

Nexus between Monetary Policy and Bank Credit: New Insight from Nigeria

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Abstract

The study examines the role of monetary policy on bank credit in Nigeria using time series data over the period of 1990–2016. We applied Autoregressive Distributed Lag (ARDL) approach proposed by Pesaran, Shin and Smith (2001). We find that monetary policy (monetary policy rate and liquidity ratio) retards bank credit (bank credit to private sector and small and medium scale enterprises) while money supply stimulates bank credit in Nigeria. Based on this result, we conclude that monetary policy impedes bank credit in Nigeria. It is therefore recommended that monetary authorities should reduce monetary policy rate so as to reduce cost of borrowing in order to increase domestic credit to private sector to boost investment and output.

Index terms— monetary policy; bank credit, money supply, ARDL.

1 Introduction

The link between monetary policy and bank lending is crucial because monetary policy involves deliberate actions of the monetary authorities mostly central bank to change the quantity, availability or cost of money in an economy to achieve low unemployment, high output growth rate, price stability and stable exchange rate through monetary policy rate, open market operation, reserve requirement, credit control and moral suasion (CBN, 2016). In Nigeria as well as other developing countries, it has been observed that prudent monetary policies are the key stone to effective regulations as well as supervision for the growth of any country's banking Industry. By effective manipulation of monetary policy variables, the Central bank seek to influence the growth rate of money supply in an economy, interest rate level, liquidity and the availability of credit from the banking sector (Ehimare, Emena and Niyan, 2015).

Monetary policy has an interdependent relationship with commercial banks in the economy. This is based on the fact that they are the main agents of monetary policy implementation within any economy (Krause & Rioja, 2006). Apart from the traditional roles of savings, banking system played fundamental roles in the growth of an economy through their intermediation role. They perform these roles by mobilizing resources (savings) from the surplus units and channeling them to the deficit units for productive activities within an economy (Schumpeter, 1934). Banks through their credit policy act as lubricants and promote growth in different sectors of the economy. In making credit available, banks are rendering a great deal of social service and through their action, production is increased, capital investments are expanded and a higher standard of living is realized (Eta and Oghoghomeh, 2015).

Although, the empirical link between monetary policy and bank credit has been intensively examined. Nevertheless, such empirical evidences appear to be inconclusive unsettled. For instance, Anyanwu and Kalu (2017), Enyioku (2017), Kalu (2017), Akanni and Imegi (2017); and Meshack and Nyamute (2016) found that monetary policy enhances bank lending whereas Onaolapo and Shomade (2017), Jegede (2016) Agbonkhese and Asekome (2016); Akannbi and Ajagbe (2016); Muhammed (2015); and Ekpung et al (2015) found that monetary policy inhibits bank credit. Given the lack of inconclusiveness from the previous research work could therefore indicate it as an area that requires further probe. Thus, this study seeks to fill the gap in economic literature by exploring the link between monetary policy and bank credit in the case of Nigeria over the period of 2001 to 2017 using Autoregressive Distributed Lag (ARDL) model. The rest of the paper is organized as follows: Section

2 provides an overview of the relevant empirical literature between monetary policy and bank credit; Section 3 is the methodology section while Section 4 contains the results and discussion. Finally, Section 5 deals the conclusion and policy recommendations.

2 II.

3 Review of Relevant Literature

The empirical nexus between monetary policy and bank credit has been extensively examined in the past years. However, such empirical evidences appear to be unsettled. For instance, Anyanwu and Kalu (2017) employed Ordinary Least Square (OLS) technique in investigating the role of monetary management on commercial bank loan and advances and output in Nigeria spanning 1994 and 2015, and found that money supply enhances bank loan and advances. In a related study, Onaolapo and Shomade (2017) Using a sample of 12 banks in Germany, 22 in Switzerland, and 10 in Thailand over the period of 1990 and 2013, Vithessonthi et al (2017) evaluate the relationship between the monetary policy (monetary policy rate), the loan policy of commercial banks, and the investment behavior of firms. The result of the POLS technique showed that monetary policy positively influences the commercial banks' lending rate in the short run in Germany and Thailand. However, monetary policy is ineffective in influencing the commercial banks' lending rate in Switzerland. In Chicago, Chang and Jansen (2016) investigate whether contractionary and expansionary policies have asymmetric impacts on bank loans and output spanning 2000 and 2014. Employing logistic smooth transition vector error correction model, they found that big bank loan growth has a much greater response to monetary policy, compared to that of small banks and asymmetry in the response of bank lending to monetary policy is not a substantially contributing factor in explaining the different responses of output to contractionary and expansionary policy.

