research problem as identified by the researcher. It is the fundamental framework or the basis for carrying out the study (Malhorta & Briks, 2007). The research design adopted in this study to address the research problem is to identify all banks required to provide the data needed to be analyzed in achieving the study objectives. The needed variables are then gathered by collating and sorting them. The needed variables are then analyzed using the appropriate analysis technique and the results presented and discussed to reach a conclusion.

### **3.3 Research Population and Sampling Design**

The population of a study refers to all possible elements of interest to the researcher that is all possible elements the researcher wishes to understand. The population for this study constituted mainly universal banks in Ghana. A research sample refers to a set of people or object chosen from a larger population in order to represent that population (Neuman, 2007). In relation to this study, the sample size consists of selected universal banks in the Ghanaian banking industry. Sample data gathered therefore consisted of data from the selected universal banks that existed within the year 2000 and the year 2011.

### **3.4 Data**

The study was focused on universal banks whose data were available with the Bank of Ghana. The study made use of secondary data which was obtained from the audited statement of comprehensive income and statement of financial position of these universal banks which existed between the periods from 2000 to 2011. A total of twenty-eight (28) universal banks whose data were available was used for this study. However, some banks were had sufficient data points as a result of incorporation, merger and acquisitions and liquidation over the period.

### **3.5 Determinants of bank loan portfolio size.**

The analytical framework in Ladime et al (2013) was adapted with modifications to examine the determinants of loan portfolio size of universal banks in Ghana. Ladime et al (2013) examined the determinants of bank lending in Ghana using the GMM technique using data from the year 1997 to the year 2006. They considered the relationship between the loan portfolio size as the dependent variable with the bank size, bank capital structure, bank spread,

prime rate, exchange rate, real GDP growth rate and HHI as the independent variables. This study by way of addition, introduces the volume of deposits, investments, loan loss provision, inflation and money supply into the model due to existing studies on the impact of these variables on loan portfolio size (Diamond & Rajan, 1998; Olokoyo, 2011; Olusanya et al, 2012; Alhassan et al, 2013). The study also introduces a dummy variable to ascertain the impact of foreign and local majority ownership of banks on their loan portfolio size. This study, however did not consider the capital structure and bank spread in the model. This is due to the fact that the capital requirement of banks may have an impact on its structure and might not lead to much differences in their capital structure.

### 3.6 Econometric Model

Based on the theories and empirical literature reviewed, the objectives of the study was achieved by employing the dynamic panel model in examining the determinants of loan portfolio size of universal banks in Ghana. Based on the review of literature, the model proposed for this study was given as;

$$LP_{it} = \beta_1 LP_{it-1} + \beta_2 SIZE_{it} + \beta_3 INV_{it} + \beta_4 LLP_{it} + \beta_5 DEP_{it} + \beta_6 HHIL_t + \beta_7 MPR_t + \beta_8 INFL_t + \beta_9 EXCH_t + \beta_{10} GDPg_t + \beta_{11} MONEY_t + \beta_{12} OWN_t + \mu_i + \delta_t + v_{it} \quad (1)$$

$LP_{it}$  is the loan portfolio of size of bank i at time t given by log of total loans and advances

$SIZE_{it}$  is the size of bank i at time t measured by the log of total assets

$INV_{it}$  is the investment portfolio size of bank i at time t measured by the log of total investment

$LLP_{it}$  is the Loans provision of bank i at time t measured by the percentage of loan loss provision to gross loan

$DEP_{it}$  is the deposits of bank i at time t measured by the log of total deposits

$HHIL_{it}$  is the competition in the banking industry at time  $t$  measured by Herfindhal-Hirschman Index for loan portfolio size

$MPR_t$  is the lending rate of the central bank at time  $t$  measured by the monetary policy rate.

$INFL_t$  is the inflation rate at time  $t$

$EXCH_t$  is the exchange rate at time  $t$

$GDPg_t$  is the GDP growth rate at time  $t$

$MONEY_t$  is the money supply at time  $t$  measured by M2/GDP

$OWN_{it}$  is the ownership of bank  $i$  at time  $t$  measured by 1 if it's a foreign bank and 0 if it's a local bank

$\beta_1$  to  $\beta_{13}$  is the coefficient of the dependent variables

$\mu_i$  captures the bank fixed effects which controls for time invariant unobserved firm characteristics

$\delta_t$  captures the time fixed effects which controls for macroeconomic changes

$v_{it}$  captures the random error term

From the independent variables outlined, a number of them are highly correlated. Based on the argument of Kennedy (2008) that independent variables with correlation higher than 0.70 are highly likely to exhibit multicollinearity. Variables with correlation higher than 0.70 were thus substituted for one another in the model and hence five different model below were used in the estimation;

$$LP_{it} = \beta_1 LP_{it-1} + \beta_2 INV_{it} + \beta_3 LLP_{it} + \beta_4 MPR_t + \beta_5 EXCH_t + \beta_6 GDPg_t + \beta_7 MONEY_t + \beta_8 OWN_t + \mu_i + \delta_t + v_{it} \quad (2)$$

$$LP_{it} = \beta_1 LP_{it-1} + \beta_2 SIZE_{it} + \beta_3 INV_{it} + \beta_4 LLP_{it} + \beta_5 MPR_t + \beta_6 EXCH_t + \beta_7 GDPg_t + \beta_8 MONEY_t + \beta_9 OWN_t + \mu_i + \delta_t + v_{it} \quad (3)$$

$$LP_{it} = \beta_1 LP_{it-1} + \beta_2 SIZE_{it} + \beta_3 INV_{it} + \beta_4 LLP_{it} + \beta_5 MPR_t + \beta_6 EXCH_t + \beta_7 GDPg_t + \beta_8 MONEY_t + \beta_9 OWN_t + \beta_{10} INVOWN_t + \mu_i + \delta_t + v_{it} \quad (4)$$

