

*Original Research Paper*

# Central bank's policy rate on the cost of borrowing from some selected commercial banks in Ghana

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**\*Augustine Addo  
And  
ZuKwame A. Seyram**

Institute of Entrepreneurship and  
Finance,  
Department of Entrepreneurship  
and Finance,  
Kumasi Polytechnic,  
P. O.Box 845  
Kumasi,  
Ghana.

\*Corresponding author  
Email: [augustine\\_addo@yahoo.co.uk](mailto:augustine_addo@yahoo.co.uk)  
Tel: +233 263928024

High cost of borrowing has been a source of distress to individuals and organizations in Ghana. There has been raising concerns on the reluctance of commercial banks to lower their lending rates upon decrease in the Central Bank's policy rate. The aim of this study therefore, is to examine the problem of high interest rates in Ghana and establish the strength of association between the Central Bank's policy rate and the lending rate of commercial banks. Also, the study considers the determinants of interest rate of commercial banks in Ghana. Ten commercial banks were randomly sampled for the study, which covers the period of March 2007 and December 2011. Using a linear regression model, the study establishes a statistically significant strong positive relationship between policy rate and lending rates of the sampled banks; indicating that commercial banks' lending rate behaviour is affected by the Central Bank's policy rate and inflation rate. The study further discovered that the lending behaviour of the commercial banking institutions has been influenced by the monetary policies of the Central Bank. Efforts made by the Central Bank of Ghana to implement strict monetary policies resulted in reduction in policy rates and inflation. This indirectly minimized the cost of borrowing and managed macroeconomic instability to ensure growth and development. Again, Central Bank reduced the mandatory primary reserves ratio to help banks reduce their cost and interest rates. Also, government reduced its domestic debt arrears to banks, and this helped to reduce their Non-Performing Loan (NPL). On the other hand, commercial banks managed their structural weaknesses and inefficiencies, high operating cost, outrageous charges and fees in granting credit in the banking system that prevent rapid transmission of lower rates of borrowing in their services in general.

**Keywords:** Central bank, policy rate, interest rate, inflation, commercial banking, Ghana

## INTRODUCTION

The Central Bank of Ghana uses a short-term money market interest rate as its operating target. This is where changes in the short-term interest rate are expected to influence the cost of funding for banks and eventually the level of retail deposit and lending interest rates (Arto, 2011). The special role for banks in the credit allocation process have been widely explored, and the existence of banks as financial intermediaries are generally explained by informational

asymmetries that lead to costly frictions in the allocation of capital (Diamond 1984, 1989, 1991; Ramakrishnan and Thakor 1984). Today, banks all over the world continue to lend monies to clients depending on base rates set up by Central Banks'. Many factors including risk of borrowing and profit margin are determined by the bank. The stated interest rates on most loans are determined through negotiations between the borrower and the lender. Banks

try to vary charged interest rates according to risk and creditworthiness of the borrower; as lower the creditworthiness of the borrower, the higher the interest rate. Interest rates charged also vary in keeping with money market conditions; such as changes in policy rate. When policy rate is reviewed upwards, commercial banks also increase their transaction interest rates, which affect borrowing and saving decisions of consumers and businesses. Thus, policy rate informs the charge interest rate on loans. Central bank's issue liabilities denominated in their own unit of account, while commercial banks issue liabilities denominated in a central bank's unit of account, and this gives central bank's leverage over interest rates (Hoein, 2011).

The ability to hit the interest rate target consistently plays a critical role in monetary policy effectiveness. It is also essential for the communication of the Central Bank's policy stance to the public (Ennis and Keister, 2008). The changes in transmission of interest rate through the interest rate channel, should ideally take place over a relatively short period of time (Goodfriend, 1991; Goldwaite, 1995); as a faster transmission would strengthen the impact of monetary policy on the real economy. In developing countries such as Ghana, underdevelopment, shallowness of financial markets and the transmission process dominated by bank lending channel, make the structure of financial markets play an important role in transmission process (Mishra, Montiel and Spilimbergo, 2010). Mishra and Montiel (2012) provide an excellent survey of the effectiveness of monetary policy transmission in developing economies, and conclude that monetary policy transmission in such economies tends to be weak at best. A number of studies have examined potential structural basis why the transmission mechanism is effective in some countries and weak or non-existent in others; mostly with a focus on advanced economies (Saxegaard, 2006). Cecchetti (1999), Cottarelli and Kourelis (1994) and Ehrmann et al (2001), suggest that an economy's financial structure, as well as its underlying regulatory and institutional quality is the key for the effectiveness of transmission.

High interest rates in Ghana have resulted in public outcry and the call for regulation. Despite the pressure from interest and pressure groups, cost of borrowing has not dropped, even though the high level of interest rate in the country continues to be a source of worry; as it inhibits investment, economic growth and development (Amidu, 2006). A specific policy issue that is of concern to policy-makers relates to the apparent lack of downward responsiveness of commercial banks lending rates. This apparent intractable position by the banks has complicated policy issues concerning lending rates at a time when the government wants to promote private sector-driven growth (Baah-Wieredu, 2007). The question still remains as to why commercial banks fail to reduce their base rate as a

response to the decrease in Central Bank's Policy rate and the supposedly improvement in macroeconomic factors. While some believe competition among banks can help reduce interest rates, as a result more banks were given license to operate following the slow response in reducing the banks base rate but to no avail.

In spite of its increasing relevance for monetary policy implementation, the interest rate transmission process is not extensively studied in Ghana. An exception is Ghartey (2005), Kwakye (2010b) and Arto (2011) who examined the impact of monetary policy on the term structure of interest rates in Ghana, and they report that there is a significant effect from monetary policy to Treasury bill and interest rates. The interest rate channel is the most traditional mechanism and has been subjected to intense scrutiny. The questions for this study are:

- To what extent does the Central Bank policy rate influence commercial banking institution lending rate?
- How is policy and interest rates determined by the Central Bank and commercial banks respectively?
- What is the strength of relationship between interest rate, policy rate and inflation?
- And what is the volatility of policy rate, interest rate and inflation?

