Fiscal Policy and Lending Rate Nexus in Ghana

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Abstract

This paper examines the macroeconomic effects of fiscal policy on retail interest rate in Ghana using the Autoregressive Distributed Lags model. A database of annual data on fiscal variables and lending rates for the period 1970 – 2013 are constructed largely from the World Bank Indicators and International Financial Statistics. Our findings show evidence of contemporaneous effects from fiscal spending to interest rate. Specifically, we show that fiscal deficit induces a sizable and robust effect on the retail interest rate in the short run, but contrary in the long run. We also find that government investment, exchange rate and the yields on government short-term treasury instruments have simultaneous effects on the downward stickiness of the retail interest rate.

Keywords: Ghana; Fiscal policy; ARDL; Cointegration; Interest rate; Exchange rate

1. Introduction

The lack of consensus in the economic literature on the effects of fiscal policy in the case of developing economies suggests that empirical investigation in this area has still a very important role to play. The issue is particularly important for Sub-Saharan African economies, where fiscal policy is mostly relied on to propel economic growth. A retrospective look at the post-liberalization economies of these markets show evidence of greater fiscal policy dominance with little monetary policy impetus. The dominance which partly trickles down to interest rates through domestic borrowing has had serious implication capital accumulation and growth. Given the need for governments in developing economies to bridge their financing gaps with domestic debts, the macroeconomic implications of these policies are ultimately to affect investment and aggregate demand.

Though, interest rate remains a robust price signaling tool that underlie inflation targeting (IT) framework, its stability and sustainability has become a policy concern for the business cycle in most developing economies. Cost of capital has largely remained very volatile in many developing economies. For instance, the retail interest rate in Ghana has been in excess of 20% for more than two decades mostly exacerbated by the distortions from price controls. The pre-liberalization repressive price control regime retarded growth of private investment, discouraged savings culture and inhibited financial development. Credit channels from state-owned financial institutions were concentrated in 'unproductive sectors' through a policy mix of selective credit controls and interest rate ceiling (Aryeetey, Asante, Kyei, & Gockel, 1990; Bawumia, 2010). This sub-optimal credit allocation policy regime which existed before the liberalization was likened to the financial repression in McKinnon (1973) and Shaw (1973). The post-liberalization is also seeing the government exhibit certain characteristics in terms of its borrowing which is pushing the economy closer to its pre-liberalization periods. Distortion in the lending structure from the high domestic public borrowing continue to choke off the private sector. The high interest rates is therefore widening the interdependence between the demand and the supply of investment capital to the private sector, as high levels of investment capital flow to the government. The major problem is how to reduce the already high interest rate whiles pursuing a policy of disinflation through limited fiscal spending. This issue has been the underlying motivation for this study. Specifically, this study empirically tests whether fiscal policy dominance over the decades has contributed to the persistence of high retail interest rates in Ghana. Such knowledge would be essential for major policy directions geared towards streamlining fiscal policy. In particular, the knowledge about the size of the pass-through effect of the fiscal policy variables on the lending rate are very important in assessing the importance of the credit channel in monetary policy transmission. The study also provides necessary information on what factors underlie the high interest rate regime in Ghana and how to influence these factors in order to reverse the economy to a path of low interest rate regime. In light of these, the present paper addresses the existing empirical gaps by extending the literature on developing economies, from the perspective of Ghana, a sub-Saharan African country. The rest of the paper is structured as follows:

The next section provides a brief survey of related literature followed by a discussion of the model, data and the estimation strategy. The results are then presented and analysed, after which we provide the summary of results and concluding remarks.

2. Literature Review

Theoretically, fiscal deficit and interest rate contagion have assumed importance through mainstream economic policies in both advanced and emerging economies. Given the growing global financial market integration, it is assumed that the macroeconomic effects of rising interest rate due to fiscal slippages could spread globally; which may lead to crowding out of the interest-sensitive components of private spending (Correia-Nunes and Stemitsiotis 1995; Chakraborty 2007). To examine the fiscal deficit – interest rate nexus, the Neoclassical, Keynesian and Ricardian Equivalence theories have been used (e.g Evans 1985; Oost and Gidlow 2002; Woodford 2003; Chakraborty 2007; Galí 2013). The Neoclassical theory assumes that a rise in deficit may lead to an increase in the interest rate on the loan market, which in turn would crowd out private investment. This led to the rejection of Keynesian deficit spending policy. To affirm their policy stance, the Keynesians argued that government could provide short term stimulus to reverse economic downturns by spending borrowed private sector funds from the financial market. Nonetheless, the Keynesians contended that policymakers should be prepared to reduce government spending once the economy recovered in order to prevent inflation, which is linked to too much economic growth. Contrary, to the neoclassical, the Keynesians assumed that interest rate hikes from inflation fuel savings and capital formation. The Ricardian Equivalence theory, on the other hand, emphasises that fiscal deficits merely postpone taxes such that tax financing and debt financing of deficit have equal influence on the economy hence, neutralising the effect on interest rate (Barro 1974; Chakraborty 2007).