$$LP_{it} = \beta_1 LP_{it-1} + \beta_2 SIZE_{it} + \beta_3 INV_{it} + \beta_4 LLP_{it} + \beta_{10} HHIL_t + \beta_{10} GDPg_t + \beta_{11} MONEY_t + \beta_{12} OWN_t + \mu_i + \delta_t + v_{it} \quad (5)$$

$$LP_{it} = \beta_1 LP_{it-1} + \beta_2 SIZE_{it} + \beta_4 LLP_{it} + \beta_{10} DEP_t + \beta_{10} INF_t + \beta_{11} MONEY_t + \beta_{12} OWN_t + \mu_i + \delta_t + v_{it} \quad (6)$$

### 3.7 Variable Description

#### 3.7.1 Dependent variable

##### *Loan portfolio size*

The loan portfolio size of universal banks refer to the amount of loans and advances which the universal banks give out to client in a particular year. In this study the log of total loan and advances of universal banks is used as the measure of the loan portfolio size. The loan portfolio size of bank i at time t is given as;

$$LP_{it} = \log Total Loans and Advance_{it}$$

#### 3.7.2 Independent Variables

##### *Bank Size*

Bank size is proxied as the natural logarithm of the bank total assets. It is argued that large banks have better risk management techniques which ensure better screening of loans and

hence reduce default rate which encourages them to give more loans (Alhassan et al, 2013). On the other hand, it is also argued that as banks grow in size, monitoring and evaluation becomes difficult as they take on increased risk which discourages them from giving out more loans. Empirical evidence on the relationship between loan portfolio size and bank size however, remains mixed. This study however, expects a positive relationship between bank size and loan portfolio size.

### ***Bank Investments***

The investment of banks has been identified to have a negative relation with the loan portfolio size of banks in empirical literature (See Olusanya et al, 2013). They argue that banks substitute between giving out the funds they receive from surplus units as loans and investing the funds in various investments. Banks therefore reduced their loans portfolio size by investing their accumulated funds in other assets. Another school of thought also argues that banks are established to manage risk of depositors. Banks therefore diversify the funds they accumulate from depositor into loans and investments. The loans portfolio is therefore positively related to the investment portfolio of banks (See Olokoyo, 2011). This study however, expects a negative relationship between bank investments and loan portfolio size.

### ***Banks' Loan Loss Provision***

The loan loss provision of banks depicts the credit risk of banks. The higher the loan loss provision of a bank, the more credit risky it is. In relation to this variable, a higher credit risk will discourage banks from giving out more loans since they will not be willing to take on any additional risk. However, a lower loan loss provision will encourage banks to give out more loans. This study expects a negative relationship between banks loan loss provision and the loan portfolio size.

### ***Bank Deposit***

The main source of funds of universal banks is deposit by surplus units or savers. 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. Banks are mostly defined as institutions that accept deposits and give out loans. This study expects a positive relation between bank deposits and loan portfolio size.

### ***Bank Ownership***

Banks are not just profit making institutions with the motive to maximize shareholders' value but also serve as a channel or tool used by the state to regulate money supply in an economy. Micco and Panizza (2006) pointed out that state-owned banks are used by the state to stabilise the economy during periods of macroeconomic shocks. Allen et al, (2013) however, pointed out that there is a mixed results in the role of foreign banks in ensuring stability of the host country. They argued that the foreign banks may provide credit in the host country during banking crisis in the host country to help in its stability or increase risk of importing instability from abroad during crisis in their home country. This study aims at exploring the impact of foreign banks on the loan portfolio size of banks. A negative relationship is expected as all things being equal foreign banks will be reluctant to lend more due to non-familiarity with the host country as compared to domestic banks.

### ***Bank Industry Competition***

The banking industry is very essential in the economic development of every country due to their role is provision of liquidity to economic agents. In order to ensure the efficiency and effectiveness of the industry, the industry is liberalise to improve upon competition in it. This study examines the impact of competition in the banking industry on the loan portfolio size of banks. Competition-stability hypothesis posits that competition-driven efficiency results in banks' stability and improves the soundness of the banking industry (Beck et al, 2006; Ariss, 2010; Schaeck & Cihak, 2010). This study adopts Herfindahl-Hirschman Index (HHI) to measure lending concentration among banks in the industry. The HHI for loans and advances is given by;

$$HHIL = \sum_{i=1}^N l_i^2 \quad \text{and} \quad l_i = \frac{LA_i}{LA_n}$$

Where *HHIL* is the Herfindahl-Hirschman Index for lending in the banking industry whilst  $l_i$  is the market share of loans for bank *i*. The market share is the ratio of each banks' gross loans and advances to total industry loans and advances for each year studied. The higher the *HHIL* the more concentration in lending among banks in the industry and hence less competition. Ladime et al (2013) identified a positive relationship between loans and advances and competition in the banking industry of Ghana using HHI as their measure of competition in the industry. This study expects a positive relationship between *HHIL* and the loan portfolio size of banks.

