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The Effects of Asymmetry Window Corridor on the Performance of Deposit Money Bank in Nigeria

Oloruntoba David Adeyemi, Adeoye Vincent Oluseyi, Buzaije Elizabeth Bakoho, Adegbenro Oluwadamilola Marvelous

Department of Banking and Finance, University of Jos – Nigeria.

Corresponding author: oloruntobad@unijos.edu.ng

Abstract

This study examines the effect of monetary policy instruments otherwise refers as asymmetry window corridor on the performance of deposit money banks in Nigeria from 2000 to 2020. Total private sector credit of deposit money banks was used to proxy the performance of deposit money banks while monetary policy rate, liquidity ratio, cash reserve ratio and loan to deposit ratio were used as proxies for monetary policy. The Ex-Post Facto research design was adopted in this study. Data on total private sector credit of deposit money banks, monetary policy rate, liquidity ratio, cash reserve ratio and loan to deposit ratio obtained from the Central Bank of Nigeria (CBN) Statistical bulletin (2020). The hypotheses of this study were tested using the Ordinary Least Square regression statistics. The findings revealed that total private sector credit of deposit money banks has a significant relationship on monetary policy rate; liquidity ratio and cash reserve ratio; while loan to deposit ratio has an insignificant relationship with total private sector credit of deposit money banks. The researchers recommended among other things that the central bank of Nigeria should redefine these monetary policy instruments to make them more attractive to the banks.

Keywords: Asymmetry window; monetary policy rate, Statutory Liquidity ratio, Cash reserve ratio, Market rates; Private sector credit.

Introduction

The Asymmetry window provides daily liquidity to financial markets in various forms and through various channels, such as Open Market Operations (O.M.O.) with different maturities (overnight, over-week and over-month), discount windows and additions to short-term interest rates through a set of strict limits on their usage and costs (CBN, 2018). The weighted average cost of the monetary rate lending at different frequencies is higher than the lower bound of the corridor, and more important, higher than the MPR official monetary policy tool the higher over-week interest rate. The over-week rate fluctuates between the lower and upper bands around symmetric corridor of +100/-700 basis points at 288th meeting of monetary policy committee (Economic confidential, 2022)

The effect of changes in central bank interest rates MPR set the tone for changes in market interest rates such as mortgages, consumer loan, or deposits at financial institutions includes a decline in market interest rates for instance reduces both the cost of borrowing and interest on deposits. While the reduction in the cost of borrowing tends to encourage borrowing, spending, and investing, the latter discourages saving. Overtime therefore,

there would be a boost in the overall demand for goods and services. The opposite holds when market interest rates rise. Changes in central banks interest rates also affect prices of various assets such as bonds, stocks and houses. An increase in the central bank interest rates can put a damper on the prices of these assets, thereby decreasing household wealth and with possible reduction in the appetite for borrowing and spending.

Exchange rates are also affected by changes in central banks interest rates. An increase in a country's interest rate relative to other countries makes the domestic currency denominated assets more attractive to foreign (and domestic) investors (CBN, 2016).

Problem Statement

Central banks have been using multiple tools to set up their monetary policies. Sometimes, however, they use policy tools in a 'wrong way' Brainerd's (1967), such that an adverse effect of one policy tool is decreased by using another policy tool that moves in the opposite direction.

This paper assesses the effect of symmetric corridor of +100/-700 basis points tool on commercial bank lending (a central bank transmission channel on economic performance) as well as the effect on banks performance. There are various reasons for this study. First, the CBN argues that different monetary policy tools affect different variables to a different degree. For example, Kara (2015), argues that a lower band of interest rate is important for international capital inflows, and that the cost of funding to all commercial banks is important for banks' deposit interest rates. Er and Guney (2016) and Guler et al. (2014), argue that MPR affects the banking sector's credit cost and its credit quantity dynamics. Thus, because the CBN might be using MPR in a 'wrong way', we therefore look at the effect of recent symmetric corridor on sustained capacity of commercial banks to perform their intermediation role profitably.

Objectives of the Study

i. To ascertain the effect of Monetary Policy Rate (MPR) on the total private sector credit of deposit Money Banks
ii. To determine the effect of the Liquidity ratio (LQR) on the total private sector credit of deposit Money Banks
iii. To assess the effect of the Cash Reserve ratio (CRR) on the total private sector credit of deposit Money Banks.