However, given the high level of asymmetric information in the search of investment capital, the adverse selection hypothesis emphasises that while the rigidity in interest rate may be associated with the capital bidding process, information asymmetry creates an adverse selection problem in the loan markets because high interest rates attract riskier borrowers (Marotta 2009; Greenwood-Nimmo et al. 2011). Consequently, financial institutions increase their interest rates to ration the available credit to circumvent loan defaults by riskier borrowers. The utmost effect of this situation, crowds out the private sector as the available credit is allocated to the government, who is the highest bidder on the market. Similarly, the adverse selection hypothesis suggests that interest rates become sticky downwards when government borrows from the market. In so doing, the market punishes fiscal profligacy through higher interest rates (Faini 2006). Though, it is empirically indeterminate that fiscal indiscipline increases the volatility in interest rates, empirical testing of the relationship show inconclusive results (Blanchard and Summers 1984; Ahmad 1994; Kulkarni and Erickson 1996). Ford and Laxton (1999) argue that though the factors that influence interest rates still remain obscure, rise in government spending remains the major contributor to rising interest rates. Yet, evidence from prior studies reveal that interest rate has remained irresponsive to public debt (see Barro and Sala-iMartin 1990). Cook and Yetman (2012) also conclude on an incomplete sterilisation as the cause of the rise in financial market interest rates, which reinforces the risk of excessive credit expansion. The authors reveal that the major threat to financial stability arises from an increased bank lending following credit growth and pressure from inflationary expectations. Auerbach et al., (2002) examine positive relationship between fiscal deficit and interest rate; concluding that interest rate may remain high as a result of persistent fiscal imbalances that may affect capital stock accumulation in the economy. Using data from the European Union, Faini (2006) examine that expansionary fiscal policy increases the spread and spill-over effect through the interest rate channel among fiscal policies of member countries. Similarly, Ardagna (2009) shows that long-term government bond rates fall in periods of budget consolidation and rise when the fiscal position in OECD countries deteriorates. Ducoudré (2005) also reveal that growing public debt and persistent fiscal deficits pass through to interest rates *via* inflation anticipation. This inflationary expectations from the financial market raises the existing interest rates. Gale and Orszag (2003) examine that budget deficits may raise nominal interest rates as a result of the absence of compensating foreign capital inflows to cushion supply of capital. The author further reveal that nominal interest rate may rise given the imbalance between the stocks of government debt relative to other financial assets. Thus, the 'portfolio effect', results in a higher interest rate on government bonds in order to motivate investors to hold the additional bonds. Mehra (1995) also confirm that the behaviour of nominal interest rate is significantly affected by the outlook of inflation, funds rate and the outlook of the economy but not fiscal policy, real output growth and foreign capital inflows. In India, Chakraborty (2012) examined the factors that contribute to interest rate instability, the author concludes that interest rate is influenced by changes in reserve currency, expected inflation and volatility in capital flows but not fiscal expansion.

In Ghana, empirical reviews on the determinants of interest rate are scanty except for the seminal works of Bawumia *et al.,* (2005), Aboagye *et al.,* (2008), Kwakye (2010), Sheriff and Amoako (2014). A closer look at the Ghanaian economy shows a pass-through effect from fiscal policy to the retail interest rate contrary to the monetary policy (Bawumia 2010). The rippling effect of the fiscal policy on the economy has featured in various research themes and policy debates in Ghana. It is argued that the market lending rate may adjust disproportionately to policy expectations of the government (Ford and

Laxton 1999; Loloh 2011). In their paper, Sheriff and Amoako (2014) show that fundamental macroeconomic indicators such as inflation and fiscal deficit play significant role in the high interest rate spread in Ghana. Bawumia et al., (2005) using firm and market specific factors revealed that factors including lending risk, public sector borrowing, low savings rate, inflation and exchange rate play critical role in the systemic rise of interest rate spread in Ghana. Adu and Marbuah (2011) confirm the nexus between inflation and interest rate and other macroeconomic determinants in Ghana using data from 1960 to 2009. They concluded that the positive inflation - interest rate nexus is due to the short term interest rate been a principal policy anchor in the inflation targeting framework of the central bank. Dordunoo (1994) examines that rapid exchange rate depreciation and the resultant hikes in import prices are in themselves inflationary hence cannot be ignored in explaining the changes in interest rate in Ghana. Chhibber (1991) concludes that the extent to which currency depreciation influence interest rate movement largely depends on the revenue and expenditure pattern of the government simultaneously with the monetary policy pursued by the monetary authorities. In many instances, research on fiscal policy – lending interest rate nexus among developing economies is nonexisting hence the current study seeks to fill this gap using data from Ghana.

