DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original research

and that no part of it has been presented for another degree in this university or

elsewhere.

Candidate's Signature: ………………………   Date: ………………….

Emmanuel Kweku Ebonyi-Amoah

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were

supervised in accordance with the guidelines on supervision of dissertation

laid down by the University of Cape Coast.

Supervisor's Signature..   Date..............................

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ABSTRACT

The study examines the effect of interest rate changes on bank profitability, using the pooled OLS panel data of 25 banks in Ghana between 2006 and 2015 (Bank of Ghana data scope). This population of the study consisted of banks in Ghana listed on Ghana Stock Exchange. The data gathered was analyzed using STATA 12.0. The explanatory variables used were interest rate changes, interest margin, deposit growth, Loan Loss Provision, Ownership Bank size whiles profitability indicator, ROA, we used as the dependent variable. From the descriptive statistics, the average profitability value suggests that the overall profitability of banks in Ghana is relatively low. Pearson's correlation coefficient was used to analyzed the association among the variables (Both dependent variables and independent variables). It was observed that the correlations among all variables were low and there was weal positive and negative relationship among the variables. However, there was a strong positive correlation between interest rate changes and interest margin from the pooled OLS panel result, Interest rate changes and interest margin were positive and significantly (1% level of significant) linked to return on asset (ROA). The findings agree with those of Ongore and Okoth (2013) who found that interest rate volatility affected the performance of organizations especially in the financial sector in Kenya. In the regression model, the positive relationship between interest rate and bank return on asset may reflect how fluctuating and volatile interest rate may have contributed to the

return on the asset of banks. This suggests that banks respond very fast to changes in interest rate.

ACKNOWLEDGEMENTS

DEDICATION

To my wife Mawudeka, my mother Sophia Amoah-Ebonyi of blessed memory

and my two boys Mikel and Nhyira.

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LIST OF ACRONYMS

ROA	:	Return on asset
INT_1	:	Current end monthly treasury bill rate
INT_0	:	The initial year treasury bill rate
CR	:	Credit risk
OWN	:	Ownership
OLS	:	Ordinary least square
NIM	:	Net interest margin
GAP	:	The difference between interest rate sensitive assets and interest rate sensitive liabilities
VAR	:	Value at risk
VECM	**:**	Vector error correction model

UNIVERSITY OF CAPE COAST

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CHAPTER ONE

INTRODUCTION

Financial intermediation is an important factor in economic development process as it has implication for effective mobilisation of investible resources. These financial intermediaries accept deposits from surplus units and lend to deficit units. This intermediary role is undoubtedly very significant to promoting the growth of the economy by supporting businesses to grow and also increase their profitability through the loans advanced to customers. In this light, the banking sector in Ghana which by far is the largest component of the financial sector has never been competitive than as it is today in providing the financial intermediary role. Now foreign banks are gradually penetrating the industry increasing customer expectations and demands and hence increasing competition. Consequently, the price-setting behaviour of banks can to a large extent influence their performance.

Background to the Study

Lending rate is the interest charged by banks when they advance loans to its customers. This interest rate charged by banks is usually set in a way that the cost incurred by the banks will be covered and a profit made by the banks when customers service their facilities. Thus, banks spread between a bank's interests earnings and expenses are a very significant issue in the banking industry. There is a large degree of agreement among economists that financial liberalisation facilitates economic development and growth (Bawumia, Belnye & Ofori, 2005). This view, embodied in the McKinnon-Shaw paradigm,

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states that the removal of financial repression, in the form of interest rate controls, imposition of credit ceilings and credit rationing, leads to significant improvement of growth prospects. This indicates that narrow spreads may be indicative of a relatively competitive banking system with a low level of intermediation costs and regulatory "taxes" (e.g. reserve requirements and capital requirements) (Saunders & Schumacher, 2000). On the other hand, as posited by Saunders and Schumacher (2000), relatively large spreads may bring a degree of stability for a banking system, in that they can add to the profitability and capital of banks so as to insulate then from macro and other shocks. As is well known, bank failures can carry significant externalities and social costs (Diamond & Dybvig, 1983). Furthermore, in the absence of well-functioning equity markets like the Ghana Stock Exchange, bank interest spreads and internal profit generation may be the only means banks have to add to their capital bases.

After a long period of financial liberalisation in Ghana, the expected decline in interest rate spreads to ensure banking efficiency has not materialised (Bawumia et al., 2005). Most of the banks argue the higher risk in lending which may result from moral hazards and adverse selection based on information asymmetry resulting in mounting non-performing loans and provision for doubtful debts as well as other conditions like higher cost of capital, higher reserve requirements, higher operational cost and macroeconomic instability. Thus, banks in Ghana still charge higher interest rate on loans despite the favourable macroeconomic conditions like decreasing inflation rates and lower policy rates. The high price of loans in Ghana obviously limits access to capital and inhibits economic growth. These

implications of banking sector inefficiency have spurred numerous debates in developing countries about the determinants of banking sector interest rate spreads. In the light of the increasing interest rates charged on loans compared to those offered on deposits, these interest rates vary among commercial banks in the country. In practice, banks have several lending rates and several deposit rates according to the different asset and liability products. So the obvious question still remains: how does the interest margin of banks affect their profitability? This study tries to provide empirical evidence in this direction.

Statement of Problem

As financial intermediaries, banks encounter interest rate volatility in several ways. The primary and most often discussed form of interest rate risk arises from timing differences in the maturity (for fixed-rate) and repricing (for floating-rate) of bank assets, liabilities, and OBS positions. While such repricing mismatches are fundamental to the business of banking, they can expose a bank's income and underlying economic value to unanticipated fluctuations as interest rates vary. Nwaobi, (2008), For instance, a bank that funded a long term fixed-rate loan with a short-term deposit could face a decline in both the future income arising from the position and its underlying value if interest rates increase. These declines arise because the cash flows on the loan are fixed over its lifetime, while the interest paid on the funding is variable, and increases after the short-term deposit matures.

Generally interest rates changes frequently as a result of inflationary changes. Due to unstable inflationary trends in Ghana, interest rates are usually unstable. That is it fluctuates very often. This often has a negative impact on the Ghanaian economy. High interest rates affect the way banks operate several respects. If interest rates fluctuate, it means banks will not be able to loan or lend money to borrowers because cost of borrowing becomes high. It will affect the private sector negatively hence slow economic growth. It affects banks profitability adversely. In Ghana, although interest rates are unbearably high, banks continue to post very high profits year in and year out. A cursory look at the end of year financial statement of banks will reveal how most if not all banks are making huge profits.

Quite a number of works have been done on interest rate changes in the country (Nduati, 2013; Rasheed, 2010; Ngugi, 2004). For example: Interest rate and demand for credit, determinants of interest rate spread in Ghana as well as interest rate and economic growth plus many others which are not captured here. Obviously, it is difficult to see a study that examines the relationship between interest rate fluctuation and banking performance in Ghana. Therefore this study proposes to fill this knowledge gap and the primary research objective is: does interest rate changes influence banking profitability, the case of some selected commercial banks in Ghana.

Objectives of the Study

The main objective is to examine the effect of interest rate changes on bank profitability in Ghana. The specific objectives are;

1.   To examine the kind of relationship that exists between interest margin and profitability of banks in Ghana.

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2.   To estimate the effect of interest rate changes on the profitability of banks in Ghana.

3.   To find remedial actions for high interest rate in the Ghanaian banking sector.

Research Questions

1.   What is the kind of relationship that exists between interest rate margin and profitability of banks in Ghana?

2.   What is the effect of interest rate changes on profitability of banks in Ghana?

3.   What are the remedial actions for high interest in the banking sector?

Purpose of Study

The main motivation for embarking on this work is that, upon thorough investigation it was realized that although some work have been done on Banks' profitability, no work has been carried out on effect of interest rate changes on profitability of Banks' in Ghana. All work that has been done is on foreign countries banking sector.