Research Questions

Based on the contentious issues raised in the problem statement, the following questions were formulated to provide focus and direction for the research.

i. What is the effect of Monetary Policy Rate (MPR) on the total private sector credit of deposit money banks?
ii. What effect does the Liquidity ratio (LQR) have on the total private sector credit of deposit money banks?

iii. Does Cash Reserve ratio (CRR) have significant effect on the total private sector credit of deposit money banks?

Research Hypotheses

The research hypotheses below were all stated in the null:

H_o1: There is no significant relationship between monetary policy rate and total private sector credit of deposit Money Bank.

H_o2: There is no significant relationship between liquidity ratio and total private sector credit of deposit Money Banks.

H_o3: Cash reserve ratio has no significant effect on total private sector credit of deposit Money Banks.

Conceptual Review

Asymmetric Window Corridor

The corridor system in its current form is believed to reduce the volatility of overnight interest rates and to eliminate any chance of persistent upward or downward bias (Jiho Lee, 2016). Asymmetric Window (Corridor) is a tool used to increase the flexibility of monetary policy and provides for the ability to make timely responses to external finance or risk sentiment shocks. However, an Asymmetric Corridor of interest's rates around the MPR at +100 and -700 basis points implies that the rate on the standing lending facility (SLF) will remain at 100 basis points above the MPR, while the rate on the standing deposit facility (SDF) will be 700 basis points below the MPR.

Standing Lending Facility is a lending facility where healthy banks are allowed to borrow all they want from the Central Bank. It is a line of short term credit available for commercial banks to draw on when they need to meet immediate short term withdrawals from their customers.

Standing Deposit Facility is the rate at which commercial banks deposit money with the central bank.

Monetary Policy

Among other things, monetary policy refers to measures designed to regulate money supply in an economy. According to Olaoluwa and Shomade (2017), Monetary policy is an economic stabilization tool which involves measures taken by the Central Bank to regulate and control the volume, cost, availability and direction of money and credit in an economy to achieve some specified macroeconomic policy objectives and to counter all undesirable trends in the economy. The CBN annual report (2018), defines money supply as the total value of money in the economy and this consists of currency outside banks with the non-bank public (notes and coins) and deposits with the deposit money banks. For purposes of monetary policy, there are two variants of money supply in Nigeria – M1 and M2. M1 is the narrow measure of money supply which includes currency outside banks with the non-bank public and demand deposits (current accounts) at the deposit money banks. M2 is the broad

measure of money supply and it includes M1 and savings and time deposits and foreign currency deposits at the deposit money banks. M2 measures total liquidity in the economy. Ekpung (2015), opined that bank regulation is a function of employing monetary policies as the primary tool to regulate the banking sector. Inherent in these policies are the different types of instruments that are used to regulate the operations of banks in the economy. Central banks in the world such as the Central Bank of Nigeria (CBN) often employ certain monetary policy instruments like bank rate, open market operations, changing reserve requirements and other selective credit control instruments to influence money in circulation. In using the direct monetary policy measures, the monetary authorities ultimately influence items in the statement of financial position of commercial banks.

Monetary Policy Rate

Also known as the Bench mark Lending Rate is the interest rate at which the CBN lends to commercial banks. According to Bassey (2018), the monetary policy rate (MPR) is the interest rate set by the CBN to serve as indicative rate for transactions in the interbank market. It was introduced in December 2006 and is used as the operating target for monetary policy. It also serves as a signaling device for the monetary policy stance. Corb (2012), asserts that interest rate is an economic tool used by the CBN to influence money supply and to control inflation and to boost economic development. The transmission of monetary policy action is often affected through interest change. Being a cost for borrowing and a reward for lending, the interest rate is an important economic variable which need to be guided so as to achieve economic stability (Kelilume, 2014). The current MPR stance is 16.5 per cent.

The CBN (2018), reveals monetary policy rate as one of the money markets interest rates alongside Treasury bill rate. Several studies confirm that interest rates affect the financial performance of deposit money banks. The Monetary Policy rate is an intrinsic part of the monetary policy of the CBN and it is used to regulate the lending activity of the deposit money banks. The monetary Policy rate refers to the amount that is charged by the Central Bank of Nigeria (CBN) for lending to the Banks in the performance of its function as the lender of last resort and also as a signal of the desired direction of monetary policy (CBN, 2018).