2.1 Fiscal Policy in Ghana

Ghana's fiscal policies have continuously resulted in deficits since the 1970s after recording significant surpluses from late 1980s and early 1990's. With government revenues lagging behind, this created sustained budget deficits which were financed mainly from the banking system. In an effort to mitigate the decaying economy, Economic Recovery and Structural Adjustment Programmes were launched by the International Monetary Fund (IMF) and World Bank in 1983 (Bawumia, 2010; Loloh, 2011)[1]. The fiscal stabilization and consolidation processes adopted under the liberalisation process improved tax collection and donor support. Government spending picked up to about 14% of GDP by 1986; a level at which it stabilized until 1991. Despite these, all the fiscal gains could not be sustained due partly to the 1992 preparations for constitutional rule in 1993. The 1992 saw a 3% increase in fiscal deficit from 14% to 17% of GDP. The slippage was compounded by unanticipated decline in revenue to only 12 percent of GDP from 15 percent in 1991, a situation attributable mainly to shortfall in donor budgetary support. The fiscal imbalances that had characterized the previous elections reemerged in 2000 as the country organized its third general election since returning to constitutional rule. The fiscal problems were compounded by the collapse of commodity prices, exchange rate depreciation and worsening terms of trade coupled with significant shortfall in donor budgetary support. By this time the country's external debt position had become unsustainable above thresholds of the enhanced HIPC initiative. The period after the year 2001 saw significant fiscal policies to boost government revenue at the expense of public spending in order to achieve fiscal consolidation. The fiscal space created from the HIPC initiative occasioned the economy's progress for fiscal consolidation, bringing the budgetary deficit from a height of 8.6 percent of GDP at the end of 2000 to 2 percent of GDP at the end of 2005 (see Killick 2010; Loloh 2011). Unfortunately, the fiscal imbalances returned in 2006 as the country grappled with energy crisis that threatened to disrupt economic activity. The pace of government spending in response to the energy crisis were significantly elevated, resulting in an incongruous end of year fiscal deficit. The country's fiscal position deteriorated further in 2007 with the persistence of the energy crisis, expenditures on the country's Golden Jubilee celebrations, and preparations for the African Cup of Nations in 2008. This notwithstanding, the 2008 general elections further deepened the fiscal imbalances pushing further the budget deficit to 11.5% of GDP compared to the target of 4% percent of GDP, a primary criteria for the West African Monetary Zone (WAMZ)[2], single currency initiative. The fiscal deficit returned to its deteriorating trajectory in 2009 after the new government failed its fiscal consolidation target. The fiscal deficit rose from 9.5% to 11.1% of GDP in 2010 and 11.8% in 2012 partly due to the complete migration of salaried public workers onto the Single Spine Salary Structure (Akosah 2013). For the central bank's IT policy to promote saving, investment and economic growth, it should be effective on the movement in the economy-wide cost of capital. This is

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[1] Bawumia (2010) provides a retrospective picture of the financial reforms in Ghana after and before the Economic Recovery and Structural Adjustment Programmes. Loloh (2011) similarly provides extensive history of the fiscal policy on Ghana after the independence.

[2] The West African Monetary Zone (WAMZ) comprises Ghana, Nigeria, Sierra Leone, The Gambia, Guinea and the Republic of Guinea. It is required of the member countries to keep a fiscal deficit target below 4% of GDP to increase the expediency of the convergence for a single currency zone. This is targeted at reducing economic downturn and high inflationary pressure *via* high nominal interests, high current account imbalances and attendant exchange rate depreciation pass-through in the region.

crucial because, although the implementation of IT policy in Ghana has seen gradual fall of the previously high inflation rate, not all interest rates have responded adequately.

3. Modelling Strategy

To establish the representative interest rate - fiscal policy model, we first identify the contributing factors that can adequately explain the interest rate – fiscal policy dynamics in a developing economies perspective. Inflation, yield on government securities and currency depreciation exert significant effect on interest rate stability in developing economies (see Harvey and Cushing 2014), and from the Classical argument, demand and supply factors determine the equilibrium of interest rate in the market. In this effect, we control for the effects of household consumption, economic growth and domestic credit to private sector. In modelling the fiscal policy transmission mechanism to interest rate in Ghana, we use the Autoregressive Distributed Lag framework (ARDL). The baseline equation is specified as follows;

$$LR_t = \beta_1 + \beta_2 FD_t + \beta_3 EC_t + \beta_4 EX_t + \beta_5 INF_t + \beta_6 DCP_t + \beta_7 TBR_t + \mu \quad \dots\dots\dots \quad (1)$$

