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Determinants of wide interest margins in Ghana: panel EGLS analysis

David Sarpong (Jr), Ernest Christian Winful* and Jones Ntiamoah

Department of Accountancy, Accra Polytechnic, Ghana.

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Government, institutional investor, investors and the ordinary Ghanaian believe that the interest rate spread in Ghana is on the higher side. Financial institutions also on the other side claim the opposite. The perceived wide interest spread charged by banks in Ghana continues to ignite many debates as to whether the commercial banks are taking advantage of Ghana's trade liberalization to make excessive profits or such banks are constrained to charge significant spreads due to economic variables that affect their operations. This study identifies the key factors affecting interest margins in Ghana and examines how such factors impact on the spread, using panel EGLS with a cross-section weights. The results show that operating cost, market share and previous year's non-performing loans are sensitive to the definition of interest rate spreads. Concentration of the banking industry, GDP, inflation, treasury bills and exchange rate however do not have statistically significant influence on spread. It also came out that commercial banks respond to increases in reserve requirements by increasing the margin between lending and deposits rates.

Key words: Interest Rate Spread, Non Performing Loans, Operating Capital, Liquidity Reserve Requirement.

INTRODUCTION

Ghana has a vibrant and fast growing banking industry made up of twenty six major banks (as at the close of 2011), consisting of commercial, development and merchant banks. The financial services in Ghana have seen a lot of reforms in the past years. The Ghanaian banking industry is highly concentrated, with the top five largest banks controlling more than fifty percent of the total market share in terms of total assets. Foreign banks account for more than fifty percent of the market share in terms of total assets, which is relatively moderate compared to other countries in the region.

According to the Centre for Policy Analysis (CEPA), (2011), the banking sector of Ghana has grown rapidly over the past five years, both on account of participation of new entrants and an increase in the size of financial assets in the industry. Banks' branch networks have been broadened across board from 374 branches in 2005 to 708 branches at the end of 2010; over the same period banking sector assets more than quadrupled from GH¢3.8 billion to GH¢17.4 billion. In spite of the intense competition and spectacular growth in the industry, intermediation costs have continued to grow. The increased competition resulting from a broadened participation base seemed to have exerted pressure for more qualified personnel and funding costs, leading to high bank lending rates.

The perceived wide interest spread charged by banks in Ghana continues to ignite many debates as to whether the commercial banks are taking advantage of Ghana's trade liberalization to make excessive profits or such

E-mail: ephlameswinful@yahoo.com.

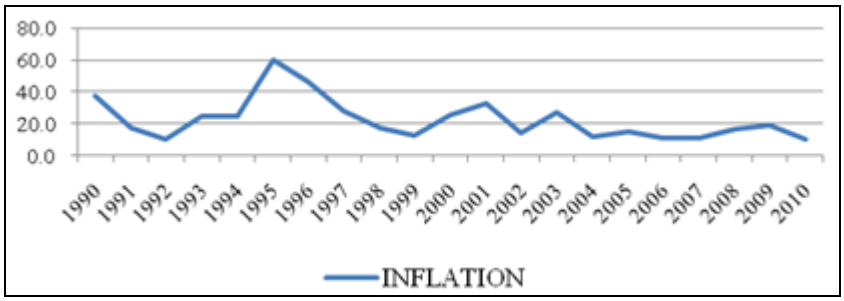

Figure 1. Inflation.

banks are constrained to charge significant spreads due to economic variables that affect their operations. It is in fact, the case that interest rate spreads within the Ghanaian banking industry are among the highest in Africa, Bawumia et al (2005). This is indicative of inefficiency in the banking sectors of developing economies including Ghana, as it is now widely acknowledged that interest rate spreads are an adequate measure of bank intermediation efficiency (Sologoub, 2006:2). Wide interest rate spreads make it expensive to move monies from those who have surpluses to those who need monies to invest and create jobs. This is because neither the borrower nor the depositor gains from the wide spread, but rather the depositor suffers low returns whiles the borrower is subjected to high borrowing cost. This situation can lead to a general scarcity of money, which causes significant decrease in borrowing for investment spending, consumer spending, construction.

Again, small scale enterprises and agriculture, which are considered the largest employers in the Ghanaian context, can no longer afford to borrow money to finance their operations. This is because they operate with low profit margins and for that matter a significant increase in the cost of borrowing will erode their profits. This will make farmers and other small scale entrepreneurs reluctant to borrow, which will make their expansion and survival difficult. Wide interest spreads can slow the growth rate of the economy, as private businesses are unable to borrow at the current interest rate to expand their businesses, so as to create employment to absorb the unemployed masses.