Significance of the Study

The study will provide a comprehensive resource material for policy makers in the banking, non-banking financial institutions as well as other business communities on the effects of interest rate variations on business performance. This research will be of particular significance to all commercial bank managers in Ghana. It will also be important of the central bank (bank of Ghana).Furthermore it will help commercial bank managers know how interest rates changes impact on

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their profitability. Again it will aid the bank of Ghana in developing policies that will have positive impact on banks' profitability. In addition, the research will add to existing literature by closing the literature gap on the impact of interest rates changes on banks' profitability. More to the above, the work will go a long way in helping potential investors to construct their investment portfolios within the banking sector in Ghana.

Organization of Study

The study is organized into the following sections; Chapter one presents introduction, problem statement, and research objectives, and research questions, significance of the study and motivation of the study. Chapter two focuses on the Theoretical framework and literature review. Chapter three highlights on Methodology, research design, sampling method, population, and data collection. Chapter four covers the data analysis and discussions and finally the chapter five is on the results, recommendations and conclusions.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Literature review discusses some ideas already in books, journals or websites that throw more light on the topic under research. This chapter examines various studies, theories and knowledge produced by persons and authorities related to the subject under study. This chapter is to review existing literature on interest rate changes and performance in the banking industry.

The spread or margin between lending and deposit interest rates is a key variable in the financial system. It reflects the additional cost of borrowing related to intermediation activities performed by banks in linking borrowers with the ultimate fund lenders. When it is too large, it can contribute to financial disintermediation as it discourages potential savers with too low returns on deposits and limits financing for potential borrowers, thus reducing feasible investment opportunities and therefore the growth potential of the economy. This section discuses some theories explaining financial intermediation.

Theoretical Framework

The classical theory of interest

Interest, in real terms, is the reward for the productive use of capital, which is equal to the marginal productivity of physical capital. In a money economy, however, as physical capital is purchased with

monetary funds, the rate of interest is taken to be the annual rate of return over money capital invested in physical capital assets.

According to Keynes, true classical theory of interest rate is the savings investment theory. Basically, the theory holds the proposition based on the general equilibrium theory that the rate of interest is determined by the intersection of the demand for and supply of capital. Caplan (2000) argued that an equilibrium rate of interest is determined at a point at which the demand for capital equals its supply.

Demand for capital stems from investment decisions of the entrepreneur class. Investment demand schedule, thus, reflects the demand for capital, while the supply of capital results from savings in the community. Savings schedule, thus, represents the supply of capital. It follows that savings and investment are the two real factors determining the rate of interest (Friedman, 1991).

The implication of the theory, different banks have different liquidate, if what stated in the theory is true high liquid bank should charge low interest rate on funds lend in order to attract more borrowers and interest rate on savings should be low in order to discourage savings or if it charges the same rate as other banks on money borrowed then interest rate on saving should remain very low. If that is true interest rate spread on highly liquid banks should be comparatively more than low liquid banks. Financial performance on comparatively high liquid bank should be better than low liquid bank (Rochon & Vernengo, 2001).

Loanable funds theory

Assumes that interest rates are determined by supply of loanable funds and demand for credit. The loanable funds theory is an attempt to improve upon the classical theory of interest. It recognizes that money can play a disturbing role in the saving and investment processes and thereby causes variations in the level of income. Thus, it is a monetary approach to the theory of interest, as distinguished from that of the classical economists. In fact, the loanable funds theory synthesizes both the monetary and non-monetary aspects of the problem (Wensheng, Wung & Shu, 2002).

According to the loanable funds theory, the rate of interest is the price that equates the demand for and supply of loanable funds. At the equilibrium level where demand = supply of loanable funds savers and investors are the happiest possible. Fluctuations in the rate of interest arise from variations either in the demand for loans or in the supply of loans or credit funds available for lending. Ngugi (2001) argued that interest is the price that equates the demand for loanable funds with the supply of loanable funds.

Loanable funds are "the sums of money supplied and demanded at any time in the money market."The supply of 'credit' or funds available for lending would be influenced by the savings of the people and the additions to the money supply (usually through credit creation by banks) during that period. The demand side of the loanable funds, on the other hand, would be determined by the demand for investment plus the demand for hoarding money (Turnovsky, 1985).

Loanable fund theory has implication on banks savers and borrowers according to this theory this two group should well

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compensated at equilibrium. According to this theory interest rate spread should not be very wide where one party feel exploited. Interest rate should be structured in a way every party feel comfortable Emmanuelle (2003) argued.

Bank Profitability

The profitability of bank is typically spoken as a function of interior and exterior determinants. The interior determinants are called micro or bank specific determinants of profitability because they are initiated from bank accounts like balance sheet or profit and loss account. While on the other hand the exterior determinants are the variables which are not in the control of bank's management. These variables reflect the legal and economic environment which can influence the process and performance of an economic body. Moreover the expenses of bank are considered significant determinant of bank's profitability which is directly associated to the concept of capable management.

For instance Bourke (1989) and Molyneux and Thornton (1992) discovered an encouraging affiliation among profitability and better-quality management. Another appealing matter is that whether the bank's ownership status is associated with its profitability or not but to support the assumption that private organization will earn comparatively higher profit, small proof is founded. The study of Short (1979) is from one of the few studies contributing cross country proof of direct negative correlation among public owned organization and the profitability of banks. The final set of the determinants of banks profitability works with macro-economic control variables. Growth rate of money supply, inflation rate and long term interest rates are usually used as variables. The issue of the association among inflation and bank's profitability

has been introduced by Revell (1979). He noted that the consequence of inflation on the profitability of banks depends upon whether wages and other operating expenses of banks are increasing faster than the inflation.

Theory of borrower dependant on banks

The view that some borrowers are dependent on banks for financing stems from economic models of asymmetric information that help explain credit market imperfections. The central idea is that the costs of obtaining information about a firm's condition, as well as bankruptcy costs, are differentially greater for smaller firms (Diamond, 1984). Thus, small firms find it more difficult and more costly to obtain credit. In addition, a special feature of banks is that they may have a comparative advantage over other intermediaries in information processing and monitoring that enables banks to lend to smaller firms at lower cost (Thakor, 1996). These theories provide a rationale for observed differences in large and small firm financing. Generally speaking, larger firms have a greater array of financing options, including equity, long-term debt, and short-term debt, in addition to bank loans and internal cash flow. In contrast, smaller firms appear to have much less access to capital markets and depend more on bank loans, trade credit, and internal funds for financing (Abor, 2004). This means that the greater dependence of smaller firms on bank financing, in turn, suggests they may be more vulnerable than larger firms to disruptions in credit availability.

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A number of studies have provided evidence that these credit market imperfections may explain differences in behaviour of small and large firms during periods of tight credit. For example, small firms appear to account for a larger share of the decline in manufacturing activity and reduced inventory demand that follows a monetary tightening (Gertler & Gilchrist, 1995). Similarly, small firms appear to have less access to bank and non-bank external finance in periods of monetary tightening (Oliner & Rudebusch, 1994). This behaviour is consistent with the view that restrictions in the availability of bank credit could have macroeconomic consequences by affecting the investment and spending decisions of bank-dependent borrowers.

Market interest rate

Interest rates measure the price paid by a borrower or debtor to a lender or creditor for the use of resources during some time intervals (Fabozzi & Modigliani, 2003). Goedhuys (1982), defined interest rate as the general level in financial assets and claims of all types whether call loans or debentures, company shares or government bonds, bank overdraft or bill of exchange. There are nominal and real interest rates. Nominal interest rate is the rate not corrected for inflation. Nominal interest rate on loan relates the amount of interest on the loan to the amount of money lent, while real interest rate is that which incorporates the effect of inflation. It is measured in terms of purchasing power. The two rates are connected by a simple relation called Fisher Effect, which says that real interest rate is measured as nominal interest rate minus expected inflation rate, because an expectation about further inflations definitely affects market interest rate (Kaufman, 1986).