where, *LR* is the logarithm of the average commercial banks' lending interest rate; FD is fiscal deficit; *EC* is economic growth; *EX* is the nominal exchange rate of the Ghanaian cedi against the US dollar; INF is the logarithm of the annual change in the consumer price index; *DCP* is the logarithm of domestic credit to private sector; *TBR* represent the logarithm of the yield on government short term instruments (91- days Treasury bill rate), μ is the white noise error term assumed to be normally distributed. From the above stochastic model, our identification strategy for the estimable time series model follows three steps. First, we examine the order of integration of the individual series using the Phillip-Perron test. Second, we test the cointegrating relationship via the autoregressive distributed lag (ARDL) bounds test to cointegration [3] (Pesaran et al, 2001). Using equation (1) the general ARDL representation is specified as:

$$\Delta LR_t = \alpha_0 + \sum_{i=1}^{n} \emptyset_i \Delta LR_{t-i} + \sum_{i=0}^{p} \vartheta_i \Delta FD_{t-i} + \sum_{i=0}^{l} \infty_i \Delta EC_{t-i} + \sum_{i=0}^{m} \partial_i \Delta EX_{t-i} + \sum_{i=0}^{j} \mu_i \Delta INF_{t-i} + \sum_{i=0}^{x} \beth_i \Delta DCP_{t-i}$$

$$+ \sum_{i=0}^{z} \tau_i \Delta TBR_{t-i} + \lambda_1 LR_{t-1} + \lambda_2 FD_{t-1} + \lambda_3 EC_{t-1} + \lambda_4 EX_{t-1} + \lambda_5 INF_{t-1} + \lambda_6 DCP_{t-1}$$

$$+ \lambda_7 TBR_{t-1} + e_t \quad \dots\dots \quad (2)$$

where all variables are as previously defined, Δ is the difference operator and e_t is the error term. To trace the existence of cointegration, F-statistic is computed from OLS regression of equation (2). The null hypothesis of no cointegration is tested by restricting the lagged level variables equal to zero (i.e.

$\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = \lambda_7 = 0$) against the alternative hypothesis that $\lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq \lambda_6 \neq \lambda_7 \neq 0$. The bounds tests provide two asymptotic critical value bounds. The lower bound assumes variables are *I*(0) whilst the upper bound assumes *I*(1) variables. The null hypothesis of no cointegration is rejected if the computed F-statistic is greater than the upper critical value bound, otherwise the null hypothesis is not rejected. Based on equation (2) the following short run ARDL error correction model is estimated;

$$\Delta LR_t = \alpha_0 + \sum_{i=1}^{n} \emptyset_i \Delta LR_{t-i} + \sum_{i=0}^{p} \vartheta_i \Delta FD_{t-i} + \sum_{i=0}^{l} \infty_i \Delta EC_{t-i} + \sum_{i=0}^{m} \partial_i \Delta EX_{t-i} + \sum_{i=0}^{j} \mu_i \Delta INF_{t-i} + \sum_{i=0}^{x} \beth_i \Delta DCP_{t-i}$$

$$+ \sum_{i=0}^{z} \tau_i \Delta TBR_{t-i} + \delta ECT_{t-1} + \mu_t \quad \dots\dots\dots\dots\dots\dots\dots \quad (3)$$

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[3] The method is usable regardless of whether the underlying explanatory variables are integrated of order zero or one

where $\emptyset_i$, ϑ_i, ∞_i, ∂_i, μ_i, $\beth_i$ and τ_i represent the short run coefficients and δ the extent of disequilibrium correction. The optimal lag length for our estimated long run growth model is selected on the basis of the Schwarz Bayesian Information Criterion (SBIC)

3.1 Data

We use annual data covering the period from 1970 to 2013 due to data availability. The respective data are obtained from the following source; *(i)* inflation rate (INF), domestic credit to private sector (DCP), economic growth (EC) and exchange rate (EX) are obtained from the World Bank Development Indicators and International Financial Statistics (IFS) 2015. *(ii)* Average commercial bank lending interest rate (LR) of the financial sector is derived from the following sources: *(a)* Aryeetey and Gockel (1991) from 1970-1981; *(b)* Aryeetey and Baah-Boateng (2007) from 1982-2003 and *(d)* Bank of Ghana from 2004-2013. *(iii)* Fiscal deficit (FD) is collected from *(a)* Musa and Gbadebo (2005) for 1970-1978; *(c)* Africa Development Indicators 2007 CD-ROM for 1979-2005 and *(d)* Bank of Ghana Statistical Bulletins: various issues for 2006-2013; *(iv)* The treasury bill rate (TBR) is collected from Bank of Ghana's Statistical Bulletins.

4. Empirical Results and Discussions

In this section, we discuss the empirical results of the paper. First, we report the stationarity tests followed by the bounds tests. The long- and short-run multipliers are discussed last. The stationarity test (see Table 1) indicates that most of the series are non-stationary at the levels except fiscal deficit (FD), economic growth (EC) and inflation (INF) at 0.01 level. The implication of the non-stationarity are two-fold. (i) Economically, it suggests that the variables are non-mean reverting hence shocks to the series will have permanent effect. (ii) Statistically, the implication of the non-stationarity of the covariates show that there would be a higher tendency of the results being spurious when the model is estimated via ordinary least squares; except where the variables are cointegrated and the covariates are strictly exogenous. Given the mixture of I(0) and I(1) variables and the need for an estimator that will treat both endogenous and non-stationarity issues in the model, we use the ARDL approach for our estimation. The ARDL framework does not impose strict exogeneity assumptions and allows for both stationary and non-stationary regressors. It is also efficient for small sample time series analysis (Pesaran *et al.* 2001).