### ***Macroeconomic Variables***

The activities of banks are affected by developments in the macroeconomic environment and as such the operations of banks may be influenced by macroeconomic indicators. Studies have shown that the lending of banks which is measured by their loan portfolio size is influenced by the monetary policy rate, exchange rate, inflation rate, GDP growth rate and money supply

(Zukarmin, 2008; Vazakidis & Adamopoulos, 2009; Olokoyo, 2011; Olusanya et al, 2012; Ladime et al, 2013). Monetary policy rate according Ehrmann et al (2003) is negatively related to the loan portfolio size of banks as they argue that the increase in the monetary policy rate discourages banks from borrowing from the central bank and hence limits the funds available to them to lend. Exchange rate and inflation rates have been identified relate negatively with the loan portfolio size of banks as they increase the cost of borrowing and makes it difficult borrowers to pay back their loans. Banks are therefore reluctant to lend in periods of high exchange rate and inflation rate as the default risk increases in such periods. This study expects a negative relation between bank loan portfolio size and monetary policy rate, exchange rate and inflation rate.

GDP growth rate and money supply have been identified to have positive relationship loan portfolio size of banks. Olokoyo (2011) and Ladime et al (2013) argued that the high GDP growth is an indication of profitability of businesses and banks are inclined to lend more to economic agents with high GDP growth. All things being equal, the more money supplied, the more the funds made available to banks for them to give out as loans. Money supply therefore positively relate to bank loan portfolio size. This study there expects a positive relationship between bank loan portfolio size and GDP growth rate as well as money supply.

### **3.8 Estimation Technique**

The structure dynamic panel data employed in this study gives rise to autocorrelations as well as correlation between the bank fixed effects and the error. This problem of endogeneity is corrected using difference generalized method of moments (GMM) of Arellano and Bond (1991) which uses the first difference of the explanatory variables to deal with the fixed effects

and their lagged values as instruments. However, the difference GMM has been found to have low predictive ability in small sample data with small number of time periods as used in this study. The system GMM of Arellano and Bover (1995) and Blundell and Bond (1998) is therefore employed to deal with the limitations of the differences GMM. In this study the lagged values of the bank specific variables are treated as endogenous, whilst the macroeconomic variables are treated as being exogenous.

The assumptions of the model in relationship to its appropriateness is tested using the Sargan and the serial correlation tests. The Sargan test, tests for the over-identifying restrictions. This study tests the sample of the moment conditions that were engaged in the process of the estimation to test for the overall validity of the instruments. The test statistics in this regard is the  $X^2_{(m)}$  distribution where  $m$  is the number of degrees of freedom obtained from the difference between the number of instruments and regressors. A test of serial correlation is looked at by formulating a null hypothesis that the error. The data analysis tool or software employed for the analysis is Stata-12.

## CHAPTER FOUR

### DATA PRESENTATION AND ANALYSIS

#### 4.1 Introduction

This chapter discusses the results from the data analysis as stated in the previous chapter. It is made up of the descriptive analysis of the research data, correlation matrix of the independent variables and the discussion of the results of the regression models

#### 4.2 Descriptive Analysis

The descriptive analysis depicts the mean and standard deviation of the various variables considered in this study. The analysis also presents the minimum and maximum values of the variables of interest which helps in getting a clearer picture of the maximum and minimum values attributable to a particular variable. Table 4.1 below presents the descriptive statistics of the variables used in the model. We observe variation in the number of observations in relation to the variables. This is explained by the unbalanced nature of the data gathered over the period used in the estimation. The macroeconomic and industry variables were however available over the period hence recording higher number of observations.

The average of the loan portfolio size (Log of total loans and advances) was 7.83 with a standard deviation of 0.72. The independent variables were not too distant from the dependent variables as most of them recorded means within the range of the dependent variable. The minimum and maximum values were 5.19 and 9.12 respectively. In respect of the independent variables the average bank size over the period was 8.26 which indicates a growth rate of 8.26% in the bank assets over the study period.

**Table 4.1 Descriptive Statistics of Variables used in the Models**

Variable	Mean	Std. Dev.	Min	Max	Observations
LP	7.83	0.72	5.19	9.12	245
SZIE	8.26	0.61	5.95	9.40	245
INV	7.59	0.62	5.20	9.09	245
DEP	8.05	0.65	5.73	9.31	245
INFL	15.47	8.98	9.00	40.50	336
MPR	17.49	4.86	12.50	27.00	336
HHIL	0.10	0.04	0.05	0.19	336
LLP	5.61	10.07	15.90	70.80	229
GDPg	6.84	3.25	3.70	15.01	336
MONEY	29.27	2.93	23.26	34.11	336
EXCH	1.10	0.29	0.54	1.55	336

*Note: LP, log of Loan portfolio size; SIZE, log of total assets; INV, log of total investment; DEP, log of total deposits; INFL, inflation rate; MPR, monetary policy rate; HHIL, Herfindahl-Hirschman Index for lending; LLP, Loan loss provision; GDPg, gross domestic product growth rate; MONEY, money supply (MS2) per GDP; EXCH, cedi to dollar exchange rate.*

*Source: Computation from Research Data, 2014*

Variables such as money supply (MS2 per GDP), inflation rate, monetary policy rate and exchange rate were however very distant from the dependent variable and the bank specific independent variables. This could likely lead to the problem of heteroskedasticity in the analysis.

In overcoming this problem, the data was robust in the estimation.

### **4.3 Test of Multicollinearity**

We test for the presence of multicollinearity which biases the regression estimates. The coefficients which measures the strength of the relation between two variables are estimated for the model variables. From table 4.2 below it is observed that most of the variables are highly

correlated with one another. The correlation between the loan portfolio size (LP) and total asset (SIZE), total investment (INV) and total deposits (DEP) is very high, recording 0.9737, -0.7943 and 0.9154 respectively. Between the independent variables, total assets (SIZE) is highly correlated with total investment (INV) and total deposit (DEP) as shown by the correlation coefficient of 0.8756 and 0.9514 respectively. This shows that the assets of the universal banks are highly correlated with total investments and financed mainly through deposits. Total investments and total deposits were also highly correlated with a correlation coefficient of 0.9041. This high level of correlation is a clear indication of the possible case of multicollinearity among the bank specific variables. The relationship between the industry variable that is Herfindhal-Hirschman Index for lending (HHIL) and the monetary policy rate was no different as they recorded a correlation coefficient of 0.9411. HHIL and loan loss provision (LLP) was also quite high recording 0.7088. Inflation (INFL) recorded a high correlation of 0.8324 with monetary policy rate (MPR) and -7351 with HHIL.

