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Interest Rate Spread in Ghana's Banking Sector: 2000 – 2014

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Abstract

The study examines the interest rate spread in post-regulatory banking industry in Ghana within the period 2000 to 2014 for twenty four (24) banks using a panel data from annual bank balance sheet and income statements. The main objective is to identify the factors that influence the seemingly high interest rate spread in Ghana. The factors are classified into bank specific variables, banking industry variables and the macroeconomic variables. Findings from the study reveal that high operating costs and Bad debt increase the interest spreads in Ghana. They also reveal that prime rate and liquidity reserve requirements act as important determinants of higher spread. From macroeconomic point of view, inflation and Treasury bill rates are found to have significant influence on wide spreads. Also an inclusion of time dummy in the model showed that the global financial crises that occurred between 2006 and 2009 had a negative impact on the spread thereby reducing the spread. In general, the study found that high interest rate spread is caused by a combination of factors from the three mentioned classified sources above but the factor cannot be attributed to any particular specific source. The study concludes that the impact of the financial liberalization in Ghana did not contribute much in making the banking sector competitive and efficient. Hence, the spread remained high particularly in the study period. The study recommends that Government must ensure prompt payment of debt owed the banks to enable them have clean portfolios and minimize spreads, since a greater part of the non- performing loans are in the hands of the state.

Keywords: p*ost regulatory, bank specific variables, financial market variables, macroeconomic variables, panel data, Ghana.*

1. Introduction

Bank interest rate spread reflects the difference between ex-ante lending and deposit rates. It generally measures bank intermediation efficiency. Higher interest rate spreads indicate high intermediation cost and existence of asymmetric information problem which leads to agency cost for banks and reduced efficiency. Low interest rate spread is desirable for most economies because it promotes economic growth by providing higher expected returns for savers, increasing loanable funds and lowers borrowing cost for investors (Ndung'u & Ngugi, 2000).

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However, the banking sector in many developing countries is characterized by persistently high interest rate spreads thereby depicting the poor financial intermediation in these countries. Evidence shows that interest rate spreads in sub-Saharan Africa, Latin America and the Caribbean are wider than in Organization for Economic Cooperation and Development (OECD) countries (Randall, 1998; Brock & Rojas-Suarez, 2000).

In Ghana, interest rate spread has become a debatable issue in recent times as the financial market liberalization has failed to significantly reduce the spread. Since the beginning of the second phase of the Financial Sector Adjustment Programme (FINSAP II) in 1994, the banking sector activities have improved and witnessed growth. This brought in its wake the emergence of new banks, increasing the number from 17 in 2002 to 27 by 2014. There has been a reduction in bank reserve requirements and some level of competition in the industry resulting in improved service delivery to clients.

The observed downward rigidity in interest rate spread in Ghana may be explained by regulated entry and exit of firms in the banking industry, moral hazard problems, high operational costs, macroeconomic instability and high cost of capital. Many studies have shown these factors as major causes of high interest rate spreads in African countries in general (Chirwa & Mlachila 2004; Beck & Heiku, 2009).

Furthermore, the banking sector of Ghana is characterized by high transaction costs associated with loan recovery due to the absence of reliable street address system to locate clients, high cost of verifying business and biographical information of loan applicants, absence of reliable credit records system to track and assess loan balances that applicants may be servicing with other banks at the time they put in applications for new loans. As a result of these, loan default rates have remained relatively high in Ghana, unlike in developed countries.

The motivation of this study is therefore to try and identify what really influences the interest rate spread in Ghana and provide solution to reducing the wide spread in the interest rates.

Ghana's interest rate spread is relatively high compared with some of the other sub-Sahara African countries. It averaged 15% between 2005 and 2010 which is more than that of Gabon (13%), Kenya (10.1%), Nigeria (5.5%), Uganda (12.9%) and Tanzania (9.7%). Therefore, the concern of the business community and policymakers has to do with the persistently high level and non-competitive nature of interest rate spreads in Ghana. This is because; the non-competitive nature of the spread could be detrimental to sustaining high economic growth.

The problem and, indeed, one of the main focus of of this study, is that despite the financial sector reforms over a decade ago, interest rates spread still remains persistently wide. So, why is this the case? To what extent do individual bank factors, banking industry factors or macroeconomic factors influence the spread? What policy options are available to reduce the spread and make the sector more efficient? Answers to these questions will help understand the nature of interest rate spread in Ghana.