Table 1: Stationarity test

	Level		First Difference	
Phillip – Perron unit root test				
	Without trend	*With trend*	*Without trend*	*With trend*
FD	*-3.759****	*-3.707***	*-9.591****	*-9.518****
EX	*-0.758*	*-1.201*	*-3.694****	*-3.697****
EC	*-4.264****	*-5.835****	*-10.292****	*-10.258****
LR	*-2.481*	*-1.634*	*-7.188****	*-7.326****
DCP	*-0.757*	*-2.031*	*-6.000****	*-6.429****
TBR	*-2.497*	*-2.120*	*-7.939****	*-8.141****
INF	*-3.874****	*-4.758****	*-9.637****	*-9.965****

Note: ***, ** and * Significance at 1%, 5% and 10% levels respectively

After establishing the stationarity properties, we proceed to employ the ARDL bounds test to cointegration to determine whether or not a long run relationship exist between the lending rate and its covariates. The results of the bound tests indicate the rejection of the null hypothesis of no cointegration relationship as the value of the computed F-statistic (6.898332) is above the simulated critical values of the upper bounds at 1% level of significance. This therefore suggests the existence of a stable long run relationship between the variables in the lending rate model. Therefore, we proceed to examine the relationship between the fiscal deficit and retail interest rate. Table 2 and 3, provide summaries of the long and short-run results of the estimated model. We further estimate the dynamic ordinary least squares (DOLS) for robustness check. The results suggest that with the exception of claims on private sector, household consumption and government investment, the signs of the DOLS and ARDL are qualitatively not different from each other in terms of signs and statistical significance of the elasticities.

Table 2: Long run results of the ARDL model

Variable	ARDL	DOLS
FD	-0.0798***	-0.0517***
	[-4.5310]	[-5.8851]
EC	-0.0055*	-0.0668***
	[-1.7776]	[-9.9216]
EX	0.1052***	0.2138***
	[6.7686]	[16.3082]
INF	-0.2374***	-0.3658***
	[-3.1269]	[-6.8014]
HFC	0.7014***	-4.6039***
	[3.9908]	[-12.1158]
DCP	-0.3471***	0.1823**
	[-3.1815]	[4.1447]
TBR	0.1130	0.5130***
	[1.2911]	[13.8127]
Intercept	0.1450	24.9617***
	[0.2334]	[13.4091]

Note: ***P<0.01, **P<0.05 and *P<0.1 levels, t-statistic in parenthesis;
Model selection ARDL (1, 3, 0, 1, 1, 3, 2) based on the Schwarz Bayesian Information Criterion

Theoretically, we expect fiscal policy to have twin effects (i.e. positive and negative) on interest based on the ideologies of the neoclassical and Keynesians. To examine these effects three proxies of fiscal policy are used in this paper; fiscal deficit, government investment and claims on government. On the fiscal deficit and interest rate contagion, the results show that fiscal deficit does not induce a rise in the retail interest rate. Thus, the negative nexus between the fiscal deficit and retail interest rate confirms the declining trend of the share of debt to commercial banks in government public finance. Though, this finding buttresses evidence from Chakraborty (2012) in India, it contradicts the neoclassical implications of the effect of fiscal deficit on the economy's interest rate (see Ramey 2011; Ascari and Rankin 2013). For Ghana, the negative nexus could be aligned to the sharp rise in interest payment obligations of the government. Thus, rising cost of servicing domestic debt has inadvertently exacerbated the accumulation of more domestic debt through increased interest payments. Similarly, the case of a higher liquid reserves with the financial institutions could have resulted in the negative nexus, such that government spending, is unable to pass-through to the retail interest rates in the financial sector through output growth and inflation.

The negative relationship between the retail interest rate and economic growth imply that a percentage decrease in economic growth would increase the lending rate by about 0.01%. This outcome may be attributed to high adjustment cost on capital accumulation after economic boom. The unique nature of the result highlights that Ghana's economic growth is not pre-dominantly driven by the bank-financed manufacturing sector hence, the downward stickiness in the retail interest rate symbolizes the high risk of non-performing loans. Consistent with the results on the economic growth, we find negative relationship between inflation and the retail interest rate. Though, this finding contradicts prior studies including Fisher's inflation hypothesis, the outcome in the case of a developing economy, such as Ghana, reveals that the retail interest rate is fuelled by investment foresights amplified by low investment confidence and information asymmetry, such that the financial sector employ high interest rates to re-orient their lending decisions to the private sector. The negative inflation-retail interest rate nexus could also be explained from the standpoint of the profitable short term yields on government instruments. Thus, investors prefer to lock their capital in risk-free government securities than invest in productive activities. The positive relationship between the Treasury bill rate (91-days) and the retail interest rate reaffirms the fact that retail interest rate would remain sticky downwards so far as the government continue borrow at a higher interest rate.