The objective of this study is to identify the effect of policy rate on the cost of borrowing; with a focus on the commercial banks. A recent data is used to determine the impact of policy rate on commercial banking lending rates and the joint effect of policy rate and inflation on commercial banks' lending rates. Recommendations are made for policy makers and interested parties in mitigating the effect of the policy. The implications of changes in the policy rate on lending rates in Ghana from 2007 to 2011 were studied in order to identify the effect of the cost of borrowing. It is important to quantify the expected impact of policy rates on market rates and also to gauge the gains from addressing potential structural weaknesses to make monetary policy more effective. The knowledge of the strength of association between policy rate and lending rates among commercial banks in Ghana will inform policy on controlling and regulating banks' lending activities in Ghana.

## Literature review

### Monetary Policy Framework of Ghana

The Central bank of Ghana known as Bank of Ghana (BOG) implements monetary policy through the Monetary Policy Committee (MPC). The policy rate set by MPC is charged on (overnight) short-term credit, which it extends to other banks to replenish their liquidity shortfalls. In this regard, the Central Bank exercises its role as lender of last resort (OMISTA, 2012). The policy rate is a "reference or base

rate" that banks use to set the price or interest rate their commercial loans and consumer loans products are pegged at. The Bank's monetary policy objective is to ensure price stability, low inflation among others to support the Government's economic objectives on growth and help create employment. The Policy Rate (PR) plays the role of a benchmark that is used to signal the cost of funds, as such, it is expected to be transmitted throughout the financial system. Commercial banks reflect this in their transactions among themselves and with the public. The degree of transmission of the PR, however, depends on the degree of development and competition in the financial system. Yet in Ghana, the reflection of the PR in commercial banks lending rates has been extremely delayed (Kwakye, 2010b). The use of policy rate by the Bank of Ghana's MPC as an intermediate target for achieving price stability, remains the most credible option for conducting monetary policy in Ghana (Amidu, 2006). The policy charge, rates closely with other short-term interest rates and it is uniform across all banks, unlike deposit interest rate, which often vary considerably from bank to bank; depending on funding needs and portfolio considerations. While individual banks may change their policy rate at any time depending on market conditions, the policy rate tends to move closely in line with market interest rates.

The 2002 Bank of Ghana Act 612, make the Bank independent to set interest rates accountable to parliament and the wider public (BOG, 2013). The MPC has improved the credibility and transparency of monetary policy, which is essential for modern financial market development (Akligoh, 2007). Central banks hold assets and incur liabilities and create money by issuing interest-free currency notes, and sell them to the public in exchange for interest-bearing assets; such as government bonds. It controls certain types of short-term interest rates and thus influence the stock and bond markets, as well as mortgage and other interest rates (Comptroller's Handbook, 1998). Central bank holds foreign exchange reserves, official gold reserves and has influence over official or mandated exchange rates, as well as market interest rates. Central banks may move the market towards a 'target rate' by lending money to and borrowing money from a limited number of strong and qualified banks, or by purchasing and selling bonds (Kyashyap and Stein, 1995). It also has the right to set the base line interest rates and every other interest rate. It controls the amount of money in circulation at any given time and regulates commercial and retail banks, settles foreign exchange transactions and runs automated check clearing facilities and makes monetary policy decisions that relates to the amount of money in circulation. Bank rate, (discount rate), is the rate of interest, which a central bank charges on the loans and advances to a commercial bank. The borrowing is commonly done through Repos (Repurchase) against the banks securities (Melitz and Pardue, 1973). A reduction in the repo rate

helps the banks to get money at a cheaper rate, and higher repo rate increases borrowing from central bank, which affect interest rates (Kashyap and Stein, 2000). Central banks increase or reduce money in circulation by manipulating interest rates through policy rate, which among other things; is a monetary tool used for controlling inflation (Kyashyap et al, 1994). A concern of Central Bankers is the possibility that an abundance of liquidity may hamper the ability of monetary policy to influence the level of economic activity as well as inflation (Agénor and Aynaoui, 2008).

### **Commercial banking Institutions in Ghana**

Commercial banks are financial institutions that accept money from the public for the purpose of lending or investment. It is repayable on demand or otherwise withdrawable by cheques, drafts or order or otherwise (Paget, 2007). Banking transactions are socially and legally approved, and they are responsible in maintaining the deposits of its account holders. Since their deposits are for short period only, banks extend loans for a short period and provide banking services for profit. They accept deposits from the public and lend them to needy parties. They therefore, come out with attractive products and services to draw borrowers. Commercial banks perform a variety of functions which are common to both developed and developing countries known as "General Banking" functions. These functions can be divided into two categories namely "Primary and Secondary functions". Primary functions include acceptance of deposits, advancing loans term loans, creation of credit, clearing of cheques, financing foreign trade, remittance of funds. Secondary functions also include agency services, general utility services and finally, fulfilment of socio-economic objectives of Ghana. Banks help the development of trade and industry in the country; encourage habits of thrift and saving, capital formation, lending money to traders and manufacturers. Commercial banks engage in the business of borrowing and lending money and increase its income through various means, especially, if it borrows at a lower rate and lends at a higher rate (Vidal et al., 1999). They act as brokers (Leiderman et al., 2006); provide safety vaults, issues shares etc. The bank is liable to pay others and these include capital, reserve fund, deposits, and borrowings from other banks, bills payable, acceptances and endorsements, contingent liabilities, profit and loss account, bills for collection. The banking system can create credit, which is several times more than the original increase in the deposits of a bank called the multiple-expansion or multiple-creation of credit. Similarly, if there is withdrawal from any one bank, it leads to the process of multiple-contraction of credit. Limitation on credit creation depends on, amount of cash received by banks, cash reserve ratio, banking habits of the people, nature of

business conditions in the economy, leakages in credit-creation, sound securities, liquidity preference and monetary policy of the central bank (Hoggson and Sanders, 1981). The money held in a loan loss reserve account cannot be counted as revenue, and, thus, does not contribute to profits (Spaulding, 2011).