It has been agreed by most economists that interest rates are greatly influenced by economic variables like inflation, international forces, government actions and changes in the conditions of the financial sector. Inflationary pressures will have significant impact on interest rates, because the rates paid on most loans are fixed in the loan contract. A lender may be reluctant to lend money for any period of time if the purchasing power of that money will be less when it is repaid; the lender will, therefore, demand a higher rate (known as an “inflationary premium”). Thus, inflation pushes interest rates higher; deflation causes rates to decline. International forces play an important role in influencing interest rates in the economy. This is because if foreign investors are willing to lend money to the Ghanaian economy, they supplement domestic sources of funds in the marketplace, driving interest rates down. If they were to decide to reduce or sell their holdings in the country and reinvest elsewhere, more needed funds would have to come from domestic sources, which would push interest rates upward.

Political stability also greatly influences interest rates since returns have positive correlation with risk. It is a universally accepted fact that political instability increases drastically the risk of doing business and for that matter banks in such areas will charge high fees and interest margins to compensate their high risk. This also means that financial institutions which operate in countries, where there is political stability, rule of law, respect for human rights and justice may have to charge lower margins commensurate with their relatively lower risk.

Despite improvements in economic trends, the country is yet to experience a significant cut in the base and lending rates offered by commercial banks, to conform to such improvements. Inflation has decreased significantly over the period, to the extent that it fell below ten percent in June 2010, as published by the Ghana Statistical Service as shown in figure 1.

There have also been significant reductions in bank of Ghana policy rate (an indicative of the rate at which commercial banks can borrow from the central bank), since 2009. Again the country has over the years experienced enviable political stability and direct foreign investments, which accounts for the influx of many foreign banks in the country. The gains of macro-economic stability in Ghana have not been translated into significantly declining interest rate spreads.

However, high Treasury bill rate, default in loan repayments and interest servicing, high overhead cost among others contribute to high interest rates charged by banks. Again the cost of capital that banks hold to cushion themselves against risk is relatively more expensive than debt because of taxation and may lead to high interest

spreads.

There have been numerous calls from the investing public and some experts for the central bank to take the necessary steps and come out with practical initiatives to make its prime rate effective and monetary policy beneficial to Ghanaians. Investors blame the Bank of Ghana for not revising its moral suasion policy, since as a result of that the overall financial portfolio of the economy is not creating wealth and therefore affecting wealth and employment creation. However, the Bank of Ghana claims that the conduct of monetary policy in Ghana is constrained in many ways. It cited the case that quite often many commercial banks have been observed to even be keeping more than the reserve requirements, they claim, due to lack of viable lending opportunities, in which case the prime rate is meaningless to them. Another constraint to monetary policy is the large amount of cash held outside the banking system due to excessive cash transaction and the huge public sector borrowing which are insensitive to interest rates.

Statement of the problem

There are various variables or indicators used to measure the performance of an economy, with four of them usually ranked high as the key macroeconomic indicators. These key indicators are inflation, aggregate output or income, rate of unemployment and interest rates. Interest rates have significant influence on the other three macro economic variables. This accounts for the reason why many capitalist societies adopt interest rates as a vital tool of monetary policy and also taken into account when dealing with other variables like inflation, unemployment and investments.

Lower interest rates encourage borrowing from both businesses and households. Low interest rates encourage and stimulate economic investments, leading to increased productivity, employment and national income. Business investments in buildings, machinery, equipments, new factories and other assets are stimulated when interest rates are dropped. This is because interest rates that must be paid on borrowing is a key element of the cost of making an investment, therefore investors or business executives will find investment prospects more attractive as interest rates decrease. This situation will by extension lead to an increase in total spending since investment spending is a component of total spending, thereby increasing productivity and reducing unemployment. Decreasing interest rates makes it easier for individuals, businesses and foreign investors to procure cash and are encouraged to spend more due to increased access to capital. This will in turn lead to enhancement of business expansions, increased sales and employment of additional labour as consumers can also have access to cheaper credits.