The main objective of this study is therefore, to examine the factors that influence the interest rate spread in Ghana from year 2000 to 2010 which essentially covers the era of post-liberalization of the financial sector. In particular, the study explains changes in interest rate spreads between 2000 and 2010 and evaluates the impact of the financial sector reforms on the spread in Ghana within the study period. To achieve the above objective, the study seeks to examine the following null hypotheses:

i. Only Bank Specific factors influence the seemingly wide Interest Rate Spread in Ghana
ii. Only Banking Industry factors drive the seemingly wide Interest Rate Spread in Ghana
iii. Only Macroeconomic factors affect the seemingly wide Interest Rate Spread in Ghana.

The recommendations of this paper will be very helpful in policy formulation towards interest rate management and reforms in the banking sector to achieve financial stability and growth in the country. The rest of the paper is organized as, section two gives a brief background of Banking sector of Ghana, section three looks at reviews a brief literature, section four deals with methodology and the section five concludes the study.

2. Ghana's Financial System

2.1. The Growth of Financial Institutions and Financial Sector Reforms/liberalization

From a pre-liberalization number of about two foreign and five states owned banks with virtually no non-bank financial institutions, the financial sector has seen a dramatic growth since the advent of the liberalization process in the late 1980s. As at 1990, the banking sector in Ghana comprised of the central bank (Bank of Ghana), 9 commercial banks, and 3 merchant banks. One of the most useful innovations under the financial sector reforms was the creation of about 100 rural banks.

The non-bank financial institution consists of a stock exchange market (Ghana Stock Exchange), 21 insurance companies, the Social Security and National Insurance Trust (SSNIT), two discount houses, a home finance company, a venture capital company, a unit trust and a leasing company. The liberalization paved the way for influx of many foreign banks into the country. As a result, by the end of 2002 there were seventeen banking institutions operating in Ghana with several rural banks spread across the country.

Foreign share ownership dominated eight of the banks at the time with nine being purely commercial banks, five were merchant banks and three development banks. The banking sector continues to see increase. Currently, there are 28 regular

commercial banks and 129 rural banks in Ghana. However, it has been pointed out that the Ghanaian banking industry is dominated by a few large banks which create the potential for them to behave as monopolists or oligopolists at a great cost to the economy.

With the present state of the financial sector in terms of its structure and widely liberalized system, it is quite intriguing to see wide spreads between interest rates of commercial banks as one of the expectation of the financial sector liberalization was to minimize the spread as much as possible.

The Financial Sector reforms started in the late 1980s as part of the ongoing Economic Recovery Programme (ERP). It commenced with the partial liberalisation of interest rates in 1987 and removal of sectoral credit ceilings in the following year. This was accompanied by liberalisation of access to foreign exchange and the licensing of foreign exchange bureaux.

In 1989, the Financial Sector Adjustment Programme (FINSAP) began and was supported by a Financial Sector Adjustment Credit (FSAC) from the World Bank. The aim of FINSAP was to address the institutional weaknesses of the financial system, particularly by restructuring distressed banks, reforming prudential legislations and supervisory systems, permitting new entry into the financial markets by public or private sector financial instruments, and developing money and capital markets.

Further liberalisation of the financial market took place in 1992 with the adoption of indirect instruments of monetary control which entailed the introduction of market-determined Treasury bill rates. Since 1994, the second phase of FINSAP has been underway. The major objectives of this phase includes privatisation of the public sector banks and development of non bank financial institutions to fill the gaps in the financial markets not served by banks. The Financial market can therefore be said to have progressively been liberalised in Ghana.

2.2. Lending and Deposit Rates

Banks have several lending and deposit rates according to the different asset and liability products they have. For a better understanding of the various bank lending and deposit rates, Brock and Rojas-Suarez (2000) suggested six alternative implicit measures of interest rate spreads, these include:

i. (Interest received on loans/loans) – (Interest paid on deposits/deposits)
ii. (All interest received / loans) – (All interest paid out/deposits)
iii. (Interest plus commissions received/loans) – (Interest plus commissions paid out/ deposits)
iv. (Interest received – Interest paid out)/Total assets
v. (Interest received/(All interest-bearing assets) – (Interest paid out/all interest-bearing liabilities)

vi. (Interest plus commissions received/all interest-bearing assets} – (Interest plus commissions paid out/all interest-bearing liabilities).

They referred to (i), (ii) and (iii) as 'narrow' definitions of interest rate spread and (iv), (v) and (vi) as wide' definitions of interest rate spread. Definition iv is the most commonly used in the literature due to its relative ease to estimate from bank income statements and balance sheets. However there are drawbacks to the use of this method. For instance, it ignores fees and commissions that may increase the cost of loans to borrowers and reduce interest received by depositors. Also, by including all assets (implicitly all liabilities), the resultant measure may deviate from banks' marginal costs and revenues. In spite of these shortcomings, the present study will also use the measure iv.