### **Lending rate**

Lending rates are the charges made to borrowers when they take loans from the bank. This impacts borrowers and the banks differently. The banks have in recent times reacted differently to changes in policy rate and base rate, fees and commissions (Santomero, 1984). There are arguments that lending rates are high and scare away borrowers and other investors. Banks also argue that operational cost and cost of providing efficient services are exorbitant, and there need to recover these costs, in order to stay in business. Thus the total revenue must be greater than the total cost (Van de Heuvel, 2000; 2002). Borrowing and output by bank and dependent firms, often decrease more than the borrowing and output by firms with access to public debt market (Gertler and Gilchrist, 1994). Banking Act 2004 (Act 673) emphasize that, every bank is built to create awareness to the customer on the amount of charges made; either in real values or percentages, as well as interest to be debited on borrowers account's 14 days in advance. The full list of charges and lending rates are to be displayed at bank's branch offices or must be provided to customer on demand. The main channels that influence banks' interest rates include loan and deposit demand (Kashyap et al 1993; Melitz and Pardue, 1973; Friedman and Kuttner, 1993 and Hoggson and Sanders, 1981) and high volatility of the money market rate(s) (Ho and Saunders, 1981; Zarfar et al., 2008).

### **Interest Rates, Inflation, and the Policy rates**

Interest rates are the price for borrowing money and can move up or down; reflecting many factors including: the supply of funds, availability of loans from lenders, and the demand, from borrowers (Hoggson and Sanders, 1981). Interest rate is a mechanism that transmits central bank policy actions to the real sector and allows the central bank to steer the economy in the desired direction (Medina et al., 2011). Channels of transmission, its strength and speed determine the effectiveness of monetary policy. These depend on a host of factors including: macroeconomic conditions, financial market structure, development, and the regulatory framework (Kwakye 2010a). Monetary policy changes directly influence bank interest rates as the Central Bank controls certain types of short-term interest rates and these influence the stock and bond markets, as well as mortgage and other interest rates (Ho and Sanders, 1981; Lown, and Peristiani, 1996; Lummer, and McConnell,

1989 and Houston and James, 1995). A low interest rate implies that firms can borrow money to invest in their capital stock and pay less interest for it as business runs on credit, and banks borrow on daily basis from each other or their central bank. Therefore, lowering the interest encourages economic growth (Towbin and Weber, 2011). Bank stocks have been hurt recently by investor fears that higher interest rates would hurt earnings (Hansell, 1993). When interest rates are influenced as a result of changes in monetary policy or general economic conditions, commercial banks usually encounter a comparative change in the rate of their return on assets. This occurs because banks hold many assets of relatively short maturity, and the rates booked on short-period loans fluctuate quickly when interest rates fluctuate (Rasiah, 2010). The determinants of interest rates are real risk-free rate, inflation premium, default risk premium, default risk Premium and opportunity costs (<http://www.thetradercentral.com/2011/09/determinant-s-interest-rates/>). Despite the expected increase in competition in the short term lending space, implementation of the base rate system is unlikely to have a significant impact on banks interest spreads, because banks have flexibility to control other loan pricing elements, tenor and credit risk premiums and product specific operating costs, which provide the banks with some cushion to protect their interest spreads (Bihari, 2011).

The actual rate that borrowers and lenders receive on the market will depend on (perceived) credit risk, maturity, interest rate that is charged by the central bank on loans, advances to control money supply in the economy and the banking sector, and is done on a quarterly basis to control inflation and stabilize the country's exchange rates (Bank of Zambia, 2010). A fluctuation in bank rates triggers a ripple-effect; as it impacts on every sphere of a country's economy. Governments also borrow; if they spend more than rise in taxes to finance their programs through "deficit financing". A high level of government expenditure and borrowing makes it hard for companies and individuals to borrow, and thus "crowding out" effect occurs. Inflation affects investors; they want to preserve the "purchasing power" of their money. If inflation is high and risks going higher, investors will need a higher interest rate to consider lending their money for more than the shortest term (Scot, 2009). As inflation drops, investors demand lower rates as their expectations become lower (Huybens and Smith, 1999). The policy rate changes to take into account the changes in inflation. Changes in the "monetary policy" make interest rates lower or higher, and if the supply of money is lowered, this "tightens" monetary policy and causes interest rates to rise (Zarfar et al., 2008). Governments alter "money supply" to try and manage the economy, which is subject to shocks and can cause unnecessary uncertainty, especially, when inflation stays above target. The MPC's aim would be to steer interest rates; so that inflation can be

brought back to target within a reasonable period of time without creating undue instability in the economy (De Gregario and Sturzenegger, 1997). The acts and policies of the central bank have an important effect on the interest rate and the funds available to borrowers. While central bank does not have the power to set interest rates in general, it has control of the discount rate. And changes in the discount rate can influence other markets rates. Another monetary policy tool the Central Bank has is the power to change reserve requirements. When reserve requirements are increased, banks are required to keep more reserves and therefore, have less money available to lend out; by altering the availability of credit, interest rates may be affected. The Central Bank can also strongly influence market interest rates through its open market operations. Open market interest operations have a direct impact to the market rates of government securities, which in turn, impact other rates. This open market operations change the level of reserves available to the banking system and this directly affect the amount of money banks' have not lend out and rate on loans. Open market sale of securities by the Central Bank tends to increase rates on Government securities. This reduces the amount of reserves in the banking system; as with fewer reserves, banks have less money available and there is the tendency to raise loan rates. The total effect of such policy action is therefore, a reduction in money and credit availability and upward pressure on market interest rates (Leisenring, 1980).