Business investments are highly sensitive to interest rates since the latter forms the basis for determining the cost of borrowing or the price paid for the rental of funds (Baumol and Blinder, 2000). This therefore means that the higher the interest rate, the higher cost of borrowed funds, which will be invested in operational necessities such buildings, capital equipments and other infrastructure for businesses, as well as meeting other overhead costs. High interest rates therefore discourage investments which in turn lead to high unemployment and a reduction in total spending and national income. Increase in interest rates leads a fall in the demand for interest sensitive goods as manufacturers may pass on their high borrowing cost to consumers or these consumers may have to obtain expensive credits in order to be able to purchase these goods. It is also obvious that high interest rates will lead to higher price levels, which causes us to buy more imports and fewer exports. Interest rate is the main determinants of investment on a macroeconomic scale and if they are increased they will lead to a fall investments and national income. Despite the negative impacts of high interest rates on economic development, the Ghanaian economy has been subjected to astronomically high interest rates by banks and non – bank financial institutions, which charge significantly wider interest spreads. This is against the fact that these financial institutions have enjoyed political stability, improvements in economic trends, decreasing bank of Ghana prime rates and low deposit rates over the years.

It can be seen clearly from the above statements that wide interest spreads will in no way enhance economic development. The question then many businessmen asks is why do commercial banks continue to charge wide interest margins. This study is therefore aimed at examining the causes of high interest spreads and its impact on economic development. It is intended to provide analytical information to support financial regulators, commercial banks, investing public and financial analysts in their analysis and decision making. It offers an enhanced understanding on the impact of interest rate spread on investments, productivity, unemployment national income and growth rates.

Determinants of interest spreads

Interest spread is the difference between the average lending rate and the average borrowing rate for a bank or other financial institution. It is the yield the lender charges over a specific index that is commensurate with the risk of a given transaction. Interest rate spread is usually quoted in terms of basis points. Interest spread can be expressed mathematically as follows: (interest income ÷ interest earning assets) – (interest expense ÷ interest bearing liabilities). (Kwawaja and Din, 2008) explained interest spread as the difference between what a bank

earns on its assets and what it pays out on its liabilities. According to (Ramful, 2001), interest spread is a key variable in financial system and reflects the additional cost of borrowing related to intermediation activities performed by banks in linking borrowers with the ultimate fund lenders. He noted that 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.

Various studies have revealed various determinants of interest rate spread. Most literature on interest rate spread have classified the determinants of spread according to whether they are bank specific, industry specific or macroeconomic in nature. Other literature however identified financial regulations in addition to the other three classifications. According to Demirguc-Kunt and Huizinga (1998), the various characteristics of commercial banks that are usually theorized to have an impact on their spreads include their ownership pattern, size of the bank, quality of its loan portfolio, overhead cost, capital adequacy, proportion of liquid and fixed assets and operating expenses. It was also identified by Bawumia et al. (2005) that high operating cost, which is mainly due to labour costs, and banks' determination to maintain high profit margins are the two bank specific factors which contribute significantly to wider interest spreads. According to Ramful (2001), interest rate margin is a reward for the risk the bank bears. Not only does it compensate for loan default, but also for the risk related to cost of funding. Banks usually borrow short term funds from depositors and lend long term loans. Therefore, interest rate margins should cover both spot and future cost of funds. The margin may move up or down depending on the predictions of future short term interest rate. Wong (1997) noted that bank interest margin is positively correlated to bank's market power, operating costs, credit risk and the degree of interest rate risk. Thomas et al. (1981) developed a bank interest margin model in which the bank was viewed as a risk-averse dealer. They showed that an interest margin was the result of transaction uncertainty faced by the bank and would always exist. They found that margin depends on four factors: the degree of managerial risk aversion, the size of transactions undertaken by the bank, bank market structure and the variance of interest rates. It appeared that because of transaction uncertainty, hedging behaviour was perfectly rational within an expected utility maximizing framework. Moreover, when they extended the model from a structure with one kind of loan and deposit to loans and deposits with multiple maturities, it led to further interesting insights into margin determination especially in terms of "portfolio" effects. Robinson (2002) argued that the incidence of fraud, the ease with which bad credit risks survive due diligence and the state of corporate governance within bank have the potential of increasing asset deterioration, operating cost and ultimately interest margins.