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The market interest rate is the interest rate offered most commonly on deposits in banks, other interest bearing accounts as well as loan; it is determined by the supply and demand for credit (Farlex, 2009). Market interest rate largely depends on the supply and demand for credit, competition in the loanable market and other factors such as inflation rate, expectation of investors, monetary policy of the government etc. The question of practical importance is whether the rate may be expected to move above or below today's level, how far it may go, and how long the movement may take. There are different market interest rates in a given currency.

Interest rate risk

Management of financial institutions faces different types of risk when managing loan portfolios or individual securities. The risk encompasses credit or default risk, liquidity risk, repayment risk and interest rate risk Rose & Kolari (1995). The major concern throughout the financial system is the interest rate risk. Interest rate risk refers to the effect of interest rate volatility on rate earning assets and rate paying liabilities. For a given change (1%), interest rate risk also includes the effect of shift in volume and composition of assets and liabilities (Saha et al., 2009). As many other studies on interest rate have shown (Delis, & Kouretas, 2011; Kasman, Vardar & Tunç 2011; Hanweck & Kilcollin, 1984), maturity mismatch of banks assets and liabilities (while performing asset transformation function), and unexpected change in interest rate, potentially expose the banks to interest rate risk. This exposure will result to refinancing or reinvestment risk, depending on the direction and level of interest rate change (Saunders & Cornet, 2003).

Effect of interest rate risk on banks' profitability

Interest rate movement is a major concern to all financial institutions and markets alike. It affects decision making. Performance, and growth of any particular financial institution, (Madura, 1989). Change in interest rate and interest rates expectations affect the income and expenditure of financial institutions. Under normal circumstances, the intermediary's average yield on asset (loan) will exceed the rate it pays to savers in order to attract funds. In fact, a positive net interest margin must exist over long term for a financial institution to remain in the business of borrowing and lending money. But the maintenance of a positive net interest margin over time has been a special problem for a number of financial institutions in the recent years, due to volatile interest rates as well as other factors like restrict regulations, reckless management etc.

According to Hanweck and Kilcollin. (1984), four factors determine the effect of a change in the general level of interest rate on bank's net interest margin (NIM). First, there is the proportion of assets and liabilities. The higher the liability proportion relative to assets, the lower the NIM will be if interest rate increases. Second, there is a response of new asset and liability rates to changing general level of interest rate. Interest rate spreads between assets and liabilities may widen or narrow as interest rate rise, thereby increasing or decreasing NIM. Third, assets and liability portfolios may shift with changes in interest rate. For example deposits and loans mad at low interest rates may be renegotiated at current rate. Fourth, the size of a bank's portfolio may change with changing interest rates and so may affect NIM.

The total effect of interest rate changes on profitability (Net Interest Income) can be summarized by its gap. GAP is the difference between the interest rate-sensitive assets (loans) and interest rate sensitive liabilities (deposits) (Rose et el., 1995). Under aggressive management strategy, if interest rates are expected to raise, financial institutions with positive gap will experience rise in interest margin. Net income will increase because revenue from interest rate-sensitive assets will increase more than their cost. Financial institution with negative gap has to adjust its portfolio if it expects interest rate to rise, example, shortening the maturity of its assets, by selling long term securities and purchasing short term securities. Expectations of falling interest rate will produce the opposite of portfolio.

Factors that determine the level of interest rate

There are several factors responsible for the level of interest rates in the banking sector. Some of them are supply and demand for credit, competition in the loanable market and other economic factors such as inflation rate, expectation of investors, and monetary policy of the bank of Ghana.

Demand and supply of loanable funds

Interest rates are determined by the forces of demand and supply particularly in the free market economy like that of Ghana (demand and supply of funds) Shetty, Macgrath, & Hammerbacher (1995). Such interaction results in an equilibrium interest rate, when preference of borrowers and lender are successfully matched. An equilibrium interest rate is acceptable to

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both parties to the transaction, and it's the rate at which the loan transaction is completed (Rose et al., 1995). The supply of funds depends on the preference of society for current versus future consumption, the lower the preference for current consumption and the stronger the incentive to accumulate funds. The demand for fund depends on the opportunities available for using borrowed funds efficiently and profitably, the more profitable the usage of funds the greater the demand for funds. If demand for funds increases or the supply of funds declines, the price of funds (interest rate) will rise and if demand for funds decreases the interest rate will fall (interplay of demand and supply).

Inflation

Inflation affects interest rate because it affects the values of money promised in future, (Kohn, 2004). The rate of interest quoted in the financial market is sometimes contrasted with the real rate of interest, which is the observed market rate, corrected for price changes (inflation), (Goedhuys, 1982). According to Fisher effect, expectations of high inflation causes savers to require higher nominal (market) interest rate, as it is the only way they can maintain the existing real rate of interest. Real interest rate is measured as nominal interest rate minus expected inflation rate, because an expectation about future inflations definitely affects market interest rate (Kaufman, 1986).

Investors' Expectation

The expectation theory argues that interest rates are functions of investor's expectations (Rose et al., 1995). If the investors' expectation is that money supply will be increased by the Federal Reserve over the next period,

the level of interest will increase. This is because the increase in money supply has not actually been implemented, while investors already reacted towards it.

Competition

Competition in the loanable market also affects the interest rate. Lowering the cost of deposit and raising the interest on loan by commercial banks will increase profit. But the ability to do so depend on how much competition faced in the industry. Even if there are few commercial banks to compete with, the non-bank substitute may be a problem, this leads to disintermediation. (Rose et al., 1995).

The role of stock exchange in financial sector

The stock exchange is the very hub of the capital market; the pivot, without this facility and the chance, which is thus available to investors to liquidate their investments or adjust their portfolio whenever they desire to do so, it is doubtful if there would be any motivation to invest in securities. Most savers would then probably simply hold on to their funds in cash or bank deposit which guarantees that they would be able to meet the fundamental purpose of the saving; such motive is usually quite far from a desire to invest.

Besides, there is a strong possibility that even where savings remain constant in aggregate terms, that without the safe-guard and the guarantee of quality and the resultant confidence generated by stock exchange listing, most savers could not be easily persuaded to place their money in securities, issued by firms whose competence or integrity they could not trust. Savers would then probably put their

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money instead in small, owner-managed business concerns. The implication of this for the entire economy could be a serious handicap being placed on the promotion of large-scale enterprises and with this, a severe limitation on the nation's production capacity. Because of the impact of scale on cost of production, prices and loss of international competitiveness, the marketability of securities, which the stock exchange impact on, therefore has extremely important implication for the individual saver, the investor or fund user as well as the nation as a whole. This tremendous impact that the capital market introduces to the capital formation and investment process, ultimately to the promotion of individual and nation well-being and posterity, makes it seem today a vital component of the total strategy for promoting national economic development. It was probably because of these attractions that the emerging Ghanaian nation in 1990 elected also for the establishment of stock exchange in Accra.

The activities of the stock exchange fall into two broad categories, the primary and secondary markets. The primary market is concerned with the initial issuance of securities. Such an issue can take any of the following forms: offer for subscription, offer for sales, by introduction, private placement and rights issue. The market for outstanding securities (the secondary market as it is often called) enhances the new issues market in many ways, by providing the means by which investors can monitor the value of their shares and liquidate them when they so desire. The secondary market augment the supply of funds to the primary market stated somewhat differently. If there were no secondary market in which investors could cash their investment in listed securities they choose, many investors may not buy

new issues in the first place. From the perspective of the overall economy, the secondary market is particularly important, as it makes it possible for the economy to ensure long-term commitments in real capital.

Raising securities from the Stock Exchange requires activities such as consortium under writing, syndicated loans and project financing. Thus, the Stock Exchange is a machinery for economic units that are keen to invest surplus funds interact directly or through financial intermediaries with those who wish to procure funds for their businesses and projects. The Ghanaian financial market has participants that include the Ghana Stock Exchange (GSE), Discount Houses, Investment Banks, Merchant Banks, Development Banks, Brokerage firms, Building Societies, Leasing Companies, Insurance and Pensions organizations, Quoted Companies, the government and individuals that are regulated by the Securities and Exchange Commission (SEC). The impact of the capital market in any economy cannot be downplayed because it promotes savings and real investments in the productive sectors and the eventual growth of the economy hence the commitment to it development must be pursued vigorously.