### **Management of earnings in banks**

Loan loss provisions are an expense item on the income statement, reflecting management's current assessment of the likely level of future losses from defaults on outstanding loans. The recording of loan loss has the provision of reducing net income. Commercial bank regulators view accumulated loan loss provisions; the loan loss allowance account on the balance sheet, as a type of capital that can be used to absorb losses. A higher loan loss allowance balance, allows the bank to absorb greater unexpected losses without declining. Symmetrically, if the loan loss allowance is less than expected loss, the bank's capital ratio will overstate its ability to sustain unexpected losses (Ahmed et al., 1998). Consistent with their goal of maintaining profit and safety of banks, commercial bank regulators encourage a loan loss allowance balance greater than expected loss. This implies that bank managers, should overestimate loan losses beyond expected values during good times to build a safety cushion to carry them through bad times. However, inflating loan loss provisions in this manner reduces reported net income, and thus measured back performance. When manager's compensation is based on reported profitability, they are understandably reluctant to adhere to regulators preference that builds their loan

loss allowances. This tension inevitably influences bank's treatment of its loan loss provisions (Beaver and Engel, 1996).

Commercial banks appear to manage earnings through the realization of security gains and losses (Beatty et al, 1995; 2002). Security gains and losses are relatively unregulated and unaudited discretionary choices. It is unlikely that auditors, regulators, or shareholders will be uneasy with a manager's decision to sell an investment security that happens to increase or decrease earnings. Realized security gains or losses represent a second way that management can smooth or otherwise manage earnings (Humphries, 2012). Banks use both loan loss provisions and securities gains and losses to manage earnings and capital levels. Scholes et al., (1990) found that capital positions play a role in banks' willingness to realize gains on bonds, while Collins et al., (1995) agree with the opposite conclusion. Whalen (1994) shows that managers increase discretionary loan loss provisions when they expect future cash flows to increase, while Beatty et al., (2002) find that public banks are more likely than private ones to use loan loss provisions, and realize securities gains and losses to eliminate small earnings decreases. Both loan loss provisions as well as the realization of securities gains and losses appear to be opportunistically used to manage earnings. Earnings management may be used to discreetly smooth earnings over time; as one drastic earnings decline after hiding a series of smaller declines in previous years (Demski, 1998; Arya et al., 1998) - a pattern consistent with infrequent but large stock market declines.

## **MATERIAL AND METHODS**

### **Data**

The data for this study was mainly quantitative of 3 monthly Bank of Ghana Prime (Policy) rate obtained from Bank of Ghana Research Department, and 3 monthly interest rates also obtained from the selected commercial banks in Ghana. The sample period spans 21<sup>st</sup> November, 2007 - 15<sup>th</sup> December, 2011 consisting 49 samples. The data collected was treated statistically. The strength of association between prime rate, interest rates and inflation was tested using regression analysis model as indicated below.

### **Models**

The study was a descriptive cross sectional that maximizes control over factors that could interfere with the validity of findings (Burns and Grove, 2001). This guided the planning and the implementation of the study; in order to achieve the intended objective. This is the overall plan for obtaining answers to the research questions raised, and helped in the

**Table 1.** Regression results of inflation and Policy rate on Barclays bank’s lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.08421	0.383263	0.22
Inflation rate	0.93059**	0.235601	3.95
-cons	9.493832	3.177642	2.99

Prob> F= 0.0000; R- squared= 0.8331; outcome = Barclays bank lending rate  
 Source: Researchers Computation, 2013.

testing of the hypothesis (Polit and Hunglar, 1995). Based on the theoretical and empirical literature reviewed, this study hypothesizes the model between Lending rate, inflation rate and policy rate, as follows:

$$LENR = f(INFR, PLR) \tag{1}$$

Where *LENR* is Lending rate, *f* = function, *INFR* = Inflation rate and *PLR* = Central Bank rate.

The data collected were analyzed using STATA 11 software, and the linear regression was run based on the models below:

$$Y_n = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_n X_{in} + e_L \tag{2}$$

Where  $Y_n$  is the dependent variable for n observations,  $\beta_0$  is constant,  $\beta_1$  and  $\beta_2$  are the sensitivity of the variables to stock market returns and  $e_L$  is a stationary error correction term.

The dependent variable for the study was lending rate (LENDR) of commercial banking institution, and the independent variables studied were inflation rate (INFR) and policy rate (PLR) for the periods 2007 to 2011. Substituting the dependent and the independent variables in the regression model (2) above, the model for the study then becomes:

$$LENDR_n = \beta_0 + \beta_1 INFR + \beta_2 PLR + e_L \tag{3}$$

The four questions which guided the study were (1) to what extent does the Central Bank’s influence commercial banking institution lending rate? (2) What is the strength of relationship between interest rate, policy rate and inflation? (3) What is the volatility of policy rate, interest and inflation? (4) How is policy rate and interest rates determined by central and commercial bank?

To find answers to these questions Regression analysis was done. The data used has 3 monthly frequencies and the sample runs from 21st November, 2002 - 15th February, 2012.

The hypothesis was formulated based on the model above as follows:

$H_0$ : Central bank’s policy rate does not impact on lending rate the lending rate of commercial banks in Ghana.

The alternate hypothesis  $H_1$ : Central bank’s policy rate does impact on the lending rate of commercial banks in Ghana.

## METHODS

The study was conducted among licensed commercial banks in Ghana. Simple random sample was used to select ten banks for the study. In all there are twenty eight licensed commercial banks in Ghana, and ten banks were randomly sampled. The commercial banks sampled for the study are: Ecobank, Standard Chartered Bank (Gh), Ghana Commercial Bank, Home Financing Company, Merchant Bank, CAL Bank, Barclays Bank (Gh), Prudential Bank, Stanbic Bank and Agricultural Development Bank. The study was based on both primary and secondary data. In addition, interviews were conducted to obtain lending rates of the selected banks. Data collected were checked to ensure completeness, and coded and entered in Statistical Package for the Social Sciences (SPSS), and transferred into STATA 11 software for the actual analysis. This was used to test the strength of association between the policy rate, interest rate and inflation. Descriptive statistics in the form of graphs and frequency tables were carried out using SPSS and they are presented below with subsequent relevant discussions.