These high correlation between independent variables could lead to the problem of multicollinearity in the estimation. In order to overcome this, separate models were developed by substituting highly correlated variables for each other in the models. Considering the correlation matrix and the relationship between the independent variables, the inflation rate and deposits were dropped from the model and were not included in any of the first four models developed.

**Table 4.2: Pearson Correlation Matrix (\*\*1% significance, \*\*5% significance and \*10% significance levels)**

	LP	SIZE	INV	DEP	INFL	MPR	HHIL	LLP	GDPg	MONEY	EXCH	OWN
LP	1											
SIZE	0.9737**	1										
INV	-0.794**	0.6756*	1									
DEP	0.9154*	0.6514*	0.9041**	1								
INFL	0.386*	-0.408	-0.336**	-0.414	1							
MPR	-0.529	-0.551**	-0.448	-0.549*	0.8324**	1						
HHIL	-0.623**	-0.651	-0.521**	-0.635*	0.6864	0.9041**	1					
LLP	-0.412*	-0.422*	-0.327	-0.421	0.4799*	0.6863**	0.608	1				
GDPg	0.4141	0.4454	0.3959	0.440**	-0.582**	-0.655*	-0.626**	-0.391**	1			
MONEY	-0.239	-0.208	-0.12	0.235**	0.1979	0.3365	0.3453	0.4313*	-0.030**	1		
EXCH	0.5639*	0.6109*	0.526	0.5879**	0.514**	-0.602*	-0.894**	-0.558*	0.6331**	-0.0444*	1	
OWN	0.0557**	0.1561	0.2577	0.2159	-0.14	-0.171	-0.165	-0.089	0.0991	-0.0645	0.1294	1

*Note: LP, log of Loan portfolio size; SIZE, log of total assets; INV, log of total investment; DEP, log of total deposits; INFL, inflation rate; MPR, monetary policy rate; HHIL, Herfindahl-Hirschman Index for lending; LLP, Loan loss provision; GDPg, gross domestic product growth rate; MONEY, money supply (MS2) per GDP; EXCH, cedi to dollar exchange rate.*

*Source: Computation from Research Data, 2014*

#### 4.4 Test for Normality

In order to test for the normality of the data in relation to its distribution the Shapiro-Wilk test was performed. The null hypothesis of the Shapiro-Wilk test is that the data is normally distributed. From Table 4.3, all the data are not normally distributed since the p values of each variable were significant at one percent, which was less than 5%. We reject the null hypothesis of normal distribution.

**Table 4.3: Shapiro-Wilk Test for Data Normality**

Variable	Obs	W	V	Z	Prob>z
LP	245	0.960	22.48	7.670	0.0000
SIZE	245	0.969	5.59	4.001	0.0000
INV	245	0.089	162.28	11.829	0.0000
DEP	245	0.054	168.63	11.918	0.0000
INFL	336	0.856	34.02	8.324	0.0000
MPR	336	0.840	37.80	8.572	0.0000
HHIL	336	0.941	13.91	6.212	0.0000
LLP	245	0.933	12.02	5.779	0.0000
GDPg	229	0.601	66.92	9.738	0.0000
MONEY	336	0.759	56.88	9.537	0.0000
EXCH	336	0.971	6.75	4.506	0.0000
OWN	336	0.875	29.42	7.981	0.0000

*Note: LP, log of Loan portfolio size; SIZE, log of total assets; INV, log of total investment; DEP, log of total deposits; INFL, inflation rate; MPR, monetary policy rate; HHIL, Herfindahl-Hirschman Index for lending; LLP, Loan loss provision; GDPg, gross domestic product growth rate; MONEY, money supply (MS2) per GDP; EXCH, cedi to dollar exchange rate.*

*Source: Computation from Research Data, 2014*

#### 4.5 Discussion Regression Results

Based on the four models developed as a result of the multicollinearity among the independent variable, four regression models were estimated using the system GMM estimators. The results of the estimation of the four models are presented in table 4.4.

**Table 4.4 System GMM Estimation Using Linear Module-One Step (\*\*\*) 1% significance, \*\*5% significance and \*10% significance levels)**

Variables	Model 2	Model 3	Model 4	Model 5	Model 6
Lag of Loans Portfolio Size	0.412*** (0.071)	0.386*** (0.088)	0.347*** (0.096)	0.354*** (0.094)	0.423*** (0.084)
Bank Size		0.101* (0.054)	0.050 (0.053)	0.024 (0.045)	0.055** (0.025)
Investment	-0.004** (0.002)	-0.003* (0.002)	-0.617*** (0.1100)	-0.624*** (0.105)	
Loan Loss Provision	-0.002** (0.001)	-0.002** (0.001)	-0.002*** (0.001)	-0.002*** (0.000)	-0.002*** (0.005)
Deposits					0.004** (0.000)
HHIL				0.290 (0.397)	
Monetary Policy Rate	0.000 (0.003)	0.003 (0.003)	0.003 (0.003)		
Inflation Rate					0.001 (0.001)
Exchange Rate	-0.063 (0.063)	-0.088 (0.072)	-0.055 (0.066)		
GDP Growth Rate	0.000 (0.004)	0.000 (0.004)	0.002 (0.003)	0.001 (0.003)	
Money Supply	-0.009*** (0.003)	-0.008*** (0.003)	-0.005** (0.002)	-0.005** (0.002)	
Bank Ownership	-0.034* (0.018)	0.0173 (0.023)	-0.147* (0.025)	-0.161*** (0.023)	0.009 (0.013)
Investment and Ownership			0.616*** (0.110)	0.622*** (0.105)	
AR (1)	0.019	0.016	0.021	0.022	0.017
AR (2)	0.476	0.469	0.442	0.440	0.363
Sargan Test	0.399	0.468	0.448	0.413	0.414
Hansen Test	0.967	0.955	0.896	0.728	0.843
Observations	194	194	194	194	194