Focusing on Ghana, Muhammad (2016) examined the link between monetary policy (proxied by prime lending rate and money supply) and bank lending behavior (loan and advances) for the period of 2005 to 2014. The study revealed that decrease in money supply leads to decrease in commercial bank loan and advances to customers' while prime lending rate and inflation also retard commercial bank lending behavior. Utilizing 108 large international banks spanning 1995 to 2014, Gambacorta (2017) explore the efficiency of monetary policy on bank lending. The result of the GMM technique disclosed that monetary policy is ineffective in encouraging bank lending growth at low level of interest rates. In a regional study, Brana, Campmas and Lapteacru (2018) investigates the role of monetary policy on bank risk behavior from 126 banks in 20 European countries spanning 2000 to 2015. The result of the dynamic panel threshold model showed that relaxing monetary policy (rising central banks' liquidity and low interest rates) has a detrimental influence on banks' risk. Similarly, Chen et al (2017) employed fixed effect and GMM technique to evaluate the impact of monetary policy on banks' risk-taking for 1000 banks from 29 emerging economies between 2000-2012, the study found that monetary policy reduces banks' riskiness. In summary, the empirical literature survey above, the relationship between monetary policy and bank lending is best characterized as mixed. The variation in the result is with regard to the type of data (aggregate data, sectorial data, etc.), the choice of sample period (monthly, quarterly, yearly, etc.), proxies for measuring monetary policy (monetary policy rate, cash reserve ratio, liquidity ratio, treasury bill rate) and estimation techniques (OLS, ECM, VECM etc). In the light of this observation, this study intends to fill the gap in the literature by examining the nexus between monetary policy and bank credit in Nigeria over the period of 2001 to 2017 using Autoregressive Distributed Lag (ARDL) Model.

4 III.

5 Methodology

In line with Agbonkhese and Asekome (2016), the empirical model to examine the impact of monetary policy on commercial bank credit creation is written as: () $BC_t = \alpha + \beta_1 MP_t + \epsilon_t$ (3.1)

Where BC denote Bank credit (proxied by commercial bank credit to private sector and small scale enterprises) and MP is Central bank monetary policy. In order to examine the role of monetary policy on commercial bank credit in Nigeria. This study employs Autoregressive Distributed Lag (ARDL) approach to co integration developed by (Pesaran, Shin, & Smith, 2001). This technique is applied because it can accommodate different orders of integration I(0), I(1) or I(0)/I(1). Furthermore, the ARDL approach integrates the short run dynamics with the long run equilibrium without losing any extended run information. Also, the ARDL approach provides better results for small sample data set compared to other traditional methods to co integration (Engle & Granger, 1987); (Johansen & Juselius, 1990); and (Phillips & Hansen, 1990). Lastly, ARDL approach gets rid of endogeneity problem due to the selection of appropriate lag selection. Hence, residual correlation. The general ARDL representation of Eq (3.3) formulated as: $\Delta BC_t = \alpha + \beta_1 \Delta MP_t + \sum_{i=1}^p \beta_{i+1} \Delta BC_{t-i} + \sum_{j=1}$

Ftest for the joint significance of the coefficients of the lagged values of the variables taking into account the null hypothesis of no co integration, $H_0: \alpha = 0$ against the alternative: $\alpha \neq 0$ where $\alpha = (\alpha_1, \alpha_2, \dots, \alpha_4)$.

The Wald test is applied in cases where there is more than one short-run coefficient of the same variable. The F-statistics compared with the upper and lower bounds critical values. If the F-statistic exceeds the high significant value, we conclude in favour of a long run relationship or otherwise. However, if the F-statistic lies between the lower and upper critical bounds, the inference would be inconclusive.