Market structure (banking industry) is an important variable in determining interest rate spreads. Several studies have indicated that markets with low concentration may result in high interest spreads. This is evidenced in conclusions drawn by Ho and Saunders (1981), which indicated that bank interest margins depend mainly on four factors namely the degree of banks' management risk aversion, market structure of the industry, average size of bank transactions and the variance of interest rates. Berger and Hannan (1989) identified that banks in highly concentrated markets pay less on money market deposits account as compared with those that operate in markets with a lower degree of concentration. However, according to Bain (1951), market concentration encourages collusion that in turn enables firms in the industry to pay relatively less on their liabilities and charge more on their assets, thereby increasing the interest spread. Khawaja and Din (2008) extended this assertion by showing it implies that if the banks are free to set their own rates, then given the market power they will set lending rates at higher levels and deposit rates at lower levels than the competitive environment would allow. The size of a financial market also has material influence on the magnitude of spreads that will be charged in that market. Demirguc-Kunt and Huizinga (1998) identified that interest rate spreads in smaller markets are relatively wider due to diseconomies of scale. According to Elkayam (1996) as in Ngugi (2001) interest rate spread derives solely from central bank variables such as discount window loans, reserve requirements and interest on liquid assets on deposits with the central bank, in a competitive banking system, while under an oligopolistic structure the interest rate spread is in addition affected by elasticity of demand for credit and deposits. He also identified that there was more market power in the credit market than the deposit market, and that increase in money supply under elastic demand reduces the spread more in a monopolistic than in a competitive market. Various studies have also revealed that imperfect competition in the banking industry as a result of asymmetric distribution of information and wealth distortion have significant influence on interest margins as stated in the works of Stiglitz and Weiss (1981) and Jaffee and Roussel (1976). In Ghana, as in most countries, regulation rather than competition has defined the structure and range of financial products and services a bank can offer, the types of assets and liabilities it can hold and issue as different kinds of banking institutions licensed to serve a diverse clientele base. The concentration of the banking system appears to be diluting slowly, with the licensing of new banks and also the introduction of universal banking, Bawumia et al. (2005). Figure 2 shows the market share and assets of the top five banks in Ghana obtained from

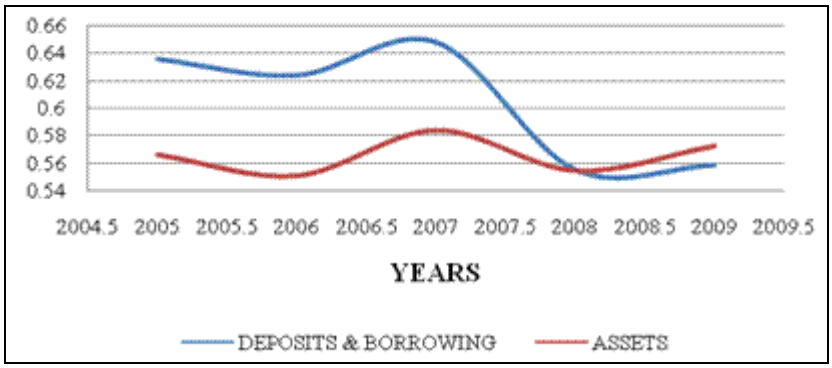

Figure 2. Market shares of the top five banks**.**

their audited accounts. Credit should also be given to the successful implementation of Financial Sector Adjustment Program (FINSAP) in its contribution in the dilution of the market concentration of banking sector.

It has been identified by various studies that macro economic factors contribute significantly to the determination of interest rate spreads. Folawewo and Tenant (2008) observed from a study conducted by Chirwa and Mlachila (2004) that the macro economic variables typically thought to be determinants of interest rate spreads includes inflation, growth of output, money market and real interest rates. They further identified that macro economic instability and the policy environment have important impacts on the pricing behavior of commercial banks. They noted that interest rate uncertainty, exchange rate volatility and the share of commercial banks public sector loans are necessary determinants of interest rate spread. Randall (1998) also indicated in his studies that interest rate spreads in high inflation – countries are persistently high compared with that of low-inflation countries. It can be concluded from various literature that the various macro economic variables which have been empirically shown to increase interest rate spreads include interest rate uncertainty, exchange rate uncertainty, high and variable inflation and real interest rate, broad money growth, increased fiscal deficits and a high share of commercial bank's public sector loans.