3. Literature Review

A major indicator of banking sector efficiency is the interest rate spreads, which have been found to be higher in developing countries than in developed countries (Randall, 1998; Chirwa & Mlachila, 2004). A wide deposit-lending rate margin is not only indicative of banking sector inefficiency but also reflects the level of financial sector development in a country. Many studies have shown that there exist a critical link between efficiency of bank intermediation represented by the interest rate spreads and economic growth (Gelos, 2006; Crowley, 2007).

A study by Demirgc-Kunt & Huizinga (1999) on the determinants of interest rate spreads in the banking system found several variables that influence higher spreads, including higher inflation, higher real interest rates and lack of banking sector competition. They also found that some institutional variables such as lack of creditor rights or corruption and reserves matter more in developing countries than in developed countries.

Ndung'u & Ngugi (2000), in their study entitled Banking Sector Interest Rate Spread in Kenya, argued that disequilibrium in the loans market is a major factor driving the spread and has substantial feedback effects which reflected in the persistence of the disequilibrium. Institutional and policy factors impact on transaction costs and compound the effects of risks and uncertainty in the market, thus exacerbating the spread.

Chirwa & Mlachila (2004), investigated the impact of financial sector reforms on interest rate spreads in the commercial banking system in Malawi. By using alternative definitions of spreads, their analysis revealed that spreads increased significantly following liberalization, and the panel regression results suggest that the observed high spreads can be attributed to high monopoly power, high reserve requirements, high central bank discount rates, and high inflation in the Malawian economy.

Bawumia et al (2005), in a panel study of Bank Interest Spreads in Ghana from 2000 to 2004 concluded that the existence of major structural impediments like

market concentration and the degree of contestability among banking institutions, among others, prevent the financial system from reaching its full level of efficiency. They also pointed out that, the market share variable is very influential in explaining spreads in Ghana and reflects the lack of price competition in the banking industry. Also, cross subsidization between interest and non-interest income, high operating cost, nonperforming loans and existence of liquidity reserves, contribute to the wide spreads.

Gelos (2006) found that Latin American banks had high spreads because of higher interest rates, less efficient banks, and larger reserve requirements than banks in other regions. Brock & Rojas-Suarez (2000) found that higher operating costs and higher nonperforming loans (NPLs) were related to higher spreads.

Gockel & Mensah (2006) used an accounting approach to study bank income statements over the period 1997–2004 and concluded that the economy of Ghana experienced high interest rate spreads that averaged 15.79 percentage points. They pointed out that the largest source of the interest rate spread was the operating costs of banks. Upon further analysis, they concluded that large banks were more efficient in terms of cost and exploit their size for better profitability.

Kari (2007) carried out a study to determine the Commercial Banks' Interest Rate Spread in the Eastern Caribbean Currency Union over the period 1993 to 2003. Using panel data techniques. The study found that spreads have been strong and persistently showing little signs of narrowing, and also foreign owned banks have been operating with large spread compared to their indigenous counterparts.

Aboagye et al (2008), studied Interest Rate Spreads in Ghana using a fixed effect panel analysis of 17 banks from 2001 to 2006. They found that increases in the bank market power (or concentration), bank size, staff costs, administrative costs, extent of bank risk aversion and rate of inflation significantly increased net interest margin. It is however not clear what an ideal spread that will be satisfying for both lenders and borrowers would be.

4. Theoretical Framework

The determinants of bank interest spreads have often been modeled within the framework of a bank as a profit or wealth maximizing firm. The literature provides numerous models of the banking firm that deal with specific aspects of bank behavior but no single model perfectly describes all bank behavior - although the portfolio theory has played an important role in trying to do so (Clark, 1986).

In the portfolio choice model, banks seek to maximize profits defined by a feasible set of assets and liabilities with interest rates set by the bank and per unit costs of producing each component of assets and liabilities incurred by the bank. These models have incorporated various aspects of the competitive process and scale economies and are a basis for the empirical testing of the bank interest spreads model.

In practice, the empirical specification of the determinants of interest rate spread has been set using two different approaches. One approach adopts the accounting identity of bank balance sheets, while the other applies behavioral assumptions of the banking firm (Randall 1998; Barajas *et al.* 1999). In this study, the second approach is used which stipulates that interest rate spread in Ghana is determined by bank and market characteristics as well as regulatory and macroeconomic factors.