## RESULTS

### Analysis of results

Table 1 illustrates a regression analysis of size effect of inflation and policy rate on lending rate of Barclays Bank. The regression model gave Mc Fadden R-squared of about 0.83, which implies that all the explanatory variables included in the model are able to explain about 83 % of the influence of Barclays Bank’s lending rate. The Log likelihood ratio (LR) statistics is significant at one %. This means that both inflation rate and policy rate jointly

**Table 2.** Regression results of inflation and Policy rate on CAL bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.136965	0.383263	0.23
Inflation rate	0.462525	0.362361	1.28
-cons	16.184412**	3.177642	0.004

Prob> F= 0.0147; R- squared= 0.3911; outcome = CAL lending rate  
Source: Researchers Computation, 2013.

**Table 3.** Regression results of inflation and Policy rate on Stanbic bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.405339	0.49358	0.82
Inflation rate	0.628782	0.235601	3.95
-cons	9.509044**	3.177643	2.99

Prob> F= 0.0000; R- squared= 0.7704; Outcome = Stanbic bank lending rate  
Source: Researchers Computation, 2013.

**Table 4.** Regression results of inflation and Policy rate on Standard Chartered bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.56646	0.37823	1.50
Inflation rate	0.52101**	0.23250	2.24
-cons	7.91875	3.13591	2.53

Prob> F= 0.0000; R- squared= 0.7938; Outcome = Standard Chartered bank lending rate  
Source: Researchers Computation, 2013.

influence the lending rate of Barclays Bank. With the inflation rate being constant, the lending rate is predicted to increase by 0.0845 per unit increase in the policy rate of the Central Bank. While policy rate is constant, the bank's lending rate increase by 0.931; with a unit increase in inflation rate. When both inflation rate and policy rate is zero, the lending rate of Barclays' stands at approximately 9.5%.

Table 2 shows regression results of CAL Bank's lending rate. It could be seen that both policy rate inflation did not perform significantly on the lending rate of CAL Bank. Mc Fadden R-squared is 3.9. This means that the explanatory variables were able to explain 39% of the strength of correlation with the lending rate. When both the Policy rate and the inflation rate is at zero, the lending rate of CAL Bank stood at 16.18% with ( $P < 0.01$ ). This is much higher than the rate recorded for Barclays Bank (Table 1.)

The regression analysis result of Stanbic Bank is summarized in Table 3. The regression analysis shows that the joint effect of the policy rate and the inflation on the lending rate is significant with ( $P > F = 0.000$ ). When both policy rate and inflation are kept at zero the lending rate of Stanbic Bank is 9.51%.

Table 4 summarized the regression results of influence of policy rate and inflation on the lending rate of the bank. Almost similar coefficients were recorded for both policy rate (0.566) and inflation (0521). The lending rate was predicted to increase significantly by 0.52, with 1% increase in the Central Bank's policy rate and inflation rate kept constant. The lending rate of Standard Chartered Bank with both inflation and policy rate kept zero was 7.9%, with P-value less than 0.05 ( $P < 0.05$ ).

Table 5 illustrates the regression output of Ghana Commercial bank. It could be seen that what has been reported earlier on other banks discussed above was not very different. When policy rate and inflation were kept at zero, both variables were not statistically different from zero. However, the lending rate of Ghana Commercial Bank was predicted to be 6.51%. The regression model summarized in Table 6 shows the joint effect of policy rate and inflation rate on lending rate of Ecobank Ghana Limited. The lending rate stood at 12.25%; when the both the policy rate and inflation were kept zero. Nevertheless, the effects of the policy rate and inflation rate on lending rate were not significantly different from zero.

Table 7 shows the effect of policy rate and inflation

**Table 5.** Regression results of inflation and Policy rate on Ghana Commercial bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.697048	0.34984	1.99
Inflation rate	0.429491	0.215059	2.00
-cons	6.514341**	2.9005	2.25

Prob> F= 0.0000; R- squared= 0.89139; Outcome = Ghana Commercial bank lending rate  
 Source: Researchers Computation, 2013.

**Table 6.** Regression results of inflation and Policy rate on Ecobank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.276295	0.519656	0.592
Inflation rate	0.542250	0.319446	1.70
-cons	12.24723**	3.177642	2.84

Prob> F= 0.0006; R- squared= 0.5810; Outcome = Ecobank lending rate  
 Source: Researchers Computation, 2013.

**Table 7.** Regression results of inflation and Policy rate on Agric. Dev. bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.355922	0.394724	0.901
Inflation rate	0.601977**	0.235601	2.483
-cons	8.755181	3.27259	2.683

Prob> F= 0.0000; R- squared= 0.7609; Outcome = Agric. Dev. bank lending rate  
 Source: Researchers Computation, 2013.

**Table 8.** Regression results of inflation and Policy rate on HFC bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	-0.1591879	0.5298723	-0.301
Inflation rate	0.7235293*	0.3257259	2.219
-cons	18.299592**	4.3931779	4.173

Prob> F= 0.0017; R- squared= 0.526683; Outcome = HFC bank lending rate  
 Source: Researchers Computation, 2013.

rate of Agricultural Development Bank. The explanatory variables showed about 76% of the influence of Agric. Dev. Bank's lending rate. The log likelihood ratio (LR) statistics is significant at 1%. This implies that both the inflation and policy rate jointly influence the lending rate of Agricultural Development Bank. When inflation is kept constant, the lending rate of ADB increased by 0.6; with unit increase in inflation rate. From Table 7 the lending was 8.75 when

inflation and policy rate were kept at zero. Compared to other studied banks, the lending rate of the ADB was the lowest.