The MPR is the anchor upon which every other rates are set. CBN asymmetric corridor is setting the upper and lower bound around MPR, that is, setting the rate ceiling and floor upon which deposit money bank borrow from CBN in event of short fall in liquidity to meet up with cash reserves requirement and overnight borrowing from each other. This could be remunerated or non-remunerated depending on the monetary policy measure deploy from time to time by monetary policy committee of apex bank. Thus, the changes in the corridor stance, MPR, CRR transmit automatically to changes in other market rates.

Liquidity Ratio

According to Ekpung, Udude and Uwalaka (2015), Liquidity is defined as the ability to obtain

needed cash quickly at a reasonable cost. It also means being able to meet financial obligations as they fall due, whether it is withdrawing from the current account, savings account or inter-bank deposits. The CBN (2018), describes the liquidity ratio as the ratio of total specified liquid assets to total current liabilities and reflects the liquidity position of a bank. Olweny and Chiluwe (2012), defined liquidity ratio as the proportion of total deposits to be kept in specified liquid assets mainly to safeguard the ability of banks to meet depositor's cash withdrawals and ensure confidence in the banking system. Douglas (2014), asserted that Liquidity at a bank is a measure of its ability to readily find the cash it may need to meet demands upon it.

Liquidity can come from direct cash holdings in currency or on account at the Federal Reserve or other central bank. More commonly it comes from holding securities that can be sold quickly with minimal loss. This typically means highly creditworthy securities, including government bills, which have short-term maturities. Douglas (2014), also highlighted means by which banks can achieve adequate liquidity. These means include: shorten asset maturities; improve the average liquidity of assets; lengthen liability maturities; issue more equities; reduce contingent commitments; obtain liquidity protection.

Cash Reserve Ratio

Ekpung (2015), defines cash reserve ratio as the proportion of total deposit liabilities which the deposit money banks and other financial institutions are expected to keep as cash with the Central Bank Nigeria (CBN). According to Otalu, Aladesanmi and Mary (2014), it is the statutory cash reserves that banks are to keep with the CBN and this ratio was designed to help rescue the liquidity of the banks and hence control the volume of banks credit that can be extended by the deposit money banks.

According to Bassey (2018), the Cash reserve requirement (CRR) is the proportion of specified total deposit liabilities of Deposit Money Banks (DMBs) that is kept with the CBN as reserves. It is mostly unremunerated and is measured based on a daily average of resolvable liabilities over a two-week period. It serves prudential monetary control and liquidity management objectives. Changes to the CRR require banks to make abrupt adjustments in their portfolios and as such can induce volatility in financial market prices. An increase in the CRR, particularly when it is unremunerated, imposes additional costs on banks, which then get passed on to the economy in the form of wider interest rate spreads. The CBN (2018), asserted that the cash reserve ratio is the percentage of deposit money banks' cash deposits with the CBN in relation to their total demand deposits, savings and time deposits. The cash ratio requires the deposit money banks to keep a certain proportion of their total deposit liabilities as cash balances with the CBN, while the liquidity ratio stipulates the proportion of total deposits to be kept in specified liquid assets, mainly to safeguard the ability of banks to meet depositors' cash withdrawals and ensure confidence in the banking system. The CBN also has powers to call for special deposits from banks for the purpose of controlling liquidity.

Monetary policy stance and macroeconomic outlook

The performance of every economy is determined by the effectiveness of its monetary and fiscal policies. These policies are formulated by the government through the monetary authority with the aim of ensuring a sound financial system. According to Jegede (2014), monetary policy is an aspect of macroeconomics which deals with the use of monetary instruments designed to regulate the value, supply and cost of money in an economy, in line with the expected level of economic activity. It covers series of measures or combination of packages intended to influence or regulate the volume, prices as well as direction of money in an economy per unit of time. The monetary policy of the Central Bank of Nigeria is formulated with the aim of controlling the money supply in the economy (Agu, Nwankwo and Onah, 2018)

The CBN annual report (2018), describes money supply as the total value of money in the economy and this consists of currency outside banks with the non-bank public (notes and coins) and deposits with the deposit money banks. Jegede (2014), also stated that monetary policy and deposit money banks are inextricably linked together and the assessment of the banking system (particularly in the areas of loans and advances) can be evaluated through the performance of monetary policy tools. Monetary policy is usually in two forms: expansionary monetary policy or contractionary monetary policy. Monetary policy is expansionary when the policy thrust of the authorities increases the supply of money in the system; and contractionary when the action reduces the quantity of money supply available in the economy or constrains the growth or ability of the deposit money banks to grant further credits (Ekpung, 2015).