The capital market is the converging point for divergent preferences of portfolio managers, financial institutions, individual lenders and borrowers. It serves as the platform for mobilizing long-term funds for portfolio managers and financial institutions while providing avenues for lenders to invest. When the need arises, through

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the secondary market they can recover their investment without affecting the operations of the firms their earlier investments had financed. Thus, the secondary market converts long-term investments into perpetual investment to a large extent for accelerated economic growth and development of businesses.

Overview of the banking industry

In the 1980s, most public sector banks were declared insolvent with about 41% non-performing loans attributable to the private sector (Kapur et al., 1991, pp. 60–61). This period also witnessed numerous prudential banking reforms in Ghana and many developing economies; spearheaded by World Bank. Specifically in Ghana, such reforms included the passing of the Banking Law, 1989 (P. N.D.C.L. 225), Bank of Ghana Act, 2002, Act 612, the Banking Act, 2004a,b (Act 673), and the Banking Amendment Act 2007 (Act 783). The Banking Law (P.N.D.C.L 225) was revised in 1989 under the Financial Sector Adjustment Programme (FINSAP I). Some of the new provisions in the Act included placing limits on risks exposure; capital adequacy ratio of 6%; setting uniform accounting standards and expansion of auditing scope and strengthening both on-site and off-site supervision of banks by the Bank of Ghana. The supervisory powers of the Bank of Ghana were enhanced with the revision of the Bank of Ghana Law (P.N.D.C.L 291) in 1992.

In 2002, the Bank of Ghana Act 612 led to the establishment of the Banking Supervision Department responsible for the supervision and

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examination of all banking institutions in the country to strengthen the regulatory capacity of the Bank of Ghana. The supervision of the banking and credit system was to ensure adherence to prudential banking reforms by Ghanaian banks.

The Banking Law, 1989 (P.N.D.C.L. 225), was replaced by Banking Act, 2004a,b (Act 673) to promote an effective banking system. The regulations in the Act covered the licensing of banks, capital requirements, liquidity, ownership and control, restrictions on lending, supervision and control and accounts and auditing. A notable reform in the Act was the increase in the minimum capital adequacy ratio from 6% to 10%. The Banking Amendment Act (2007), Act 738, replaced the Banking Act (2004) with an additional function of ensuring the soundness and stability of the financial system in Ghana and also the establishment of offshore banking and other offshore financial services such as insurance and leasing with a focus of positioning Ghana as the regional hub for financial activities in Africa and to attract diaspora investments. As evidenced from the aforementioned reforms, most of the regulations have sought to ensure adherence to best banking practices. There are currently 7 banks listed on the Ghana Stock Exchange namely, Societe Generale Ghana Limited (SOGEGH), Standard Chartered Bank (SCB), Ghana Commercial Bank (GCB), HFC Bank (HFC), CAL Bank Limited (CAL), Ecobank Ghana Limited (EBG) and UT Bank Limited (UTB).

Asset structure of Ghanaian banks

The asset structure of Ghanaian banks is mainly made up of loans and advances, assets held in foreign currencies, investments in government securities and other assets. From Fig below, banks loans and overdrafts accounted for 40.1% of total banking industry asset in 2010 compared to investments, government bills and securities of 26%. In all 8% of the banking industry assets are held in the form of foreign assets. The implications of the banking industry asset structure are that banks are exposed more to credit risk.

Table 1- Asset Structures of the Banking Sector (2006–2011)

Components of Assets (In % of Total)	2006	2007	2008	2009	2010	2011
Cash and Due from Banks	23.5%	23.3%	25.2%	26.3%	25.3%	27.8%
Investments	23.3%	17.6%	14.5%	21.4%	26.5%	27.6%
Net Advances	45.0%	50.3%	52.3%	43.8%	40.1%	37.8%
Other Advances	5.2%	5.7%	4.7%	5.4%	5.2%	3.8%
Fixed Assets	3.1%	3.1%	3.2%	3.0%	2.9%	2.7%

Source: Bank of Ghana Website, Global Financial Stability Result 2012

Loan asset portfolio analysis

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From Table below, banking industry loans and advances expanded from 2006 to 2010. The gross loans granted by the industry was GH¢m 2,519.70 in 2005. This figure almost doubled to GH¢m 4,146.5 in 2006. The rising trend continued to 2010 at GH¢m 7,994.70. The growth in banking sector lending to private enterprises also followed a similar trend: from 68% share of gross loans in 2006, above the period average of 66.95%. The period end figure of 72.8% shows the continuous reliance of the private sector on the banking industry for funding. While household share in gross loans exhibited little variations between the ranges of 13.7% in 2010 and 17.6% in 2008, credit to government and public institutions and public enterprises declined from 5.1% and 12%, respectively, in 2006 to 2.6% and 10.9%, respectively, in 2010. The high concentration of lending among private enterprises indicates that any adverse economic effects could affect the ability of firms to service bank debts and have severe consequences for banking operations.

Table 2- Banking Sector Loans (2006–2010)

	2006	2007	2008	2009	2010	Average
Gross loans GH¢m)	2,519.7	4,146.5	5,966.8	6,920.8	7,994.7	5,509.71
Distribution of gross loans by economic sector (In %)						
Private enterprises	68	64	63.4	67.6	72.8	67
Household loans	14.9	17.5	17.6	15.5	13.7	15.8
Government and public institutions	5.1	4.7	5.3	2.5	2.6	4

Public enterprises	12	13.8	13.7	14.5	10.9	13

Source: Bank of Ghana Website, Global Financial Stability Result 2011

Profitability Indicators

The banking sector's net interest margin grew to 8.4% in 2010 from 6.9% recorded in 2009. The industry's share of net interest income as share of total income grew from 39.4% in December 2009 to 50.10% in December 2010. Marginal increases were recorded for return on equity to 2.7% in December 2010 from 2.1% in 2009 while return on assets increased from 23.6% in 2009 to 28.6% in December 2010.

Table 3- Profitability Indicators (2006–2010)

	2006	2007	2008	2009	2010
Interest Margin to Total Assets	7.80%	6.40%	6.60%	6.90%	8.40%
Interest Margin to Total Income	51.80%	46.10%	41.30%	39.40%	50.10%
Return on Assets	39.60%	35.80%	30.10%	23.60%	28.60%
Return on Equity	3.30%	2.60%	2.50%	2.10%	2.70%

Source: Bank of Ghana (2011)

Capital adequacy ratio

Bank equity capital depicts banks' ability to absorb losses on their books. The capital adequacy ratio of the industry was continuously above minimum regulatory requirement of 10% from 2007 to 2010. While a marginal decline of 13.80% was experienced in 2008 from 15.70% in 2007, the ratio increased from to 18.2% and 19.1% in 2009 and 2010 respectively. With the current liberalized market and improving macroeconomic

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environment, the prospects of the sector's growth and development are high. Because of competition, innovation and efficiency in the industry are expected to deepen (BoG, 2011; Zangina & Bokpin, 2012). This might however, lead to more mergers and acquisitions since stronger asset base is needed to effectively compete and still maintain appreciable profit margins as well as meet the new capital requirement of GH¢m 60 million. These policies together with the downward revision in the prime rate and a stable macroeconomic environment are expected to position the industry for greater growth (Bank of Ghana, 2011).

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter presents the methodology to be used for the study. It begins with the research design of the study. It highlights the method of data analysis and model specification of the study.

Research Design

A research design is systematic plan to study a scientific problem. The design of a study defines the study type whether it is descriptive, correlation, semi-experimental, review, meta-analytic and sub-type research questions, hypotheses, independent and dependent variables, experimental design and if applicable, data collection methods and statistical analysis plan. Research design is the framework that has been created to seek answers to research questions.