Various studies like Ho and Sanders, 1981; Bawumia et al., 2005; Yu, 1995 and Ngugi, 2001, as discussed below have shown enough empirical evidence that interest margins are also greatly influenced by financial regulations emanating from a country's monetary policy. In the work of Ho and Saunders they asserted that various imperfections and regulatory restrictions such as probability of loan defaults and the opportunity cost of holding mandatory reserves have significant influence on interest margins. Bawumia et al. 2005, in their paper also agreed that liquidity reserves and taxation contribute to some extent the wide interest spreads charged by banks in Ghana. According to Yu (1995) bank capital regulation has an impact on interest rate spreads. This is because interest spread has direct relationship with capital-to asset ratio such that an increase in the cost of capital emanating from capital requirement is passed on to borrowers. According to Madura et al. (1992) as in Ramful (2001) another important regulation variable which affects bank interest rate margins is the minimum capital requirement. Higher equity positions reduce financial leverage. Hence, an increase in bank equity should induce banks to increase interest rate margins to cover the higher cost of capital. They observed that the particular form of the bank decision-makers preference function is an important variable in predicting the response of interest rate margins to variations of deposit insurance and bank capital standards. The regulatory and legal framework influences the functional efficiency of banking institutions and thus defines financial stability (Ngugi, 2001). The study further asserted that financial stability, with unsound and improperly supervised lending practices, increases the risk premium charged on loan rates and widens the spread. This is because weak supervision gives rise to moral hazards and adverse selection problems. It noted however that regulatory difference across financial institutions destabilize the financial sector by diverting intermediation into the informal, less regulated and less taxed part of the sector.

The determinants of interest spread also vary according to the growth and level of development of an economy. The macroeconomic environment has significant impact on the performance of the banking sector by influencing the ability to repay borrowed loans. The demand for loans with unpredictable returns from investments and the quality of collateral determine the amount of premium charged and therefore the cost of borrowed funds to investors. With an unstable macroeconomic environment and poor economic growth, investors face uncertainty about their investment return and this raises the lending rate as the level of non-performing loans goes up. Poor output prices for instance

reduce firm profitability whiles reduced asset prices reduce the value of assets for collateral and therefore the credit worthiness of the borrowers. As a result return on investment declines, increasing the level of non-performing loans, which also leads to banks charging high risk premiums to cover their default risk (Ngugi, 2001). The banking industry in developing economies exhibits an oligopolistic market structure, with lack of adequate competition and poor infrastructure for efficient banking. Demirguc-Kunt and Huizinga (1997) identified that better contract enforcement, efficiency of the legal system and lack of corruption are associated with lower interest margins. This implies that developing economies will have wider margins due to inadequate legal systems, weak contract enforcement and high level of corruption. It was observed by Chirwa and Mlachila (2004) that high interest spreads in developing economies will persist if financial sector reforms do not significantly alter the industry and macroeconomic environment within which the banks operate.

Liberalization in the presence of inadequate prudential supervision and regulation magnifies the impact of exogenous shocks by accommodating distress borrowing. Bawumia et al. (2005) observed that the lower level of intermediation spreads needed for financial liberalization to result into economic growth and development has not been attained in developing economies due to the following factors:

Lack of changes in the structure and institutional behaviour of the banking system, shown by concentration, the conditions of free entry and competitive pricing.

High reserve requirements which act as implicit financial tax. While reserve requirements may be designed with the aim of protecting depositors, the availability of a pool of resources allows for financing high fiscal deficits through the implicit financial tax, creating an environment that can promote high inflation and persistent high intermediation margins.

Adverse selection and adverse incentive (moral hazard) effect which could result in mounting non-performing loans and provision for doubtful debts.

High operational costs have also been found to be a source of persistent and wide intermediation spreads in developing countries. Operational cost reflects variations in cost capital, employment and wage levels. Inefficiency in bank operations may also be shifted to customers through wide margins.

The cost of capital that banks hold to cushion themselves against risk is relatively more expensive than debt because of taxation and may lead to high spreads.

Macro economic instability and the policy environment may also affect the pricing behavior of commercial banks.

MATERIALS AND METHODS

To examine the determinants of interest margins for the Ghanaian banking industry, this study adopted the model used by Randall (1998), Demirguc-Kunt and Huizinga (1999), Barajas et al. (2000) and Bawumia et al. (2005), in which interest spreads are a function of operational cost, bank and market characteristics, the regulatory environment and macro economic characteristics. The empirical model was therefore specified within the framework of a bank as a profit maximizing firm with bank level variables to deal with specific aspects of bank behaviour. In addition, this study has included the rate of exchange of the domestic currency to the US dollar. This is because the world is now considered a global village, which Ghana is not excluded, and the US dollar has come to be accepted not only as a medium of exchange in international transactions but has also established itself as a major reserve currency and also plays the role of world currency. Oil, which affects the cost of doing any business and return on capital employed, is even priced in dollars at the world market.