4.1. Model Specification

To achieve the objective of the study, we based our empirical model on the work of Demirgüç-Kunt and Huizinga (1999). Our main concern in this study is to assess the contribution of bank specific market characteristics and macroeconomic factors that affect banks' interest rate spreads in Ghana. In this model, interest spreads are expressed as a function of bank and market characteristics, regulatory environment and macroeconomic characteristics. The model is stated as follows:

$IRS_{it} = f(B_{it}, I_{it}, M_{it})$

Where:

IRS_{it} is the annualized interest rate spread of bank *i* at time *t* which is a function of the following variables:

(1) A vector of bank specific variable B_i at time *t*
(2) A vector of industry specific variable I_i at time t and,
(3) A vector of macroeconomic variables M_i at time *t*.

The regression model takes the following form:

$IRS_{it} = \alpha_i + \Sigma\beta B_{it} + \Sigma\varphi I_t + \Sigma\gamma M_t + \varepsilon_{it}$,

where ε_{it} is the error term. This error term is conceived of as having bank-specific and time-specific components as well as a random term.

4.2. Variables and Their Definitions

Interest rate spreads are expressed as a function of bank-specific variables, bank industry-specific variables and macroeconomic factors. The variables used here are similar to those used by Bawumia et al (2005) with some few additions.

4.2.1. Bank Specific Variables

The bank-specific variables used include:

i. Ratio of the provision for doubtful or *bad debts* (**Bd**) to total loans as an inverse indicator of the quality of assets. It is expected that a positive relationship exist between bad debt and spreads. If it is true, the expectation will confirm the argument that banks tend to push the cost of nonperforming loans to customers.
ii. Nonfinancial costs estimated as the annualized ratio of *operating cost* (**Opc**) including the wage bill to total assets. A positive relationship is expected between operating cost and the measure of interest spreads.
iii. *Market share* (**Mks**) of each commercial bank in the deposit market, as an indicator of bank size, to test the efficient market hypothesis or existence of economies of scale. If economies of scale exist then interest rate spreads should fall with increasing market shares. On the other hand, the existence of monopoly power would lead to increase of interest rate spreads.

4.2.2. Industry Specific Variables

As a result of the increase in the number of banks due to the reforms in the banking sector, there is a stiff competition especially in the deposit market. In order to capture the competitive effect of the banks in the industry, *Herfindahl-Hirschman index* (**HHI**) is used as a measure of competition based on the Structure-Conduct-Performance paradigm. This paradigm postulates that where there are fewer and larger firms, the firms are more likely to engage in anticompetitive behavior and reap large benefits.

Note that there are no consensus about the method for measuring competition. Some studies simply take the concentration ratios while others use indices like the Herfindahl-Hirschman Index (HHI), Lerner, Tobin's q, and Panzar and Rosse H-statistic (Yaldiz & Bazzana, 2010). Therefore, for simplicity and availability of data, this study also uses the Herfindahl-Hirschman index which is a measure of concentration in the market as a proxy for bank competition in the market. The index is calculated by squaring the market share of each bank competing in the market and then summing up the resulting numbers. This is expressed as:

$$H = \sum_{i=1}^{n} x_i^2$$

where, x_i is the market share of bank i and n is the number of banks.

In this particular context, the market share of each bank is calculated as its portion of loans and advances to the total industry's loans and advances in its respective country. The HHI can range from zero to one. According to international standards, a value less than 0.1 is considered to be unconcentrated and hence highly competitive market. A value ranging from 0.1 to 0.18 is considered moderate

concentration hence moderate competition and a value that is greater than 0.18 is considered highly concentrated which indicates low competition.

Financial sector reforms also brought the introduction of the required *liquidity reserve ratio* (Lrr) since 1989. The reserve ratio serves as a financial tax on the banking industry so we include the central bank's *prime rate or policy rate* (i.e. Bank of Ghana lending rate - **BGr**) to capture monetary policy developments.

4.2.3. Macroeconomic Variables

The effect of macroeconomic environment on interest rate spreads is captured in this study through changes in the *consumer price index* (**Infl**) and changes in the *Treasury bill rates* (**Tbr**).

4.3. Data Source

The study uses an unbalanced panel data for fifteen years (2000 – 2014) from twenty (24) banks which were extracted from annual bank balance sheets and income statements submitted to the Banking Supervision Department of the Central Bank of Ghana. Banks that commenced operations after 2014 were dropped since it was difficult to get data on them.

Explanatory variables include variables representing bank specific factors, financial market specific factors and macroeconomic factors which are obtained from various issues of the Bank of Ghana's Quarterly Bulletin.

5. Estimation Procedure

The estimation procedure of the study follows a standard panel data approach. The panel data analytical method was chosen in order to increase the number of degrees of freedom and thus the power of the test. Panel data approach takes into account both the heterogeneity of the banks and the variables that are constant over time. These two characteristics of the panel approach are superior to a cross-sectional method of data analysis and hence the choice of the panel approach. Also, the panel approach copes better with the problem of multicollinearity.