6 a) Data

This study makes use of quarterly time series data from 2001-2017 on bank credit (proxy by commercial bank credit to private sector and small scale enterprises), monetary policy rate, liquidity ratio and money supply sourced from Central Bank of Nigeria Statistical Bulletin, 2017 edition.

7 IV. results and discussion a) Preliminary Analyses

i. Descriptive statistic Prior to estimation of the ARDL model to examine the impact of monetary policy on bank credit, we conduct preliminary analyses on the data. These involve the descriptive statistics to reveal the salient characteristics of the series (i.e. mean, standard deviation, maximum and minimum) and the stationarity tests (Augmented Dickey-Fuller and Phillips-Perron) to show time series properties of the variables. Deductible from Table 1, the average of bank credit to private sector and small and medium scale enterprises is N9744B and it ranges between N 22290B and N 764B while the average of money supply is N10581B and ranges between N 24140B and N 1269B. In addition, monetary policy rate is 12.5 on average with maximum of 20.5 while the average of liquidity ratio is 46.62 which is low.

8 ii. Unit root test

In an attempt to check the order of integration of each variable, this study employed the Augmented Dickey-Fuller (ADF) and Phillip-Peron (PP) unit root tests (see Table 2). ADF and PP tests for which the null hypothesis is non-stationarity and the alternative hypothesis is that variables are stationary. The results of the ADF and P tests indicate that Bank credit (LBC), Monetary policy rate (MPR) and Money supply (LMS), are stationary at first difference except liquidity ratio (LIQR) that is stationary at level. These two test ensure that none of the variables is integrated with an upper or derthan1 which conforms with the assumptions of the ARDL bounds testing approach to co integration. iv. Co integration Test Furthermore, the long-run relationship between the variables under consideration is examined. To this end, this study employed the ARDL bounds test approach for co integration by Pesaran et al. (2001). The result in Table 3 showed that the lower bound is 3.23 and the upper bound is 4.35 while the F-statistic is 5.1883. Since the F-statistics results is greater than the upper critical bound at 5 percent significance level, this implies the existence of a long-run relationship among monetary policy and bank credit in Nigeria.

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10 b) Estimation Result

In order to examine the short and long run impact of monetary policy on bank credit in Nigeria, we estimate the ARDL method. The result of the short and long run estimates are reported in Table 4. The results indicate that monetary policy (proxied by monetary policy rate) has a significant negative impact on bank credit both in the short and long run. This result suggests that monetary policy rate retards bank credit to private sector and small and medium scale enterprises in Nigeria because increase in monetary policy causes a general rise in lending interest rate or cost of holding money. This result has been confirmed by many scholars in the economic literature who found that monetary policy rate retards bank credit (Akanbi and Ajagbe, 2016; ?uhammad, 2016; and Onaolapo and Shomade, 2017). Further, results indicate that monetary policy (proxied by liquidity ratio (LIQR)) has a significant negative effect on bank credit in Nigeria in the short run but exert a significant positive impact in the long run. This may be as a result of insufficient government investment in infrastructural development. This outcome supports the findings of Jegede (2016) who finds that liquidity ratio reduces bank loan and advances to customers. In addition, money supply has a positive impact on bank credit both in the short and long run. This outcome conforms with the finding of Anyanwu and Kalu (2017) who found that money supply enhances bank credit.

The estimate of the lagged error term (ECT) is negative (-0.1582), and it is statistically significant at the 5% level. This implies that the adjustment from the short run to the long-run equilibrium path is 15.8%. Furthermore, the R^2 that measures the degree at which the explanatory variables explained bank credit is high at 92.87%. Also, F-statistics ($F=4351.00$) which measures overall significance of the model indicates that all the estimated regression coefficients are highly statistically significantly different from zero. Lastly, it is traditional to check the robustness of a model by examining few diagnostic tests. The lower part of Table