A yearly panel data from twenty one commercial banks (including Apex bank) in Ghana for the period 2005 – 2009 were used for the study. All these banks were in operation from the start to the end of the time frame mentioned above.

Model

Our model is: $IS_{it} = \alpha_o + ß_1 X_{it} + \varepsilon_{it}$

Where, IS_{it} is the annualized interest rate spread for bank i, for time period t, ($ß_o$, $ß_1$) is a vector of parameters, X_{it} is a vector of bank specific, industry and macro economic variables, and ε_{it} is a stochastic error term.

The dependent variable is the bank interest spread, which is calculated as the difference between interest income and interest expenses as a percentage of total assets. Interest rate spreads are hypothesized to be a function of bank specific, industry and macroeconomic variables.

Following the arguments of Bawumia et al. (2005), we included key commercial bank-specific variables. The first variable is the annualized ratio of the provision for doubtful debts to total loans (NPL) as an inverse indicator of the quality of assets. We anticipate a positive relationship between NPL and spreads, based on the argument that banks tend to shift the cost of non-performing loans to customers. Next, we include operating (non-financial) costs estimated as the annualized ratio of operating cost (including the wage bill) to total assets (OPC) and expect a positive relationship between this ratio and interest spreads, since banks will charge higher margins to recover high operating cost. We also include the market share of each commercial bank in the deposit market (MS), as an indicator of size to test the efficient market hypothesis or existence of economies of scale. As indicated by Khawaja and Din (2007), larger banks may reap scale of economies and transfer some of the benefits to their customers in the form of lower margins. On the hand, the existence of monopoly power is believed would cause interest spread to widen. The actual liquidity reserve ratio LIQ, calculated as the required percentage interest proportion of the interest income ratio is also included as a bank specific variable. This approach takes opportunity cost into consideration. The shareholders' funds as well as the fee (non-interest) income of banks are also included as bank level variables. Macroeconomic variables included in the regression equation are rate of exchange of the cedi to the US dollar, real output growth, log of consumer price index as a measure of price level changes and the One Year Note Treasury Bill rate, which is used as monetary policy rate.

The common effect model is used in determining the aggregate response of the interest spread to the different variables. The model is estimated using the Estimated Generalized Least Squares method, using cross-sectional weighting of balanced panel and

Table 1. Descriptive statistics.

Values	mean	min	Max
OPC	0.1084	0.0000	5.1747
NPL	0.0304	0.0000	0.1536
MKT SH	0.0476	0.0003	0.1811
spread	0.2296	0.0054	5.8886
SH FUND	0.1332	0.0267	0.5579
FEE	0.1045	0.0020	3.3963
liq	0.0564	0.0000	1.3219

Table 2. Panel EGLS coefficients estimation.

Values	Coefficient	t-Statistic	Prob.
C	-0.034797	-4.779812	0.0000
FEE	1.099925	12.87388	0.0000
LIQ	1.210609	8.673752	0.0000
MKT_SH	0.306777	7.584950	0.0000
NPL(-1)	0.208788	2.427072	0.0176
OPC	0.419550	7.400393	0.0000
SFUND(-1)	0.016185	0.444947	0.6576

Source: estimated by the researchers using EViews (2011).

linear estimation after one-step weighting matrix, where observations for each bank constitute a cross-section. Dynamic adjustments of interest margin to changes in the regressors are allowed through the inclusion of one lagged term of some variables into the unrestricted equation. Insignificant terms are then excluded to attain parsimony.

FINDINGS

The annual data for the work covered the period from 2005 to 2009. We had 21 cross sections giving us a total observation of 84. The minimum and maximum values of OPC, as shown in Table 1, for the period were 0.000 and 5.1747 respectively, with a mean of 0.1084 as show in table 1. NPL had a minimum value of 0.0000, mean of 0.0304 and maximum of 0.1536. MKTSH also had a minimum value of 0.0003, mean of 0.0476 and maximum of 0.1811. The mean value of “spread” which is our dependent variable is 0.2296, with minimum and maximum values of 0 .0054 and 5.8886 respectively. The minimum and maximum values of FEE are 0.0020 and 3.3963 respectively, and a mean value of 0.1045.