The study adopted quantitative research approach which made use of numerical data. Moreover, Creswell (1994) define a quantitative research approach to mean a study that explains a phenomenon by collecting numerical data that are analyzed by using mathematical based method, precisely statistical methods. The justifications for adopting quantitative approach in the research are that the results can be more reliable and objective, looks at the relationships between variables and can establish cause and effect in highly controlled circumstances. It also assume the sample is representative of the population and can be used to test theories and hypotheses.

Sample Size

The data for the study covered twenty-five (25) banks in empirical investigation was carried out with annual data over the period 2006 to 2015. The sample size of the study include all licensed universal banks excluding those with less than three years financial statement and these were First Capital plus bank, Omnibank and the Royal Bank Limited.

Sources of Data

Data for the study were mainly secondary data which were obtained from published audited annual report of the banks. Researcher employed the secondary data sources for this study to get desired goals. Secondary data means the data that has been collected by scholars and documented in articles, books and other publications. Secondary data is very useful for research with its significant advantages: time saving and rapid accessibility For the purposes of the study the secondary data was obtained from the Bank of Ghana website and the Ghana Stock Exchange covering a period of 6 years, from 2009-2014. The researcher chose Universal banks because they have their audited financial statements published for public consumption and was reliable and readily available. Moreover, the researcher seeks to find out whether or not the universal banking resulted from financial reforms and deregulations has brought about interest rate changes and improvement of bank profitability.

Data Analysis

The data gathered was analyzed using STATA 12.0. These were were analyzed into tables for interpretations. The following analyses were used to analyze the secondary data;

The quantitative analysis was done first by performing descriptive statistics in other to describe the characteristics of the variables was used and to check the statistical conclusion validity by first looking for violation of the assumption underlying the statistical techniques was used to address the research hypotheses. The study was then conduct correlation analysis and panel regression analysis.

Correlation Analysis

The study made use of correlation analysis specifically the Pearson Correlation in order to measure the degree of association between the variables.

Model Specification

The general regression model is specified below:

$$Y_{it} = \alpha_o + \beta X_{it} + \varepsilon_{it}$$

The subscript i denotes the cross-sectional dimension whiles the t represents the time series dimension. The left hand variable Y_{it} stands for the dependent variable in the model, which is return on assets. X_{it} Contains a set of independent variables in the estimation model, it is taken to be constant overtime t and specific to the individual cross-sectional unit. α_0 is given as the constant and β is taken as the co-efficients.

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It is the regression function which examines the relationship between the independent variable and the dependent variable. It is the value for the regression equation to predict the variances in dependent variable from the independent variables. This means that if any of the coefficients is negative, the predictor or independent variable affects dependent variable negatively; one unit increase in independent variable will decrease the dependent variable by the coefficient amount. In the same way, if any of the beta coefficients is positive, the dependent variable increases by the coefficient amount. b_0 is the constant value which dependent variable predicted to have when independent variables equal to zero (i.e. if $\beta_{1's}$ are 0 then $\boldsymbol{R_{it}} = \boldsymbol{\alpha_0}$)

Model Estimation

The model used is presented in the equations below.

Model

$ROA_{it} = \beta_0 + \beta_1 \Delta INTrate_t + \beta_2 Depositgrowth_{it} + \beta_3 CR_{it} + \beta_3 OWN_{it} + \beta_4 BankSize_{it} + e_{it}$ .... (1)

$ROA_{it} = \beta_0 + \beta_1 \Delta INT.Margin_{it} + \beta_2 Depositgrowth_{it} + \beta_3 CR_{it} + \beta_4 OWN_{it} + \beta_5 BankSize_{it} + e_{it}$ .... (2)

Variables selected to be analyzed under the study are Interest rate changes, interest margin, deposit growth, Credit Risk (CR), Ownership and Bank Size (explanatory variables) and profitability (ROA) for dependent variables.

The ROA_{it} is a vector of profitability variable which include Return on Asset (ROA), for each bank (i) at time (t). This is expressed as;

- Return on Assets (ROA) $= \frac{NetProfit}{TotalAssets}$

Credit Risk (Credit)

To proxy credit risk, we use the loan-loss provisions to total loans ratio. Theory suggests that an increased exposure to credit risk is associated with decreased bank profitability. We thus expect a negative effect of this variable on bank profitability. This is expressed as;

Credit Risk (CR) $= \frac{LoanLossProvison}{TotalLoans}$

Deposit Growth

In order to measure a bank's growth, the study uses the annual growth rate of deposits ($\frac{Deposits_t - Depoits_{t-1}}{Depoits_{t-1}}$). One might expect a faster growing bank to be able to expand its business and thus generate greater profits. However, an increasing amount of deposits does not necessarily increase the banks' profitability, as a bank needs to be able to convert an increasing amount of deposits into additional income earning assets. Furthermore, growth is often achieved by allocating loans to borrowers with lower credit quality. In addition, high growth rates in a market might also attract additional competitors. This reduces the profits for all market participants. Therefore, the overall effect of this variable is indeterminate from a theoretical point of view.

Bank Size

Bank size is often considered an important determinant of its profitability. As in most studies in banking (Athanasoglou et al., Demirguc-Kunt & Huizinga, 1999), market capitalization of the banks (The size of the bank used as a proxy for the market capitalization of the bank, calculated as, the natural log of total assets

Interest Margin

Interest margin is the cost of financial intermediation, and is defined as net interest income divided by average earning assets of the bank. Interest margin data used in this study were collected from commercial bank financial statements. As posited by Aboagye et al. (2010) this is one of the easiest ways to estimate interest spread/net interest margin from bank income statements and balance sheets. This measure has drawbacks, however, as noted by Brock and Rojas-Suarez, for one thing, it ignores fees and commissions that may increase the cost of loans to borrowers and reduce interest received by depositors. Second, by including all assets (implicitly all liabilities), the resultant measure may deviate from banks' marginal costs and revenues.

- Interest Margin (Int. Margin) $= \frac{InterestIncome}{operatingincome}$

Interest rate changes

The yearly return on risk-free 91-day Treasury bill interest rate calculated as $\frac{INT_1 - INT_0}{INT_0}$, where, INT_1 is the current end monthly treasury bill rate and INT_0 is the initial year treasury bill rate. Gertler

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and Grinols (1982) in their study used a sample of 712 companies listed on the New York Stock Exchange for the period of 10 years (1970-1980) and concluded that there was a statistical relationship between expected returns and interest rates. From the model, $\Delta INTrate_t$ is the interest rate changes volatility variable, at time (t)

Ownership

The ownership of firms including banks particularly in developing economies tend to affect their level of profitability. Surveys have concluded that foreign owned banks are more efficient and have bigger financial muscles making them more profitable than local ones.

- OWN_{it}, where 1= foreign banks and 0= local banks

β_0 is the intercept term of the model, β_{1-5} are the coefficient of the regressors, e_{it} is the error term of the model.

e_{it} is a stochastic disturbance.

To complete the specification of the regression model we add the following assumptions:

1. εi is normally distributed

2. $E(\varepsilon i) = 0$

3. $E(\varepsilon i^2) = \sigma^2$

4. $E(\varepsilon i \varepsilon j) = 0$ for $i \neq j$

5. No exact linear relation exists between any of the explanatory variables.

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Robustness Test

Regression models that examine the dependent variable be conducted using the linear regression model, which is be the most common method in relationship and impact literature. Without verifying that the data have met the assumptions underlying OLS regression, the results may be misleading. A number of assumptions underlie OLS regression; normality, homogeneity of variance (homoscedasticity) and collinearity.

This assumption refers to the fact that the residuals (errors) should be normally distributed. Normality of residuals is required for assurance that the P-values for t-tests and F-test are valid. The normality assumption is not required in order to obtain unbiased estimates of the regression coefficients . This assumption can be examined using the Stata programme as follows: After conducting regression analysis, the predict command will be used to generate residuals (predict r, resid). Then, the kdensity command will be used to create a kernel density plot with the normal option (density r, normal). The plot indicated that the data is not normally distributed. The remedy for this is to include dummy variables and increase sample size.