11 Conclusion and Policy Recommendation

This research work provides empirical evidence on the nexus between monetary policy and bank credit in Nigeria over the period of 1991 and 2017 with the aid of ARDL technique. The result of the ARDL bounds testing indicates a long run relationship between monetary policy (proxied by monetary policy rate, significance level. We thus accept the null hypothesis of homoscedasticity and reject the alternative hypothesis of presence of heteroskedasticity. The model also satisfies the Jarque-Bera normality test, indicating that the errors are normally distributed since the probability value of the Jarque-Bera (JB) statistics of 0.6013 is greater than 5 percent. Also in order to test the stability of the model, this study applied Cumulative Sum of In addition, to test for the presence of homoscedasticity in the model, the study chooses the Arch Test. The ARCH test for heteroskedacity in the residual shows the probability value of 0.3239 at the 5% and liquidity ratio retards commercial bank credit to private sector and small and medium scale enterprises liquidity ratio and money supply) and bank credit. Further, our findings disclose that monetary policy rate in Nigeria. Based on this result, this study therefore Year 2020 () B monetary policy rate so as to reduce cost of borrowing in order to increase domestic credit to private sectors so as to boost investments and outputs. ¹

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customers while monetary policy rate (short-term interest rate) and cash reserve ratio retards commercial bank loan and advances to customers.

Using Vector Error Correction Model, Jegede (2016) assessed the role of monetary policy (proxied by money supply, interest rate and liquidity ratio) on commercial bank lending activities in Nigeria during the period of 1998-2013. The study found that money supply and liquidity ratio reduce commercial loan and advances to customers while interest rate increases commercial loan and advances to customers in Nigeria. Likewise, Agbonkhese and Asekome (2016) analyzed the impact of monetary policy on bank credit creation in Nigeria from 1980 and 2010 using OLS technique. The results of the study showed that total deposits and treasury bills rate boost credit creation while reserve requirement ratio and interest rate had a negative relationship with total credit creation. In another study by Agbonkhese and Asekome (2017) examined the role of macroeconomic indicators (real GDP, money supply, exchange rate, lending interest rate and inflation) on commercial bank risk assets creation in Nigeria over the period of 1980 to 2014. The study employed OLS methodology and the result showed that money supply, lending interest rate exert a significant positive impact on commercial bank risk asset creation while inflation rate retards it. T With the aid of annual data and OLS technique, Enyioko (2017) examined the role of monetary policy (proxied by interest rate) on the overall performance of commercial banks in Nigeria from 2005 to 2012. The study showed that monetary policies have insignificant impact on commercial bank performance in Nigeria. Akanbi and Ajagbe (2016) investigated the importance of monetary policy on commercial banks operation in Nigeria spanning 1990 to 2015. The result revealed that monetary policy retard commercial bank performance in Nigeria within the study period. In addition, Kalu (2017) analyzed the link between monetary policy and private sector credit in Nigeria January 2000 to May 2013. The result of the error correction model (ECM) disclosed that variations in credit have enhance changes in monetary policy and credit granger cause monetary policy. Furthermore, Matousek and Solomon (2017) investigates the bank lending channel in Nigeria using GMM technique with annual data from 2002 to 2008. They found that consolidation and restructuring policies of Central Bank of Nigeria's (CBN) enhance bank lending channel and loan growth response sensitive to changes in bank size and capitalization. Recently, Ezeaku et al (2018) utilized error correction technique to probe the role of monetary policy transmission mechanism on industrial development spanning 1981 and 2014.

employed
Error
Cor-
rection
Model to
explore
the role of
monetary
policies

1

	BC	MPR	LIQR	MS
Mean	9744.706	12.5000	46.6241	10581.71
Maximum	22290.66	20.5000	63.2050	24140.63
Minimum	764.9615	6.0000	30.4250	1269.322
Std. Dev.	7960.067	3.5233	8.4982	8026.048

Figure 2: Table 1 :

3

Variables	F-Statistics	Co integration
F(BC/MPR,LIQR &LMS)	5.1883	Co integration
Critical Value	Lower Bound	Upper Bound
1%	4.29	3.77
5%	3.23	4.35
10%	2.72	3.77

Source: Author's Computation

Figure 3: Table 3 :

2

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() B

Figure 4: Table 2 :

4

Figure 5: Table 4 :

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