The unit root test using augmented Dickey Fuller test confirmed that all the variables in levels are stationary at different significant levels as shown in appendix 2. This means that using the variables in levels to run the regression will not generate spurious results. Using OLS we encountered multicollinearity and autocorrelation problems and hence we adopted the panel EGLS with cross section weights. Our major concern from our results was a very high R^2 and adjusted R^2. A mean dependent variance of 0.64 implies that we do not have multicollinearility problem. Durbin-Watson stat of 1.22 means that we have a positive autocorrelation problem but since it is greater than one (1) it was ignored because it will not affect our results. Table 2 shows the various coefficients and their significant levels from the EGLS estimation.

Concentration of the banking industry does not statistically influence interest spreads (as indicated in appendix 1). The failure of the concentration ratio, which indicates the degree of competition, to exercise an influence on interest margin, as indicated by Khawaja and Din (2007), may be due to high levels of interest-insensitive deposits, which leaves little incentive to bankers to adopt competitive practices.

The macro economic variables (GDP, inflation, Treasury bill rate and exchange rate) do not have any material influence on interest spread unlike the bank specific variables.

Commission and fees which represent the non-interest income variable is significant and has a direct impact on interest spread. This shows that banks are not ready to offset high margins with their commission and fees and for that matter charge high intermediation spread even if they are earning high commission and fees income. Figure 3 confirms the analysis above and also shows graphically the huge margin between interest expense and interest incomes of commercial banks. Borrowers therefore do not suffer only high interest margins but high fees as well. This may discourage borrowings for economic investments leading to decreased productivity, employment and national income.

Liquidity causes a statistically significant influence upon interest margins. The co-efficient of liquidity reserve requirement is positive at 1.21 and statistically significant at 5% significance level. This implies that a percentage increase in liquidity reserve leads to a 1.21 percentage rise in interest margins. As asserted by Bawumia et al. (2005), liquidity 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 margin between lending and deposits rates.

Market share is statistically significant at 5% significance level and directly related to interest spread. The 0.31 co-efficient of market share is an indication that a percentage increase in the size of a bank results in a corresponding 0.31 percentage increase in interest rates. This shows that the large banks have the tendency to increase interest spread. This is in consonance with the assertion made by Bain (1951), that market power enables firms to pay less on their liabilities and charge more on their assets thereby increasing the spread. It

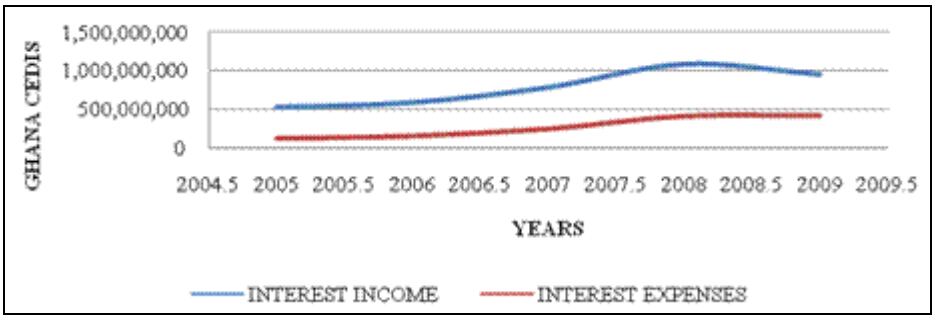

Figure 3. Trend of interest income & interest expense.

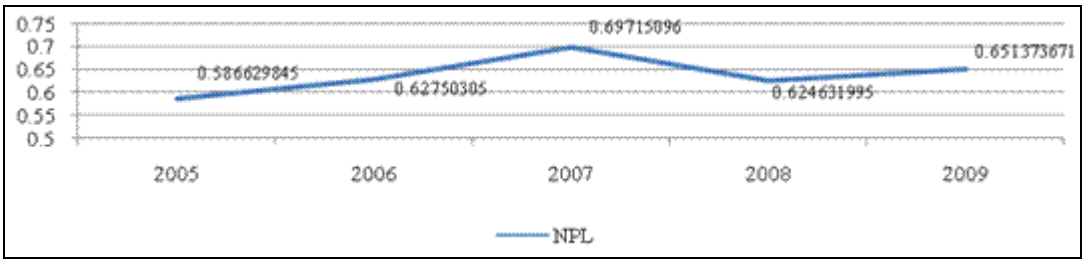

Figure 4. Non Performing Loans Trend.

could also be attributed to diseconomies of scale within the banking industry which has the potential of limiting operational efficiency of the banks.