Table 8 is an illustration of regression analysis of HFC Bank. Contrary to the analysis of regression reported, the policy rate shows negative coefficient on the lending rate of HFC. From the Table 8 above, a unit increase in the policy rate of the Central Bank predicted a 0.16 decrease in

**Table 9.** Regression results of inflation and Policy rate on NIB bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.1832601	0.583471	0.309
Inflation rate	0.4248792	0.358674	1.179
-cons	15.9614991**	4.837579	3.329

Prob> F= 0.01580; R- squared= 0.38609; Outcome =NIB bank lending rate  
Source: Researchers Computation, 2013

**Table 10.** Regression results of inflation and Policy rate on Merchant bank's lending rate.

Independent Variables	Coefficients	S.E	t-statistics
Policy rate	0.171354	0.6161758	0.279
Inflation rate	0.439776	0.3787791	1.162
-cons	16.09012	5.108729	3.152

Prob> F= 0.02040; R- squared= 0.3697; Outcome = Merchant bank lending rate  
Source: Researchers Computation, 2013.

lending rate of HFC Bank. However, this was not statistically significant. The lending rate was significantly increased by 0.723% with ( $P < 0.05$ ); with a unit increase in the inflation rate when the policy rate was held constant.

Table 9 shows the regression analysis for NIB Bank. The standard error showed 58.3471% coefficient for policy rate, and 18.326% regression coefficient; confirming the non-significant relationship between the policy rate and the lending rate of the bank. When the policy rate and the inflation rate were kept zero, the lending rate stood at 8.749%. The regression analysis of Merchant Bank is shown in Table 10. From Table 10, the McFadden R-squared is 36.97% (0.37) and the explanatory variables - policy rate and inflation rate- were able to explain 39% of the strength of correlation with the lending rate. However, the policy rate and the inflation rate had no significant effect on the bank's lending rate. Keeping policy rate constant, the lending rate stood at 16.09%.

Table 11 illustrates the prediction of the extent of the effect of the Central Bank's policy rate on commercial bank's lending rate. As can be seen from Table 11, a unit increase in the policy rate of the Central Bank has significantly positive influence on the lending rate of most of the commercial banks studied. Comparatively, Barclays Bank has a higher coefficient of policy rate. With a unit increase in the policy rate of the Central Bank, the lending rate of Barclays Bank is predicted to increase significantly by approximately 1.44% ( $p > 0.01$ ). With the policy rate standing at zero, the lending rate of Barclays Bank was predicted to be 2.15% approximately. At CAL Bank, a significant increase of less than one (0.808%;  $p > 0.01$ ) was predicted with 1% increase in the policy rate of the Central Bank. However, with the policy rate at zero, the lending rate

of CAL Bank was predicted to stand at 12.53%, which was much higher compared to the value recorded for Barclays bank.

Standard Chartered Bank, Stanbic Bank and Ghana Commercial Bank had similar coefficients for policy rate in the regression analysis; with all being statistically significantly different from zero. The lending rates of the three commercial banks were predicted to increase significantly by approximately 1.32% with a unit increase in the policy rate of the Central Bank. With policy rate kept at zero, the lending rates of Standard Chartered, Stanbic and Ghana Commercial Banks were approximately 3.81%, 4.55% and 3.12% respectively, although these were not statistically significant. Merchant Bank and NIB Bank both reported similar prediction of lending rate per unit increase in the Central Bank policy rate. As shown in Table 11, both banks recorded an approximate increase of 0.81% with a 1% increase over the Central Bank's policy rate and a lending rate of approximately 12.6%, when the policy rate of central bank is kept at zero. The lending rate of the Agricultural Development Bank, also increased by 1.23% when the Central Bank policy rate increased by 1%. The rate however, stayed at 4% with the Central Bank policy rate kept at zero.

Table 12 presents a summary of responses of key factors considered by commercial banking institutions in Ghana in the base lending rate decision making process. From the table, the most common factors considered in the setting process include the Treasury bill rate which gives 100% as cited by all the banks studied as well as the processing loan which also shows 100%. On government bond rate, the respondents explained that the bond rate has direct relation with interest. They explain further that this the

**Table 11.** The effect of Policy rate on selected commercial bank’s lending rate

Bank	Coefficient	Standard Error	t- statistics
GCB	1.32092**	0.170057	7.773
-cons	3.12482	2.53994	1.230
Barclays bank	1.435757**	0.232191	6.181
-cons	2.149637	3.46796	0.622
ADB bank	1.23030*	0.2153	6.103
-cons	4.00441	3.01004	1.334
HFC	0.891818**	0.263306	3.393
-cons	12.58952**	3.932691	3.201
Merchant bank	0.81015*	0.280042	2.891
-cons	12.61962**	4.182691	3.023
Ecobank	1.063963**	0.245849	4.33
-cons	7.968191*	0.671901	2.173
Stanbic	1.387651**	0.2416704	5.46
-cons	4.546732	0.6095412	1.26
CAL bank	0.8088284**	0.2699412	3.001
-cons	12.534641**	4.0331949	3.112
Stanchart	1.323214**	0.188326	1.03
-cons	3.806931	2.812801	1.362
NIB bank	0.8054492**	0.2655802	3.011
-cons	2.6083704***	3.9666321	3.181

Source: Research Computation, 2013.

**Table 12.** Determinants of Lending Rate among Commercial Banking Institutions.

Variables	Frequency	Percentage
Treasury bill/Bond	10	100
Competitors base rate	6	60
Non-performing loans levels	8	80
Demand for credit facilities	8	80
Operating cost	10	100
Inflation	6	60
Deposit cost	5	50
Expected return on equity	6	60
Taxation	4	40
Future interest rates	6	60
GDP	5	50

Source: Researchers Computation, 2013.

interest government pays for borrowing from the public as a result the public will prefer to lend to government if the rate goes up rather than the banks.

According to the respondents the ranking of factors are depended on the profit motive of the banks’. But the survey results indicated that only 60% of the banks consider economic conditions. Again, 80% of the banks’ studied considered the demand of credit facilities by public and non-performing loans. The non-performing loans are then pass on to the customers through lending and this increases the base lending rate. Concerning competitors base rates, the respondents explained that banks’ price their loans by

considering that of their competitors so as not to lose their customers to their competitors. From the table, other factors cited includes taxation (40%), future interest rates (60%) and GDP (50%).