Anowor and Okorie (2016), added that if the economy experiences a decline in economic activities and employment declines, policy makers will be moved to soften monetary policy so as to stimulate aggregate demand. This is called expansionary monetary policy. In contrast, if the economy is showing signs of overheating and inflation pressures are building, the Central Bank will be propelled to counter those pressures by tightening the economy in order to bring growth in aggregate demand below that of the economy's potential to produce. The measures put together by the Central Bank of Nigeria to regulate money supply are known as monetary policy instruments. Uloma, (2017), asserted that the monetary policy instruments can be categorized into: Direct and indirect monetary policy instruments. The direct monetary policy instruments include reserve requirements, special deposits, moral suasion, selective Credit control and prudential guidelines. The indirect or quantitative monetary policy instruments include: open market operations, lending by the Central Bank of Nigeria, Interest rate, Exchange rate, Rediscount rate and Cash reserve requirements.

Monetary policy in Nigeria has experienced two main phases which are the era of direct control (1959-1986) and the era of market-based controls (1986-date). In the era of direct control, the CBN used directives targeted at specific sectors to fix or control interest rate, exchange rate and to determine credit allocation to choose sectors. Concerning recent adjustments in Nigeria's monetary policy instruments, the CBN monetary policy committee

in November 2020 retained the monetary policy rate (MPR) at 11.5 percent and as at 2022 it is currently at 16.5; retained the asymmetric corridor of +100/-700 basis points around the MPR; increased the Cash reserve ratio (CRR) to 27.5 percent; and retained the liquidity ratio (LR) at 30 percent (Emefiele, 2020). According to Emefiele (2020), the decision to raise the CRR from 22.5 to 27.5 percent was in response to the inflationary pressure in the economy. Currently, the inflation rate stands at 12.69 percent from 12.88 percent in 2020 and 11.40 percent in 2019.A number of scholars have established that the frequent adjustments made on monetary policy instruments affect the performance of banks in terms of their lending activities. Whereas, an analytical look into the Central Bank statistical bulletin (2019), reveals that there have been times when adjustments in monetary policy instruments did not amount to any tangible change in the level of interest rates and credit availability. Afolabi, Adeyemi, Salawudeen and Fagbemi, (2018), noticed that the credit of deposit money banks to the private sector rose from N10, 660.07 billion in 2011 to N18, 674.15 in 2015 in spite of the adjustments carried out on the monetary policy instruments during that period. The view of some scholars that adjustments in monetary policy instruments affect the performance of banks needs empirical investigation. Hence, this research work intends to find out if there is really a significant relationship between monetary policy instruments and the performance of deposit money bank.

Monetary Policy Decisions (2022)

Key Decisions of the Central Bank of Nigeria Monetary Policy Committee 18th and 19th July 2022. (https://cbn.gov.ng>decisions)

The Committee decided at the 286th meeting of the MPC held on 18th and 19th July 2022, to:

1. Increase the MPR by 100 basis points from 13.0 to 14.0 per cent;
2. Retain the asymmetric corridor at +100/-700 basis points around the MPR;
3. Retain the CRR at 27.5 per cent; and
4. Retain the Liquidity Ratio at 30 per cent

Key Decisions of the Central Bank of Nigeria Monetary Policy Committee May 23-24, 2022

The Committee decided to:

1. Raised the MPR from 11.5 per cent to 13.0 per cent;
2. Retain the Asymmetric Corridor of +100/-700 basis points around the MPR;
3. Retain the CRR at 27.5 per cent;
4. Retain the Liquidity Ratio at 30 per cent.

Key Decisions of the Central Bank of Nigeria Monetary Policy Committee March 21 and 22, 2022.

The Committee decided to:

1. Retain the MPR at 11.5 per cent;

2. Retain the Asymmetric Corridor of +100/-700 basis points around the MPR;
3. Retain the CRR at 27.5 per cent;
4. Retain the Liquidity Ratio at 30 per cent

Key Decisions of the Central Bank of Nigeria Monetary Policy Committee January 21 and 22, 2022.

The Committee decided to:

1. Retain the MPR at 11.5 per cent;
2. Retain the Asymmetric Corridor of +100/-700 basis points around the MPR;
3. Retain the CRR at 27.5 per cent;
4. Retain the Liquidity Ratio at 30 per cent.