This study also adopts fixed effects and random effects estimation methods to examine the factors that determine interest rate spread in Ghana. This approach enables a comparison of estimated parameters across the two models with respect to parameter stability and consistency.

Fixed fixed effects method is used when units can be viewed as parametric shifts of the regression function (see Greene, 2000). A fixed effect model is estimated to control for unobserved characteristics of financial institutions included in the data. A fixed effect estimator treats the unobserved financial institution effects, a_i as constant over time but varying across banks. A fixed effects estimator

deals with one of the problems potentially introduced by correlation of omitted variables including the unobserved effect and the independent variables in the model.

The fixed effects regression model is given as:

$$y_{it} = \alpha_i + \beta_1 x_{it} + ... + \beta_k x_{tik} + \gamma D_t + a_i + u_{it} \quad (1)$$

Where y refers to the measure of interest rate spread. Here interest rate spread varies across time t and financial institution i. α_i represents a constant intercept term and β is the coefficient of the independent variables in the model. *D* is the year dummy variable which captures the effect of the global financial crises during the study period. The error term u_{it} represents unobserved factors that change over time and across financial institutions and that affect interest rate spreads.

The fixed effect model allows for correlation between the unobserved financial institution effects variable a_i and independent variables in the model. This assumption implies that estimating equation (1) as specified yields biased and inconsistent results.

The next step in the model specification addresses this problem by taking the first difference of the model over time to obtain what is normally called the first differenced model. The first differenced model can be specified as:

$$\Delta y_{it} = \delta_0 + \beta_1 \Delta x_{it} + ... + \beta_k x_{itk} + \gamma \Delta D_t + \Delta u_{it} \quad (2)$$

where $\Delta y_{it} = y_{it} - y_{it-1}$, $\Delta x_{it} = x_{it} - x_{it-1}$, $\Delta u_{it} = u_{it} - u_{it-1}$, and $\Delta D_t = D_t - D_{t-1}$.

The fixed effects model estimated is the first-differenced version in equation (2).

The random effects model treats the individual effects as uncorrelated with the other regressors and might be inconsistent due to omitted variable bias. However, if this assumption is violated, random effects model provides inconsistent estimates. Also, to account for the possibility that the financial institution factor(s) may be purely stochastic, a random effect model is also specified and estimated. The stochastic specification allows for omitted variables that may be constant over time but differ between financial institutions and those that may be fixed between institutions but vary over time to be captured. The random effect model is specified as:

$$y_{it} = \alpha_i + \beta_1 x_{it} + ... + \beta_k x_{tik} + \gamma D_t + a_i + u_{it} \quad (3)$$

Here, the financial institution effect a_i is retained in the model because it is assumed to be uncorrelated with the independent variables in the model.

The financial institution effect a_i and the error term u_{it} constitute a composite error term that can be written as $v_{it} = a_i + u_{it}$. The model in equation (3) can therefore simply be written and estimated as

$$y_{it} = \alpha + \beta_1 x_{it} + ... + \beta_k x_{tik} + \gamma D_t + v_{it} \quad (4)$$

6. Result and Discussion

6.1. Parameter Estimation and Discussions

This section presents and discusses the estimation of the model parameters. The estimation was carried out using the fixed effect and the random effect models in order to compare the results. Stata 12 econometric software was used for the estimation. Table 1 shows the summary of the result.

Table 1: Panel regression estimates of the fixed and random effect models dependent variable: Interest rate spread (IRS)

VARIABLE	FIXED EFFECT			RANDOM EFFECT		
	Est. Coefficient	t-value	Sign. level	Est. coefficient	z-value	Sign. Level
Mks	-0.0286262	-2.75	0.017	-0.0255753	-1.21	0.0351
Bd	1.0254576	4.12	0.001	0.1342305	2.95	0.0015
Opc	0.7836883	5.33	0.000	0.6020153	4.14	0.0000
BGr	0.1044872	2.06	0.061	-0.1116593	-5.18	0.0000
Lrr	0.0101097	1.27	0.228	0.0707213	1.67	0.0037
Hhi	0.0976123	1.22	0.245	0.0530361	2.35	0.0093
Inf	0.2568628	3.76	0.002	0.2533196	8.01	0.0000
Tbr	1.1029216	4.01	0.002	1.087517	4.61	0.0000
_06	-0.4095494	-4.45	0.001	-1.351682	-1.79	0.0367
_07	-1.5478632	-5.04	0.000	-2.512879	-3.75	0.0000
_08	-1.3452925	-2.49	0.028	1.335392	1.09	0.0019
_09	0.0563349	1.87	0.086	0.662736	3.11	0.0009
_cons	-5.7511846	-2.61	0.022	-8.850182	-6.06	0.0000
Number of observation	*360*			*360*		
R-square	*Within=0.7260* *Between=0.7914* *Overall=0.7246*			*Within=0.8714* *Between=0.7543* *Overall=0.8256*		
Overall Significant	*F(12,188)=136.76* *Prob>F=0.0000*			*Wald Chi² (12)=157.14* *Prob>Chi²=0.000*		