**The volatility of policy rate, Inflation and Interest rate**

The volatility of the Central Bank Policy rate, interest rate and inflation determines the stability of market and level of confidence investors have in the market. Volatility in the money market is influenced by a number of factors like: the risk of perception of financial actors, interest rate and

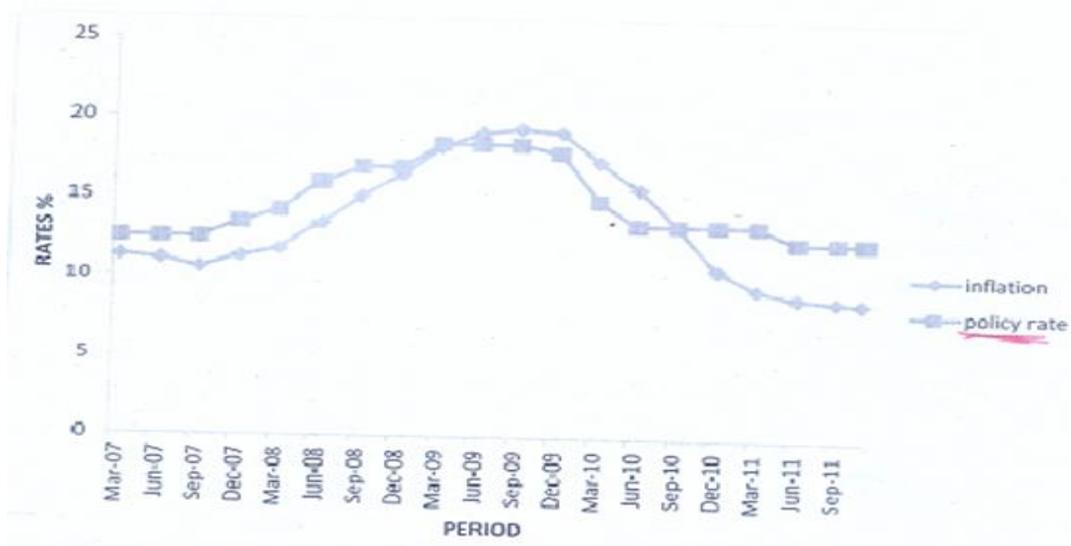


Figure 1: Volatility of inflation and Policy rate

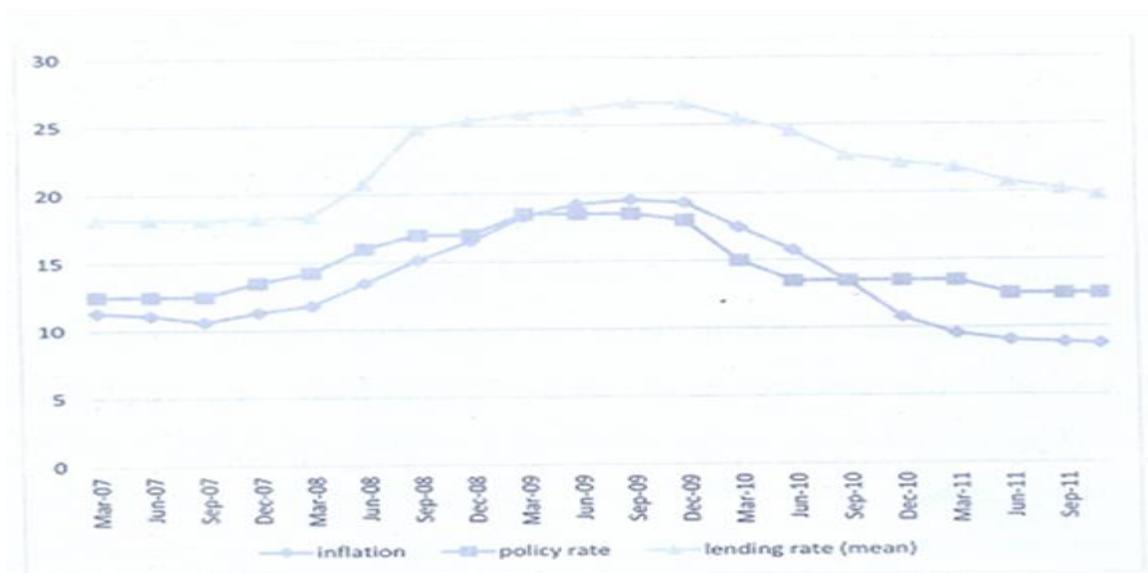


Figure 2: Volatility between Policy rate, Interest rate and Inflation.

inflation. The graphic display of inflation and policy rate showed high and low volatility at certain points and maintains constant volatility towards the end of 2011. Figure 1 shows the policy rate and inflation of the Central Bank of Ghana, and it exhibited some uniformity in terms of changes in volatility, which is the movement of the curves. Inflation rate maintained a steady movement up to the first quarter of 2008 and rose steadily up to the middle 2008. Similarly policy rate of the Central Bank showed steady increase in volatility up to the first quarter of 2008 and

remain steady before showing a sharp decrease in volatility in December 2010. Both policy rate and inflation depicted constant volatility towards September 2011. Value of the Central Bank and inflation lending rate can be seen in Figure 2. The movement of curves for the policy rate of the Central Bank, inflation and lending rates are similar. However, the line for lending rate increased volatility towards the close of 2008 with the policy rate increasing steadily. This increases in commercial banks lending rate with a slight increase in policy rate of central bank. The

shape of the inflation rate was similar to the lending rate ; indicating a much symmetric relationship between inflation and lending rate

## DISCUSSION OF FINDINGS

The study sought to examine the impact of central bank policy rate on lending rates of commercial banking institutions in Ghana between the periods March 2007 to December 2011. It further explored the influence of inflation on lending rates. The hypothesis was formulated as follows:

$H_0$ : Central Bank's policy rate does not impact on lending rate of commercial banks in Ghana.