Heteroskedasticity simply means that the error variance should be constant, as one of the main assumptions for OLS regression is the homogeneity of the variance of residuals. If the variance of the residuals is non-constant, then the residual

variance is said to be heteroskedastic. To examine the heteroskedasticity problem using the Stata programme, after conducting regression analysis, the command hettest was used to run the Breusch-Pagan test. The null hypothesis of this test is that the variance of residuals is homogenous, so if the P-value is small the null hypothesis will be rejected, and will accept the alternative hypothesis that the variance is heteroskedastic. The results from the test for the Breusch-Pagan test showed a significant chi2 for all the models which indicates the presence of the heteroskedasticity. To resolve this problem using stata, the command for the regression included robust which will eliminate the problem of heteroskedasticity.

Multicollinearity means that the independent variables are correlated, which can cause problems in estimating the regression coefficients. The possible existence of multicollinearity is tested based on the correlation matrix incorporating all the independent and control variables. Both Pearson and Spearman 's rank correlation matrices show that correlation coefficients are less than 0.8, the limit or cut off correlation percentage commonly suggested by prior studies after which multicollinearity is likely to exist (Gujarati, 2003). Using the rule of thumb, none of the regression coefficient of the independent variables is above 0.5 which shows the absence of multicollinearity.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the results of data analysis. It discusses the results and provides information on descriptive statistics, correlation and regression analysis of the data used.

Descriptive Statistics of Variables

The descriptive statistics provides a statistical description of profitability, main explanatory variables (interest rate changes, and interest margin), as shown in table 4. It used 25 banks for 8 periods (2006-2015).

Table 4- Descriptive Statistics of Variables

Variables	Measures	Obs.	Mean	Std. Dev.	Minimum	Maximum
Dependent variable (Profitability)	ROA	144	0.0285	0.03634	-0.1710	0.1191
Explanatory Variables	Interest rate changes	144	-2.7232	0.3871	-4.7072	-1.72132
	Interest Margin	144	0.0703	0.0254	0.00903	0.1788
Control	Deposit growth	118	0.5062	1.2513	-0.7548	12.1621
	Credit Risk	118	0.0445	0.03377	-0.01892	0.14081
	Own	149	0.4362	0.4976	0	1
	Bank Size	144	20.126	1.008231	16.4525	22.255

Source**:** Field Survey, Ebonyi–Amoah (2016)

Return on Asset (ROA) was the only proxy for profitability and it was the dependent variable. The mean of ROA is 2.85 percent. ROA recorded a

standard deviation of 0.03634 with a minimum and maximum values of -0.1710 and 0.1191 respectively. The average profitability (ROA) value suggests that the overall performance of the bank is relatively low, given their respective minimum and maximum values. From the table, the mean (standard deviation) value of Interest rate changes was -2.7232 (0.3871) whiles the minimum and maximum values were -4.7072 and -1.72132 respectively. This represents high changes in the rate of interest for the banks Interest Margin is 0.0703 (0.0254) with minimum and maximum values of 0.00903 and 0.1788. This means that on average the net interest margin is 7 percent of the net operating income.

Table 4 details the measures of other explanatory variables that were used. It can be seen that the mean (standard deviation) of deposit growth over the period of study is 0.5062 (1.2513) with maximum and minimum of -0.7548 and 12.1621 respectively, indicating that deposit growth was on a high on the average. Credit risk recorded a mean (standard deviation) of 0.0445 (0.03377), a minimum and maximum of -0.01892 and 0.14081 respectively. A mean of 0.4362 of ownership suggests 43.62 percent of domestic banks with majority being foreign banks. Bank size recorded a 20.126 (1.0082) percent mean (standard deviation) with minimum and maximum of 16.4525 and 22.255 percent respectively (BOG, 2015), indicating that bank size is relatively large in terms of their asset.

Changes in interest rate

This section reports on interest rate changes from 2006 to 2014 as shown in figure 4.

Figure 1- Changes in Interest Rate
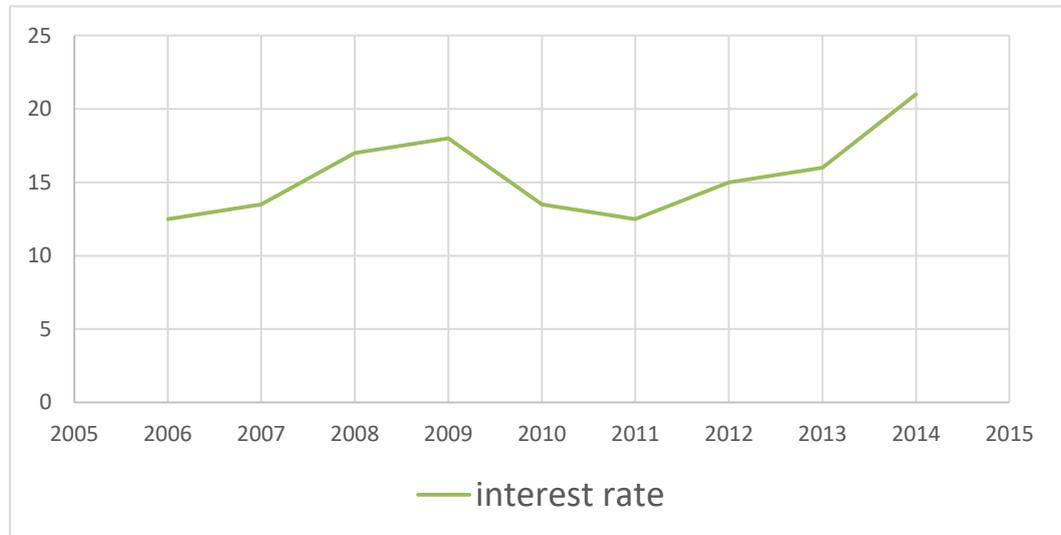
Source: Field Survey, Ebonyi–Amoah (2016)

From figure 1 interest rate increased from 2006 to 2009. However, after the world economic crises in 2008, interest rate decreased from 2009 to 2011. This suggests that banks in Ghana were investing or lending to the public at a lower interest rate after 2009. Interest rate shoots up after 2011 till 2014. This shows that banks in Ghana will increase their nominal interest rate as inflation rate increases. Higher Interest rates put pressure on borrowings, leading to lower rate of borrowing and risk of default. Thus, interest rate changes have shown an increasing rate from 2011 till 2015.

Correlation Matrix

Pearson's correlation coefficient was used to analyse the association among the variables (both dependent variables and independent variables).

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Table 5- Correlation Matrix

	ROA	ΔIntrate	Int.Margin	Dep. growth	Credit Risk	Own	Bank Size
ROA	1						
ΔIntrate	0.4282	1					
IntMargin	0.4620	0.9442	1				
Dep.growth	-0.0387	-0.0314	-0.0372	1			
Credit Risk	-0.1959	0.0052	0.0392	0.2098	1		
Own	0.1320	0.1102	0.0749	0.1690	0.1962	1	
Bank Size	0.3766	0.1981	0.1781	-0.2619	-0.2629	-0.1505	1

Source: Field Survey, Ebonyi–Amoah (2016)

Notes: ROA, represent Return on Asset, IntMargin stands for the ratio of Interest Income to Total Asset. ΔIntrate = changes in Interest rate, Dep. Growth = growth in deposit, Credit Risk (CR) = Loan Loss Provision, Own = Ownership, and Bank Size = log of total asset.

From Table 5, it can be seen that the correlations among all variables are relatively low and there is a weak positive and negative relationship among certain variables. However, there is a strong positive correlation between Interest rate changes and interest margin, suggesting that the two variables cannot be in the same model – to avoid the problem of multicollonearity. From the table, a correlation coefficient of less than 50% indicate no multicollonearity between the variables. Therefore, before we can proceed to the regression analysis,

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there is multicollinearity between Interest rate changes and interest margin and it is strong enough to cause multicollinearity problem.