The empirical estimations presented in (Table 1) compares the results derived from a static panel of fixed effects and random effects model using annual data for the sample period for 24 banks in Ghana. The results show that most coefficients have the expected signs. Using the fixed effect model, about 72 percent of variation in SPR of the banks in Ghana over the period 2000 – 2014 period are explained while about 83 percent are explained using the random effect model. These are shown by the the R-square values produced by each model.

Significant F statistics at 1 percent indicate the overall statistical significance of the estimations of the parameter estimates produced by each. The level of significance of the estimated value of each parameter can be seen from the probability value associated with the results of its F-test. Wald-statistic for model adequacy is statistically significant at 1% as shown in the table. The impacts of the variables in the models on the interest rate spread (SPR) are discussed below.

6.2. Hauseman Test

The Hausman specification test compares the fixed effect and the random effect under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model. If correlated (H_o is rejected).

A random effect model produces biased estimates, thereby violating one of the Gauss-Markov assumptions. Therefore, a fixed effect model is preferred. Hausman's essential result is that the covariance between an efficient estimator and the difference of an efficient and inefficient estimator is zero (Greene 2000). Table 2 presents the results of Hausman test using the Stata 12 software which usually reports the test result as part of the panel fixed effect output.

Table 2: The Hausman's specification test results

Sigma_u	=	*0.33854173*	
sigma_e	=	*1.5076721*	
rho	=	*0.04800066*	*(fraction of variance due to u_i)*
F test that all u_i=0:		*F(19, 188) = 0.17*	*Prob > F = 1.0000*

From table 2, Prob>F = 1.000 indicates that the Hausman test is not significant for the null hypothesis. Therefore, in general, we cannot reject the Null Hypothesis that both the fixed and random effects are efficient and yields similar coefficients. Hence, it can be concluded that there is no evidence of significant difference between the coefficients of both the fixed effect and the random effect estimates. Both effects are therefore valid.

6.3. Bank specific Variables

6.3.1. Market Share (Mks)

The market share coefficient of -0.029 from the results, which is significant at 1% for the fixed effect model, indicates that a unit fall in market share of deposits leads to 0.029 unit increase in interest rate spread, implying that small banks are likely to increase interest rate spread since they are not able to mobilize enough deposits.

The explanation for this is that that a bank will mobilize more funds from the system and will let them out as early as possible in the form of credit to the business community and the only way to entice businesses and individuals to come for the

money is to minimize the spread by charging reasonable interest rates. Though the market share also impacted negatively on the spread with the random effect model, it is not significant at 1%. This may also mean that the banks are enjoying economies of scale.

6.3.2. Bad Debt (BD)

The annualized ratio of provision of bad debt to total loans, which act as an indirect indicator of asset quality, exhibited a positive impact on the interest rate spread in Ghana over the study period as expected. This is also the case with both fixed and random effects models. They were all at 1% significant level. However the impact with the fixed effect was more pronounced than with the random effect. This is shown by the values of the fixed and random effect models which are 1.025 and 0.134 respectively. This means as provision for doubtful loans increases so will the spread also be.

This relationship may be explained by the bank's attempt to maintain profit margins when confronted with a high level of non-performing loans and declining earnings from alternative sources such as treasury bills. So the positive relationship between the spread and bad debt provision simply means that faced with rising credit risk, banks kept lending rates high as they charged higher risk premiums to maintain their profits. This finding is similar to that of Bawomia et al (2005) and Aboagye et al (2008), and to the finding by Barajas et al (1999) for Colombia.

6.3.3. Operating Cost (OPC)

Operating costs arise in processing loans and in the servicing of deposits. They are represented by the ratio of total operating costs to total earning assets. The results in Table 1 show a positive relationship between this variable and bank interest rate spreads in both model just as expected. There is no appreciable marginal difference in their impacts in the two models. As can be seen in Table 1, their coefficients in the fixed and random effect models are 0.783 and 0.602 respectively and these are all significant at 1%.