The test for the validity of the result by the Sargen test, Hansen test and the Arellano-Bond test indicates the validity of the system Generalised Method of Moments (GMM) estimates. In all the models the Sargen test indicates that the over identifying instruments are valid (p-values is greater than 0.05). For each of the regression, the specification of the equation was tested with the Hansen test for instruments validity and the serial correlation test for the second order serial correlation. The test results suggest that our instruments are valid, and there exist no evidence of second serial correlation in our estimation. Arellano and Bond (1991) posits that a consistent GMM estimator must not exhibit second-order autocorrelation. From the results in all the models, the Arellano-Bond test showed that there was autocorrelation in the first order (p-values is less than 0.05) but no autocorrelation in the second order (p-values is greater than 0.05).

The lag of the dependent variable, loan portfolio size has a positive and significant relationship with the dependent variable in all the models at one percent (1%). This indicates that the loan portfolio size of universal banks in a previous year has significant impact on the current year loan portfolio size. According to Ladime et al (2013) this implies that a good relationship between banks and borrowers could further be reinforced by previous year's lending. This can result in more lending and hence increased loan portfolio size in the current year.

The size of the bank was also positively significant relationship at ten percent (10%) in Models 3 and 6. This shows that the size of a universal bank may positively affect its ability to create loans or credit or increase its loan portfolio size This can be explained from the view that the assets composition of the Ghanaian banking industry is predominately made up of a high percentage of loans and advances (42.4%) as shown in the industry overview in chapter 2. Large banks may for that matter place more of their assets in loans. However, considering the

high percentage of investments and other assets in the asset composition of the Ghanaian banking industry, while the size of the banks depicts that they are large and can comparatively give out more loans, they may not due to investments being made in government securities and other assets. This explains the insignificance of the positive relationship between the size of the bank and loan portfolio size in Models 4 and 5.

The coefficient of investment is a negative and significantly related to the loan portfolio size in all the models. This can be explained from the view that banks choose between giving out the funds they mobilise as loans and investing it in government securities and other financial assets (Olunsanya et al, 2012). In view of this loans and investments are seen as substitutes from the point of view of banks and hence, the increase in one leads to the reduction in the other, hence the significant negative relationship between the loan portfolio size and total investment.

The loan loss provision of universal banks (LLP) according to Alhassan et al (2014) depicts credit risk of the bank. The credit risk reflects the probability that borrowers will default in loan and/or interest payment. In relation to this study, the coefficient was negative and significant in all the models. This depicts that as credit risk or loan loss provision increases the loan portfolio size of banks decreases. This is due to the fact that the universal banks will want to avoid risk and hence divert their funds into other investments rather than give them out as loans. Again Alhassan et al (2014) pointed out that increase in loan loss provision is an indication of increasing non-performing loans which according to Fofack (2005) could lead to collapse of banks and eventually a banking crisis. As a result of the threat of loan loss provision, universal banks tend to reduce their loan portfolio size with increasing loan loss provision as depicted in the results.

Deposits were only used in model 6 due to its level of correlation with most of the variables in the models. From the results presented in model 6, deposits show a positive and significant relationship with the loan portfolio size of universal banks in Ghana. This emphasizes the point of Foss et al (2010) that banks accept deposits and give them out as loans. It therefore follows that banks are able to give out more loans when they are able to mobilise more deposits.

The Herfindhal-Hirschman Index for lending (HHIL) was included only in model 5 due to its high correlation with most of the independent variables. The HHIL measures the concentration of the loan portfolio size in the banking industry. A high index indicates that loan portfolio is concentrated among few banks and hence less competition in the industry in relation to lending and vice versa. The coefficient of HHIL entered the model as positive but insignificant. The positive relationship between the HHIL and the loan portfolio indicates that competition is negatively related to loan portfolio size as a higher HHIL indicates lower competition. The results therefore show that competition is negative but insignificantly related to loan portfolio size, hence improvements in the competitiveness of the banking industry tends to result in decreases in loan portfolio size or credit creation. This is explained by the increasing trend in the investments and other assets of banks component of the banking industry assets over the period under study. Contrary to the findings of Ladime et al (2013) that competition positively impact loan portfolio size of banks in Ghana, this study found that competition negatively affects loan portfolio size in Ghana.

Against expectation, the monetary policy rate (MPR) coefficient is positive but has an insignificant relationship with the loan portfolio size. This is due to the fact that an increase in the MPR implies a higher lending rate for universal banks borrowing from the bank of Ghana. However, current trends in the banking industry shows that universal banks rarely get to the

point of falling on the lender of last resort for funds (PWC, 2011). Universal banks normally borrow from the interbank market which is not easily influenced by the MPR. Hence although the Bank of Ghana MPR may be increasing it does not discourage universal banks from giving out loans. Again universal banks may not borrow from the central bank but rather source funds from cheaper source and use the increase in MPR as a basis to charge higher interest and gain higher spread on their loans.