The results also show positive association between household consumption and retail interest rate in the ARDL model but negative in the dynamic ordinary least squares. These elasticities mimic Runkle's (1991) findings when he examined the effect of liquidity constraints on household consumption behaviour using the permanent-income hypothesis. Since liquidity constrained households have limited access to personal financial resources to smoothen their consumption, they are compelled to borrow from the financial sector. Thus, to catch-up with the increasing demand, the banks would have to re-adjust their interest rates upward to meet the demand. The case of the Ghanaian economy, could be fuelled by the high consumption expenditures on the demand for imported goods. Since the high demand for such goods require huge capital

base to match supply, the risk associated with such investment uptakes by the private sector, may attract high interest rates when funds are borrowed through the banking system.

In line with the international Fisher effect, we establish positive and significant relationship between exchange rate and the retail interest rate. This finding suggest that the high retail interest rate is contributed partly by the depreciation of the nominal exchange rate such that the interest rate differential, reflects expected changes in the spot exchange rate between the Ghana cedi and the United State dollar. Empirically, our findings confirm evidence from Dordunoo (1994) and Chhibber (1991), all on Ghana. This contagion is implied to manifest from the rapid exchange rate depreciation which has resulted into high import prices of imported goods and services. The persistence of this nexus is mainly influenced by the scarcity of exchange rate especially the US dollar in the Ghanaian economy. Thus, the lack of direct exchange rate between the Chinese Renminbi and the Ghanaian Cedi increases the stress on the US Dollar – Cedi exchange rate hence deepening the size of the pass-through effect to the commercial banks' retail interest rates.

Table 3: Short run and error correction

	Coefficient	t-statistics	Prob.
Δ FD	0.0236	4.8296	0.0001***
Δ ln EC	-0.0046	-1.7512	0.0969*
Δ ln EX	0.0889	7.3706	0.0000***
Δ ln INF	0.0399	2.1968	0.0414**
Δ ln HFC	-0.0695	-0.4720	0.6426
Δ ln DCP	-0.1389	-1.9597	0.0657*
Δ ln TBR	0.1642	2.6564	0.0161**
ECM(-1)	-0.8452	-7.5285	0.0000***
F-statistics	8.4380[0.000]		
DW-statistics	1.9559		
Normality	0.4271[0.8077]		
Serial Correlation	1.2522[0.3124]		
Heteroskedasticity	1.0941[0.4277]		
Misspecification	2.2796[0.1346]		
CUSUM	Stable		
CUSUMQ	Stable		

Note: ***P<0.01, **P<0.05 and *P<0.1 levels, t-statistic in parenthesis;
Model selection ARDL (1, 3, 0, 1, 1, 3, 2) based on the Schwarz Bayesian Information Criterion.

The estimated model passes all the series of diagnostic tests applied to test the reliability of the model. Largely, specification tests suggest that our model does not suffer from misspecification, serial correlation, non-normality and heteroskedastic errors in the residuals. The reported F-statistic indicates a very good fit of the model, confirming its predictability. Both the CUSUM and CUSUMQ stability tests show that the estimated models are stable for the period considered. The coefficient of the error correction term (ECM-1) which measures the speed of convergence of the retail interest rate from short to long run equilibrium path, suggest that the convergence speed is corrected annually by 84.52% signifying a high speed of adjustment.

Consistent with our long run findings, we report negative association between economic growth and the retail interest rate. Similarly, the result is on the relationship between claims on the private sector and the retail interest rate is congruent with the long run findings at 10% levels of significance, respectively. Given the high level of asymmetric information that characterizes the Ghanaian economy in the search of investment capital, the adverse selection hypothesis emphasizes that while the rigidity in the retail interest rate may be associated with the capital bidding process, information asymmetry creates an adverse selection problem in the loan markets because high interest rates attract riskier borrowers (Marotta 2009; Greenwood-Nimmo et al. 2011). Consequently, financial institutions raise their interest rates to ration the available credit to circumvent loan defaults by riskier borrowers. The utmost effect of this situation, crowds out the private sector as the available credit is allocated to the government, who is the highest bidder on the market. By far, our results show that outlook of the retail interest rate in Ghana is positively influenced by changes in nominal exchange rate, Treasury bill rate and government investment, but negatively by the claims on the private sector. These results are congruent with the long run estimates. These outcomes, from the Ghanaian perspective, are influenced by the rising appetite for imported goods

which exerts significant impact on the local currency against other currencies of the country's trading partners. Aside this, government intervention through excessive public sector borrowing in the domestic market aggravates the cost of capital in the open market.