These results mean that as operating cost increases, operating efficiency decreases and this, in effect, leads to increase in spread, as banks transfer their inefficiencies in the form of higher interest charges on loan clients. This result explains the role of size and diseconomies of scale in the operations of commercial banks in Ghana. Therefore, reducing operational inefficiencies in order to exploit scale and scope economies should be an urgent priority of banks.

The result here is similar to the results obtained in previous studies by Randall (1998) and Barajas et al (1999). The results in both studies showed the existence of positive and significant relationship between bank spreads and operating costs.

Banks can improve their operational efficiencies and realize cost saving through technological change such as the use of Automated Teller Machines (ATM) and the move towards electronic banking systems, high-speed check readers and check imaging systems.

6.4. Industry Variables

6.4.1. Herfindahl-Hirschman Index (HHI)

Herfindahl-Hirschman Index (HHI),which is a measure of concentration and a proxy for bank competition, has a positive and significant relationship with (or impact on) spread at 1% significance level in the random effect model but in the fixed effect model, the relationship or impact is not significant (see table 1). Thus, it appears that bank competition does not impact much on interest rate spread of banks in Ghana as the coefficients are very marginal - 0.09 for fixed effect and 0.05 for random effect.

The data appear to support high concentration of banks in the system with average HHI of 1.2 hence a low competition which is found to be associated with higher spreads. This means banks in Ghana can become competitive through diversification, if the composition of lending changed towards riskier lending, or if it resulted in better financial sector oversight. The results are also indicative of the effect of market structure index on spread as can be seen in the positive coefficient of the HHI, suggesting that market structure is an important factor in explaining banks competition in the market structure. This finding is consistent with other findings such as those by Randall (1998) and Barajas et al (1999).

6.4.2. Liquidity Reserve Requirement (LRR)

The coefficient of the liquidity reserve requirement is consistently positive and statistically significant at 1 percent level with the Random effect model but it is not significant with the fixed effect model. Reserve requirements are a form of financial taxation on the commercial banking system, and commercial banks respond to increases in reserve requirements by increasing the spread between the lending rate and the savings rate. However this result is contrary to the findings of Demiirguc-kunt et al (1999) in their study of eighty countries who found a negative relation between bank reserves and spreads. They contend that the negative coefficient may be signaling that banks are counting their liquidity as part of their reserves.

6.4.3. Bank of Ghana Lending Rate (BGr)

As can be seen in Table 1, the coefficient of the prime rate is positive and statistically significant at the 1 percent level in both models. This mean that any adjustment in the prime rate is accompanied by a proportionate change in the interest rate spread. The results in Table 1 shows that the prime rate is positively associated

with interest spreads. This suggests that commercial banks respond to the upward adjustments in the prime rate by widening the spread, thereby shifting the cost of refinancing their liquidity requirements to customers. On the other hand, the banks respond to downward adjustments to the prime rate by reducing the interest rate spread.

Businesses have been concerned with upward revisions of the prime rate on the grounds that it is linked to high cost of borrowing. It is a fact that any decisions on the prime rate will reflect on transaction interest rates as the Monetary Policy Committee intends to influence the amount of money that is available to the public. Basically, businesses assert that when the prime rate is increased, the cost of borrowing typically increases. This further leads to higher prices in the economy- a phenomenon termed "price puzzle". But the premise of this argument is inconsistent with the inherent monetary policy stance. The truth is that monetary policy operates in an industry and market environment that should be relatively efficient.

6.5. Macroeconomic Variables

6.5.1. Inflation (INF)

In both models (see Table 1), as expected, price instability represented by rate of inflation does have a positive and significant impact on interest rate spread of banks at 1% significance level. There is only a marginal difference between the coefficient of inflation from the fixed effect and the random effect (i.e. fixed effect = 0.256, random effect = 0.253). These values of the coefficients mean that a unit change in inflation will lead to 0.256 and 0.253 units change in spread for both the fixed and random effects models respectively.

Given that the rate of inflation has generally fallen over the period covered by this study, the results are consistent with the falling of the spread due to improvements in the macroeconomic environment. This result suggests that commercial banks respond to increases in the price level by widening the spread between lending and deposit rates. High levels of inflation are generally associated with a more unstable economic environment. Whenever the conditions allow, greater mark ups are expected in order to guarantee positive net returns. However, inflationary gains during periods of high inflation could have a negative effect. As argued by Arcoverde (2002), inflationary gains provided negative incentives to banks to become efficient at offering credit to the private sector.

6.5.2. Treasury Bills Rate (TBR)

The result in the table (Table 1) indicates a positive relationship between the 91-days T-bills and the spreads, as expected, for both the fixed effect and the random effect models. The coefficient were significant at 1% level for both models. This means

that a one unit change in TBR will lead to about 1.102 and 1.088 units change in interest rate spread for fixed effect and random effect models respectively.