Inflation rate because of its correlation with most of the independent variables was only used in model 6. However, it shown a positive but insignificant relationship with the loan portfolio size contrary to what was expected. This could be explained from the view that increase in inflation leads to the increase in the cost of factors of production above what economic units actually planned for. In order for them to meet planned production, they have to borrow more. Banks therefore give out loans to meet the demand at higher rates to earn more interest income.

The exchange rate variable was negative but the relationship was insignificant with the loan portfolio size of universal banks in Ghana. This may be due to the fact that the value of bank loans depreciates with the depreciation of the local currency and for that matter exchange rate. Banks therefore invest their funds in investments that will help them preserve the value of their funds against the falling exchange rate rather than give them out as loans. This is affirmed by the findings of Ladime et al (2013) and Olusanya et al (2012) who also found a negative relationship between exchange rate and bank loan portfolio size. This argument is further affirmed by the increase in investment by universal banks in 2011 compared to giving out loans.

The gross domestic product growth rate (GDPg) according to Olokoyo (2012) gives universal banks an indication of economic development that courage to increase their loan portfolio size. However, the results of the study show that although GDPg is positively related to the loan portfolio size of banks, the relationship is insignificant. This can be explained from the point of view that the economy results is majority of universal banks' assets are placed in investments and other assets (Bank of Ghana, 2011) which limits the funds available for loans and credit origination. The increase in the economic development thus gives an indication to universal banks that businesses are doing well and hence can make enough profit to pay loans and interest they owe but is not significant enough to influence the universal banks to give out more loans.

The coefficient of money supply per gross domestic product (MS2 per GDP) was surprisingly negative and significant. This is because according to Diamond and Rajan (1998) who found a positive relationship between money supply and lending, increase in money supply puts more funds at banks disposal in order for them to give out more loans. The results of this study however depicts that with increased supply of money, universal banks reduces their loan portfolio size. This is explained from the point of view that due to the increase supply of money, the interest charged by banks on the loans they give out reduces which in effect will result in lower interest spread and hence lower interest income. Universal banks are therefore more inclined to invest the increased money supply in investment that yield higher returns than the interest spread they will accrue from giving out loans.

Finally, we observe foreign ownership dominated of universal banks is negatively related to loan portfolio size. The relationship was however found to be insignificant. This could be explained by the notion most foreign majority ownership dominated banks are not familiar with the host country's economy as a whole and are less likely to give out more loans. Hence the

more foreign dominated ownership a universal bank is, the more likely that it will not give out more loans. In model 3, the foreign ownership of universal banks is positive but insignificant. Further analysis was conducted by interacting total investment with ownership in model 4 and model 5. In both models, the foreign majority ownership variable was negative and significant at 1% level of significance. The interaction term (INVOWN) however exhibited a positive and significant at 1% level of significance in both model 4 and model 5. Examining the results further showed that universal banks in general treat loan portfolio size and total investment as substitutes as signified by the negative and significant relationship between total investment and loan portfolio size. However, for foreign majority owned banks, the total investment and loan portfolio size are not necessarily treated as substitutes but complementary assets. This is due to the fact that foreign majority owned banks are faced with the risk of higher default risk compared to local majority owned banks. This is as a result of the non-familiarity of the local economy by foreign majority owned banks compared to local banks. Foreign banks therefore try to reduce their risk by diversifying their funds in investments and loans. This explains the positive and significant relationship between the interaction between the total investment and foreign majority ownership of universal banks.

In analysing the country effect in the regressions, some of the banks dropped collinearity. For example; the result revealed that, three banks dropped due to collinearity, therefore their firm specific effects did not show. However, the remaining 25 banks showed positive but insignificant. In relation to the control for time effect, there was a positively significant result in all the models showing that loan portfolio size of universal banks in Ghana increasing as the year increase. It was further observed from the models that monetary policy rate (MPR), gross domestic product growth rate (GDPg) and exchange rate (EXCH) showed insignificant relationship and almost zero coefficients with the dependent variable. Further analysis was

therefore conducted excluding those variables to determine if it will result in any significant difference in the results. The results (see Table VI in appendix), however, did not show significant changes in the earlier result.

## CHAPTER FIVE

### FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter comprises the summary of the findings and the conclusions of the study. It also makes recommendations in relation to the management of loan portfolio size of universal banks in Ghana based on the findings of the study.

#### 5.2 Research Findings

This study was based on the data gathered from 26 universal banks in Ghana from the year 2000 to the year 2011. The data was analysed to achieve the research objective of determining the factors that affect the loan portfolio size of universal banks in Ghana. More specifically, the research examined the empirically, the determinants of bank loan portfolio size. As noted in the review of literature, recent empirical papers have obtained varying results regarding the determinants of loan portfolio size.

The results of this study however, revealed that the loan portfolio size of universal banks in a previous year has significant impact on the current year loan portfolio size. This supports the argument that good relationship between banks and borrowers could further be reinforced by previous year's lending leading to more lending and increased loan portfolio size in the current year. The results also revealed that the size of the banks was not a significant determinant of banks' loan portfolio size. The observation made of the balance sheet of the universal banks in Ghana reveals that a chunk of banks' assets are in government bills and other forms of financial instruments suggesting the substitution of loans advances with these financial instruments. This resulted in the negative relationship between banks' investment and loan portfolio size. Thus,

this further supports the trade-off between banks' investing in financial assets and advancing loans. This even hold more for foreign owned banks as the results showed a significant negative relationship between foreign owned banks and loan portfolio size. While this suggest that advancing loans and making investment are substitutes for universal banks, foreign owned banks' seem to use investment as complements to advance loans. Thus, foreign banks therefore try to reduce their risk by diversifying their funds in investments and loans. This explains the positive and significant relationship between the interaction between the total investment and foreign majority ownership of universal banks.