Regression Results

The study estimated two regressions using pooled OLS panel regression to analyse the relationship between interest rate changes and profitability (ROA) in model 1, and the relationship between interest margin and profitability (ROA) in model 2. All assumptions under OLS were tested. The data variables are normally distributed and the study proceeded to use the OLS regression, where, heteroskedastic panels corrected standard errors. The standard errors was used to correct for heteroskedasticity and autocorrelation.

Model 1: Table 6 below shows the regression analysis between Interest Rate Changes and Profitability (ROA).

Table 6- Interest Rate Changes and Profitability Results

Variables	B	Robust std. err.	t	P > /t/
ΔIntrate	0.04285	0.008946	4.79	0.000***
Deposit Growth	0.001265	0.0021242	0.60	0.553
Credit risk	-0.1828698	0.0881436	-2.07	0.041**
Own	-0.0276644	0.006516	-4.25	0.000***
Bank size	0.009801	0.0029907	3.28	0.001***
constant	-0.0527167	0.0703438	-0.75	0.455
Observation	99			
R^2	0.389			

F-stats	11.81
Sign	0.000

Dependent variables: Profitability (ROA); *, ** and *** denotes 10%, 5% and 1% significance level respectively

Source: Field Survey, Ebonyi–Amoah (2016)

From table 7, interest rate changes were positive (0.04285) and significantly (1% level) associated to return on asset (ROA). A unit increase in interest rate changes will lead to 4.285 percent increase in bank profitability. This suggests that changes in interest rate will result in high return on asset. Studies that have been done on the effect of interest rate volatility on bank performance remain inconclusive from different context and measurement (Wambua, 2010). However, the findings agree with Ongore and Okoth (2013) who found that interest rate volatility affected the performance of organizations especially in the financial sector in Kenya.

Growth in deposit was not significantly associated with profitability because banks do not expect to increase profitability if they only increase deposit mobilization without investing or lending those deposits to generate returns. Credit risk was negative (-0.1829) and significantly (5%) linked to profitability, implying that increasing credit risk will result in a decrease in profitability – the provision for loans that go bad has a negative effect on return on asset. Banks' profitability decrease if they use more of loan loss provision to service bad loans. Ownership and return on asset were negatively (-0.0277) and statistically significant with each other at 1% level of significant. This shows that the entry of more foreign banks into the market, has a negative effect on profitability – thus decreasing profitability. Bank

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size was positively (0.009801) and statistically significant (at 1% level) with profitability. This means that increasing bank size will lead to an increase in profitability.

Table 7- Results on the Relationship between Interest Margin and Profitability

	B	Robust Std. err.	t	P > /t/
Interest Margin	0.6487227	0.1344684	4.82	0.000***
Deposit Growth	0.0011572	0.0021202	0.55	0.587
Credit Risk	-0.2014126	0.0883327	-2.28	0.025**
Own	0.0172987	0.0056312	3.07	0.003***
Bank size	0.0097576	0.0029875	3.27	0.002***
constant	-0.212333	0.0609237	3.49	0.001***
Observation	99			
R^2	0.389			
F-stats	11.81			
Sign	0.000			

Dependent variables: Profitability (ROA); *, ** and *** denotes 10%, 5% and 1% significance level respectively.   Source: Field Survey, Ebonyi–Amoah (2016)

From the table interest margin has a positive significant (1% level) relationship with return on asset. The results imply that for each 1 percentage point increase in interest margin, bank profitability will also increase by 64.87 percentage point in ROA. Thus, increasing the interest received on income, will result in high profitability. From the table, credit has a negative (-0.2014) significant (5% level) relationship with return on asset whereas deposit growth has no significant relationship with profitability. Again, for each 1 percentage

point increase in credit risk, bank profitability will decrease by 20.14 percentage point. The findings seem to agree with those of Owolabi and Obida (2012) who found that though interest margin affected bank performance, exchange rate and inflation had a weak significant impact on bank performance. In this model, ownership has positive (0.0172987) and significant (1%) relationship with profitability. This predicts a competitive market where the entry of foreign banks increase the bank profitability as supported by Clarke, Cull and Martinez-Peria, (2003, 2006). Bank size has a positive (0.0098) and significant (1%) association with profitability. This shows that bank size increases, as profitability increases.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This chapter presents the summary of the findings, conclusion and recommendations.

Summary of the Findings

The study examines the effect of interest rate changes on bank profitability, using the pooled OLS panel data of 25 banks in Ghana between 2006 and 2015 (Bank of Ghana data scope). The explanatory variables used were interest rate changes, interest margin, deposit growth, Loan Loss Provision, Ownership, Bank size whiles profitability indicator, ROA, was used as the dependent variable. From the descriptive statistics, the average profitability value suggests that the overall profitability of banks in Ghana is relatively low. Pearson's correlation coefficient was used to analyse the association among the variables (both dependent variables and independent variables). It was observed that the correlations among all variables were low and there was a weak positive and negative relationship among the variables. However, there was a strong positive correlation between interest rate changes and interest margin.

From the pooled OLS panel result, Interest rate changes and interest margin were positive and significantly (1% level of significant) linked to return on asset (ROA). The findings agree with those of Ongore and Okoth (2013) who found that interest rate volatility affected the performance of organizations especially in the financial sector in Kenya. In the regression

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model, the positive relationship between interest rate and bank return on asset may reflect how fluctuating and volatile interest rate may have contributed to the return on the asset of banks. This suggests that banks respond very fast to changes in interest rate.

Conclusions

The aim of this study is to examine the effect of interest rate changes on profitability, using the OLS panel-data estimation. Interest rate changes were positively and significantly associated with return on asset. This implies that changes in interest rate in Ghana over the study periods may have contributed to the asset and return on the asset of banks. It can be concluded that the robust standard error OLS regression model is appropriate when examining the relationship between interest rate changes and banks' return on asset. Thus, a stable interest rate regime, and good interest rate policies are vital to good performance by banks.

Recommendations

The following recommendations can be followed:

4.   The policies put in place to hedge these banks against the effects of interest rate risk should be discovered and investigated. Such policies can be used by financial institutions in other sectors to avoid losses caused by interest rate changes.

5.   Moreover, it can be recommended that since the sector is still growing and very dynamic, it is important for the banks to put into consideration the

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aspects that influence financial performance, applying global strategies that may be affected by changes in interest rate.

6.   It is recommended that other study must employ the use of macro-economic variables to explain bank profitability.

7.   Government should apply good interest rate policies since they are vital to good performance by banks

8.   Further research can focus on the long run relationship between interest rate volatility and performance in the financial sector in Ghana, as well as Africa, using the VAR or the VECM.

REFERENCES

Aboagye, A. Q. Q., Akoena, S. K. K., Antwi-Asare, T. O., & Gockel, A. F

(2008). *Explaining interest spreads in Ghana*:   Accra, Ghana.

African

Development Bank.

Abor, J., & Biekpe, N. (2007). Small business reliance on bank financing in

Ghana. *Emerging Markets Finance and Trade*, *43*(4), 93-102.

Abor, J. (2004) ''Internationalization and financing options of Ghanaian

SMEs''. Acta Commercii.

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific,

industry-specific and macroeconomic determinants of bank

profitability. *Journal   of   international   financial   Markets,*

Institutions

and Money, *18*(2), 121-136.

Bank of Ghana (2012). Monetary policy report financial stability Vol. 5 no. 1

Bank of Ghana (2011). Bank of Ghana financial stability reports, monetary

policy report, no. 5, Vol. 5. From htt://bog.gov.gh/private

Content/resear   ch/finnaical%20stability   of   20report-

october%2011-

finla%20-% 20r. pdf

Bawumia, M., Belnye, F. & Oforim, M. E. (2005). The determination of Bank

interest spreads in Ghana: an empirical analysis of panel data.

Bank

of Ghana Publication 2005.

Bourke, P. (1989). Concentration and other determinants of bank profitability

in Europe, North America and Australia. *Journal of Banking and Finance 13*, 65- 79.