The positive relationship indicates that the treasury is competing with the private economic factors such as the commercial banks for funds, leading to an increase in the final price of capital. It also indicates competition for financial assets and the incentive for investment or risk premium between the Treasury bills on the one hand and the lending and deposit rates on the other. An attractive treasury bills rate in a noncompetitive market compels banks to reallocate their asset portfolio and invest in risk-free assets. This weakens the intermediation processes. The Treasury bill is a default-free commercial paper since the government cannot default on sovereign debt.

6.5.3. Time Dummy

To capture the effect of the recent global financial crises which started in 2006 and subsided around 2009 on the interest rate spread in Ghana. As can be seen from the result the time dummies for the duration of the global financial crises revealed a negative impact on the spread from 2006 to 2008 but a positive impact in 2009, as shown by their coefficients. These coefficients are significant at 5% in 2006 and 1% for the other years in both the fixed and random effect models (see Table 1).

The coefficients depicts the intensity of the global financial crises on the spread, so a unit increase in crises led to reduction in the interest spread by 0.409, 1.548 and 1.345 in 2006, 2007 and 2008 respectively whiles in 2009, when the economy had started recovering, a unit increase in the crises led to recovering or rise in interest spread by 0.056 units. This means the negative impact of the global financial crises became more severe on the spread in 2007 and recovered to exhibit a positive influence in 2009.

7. Conclusion and Recommendation

This study attempts to determine and explain factors that influence the seemingly high interest rate spreads in Ghana. As in many developing countries, there is no simple explanation for the generally high level of bank interest spreads. The determinants were classified under bank specific, banking industry and macroeconomic factors.

The findings indicate that the liberalization of the financial sector did not benefit depositors and borrowers in Ghana, particularly within the study period, because banks were shifting most of their risks and costs (inefficiency) to customers. The study found that bank specific variables such as the provision for bad loans and operation cost; and the market factor of policy rate as well as macroeconomic variables such as inflation and Treasury bill rate form the major influencing factors of the commercial banks' interest rate spread in Ghana. Required liquidity reserve ratio and index of bank concentration which was a proxy for bank competition were not seen to have played any major role in influencing the decisions on bank interest

rate spread. This means that the financial taxation on banks is not much transferred to customers. Similarly, the Bank of Ghana policy rate which showed a declining trend within the study period, from 27% in 2000 to about 13% in 2010 and rose to 17% in 2014 made commercial banks to adjust their lending rates but not very significantly.

In terms of competition, entry of new banks into the financial system have not increased competition but have only increased concentration of banks. It is likely to reduce monopoly power enjoyed by few bigger banks in the long term which may help reduce the interest rate spreads. Bank competition was not affected due to the relative size of new entrants and their limited geographical coverage of the market.

The top three commercial banks, namely; Ghana commercial bank, Barclays Bank (Ghana), and Standard Chartered (Ghana) remain relatively large and seem not to be affected by the business diversion tactics of new banks since they command more than half of the market in Ghana. However, this study contradicts other existing empirical evidence elsewhere which suggests that foreign bank entry is associated with reductions in interest rate spreads and profitability (Barajas et al, 2000; Claessens et al, 2001).

The study further identified market share and time dummy for the impact of global financial crisis that have contributed in driving the spread downwards within the study period. The global financial crisis ended in 2009, since then interest rate spread has been on the rise in Ghana.

In general, the results strongly support the rejection of all the three null hypotheses. High interest rate spread is influenced by a combination of factors from bank specific levels, industry specific level and the macroeconomic factors but cannot be attributed to only one specific class of factors. All these factors together imply that the banking sector in Ghana is not efficient and competitive despite the fact that there is a certain degree of monopoly power existing in the system.

From the findings, we recommend that Banks in Ghana should strive to improve operational efficiencies and reduce internal operating costs in the areas of administrative and other overhead costs. Government must ensure prompt payment of debt owed the banks to enable them have clean portfolios and lower spread since greater part of the non-performing loans are in the hands of the state which tend to motivate banks to transfer these debts to customers through higher interests on their loans and thereby widening the spread.

Government should ensure an effective management of the economy in order to achieve macroeconomic stability which is essential for a good financial system that ensures a sustainable growth of the economy. The policy directives should be targeted at stability of key prices, including the exchange rate, commodity prices and interest rates. This will stimulate high investment returns and reduce credit risk.

Banks should perform more of the intermediation process than investing in short-term Treasury bills. This can be achieved by re-aligning Treasury bill rates

with other returns on short-run financial assets and pushing for competitiveness in the market.

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