Again, the results revealed that as the credit risk or loan loss provisions of banks increases the loan portfolio size of banks decreases. Thus as expected, banks in Ghana tend to reduce their loan portfolio size as the credit risk associated with giving out loans increases. While the results showed a positive relationship between competition as measured by HHIL and loan portfolio size, suggesting that the more concentrated the banking industry is among few banks (less competition) the more likely the banks are to give out more loans, this evidence was rather weak as the relationship was not significant.

In examining the macroeconomic determinants of loan portfolio size of universal banks in Ghana, the study found no strong evidence to reinforce the positive relationship between GDP growth and loan portfolio size surprisingly, the study found a negative relationship between money supply as a share of GDP ( $M2/GDP$ ) and banks' loan portfolio size. While it was expected that an increase in M2 would encourage banks to lend more, universal banks in Ghana rather seem to decrease their loan portfolio size. This may be because in the presence of increased money supply, the interest rate spread of banks may decrease hence discouraging banks to take the herd to rather invest the monies. Thus, universal banks are therefore more

inclined to invest the increased money supply in investment that yield higher returns than the interest spread they will accrue from giving out loan.

Exchange rate showed a negative but insignificant relationship with the loan portfolio size of universal banks in Ghana. Thus, while exchange rate may reduce banks' loan portfolio size, the study finds no strong evidence to support it.

### **5.3 Research Conclusion**

From the analysis and discussions made, it can be concluded that determinants of banks portfolio size of universal banks in Ghana are previous periods' loan size, investments of the banks, the ownership structure of the banks and credit risk. Previous loan size increases current year loan portfolio size while investments reduces bank's loan portfolio size. Foreign owned banks tend to give out less loans. However, these foreign banks tend to increase loans when they make good investments to complement it. The higher the credit risk of the banks, the less the banks give out loans. Other factors that were examined but had an insignificant relationship with loans portfolio size are monetary policy rate (MPR), exchange rate (EXCH), GDP growth (GDPg).

### **5.4 Recommendations**

The findings of this study have implications for the management of loan portfolio of universal banks in Ghana. The following recommendations are therefore being made in light of the findings of this study:

- Since credit risk or high loan loss provision discourages universal banks from giving out loans, credit evaluation of borrowers must be more rigorous to reduce the credit risk and improve the turnaround time of bank loan assets.

- Universal banks must put in measures to develop strong relationship with their loan clients to encourage them to service their loans and interest since previous year loans portfolio size affects current year loans portfolio size.
- Universal banks should put in more effort to enlarge their asset base to be able to give out more loans.
- The Bank of Ghana ensure that exchange rate is controlled to motivate universal banks to give out loans.
- Government must put in place measures like regular industry and sector research to give reports on performance of the economy that will give foreign banks more confidence and familiarity in the local market so as to give out more loans.
- Government should ensure GDP growth is sustained to encourage universal banks to give out more loans.
- Further studies should be conducted in relation to determinants of universal banks' loan portfolio size with focus on the factors that encourages universal banks to give loans to particular clients. Studies could also be conducted on the factors that determine why universal banks give loans to particular sectors in the economy and not others.

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**APPENDICES: DETAILED RESULTS OF ANALYSIS****Table I: Model 2: System GMM Estimation Using Linear Module-One step**

LP	Coef.	Robust Std. Err.	Z	P>z	[95% Conf. Interval]	
$LP_{t-1}$	0.412	0.071	5.780	0.000	0.272	0.552
INV	-0.004	0.002	-2.040	0.041	-0.007	0.000
LLP	-0.002	0.001	-2.370	0.018	-0.003	0.000
GDPg	0.000	0.004	0.000	0.996	-0.007	0.007
MONEY	-0.009	0.003	-3.310	0.001	-0.014	-0.004
MPR	0.000	0.003	0.110	0.909	-0.005	0.006
EXCH	-0.006	0.063	-0.100	0.920	-0.129	0.116
OWN	-0.034	0.018	-1.890	0.059	-0.070	0.001
Number of obs.		194				
Sargan Test		Over identifying instruments are valid at P-value>0.05				0.476
Hansen		Over identifying instruments are valid at P-value>0.05				0.967
Arellano-Bond test for AR(1)		No autocorrelation when P-value>0.05				0.399
Arellano-Bond test for AR(2)		No autocorrelation when P-value>0.05				0.019

**Source: Computation from Research Data, 2014**

**Table II: Model 3: System GMM Estimation Using Linear Module-One step**

Loans	Coef.	Robust Std. Err.	Z	P>z	[95% Conf. Interval]	
$LP_{t-1}$	0.385772	0.087521	4.41	0	0.214233	0.55731
SIZE	0.100837	0.05406	1.87	0.062	-0.00512	0.206793
INV	-0.00296	0.001767	-1.68	0.093	-0.00643	0.000498
LLP	-0.00199	0.000657	-3.02	0.003	-0.00327	-0.0007
GDPg	0.000317	0.003657	0.09	0.931	-0.00685	0.007484
MONEY	-0.00753	0.002666	-2.83	0.005	-0.01276	-0.00231
MPR	0.002697	0.002857	0.94	0.345	-0.0029	0.008296
EXCH	-0.08794	0.071737	-1.23	0.22	-0.22854	0.05266
OWN	0.017281	0.02268	0.76	0.446	-0.02717	0.061733
Number of obs.		194				
Sargan Test		Over identifying instruments are valid at P-value>0.05				0.468
Hansen		Over identifying instruments are valid at P-value>0.05				0.955
Arellano-Bond test for AR(1)		No autocorrelation when P-value>0.05				0.016
Arellano-Bond test for AR(2)		No autocorrelation when P-value>0.05				0.469