Non-performing loans have been on the increase since 2005 and it peaked in 2007. This trend is explained by high gap between interest income and interest expense. In other words figure 3 assert that interest rates by commercial banks were high and hence the high default rate. Non-performing loans dropped in 2008 and started rising again as portrayed in figure 4.

Non-performing loans affects interest spread and is statistically significant at 5% significance level. This development is a confirmation of the observation made by Bawumia et al. (2005), from data for the period between 2000 and 2004, which indicated that non-performing loans have statistically significant influence on interest margins. The co-efficient of one period lag of non-performing loans is 0.21. This indicates that a percentage increase in the non-performing loans of banks induces a 0.21 increase in interest spread. This implies that financial institutions tend to pass on their bad debt expenses to customers in the form of wide interest spreads.

Operating cost has a direct and statistically significant influence on interest spreads. It is statistically significant at 5% significance level, with a co-efficient of 0.42. This implies that a percentage increase in operating cost causes a 0.42 percentage increase in interest margins. This is also an indication that banks factor their operating cost in the determination of their interest margins. The determination of banks to maintain high operating profits also increases interest spread since they need to charge high margins to be able to cover overhead costs and maintain high profits.

Shareholders fund is directly associated with interest spread but has statistically insignificant influence on spread at the 5% significance level. This implies that the cost of capital of banks do not have significant influence on the high interest margins charged.

CONCLUSION

This study discusses evidence of the main determinants of intermediation spreads both analytically and empirically. The estimation results show that interest rate spread is used not only to cover the cost of operating expenses and required reserves but also reflects the prevalence of market power and compensates for the quality of loans.

The results also show that operating cost, market share and previous year's non-performing loans are sensitive to the definition of interest rate spreads. Concentration of the banking industry, GDP, inflation, treasury bills and exchange rate however do not have statistically significant influence on spread. Liquidity 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 margin between lending and deposits rates. It was established that the main determinant of interest rate margin are fees, liquidity and operation cost. Non-performing loans evident significant when lagged one year is not a strong determinant of interest rate spread in Ghana as purported by most financial institution. We recommend that banks should work on improving on their efficiency so that they reduce their fees and operation cost to reduce interest rate spread.

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APPENDIX 1

Dependent Variable: SPREAD
Method: Panel EGLS (Cross-section weights)
Date: 07/24/11 Time: 16:20
Sample: 2005 2009
Periods included: 5
Cross-sections included: 21
Total panel (balanced) observations: 105
Linear estimation after one-step weighting matrix

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011712	0.128546	0.091111	0.9276
CON01	-0.068138	0.174597	-0.390261	0.6972
EXCH	-0.031902	0.032820	-0.972041	0.3335
FEE	1.066261	0.120481	8.850017	0.0000
INFLATION	0.000676	0.002004	0.337294	0.7366
LIQ	1.675652	0.198407	8.445542	0.0000
MKT_SH	0.252135	0.073445	3.432960	0.0009
NPL	-0.143659	0.133498	-1.076116	0.2846
OPC	0.397940	0.083370	4.773162	0.0000
SFUND	0.171493	0.057816	2.966164	0.0038
TBILL	-0.000116	0.001433	-0.080719	0.9358

Weighted Statistics			
R-squared	0.910161	Mean dependent var	0.307278
Adjusted R-squared	0.900604	S.D. dependent var	0.298910

Unweighted Statistics			
R-squared	0.969764	Mean dependent var	0.229286
Sum squared resid	2.264180	Durbin-Watson stat	2.146642

Appendix 2. Augmented Dickey-Fuller tests (P-values).

variables (levels)	Inverse chi-squared(42) P	Inverse normal Z	Inverse logit t(109) L*	Modified inv. chi-squared Pm
OPC	0.0000	0.0009	0.0000	0.0000
NPL	0.0000	0.0718	0.0004	0.0000
MKT SH	0.0271	0.0491	0.0219	0.0194
spread	0.0107	0.5541	0.0045	0.0070
SH FUND	0.0014	0.0448	0.0185	0.0002
FEE	0.0000	0.0090	0.0000	0.0000
liq	0.0012	0.0123	0.0011	0.0111