Contrary to our long run findings, we report positive association between inflation and the retail interest rate. This finding affirms Fisher's hypothesis on the inflation-interest rate nexus. Thus, forward-looking anticipation of high inflation rate in the future influences commercial banks management to raise the retail interest rate in order to cushion their assets against inflation risk. Intuitively, the positive nexus could be aligned with the high cost of production emanating from the energy crisis and wage bill that have generally contributed to a rise in the general price level. Notwithstanding, the inflation-retail interest rate nexus is further deepened by the high importation costs that significant pass-through to domestic prices as a result of the pronounced depreciation of the domestic currency. Thus, for the Bank of Ghana's IT framework to be effective and successful, inflationary expectations must be reduced significantly in the short term.

In line with prior studies (see Ford and Laxton, 1999; Ducoudré 2005; Ardagna 2009), we find short run positive pass-through effect from the fiscal deficit to the retail interest rate at 1% level. This outcome is imperative for the case of Ghana, where government short term expenditure, especially during electioneering years, are financed through loans from financial institutions (CEPA, 2015; Kwakye, 2010). This confirms evidence from Ducoudré (2005), suggesting that growth in public debt and persistent fiscal deficits pass through to interest rates *via* inflation anticipation. This inflationary expectations from the financial market worsens interest rates. Gale and Orszag (2003) examined that the positive budget deficits- retail interest rate may be caused by the absence of compensating foreign capital inflows to cushion the supply of capital to the government. Hence, such situations may force the government to borrow from the open market and in so doing crowd out the private sector as a results of high interest rate. Theoretically, the finding supports the neoclassical assertion of the effect of fiscal deficit on interest rate.

5. Concluding remarks

This paper investigated the impact of fiscal policy on retail interest rate in Ghana, using annual data from 1970 to 2013. The results show that fiscal deficit induces a rise in the retail interest rate in the short run, but contrary in the long run. Specifically, the conclusion drawn from the autoregressive distributed lags analysis suggest that exchange rate and the yield on government short term instruments (such as the 91-days Treasury bill) have positive contemporaneous impacts on the stickiness of the retail interest rate. Our findings have significant policy implications for interest rate setting in Ghana, as the central bank has kept the policy rates unchanged in all recent policy announcements, citing prime reasons being the high government borrowing. Keeping the interest rates high or unchanged generally have negative implications for private investment and economic growth. The central bank over the years has kowtowed to government fiscal policy stance by maintaining its position to raise the prime lending rate, to contain government borrowing. However, we argue that as part of policy recommendation government should re-focus its attention to employing more of long term debts to ease short-term interest rate pressure on the economy. Similarly, areas of concerns such as stabilizing the foreign exchange market should be reconsidered by policy makers to address the supply-side constraints to reduce the pass-through effect of exchange rate depreciation on sensitive market indicators which have close effects on interest rate setting in the credit or loans market.

Reference

Aboagye, A.Q.Q., S.K. Akoena, T.O. Antwi-Asare & A.F. Gockel 2008. Explaining Interest Rate Spreads in Ghana, *African Development Review*, 20 (3), 378–399.

Adu, G., & Marbuah, G. 2011. Determinants of inflation in Ghana: An empirical investigation. *South African Journal of Economics*, 79(3), 251-269.

Ahmad, M. 1994. "The Effects of Government Budget Deficits on Interest Rates: A Case Study of a Small Open Economy." *Economia Internazionale* 1(1): 1–6.

Akosah, N. K. 2013. Dynamics of Inflation and Financial Development: Empirical Evidence from Ghana. *Dynamics*, 4(15), 20-37

Ardagna, S. 2009. Financial markets' behavior around episodes of large changes in the fiscal stance. *European Economic Review, 53*(1), 37-55.

Ascari, G., & Rankin, N. 2013. The effectiveness of government debt for demand management: Sensitivity to monetary policy rules. *Journal of Economic Dynamics and Control*, 37(8), 1544-1566.

Auerbach, A. J., Gale, W. G., & Orszag, P. R. 2002. The Budget Outlook and Options for Fiscal Policy. Available at SSRN 308562.

Barro, R. J. 1974. "Are Government Bonds Net Wealth?" *Journal of Political Economy* 82 (6): 1095–1117.

Barro, R. J., & Sala-i-Martin, X. 1990. World real interest rates. In NBER Macroeconomics Annual 1990, Volume 5 (pp. 15-74). MIT Press.

Bawumia, M., 2010. Monetary Policy and Financial Sector Reform in Africa: Ghana's Experience. Combert Impressions Ghana Ltd., Accra, Ghana

Bawumia, M., Benye, M. & Ofori, M. E. 2005. The Determination of Bank Interest Spreads in Ghana: An Empirical Analysis of Panel Data, Bank of Ghana WP/MPAD/BOG-05/09, Accra, Bank of Ghana.