**Source: Computation from Research Data, 2014**

**Table III: Model 4: System GMM Estimation Using Linear Module-One step**

Loans	Coef.	Robust Std. Err.	Z	P>z	[95% Conf. Interval]	
$LP_{t-1}$	0.347	0.096	3.630	0.000	0.159	0.534
SIZE	0.050	0.053	0.960	0.339	-0.053	0.154
INV	-0.617	0.110	-5.600	0.000	-0.833	-0.401
LLP	-0.002	0.001	-3.190	0.001	-0.003	-0.001
GDPg	0.002	0.003	0.570	0.565	-0.005	0.009
MONEY	-0.005	0.002	-2.260	0.024	-0.010	-0.001
MPR	0.003	0.003	0.880	0.378	-0.003	0.008
EXCH	-0.055	0.066	-0.830	0.407	-0.185	0.075
OWN	-0.147	0.025	-5.890	0.000	-0.196	-0.098
INVOWN	0.616	0.110	5.580	0.000	0.399	0.832
Number of obs.		194				
Sargan Test		Over identifying instruments are valid at P-value>0.05				0.448
Hansen		Over identifying instruments are valid at P-value>0.05				0.896
Arellano-Bond test for AR(1)		No autocorrelation when P-value>0.05				0.021
Arellano-Bond test for AR(2)		No autocorrelation when P-value>0.05				0.442

**Source: Computation from Research Data, 2014**

**Table IV: Model 5: System GMM Estimation Using Linear Module-One step**

Loans	Coef.	Robust Std. Err.	Z	P>z	[95% Conf. Interval]		
$LP_{t-1}$	0.354257	0.094335	3.76	0.000	0.169363	0.53915	
SIZE	0.024209	0.044641	0.54	0.588	-0.06329	0.111703	
INV	-0.62355	0.104676	-5.96	0.000	-0.82871	-0.41838	
LLP	-0.00204	0.000493	-4.15	0.000	-0.00301	-0.00108	
GDPg	0.000979	0.003312	0.3	0.768	-0.00551	0.007471	
MONEY	-0.00499	0.00198	-2.52	0.012	-0.00888	-0.00111	
HHIL	0.289605	0.397072	0.73	0.466	-0.48864	1.067851	
OWN	-0.16146	0.02332	-6.92	0.000	-0.20717	-0.11576	
INVOWN	0.622283	0.104976	5.93	0.000	0.416535	0.828031	
Number of obs.		194					
Sargan Test		Over identifying instruments are valid at P-value>0.05				0.413	
Hansen		Over identifying instruments are valid at P-value>0.05				0.728	
Arellano-Bond test for AR(1)		No autocorrelation when P-value>0.05				0.022	
Arellano-Bond test for AR(2)		No autocorrelation when P-value>0.05				0.440	

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**Source: Computation from Research Data, 2014**

**Table V: Model 6: System GMM Estimation Using Linear Module-One step**

Loans	Coef.	Robust Std. Err.	Z	P>z	[95% Conf. Interval]		
$LP_{t-1}$	0.4229	0.0843	5.0200	0.0000	0.2576	0.58816	
SIZE	0.0546	0.0254	2.1500	0.0320	0.0048	0.1043	
DEP	0.0004	0.0001	2.4900	0.0130	0.0001	0.0007	
LLP	-0.0024	0.0005	-4.6700	0.0000	-0.0035	-0.0014	
INF	0.0010	0.0014	0.7000	0.4850	-0.0017	0.0037	
OWN	0.0094	0.0134	0.7000	0.4820	-0.0169	0.0357	
Number of obs.		194					
Sargan Test		Over identifying instruments are valid at P-value>0.05				0.414	
Hansen		Over identifying instruments are valid at P-value>0.05				0.843	
Arellano-Bond test for AR(1)		No autocorrelation when P-value>0.05				0.017	
Arellano-Bond test for AR(2)		No autocorrelation when P-value>0.05				0.3630	

**Source: Computation from Research Data, 2014**

**Table VI: System GMM Estimation Using Linear Module-One Step (\*\*\*) 1% significance, \*\*5% significance and \*10% significance levels)**

Variable	Model 2b	Model 3b	Model 4b	Model 5b	Model 6b
Lag of Loans Portfolio Size	0.410*** (0.057)	0.414*** (0.074)	0.356*** (0.083)	0.351*** (0.087)	0.388*** (0.075)
Bank Size		0.027 (0.027)	0.033 (0.052)	0.027 (0.038)	0.049* (0.030)
Investment	-0.004** (0.002)	-0.003* (0.002)	-0.614*** (0.112)	-0.618*** (0.107)	
Loan Loss Provision	-0.009*** (0.000)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002*** (0.000)
Deposits					0.064** (0.029)
HHIL				0.244 (0.399)	
Monetary Policy Rate					
Inflation Rate					0.002 (0.001)
Exchange Rate			-0.040 (0.064)		
GDP Growth Rate					
Money Supply	-0.009*** (0.002)	-0.008*** (0.002)	-0.004** (0.002)	-0.005** (0.002)	-0.007** (0.002)
Bank Ownership	-0.037*** (0.000)	-0.013* (0.007)	-0.159*** (0.028)	-0.160*** (0.024)	0.043* (0.024)
Investment and Ownership			0.0613*** (0.112)	0.617*** (0.107)	-0.225** (0.102)
AR (1)	0.021	0.017	0.024	0.021	0.018
AR (2)	0.512	0.509	0.472	0.493	0.377
Sargan Test	0.46	0.558	0.475	0.470	0.472
Observations	194	194	194	194	194