Caplan, B. (2000). *Rational expectation.* George Mason University: Department of economics.

Creswell, J.W. (1994). *Research design quality and quantitative mixed methods approaches*. Thousand oaks, Califonia: Sage publication

Clarke, G., Cull, R., & Martinez-Peria, M. (2003). Foreign bank entry: experience, implications for developing economies and agenda for further research: *world bank research observer 18*(1), 25-59

Delis, M. D., & Kouretas, G. P. (2011). Interest rates and bank risk-taking. *Journal of Banking & Finance, 35*, 840-855.

Demirguc-Kunt, Asli & Huizinga, (1999). Determinant of commercial bank interest margins and profitability : *some international evidence. World Bank economic review, Vol. 13*(2) 379-408

Diamond, D.W., & Dybvig, P. H. (1983). 'Bank runs, deposit insurance, and liquidity.' *Journal of Political Economy*, *91*, 401-419.

Diamond, D. W. (1984). Financial intermediation and delegated monitoring. *The Review of Economic Studies*, *51*(3), 393-414.

Emmanuelle, J. (2003). *Monetary and fiscal policy*. Nairobi-Kenya: University of Nairobi.

Fabozzi, F. J., & Modigliani, F. (2003). *Capital Markets; "Institutions and Instruments",* 3[rd]Edition, published by Prentice Hall, 35-38.

Farlex Financial Dictionary, (2009): from http:// financialdictionary.Thefreed ictionary.com/www

Friedman, B. M., & Kuttner, K. N. (1991). *Why does the paper-bill spread*

predict real economic activity?. Cambridge, MA: National

Bureau of

Economic Research.

Gertler, M., & Grinols, E. (1982). Monetary randomness and investment.

Journal of Monetary Economics, *10*(2), 239-258.

Global financial stability report (2012). Bank of Ghana website, from

https://www.bog.gov.gh/finnaical%20stability%20%report%20

-

%20une%202012

Goedhuys, D.W. (1982). *Money and Banking*. Johannesburg, South Africa:

McGraw-Hill Book

Godspower-Akpomiemie, E. I. (2012). Market interest rate fluctuations:

Impact on the profitability of the commercial banks (Master of

management in finance and investment, University of The

Witwatersrand). Retrieved from http://core.ac.uk/3967123.pdf

Gujarati, D. N. (2003). Basic Econometrics. (4th ed.) Molyneux, P., &

Thornton, J. (1992). Determinants of European bank

profitability: A

note. *Journal of banking & Finance*, *16*(6), 1173-1178.

Hassan, M. K., & Bashir, A. H. M. (2003, December). Determinants of

Islamic banking profitability. In *10th ERF Annual Conference,*

Morocco (16-18).

Hanweck, G. A., & Kilcollin, T. E. (1984). "Bank Profitability and Interest

Rate Risk". *Journal of Economics and Business 36*, 77-84.

Interest Rate and Its Effect on Bank's Profitability 2018 Available

from: https:// www. researchgate. net/publication /277307455

Interest_Rate_and_Its_Effect_on_Bank%27s_Profitability

Joseph, Q. (2014). *Impact of internal and external factors on small and*

medium scale enterprises' access to Finance in Ghana. (Doctoral

Dissertation, Ritsumeikan Asia Pacific University). *Journal of Asia-*

Pacific Business, 12(3). 225-243.

Kasman, S., Vardar, G., & Tunç, G. (2011). "*The impact of interest rate and*

exchange rate Volatility on banks' stock returns and volatility"

Economic modelling 28, 1328-1334.

Kaufman, H. (1986). *Interest Rates, the market, and the new financial world,*

London, I. B Tauris & Co. LTD, 19-144.

Kohn, M. (2004). *Financial institutions and markets, 2nd Edition*, New York:

Oxford University Press, 28-194.

Madura, J. (1989). *Financial markets and institutions*. New York: West

Publishing Company, 22-39.

Molyneux, P., & Thorton, J. (1992). The determinants of European bank

profitability, *Journal of Banking and Finance 16*(6)1173-1178.

Ngugi, R. (2000). *Banking sector interest rate spread in Kenya.* Nairobi,

Kenya: Kenya Institute for Public Policy Research and Analysis

Nduati, P. (2013). *The effect of interest rate spread on financial performance of commercial banks in Kenya*. Unpublished master's dissertation University of Nairobi, Kenya.

Ngugi, R. (2004). *Determinants of interest spread in Kenya.* Nairobi, Kenya: Kenya Institute for Public Policy Research and Analysis.

Nwaobi, G. C. (2008). Modelling the world exchange rates*: Dynamics, volatility and forcasting.*

Ongore, V. O., & Okoth, G. B. (2013). Determinants of financial performance of commercial banks in Kenya, *International Journal of Economics and Financial Issues, 3*(1), 237-252

Oliner, S. D., & Rudebusch, G. D. (1994). Is there a broad credit channel for monetary policy?. *Michigan and u.s. Board of Governors Board of Governors of the Federal Reserve System.*

Owolabi, S. & Obida, S. S. (2012). Liquidity management and corporate profitability: C*ase study of selected manufacturing companies listed on the Nigerian stock exchange, Business Management Dynamics, 2*(2), 10-25

Rasheed, O. A. (2010). Interest rate determinants in Nigeria. *International Research Journal of Finance and Economics, 2*(3) 1-2.

Revell, J. (1979). Inflation and financial institutions. London. *The Financial Times Ltd.*

Rochon, L., & Vernengo, M. (2001). *Credit, interest rates, and the open economy: essays on horizontalism*. Cheltenham, UK: Edward Elgar. The Banking sector. China: Research department.

Rose, P. S., & Kolari, J. W. (1995). *Financial institutions; "Understanding and managing financial services", (*5th ed.). (pp.10-12,309-419) Irwin, Chicago

Saha, A., Subramarian, V., Basu, J., & Mishara, A. K. (2009). "Net worth Exposure to Interest Rate Risk: An Empirical Analysis of Indian Commercial Banks". *European Journal of Operational Research 193*, 581-590.

Saunders, A., & Cornett, M. M. (2003). *Financial institutions management; "A risk management approach"*. 4th ed.). New York: Published by McGraw-Hill/Irwin.

Saunders, A. & Schumacher, L. (2000). The determinants of bank interest rate margins: an international study. *Journal of international Money and Finance, 19*, 813-832.

Shetty, A. G., Macgrath, F. J., & Hammerbacher, I. M. (1995). *Finance; "An integral global approach"*. New York. Published by Richard D. Irwin, Inc., pp. 35-40.

Smith, R., Staikouras, C., & Wood, G. (2003). *Non-interest income and total income stability.* London and England. Cass business school.

Sufian, F. (2009). Factors influencing bank profitability in a developing

economy empirical evidence from Malaysia. *Global Business*

Review, *10*(2), 225-241.

Thakor, A. V. (1996). Capital requirements, monetary policy, and aggregate

bank lending: theory and empirical evidence. *Journal of*

finance,

279-324.

Turnovsky, S. J. (1985). *Short-term and long-term interest rates in a monetary*

model of a small open economy. Cambridge, Mass.: National

Bureau

of Economic Research.

Umar, M. S. & Musa, T. B. (2013). *"Stock Prices and Firm Earning Per*

Share in Nigeria", JORIND 11(2).

www.transcampus.org/journals;

www.ajol.info/journals/jorind

Wensheng, P., Lai, K., Leung, F., & Shu, C. (2002). *Impact of interest rate*

spread rate shocks on the performance of Banking sector.

HongKong:

Hong Kong monetary authority,

Were, R., & Wambua, S. (2013). *Determinant of interest rate spread.* Nairobi,

Kenya: Kenya Institute for Public Policy Research and

Analysis.

Zangina, & Bokpin (2012). *Efficiency and risk-taking behaviour of Ghanaian*

banks-Finance and development in Africa: Accra and Ghana the

emerald group publishing Ltd 53-74