The alternate hypothesis  $H_1$ : Central Bank's policy rate does impact on the lending rate of commercial banks in Ghana.

### The Volatility of Policy rate, inflation and lending rate

The volatility of policy rate, inflation and lending rate from 2007 to 2011, showed that inflation and policy rate exhibited, increased volatility from the middle of 2008 and steadily decreased rate towards the end of 2011. The trend analysis of interest rates among commercial banking institution depicted fluctuation at certain times with steady movements up to March 2008, before increasing sharply till November 2008, though there were slight differences among the banking institutions studied.

### The joint impact of inflation and policy rate on lending rate

The study revealed that banks lending rates are affected by the Central Bank's policy rate and inflation. There was a positive significant association between the lending rates of the banks under review, and the policy rates over the period under review. Again, the results indicated positive relationship between money supply and bank's credit. Standard Chartered Bank, Stanbic Bank, Barclays Bank, Ecobank and ADB showed an increase of more than 1% with a unit increase in the policy rate. Whiles NIB, HFC, Merchant and CAL banks showed less than 1% increase in lending rate with a unit increase in Central bank policy rate. This means that bank lending rate may respond to a tightening of monetary policy, and an increase in money supply into the system by the Central Bank induces banks to increase their credit portfolios. Regression analysis was used to test this relationship, and the joint influence of inflation and policy rate on lending rate. The results showed a statistically positive significant influence of policy rate on lending rate in the single model and the joint influence of inflation and policy rate on lending rates of the various studied commercial banking institution. However, an inverse relationship was observed between policy rate And lending rate at HFC Bank. It can be said that, bank's

lending behaviours respond to a tightening of monetary policy and it's significantly influenced by the country's economic activities and money supply (Amidu, 2006). The study outcome indicates a rejection of the null hypothesis and acceptance of the research hypothesis. Thus, a reduction in the prime rate will reduce to some extend the lending rate and enhance access to credit facilities; among individuals and firms. Ensuring strict monetary policies to keep inflations at check and further beat down policy rate, should be the major priority of the government of the day to minimize cost of borrowing at the commercial banking institutions.

### Other determinants of lending rates among the banking institutions in Ghana

The result of the study specified that factors like Treasury bill rate, the processing cost, non-performing loans, cost of funds, expected return on equity, competitors base rates, taxation, future interest rates, as well as demand for credit facilities by individuals and organizations, all have effects on lending rates of the studied banks.

## Conclusion

The study analyzed the policy rate on the lending rate in Ghana, using a variety of data sources. There is a relatively strong short-term response from changes in the policy rate to the wholesale market interest rates (inter-bank and Treasury bill). About one-half of the change in the policy interest rate is reflected in the wholesale market interest rates with a month lag. The long-term responses in the wholesale inter-bank market interest rate are protracted, weakening the effectiveness of Bank of Ghana's monetary policy implementation. Significant deviations from the policy rate, suggest that the policy rate may not always provide an accurate indication of the monetary policy committee stance. This has implications for monetary policy effectiveness and central bank's ability to communicate its policies to the public. Regarding retail interest rate adjustment, the study utilizes a unique bank-specific data set to gain insight into banks' behaviour in the deposit and loan markets. The estimation results show that banks' retail interest rates adjust to changes in the wholesale market interest rates, but the speed is rather slow and the adjustment is incomplete in the long run. The analysis suggests that deposit and lending rates would reflect changes in the underlying market and policy interest rates but only after a considerable period of time; a reason why lending rates in Ghana have stayed above their levels in 2010 after a considerable monetary policy decisions undertaken by the Central Bank.

The results offer a piece of evidence for the debate over the existence of a bank lending channel for monetary policy.

The bank lending channel combines the intuition that some borrowers face high information costs in external financing with the assumption that these borrowers depend on banks for external financing (Sorensen and Werner, 2006). Convincing evidence for the bank lending channel must show that bank decisions affect the cost of borrowing (Saxegaard, 2006). High cost of borrowing has been a source of distress to individual and organizations in Ghana who have been raising concerns on the reluctance of commercial banking institutions to lower their lending rates upon decrease in Central bank's policy rate. The high level of interest rate in Ghana continues to be a source of worry. Though some measure of macroeconomic stability has been achieved, interest rates have exceptionally downward rigidity. Inflexible high bank lending rates inhibits investment and economic growth and development. While high bank lending rates may have been the focus of attention, the study recognizes that there are several interest rates that are determined in several segments of the financial system. Among them are the Policy Rate, inter-bank rate(s), government securities rates and banks' lending and deposit rates (Reinhart and Rogoff, 2004). High financing needs of the government often lead to heavy reliance on government bonds as a steady source of profits for the banks, thus undermining competition between banks over private customers. Easing may have to do with other factors that are at work in the adjustment process. These could include uncertainty about the future choice of macroeconomic policies, while the current high levels of problem loans are well above their earlier levels, which would impose a cost to banks. Bernanke and Gertler (1995), and Hubarrd (1995) review alternative transmission mechanisms of monetary policy.

## RECOMMENDATIONS

Based on the outcome of the study, the following recommendations are made to the government, the Bank of Ghana and commercial banks in Ghana. Realizing the impact of monetary control measures on lending rates and its consequential effect on borrowers, MPC should improve efforts in keeping inflation and policy rates at the barest minimum without creating undue instability in the economy. They should also establish measures to compel the commercial banks to adjust its lending rates in accordance with changes in policy rates. The Central Bank can reduce the mandatory primary reserves ratio to help banks reduce their cost and hence the interest, boost patronage of Credit Reference Bureau (CRB) by compelling the banks to subscribe to CRB rather than make it voluntary. Finally, the Central Bank and government must keep their borrowing within statutory limit. Government must reduce its domestic debt arrears to banks and help reduce their NPLs. Commercial banks must manage their

internal inefficiencies. High operating cost of commercial banks must be reduced hence the interest rates, outrageous charges and fees in granting credit by the commercial banks must be reduced.

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