Blanchard, O., & Summers, L.H. 1984. Perspectives on High World Real Interest Rate, Brookings Papers in Economic Activity, 273 – 334.

Centre for Policy Analysis 2015. The Current State of the Macro Economy of Ghana 20122014. Accra: Greenhill.

Chakraborty, L. 2007. "Fiscal Deficit, Capital Formation, and Crowding Out in India: Evidence from an Asymmetric VAR Model." Working Paper No. 518. Annandale-on-Hudson, NY: The Levy Economics Institute of Bard College.

Chakraborty, L. 2012. Interest Rate Determination in India: Empirical Evidence on Fiscal Deficit– Interest Rate Linkages and Financial Crowding Out. Levy Economics Institute Working Paper No. 744. http://dx.doi.org/10.2139/ssrn.2193580

Chhibber, A. 1991. Africa's Rising Inflation: Causes, Consequences and Cures. *IMF Working Paper* No. 577

Cook, D. E., & Yetman, J. 2012. Expanding central bank balance sheets in emerging Asia: a compendium of risks and some evidence. BIS Paper, (66d).

Correia-Nunes, J., & Stemitsiotis, L. 1995. Budget deficit and interest rates: is there a link? International evidence. *Oxford bulletin of economics and statistics*, *57*(4), 425-449.

Dordunoo, C. K. 1994. The structure and policy implications of a macroeconomic model of Ghana. *World Development*, 22(8), 1243-1251.

Ducoudre, B., 2005. Fiscal Policy and Interest Rates. OFCE Working Paper No. 2005-08. Available at SSRN: http://ssrn.com/abstract=799709.

Evans, P. 1985. "Do Large Deficits Produce High Interest Rates?" *American Economic Review* 75(1): 68–87.

Gale, W. G. and P. R. Orszag. 2002. "The Economic Effects of Long-Term Fiscal Discipline." Urban-Brookings Tax Policy Center Discussion Paper. Washington, DC: UrbanBrookings Tax Policy Center

Faini, R. 2006. Fiscal policy and interest rates in Europe. *Economic Policy*, *21*(47), 444-489.

Ford, R., & Laxton, D. 1999. World public debt and real interest rates. *Oxford Review of Economic Policy*, 15(2), 77-94.

Gale, W. G., & Orszag, P. R. 2003. Economic effects of sustained budget deficits. *National Tax Journal*, 56(3), 463-485.

Galí, J. 2013. Notes for a new guide to Keynes (I): wages, aggregate demand, and employment. *Journal of the European Economic Association,* 11(5), 973-1003.

Greenwood-Nimmo, M. J., Shin, Y., Van Treeck, T., & Konjunkturforschung, D. 2011. The Asymmetric ARDL Model with Multiple Unknown Threshold Decompositions: An Application to the Phillips Curve in Canada. Mimeo.

Harvey, S. K., & Cushing, M. J. 2014. Separating Monetary and Structural Causes of Inflation. *Journal of Finance & Economics*, 2(3), 01-16.

Killick, T. 2010. Development Economics in Action, Second Edition: A Study of Economic Policies in Ghana. Routledge.

Kulkarni, K. G., & Erickson, E. L. 2011. Twin deficit revisited: evidence from India, Pakistan and Mexico. *Journal of Applied Business Research (JABR)*, *17*(2), 2076-8239. DOI: http://dx.doi.org/10.19030/jabr.v17i2.2076

Kwakye, J.K. 2010. High Interest Rates in Ghana: A Critical Analysis, IEA Monograph No. 27, Accra, The Institute of Economic Affairs.

Loloh, F. W., 2011. Ghana: Fiscal Policy Responsiveness, Persistence and Discretion. Available at SSRN: http://ssrn.com/abstract=1945710

Marotta, G. 2009. Structural breaks in the lending interest rate pass-through and the euro. *Economic Modelling*, *26*(1), 191-205.

Mehra, Y. P. 1995. Some key empirical determinants of short-term nominal interest rates. *FRB Richmond Economic Quarterly*, 81(3), 33-51.

Oost, E., & GIDLOW, R. 2002. Risk and return. Understanding South African financial markets.

Pesaran, M. H., Shin, Y., & Smith, R. J. 2001. Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Ramey, V. A. 2011. "Identifying Government Spending Shocks: It's All in the Timing." *Quarterly Journal of Economics*, 126(1), 1-50.

Runkle, D. E. 1991. Liquidity constraints and the permanent-income hypothesis: Evidence from panel data. *Journal of monetary Economics*, *27*(1), 73-98.

Sheriff, I., & Amoako, G. 2014. Macroeconomic Determinants of Interest rate Spread in Ghana: Evidence from ARDL Modelling Approach. *Journal of Finance and Bank Management*, *2*(2), 115132.

Woodford, M. 2003. Optimal interest-rate smoothing. *The Review of Economic Studies*, 70(4), 861-886.