Effect of symmetric corridor on market rates and banks profitability

The primary and conventional tool for monetary policy is the target for the monetary policy rate, but other tools have included forward guidance, price and quantity targets for the purchase of government bonds, and the provision of low-cost fixed term funding to financial institutions.

The first stage of transmission is about how changes to settings for these tools influence interest rates in the economy. The MPR is the market interest rate for overnight loans between financial institutions, and it has a strong influence over other interest rates, such as deposit and lending rates for households and businesses. The CBN other monetary policy tools work primarily by affecting longer-term interest rates in the economy.

While monetary policy acts as a benchmark for interest rates in the economy, it is not the only determinant. Other factors, such as conditions in financial markets, changes in competition, and the risk associated with different types of loans, can also impact interest rates. As a result, the spread (or difference) between the MPR and other interest rates varies over time.

As financial intermediaries, lending is one of the main activities of banks. The Commercial Banks mostly grant credit on short-term basis except in few occasions where they lend on medium and long-term basis provided it will not hamper the liquidity of the commercial banks' loans must be given with collaterals or securities to back up the loans in case of a default. Often, there are policies that guide commercial bank lending which must be adhered to before loans are granted. The level of interest rate has a very great role to play in commercial bank lending practices (Akujuobi and Nwezeaku, 2015).

Nwaru and Okorontah (2014), stated that bank credit involves financing economic activities such as manufacturing, production, commerce et cetera, through the provision of loans and overdrafts by banks. Bank credit involves financing economic activities such as manufacturing, production, commerce et cetera, through the provision of loans and overdrafts by banks. The private sector of an economy is the non-government sector. It comprises of private individuals and corporations. Credit to private sector refers to financial resources provided to the private sector, such as loans and advances, purchases of non-

equity securities, trade credits and other accounts receivable, which establish a claim for repayment (Olowofeso, Adeleke and Udoji, 2015).

Financial Performance of Deposit Money Banks

Financial performance is the ability to operate efficiently, profitably, survive, grow and react to the environmental opportunities and threats. According to the NDIC Annual Reports (2021), the financial performance of deposit money banks can be grouped into capital adequacy of DMBs; the Asset quality of banks; earning and profitability; and liquidity management of deposit money banks. Selected performance indicators include Total assets; Total loans and advances; capital adequacy; non-performing loans to total loans ratio; return on assets; Profit before tax and Loan to deposit ratio.

According to Mwongeli (2016), the determinants of financial performance can be classified into two: the micro-economic (internal factors) and the macro-economic (external factors). The micro-economic (internal factors) include: capital adequacy, asset quality, management efficiency and liquidity management. The external factors include: Gross Domestic Product (GDP), macroeconomic policy stability, inflation, interest rate and political stability.

Theoretical Review

Theory of Savings Mobilization

This research paper is anchored on the savings mobilization theory. This theory proposes how bank credits are made possible through the mobilization of savings by banks. However, this role of banks is being influenced by exogenous factors such adjustments in monetary instruments. Financial institutions perform savings mobilization as one of their major functions. As banks in an economy mobilize savings from the savers' side in their millions, it is also important that they channel same to the deficit spending units. This will in a way, enhance economic growth and development. One major determinant of the development process (in terms of the relations between output growth rate and capital stock) is capital accumulation. He added that capital plays the dual role of increasing production capacity and effective demand. Solow (1956) assumed separately that capital stock (investment) equals saving. A continuous increase in income level largely determines the increase in investments, and what savings will likely be. However, the savings of some economic agents is what serve as banks' credit (Kolapo, Ojo and Olaniyan, 2013).

Empirical Review

Ming Fang, Chiu-Lan Chang and Chung-Hua Shen(2020), study Asymmetric adjustment of interest rate pass-through from central bank's policy rate to market rate: evidence from china, the result suggest that the long-run PT of the policy rates to market target rates and the market target rates PT to interbank market rates are all significant.

Guler et al. (2014), study the effect of MPR on credits and argue that increasing MPR financed by short-term borrowing will increase the maturity mismatch of bank balance

sheets, which in turn will increase interest rate risk and affect credits and their compositions.

Borio, Gambacorta and Hofmann (2015), investigated how monetary policy affects bank profitability. The study used data for 109 large international banks headquartered in 14 major advanced economies for the period 1995–2012. Overall, it was discovered that there exists a positive relationship between the level of short-term rates and the slope of the yield curve (the "interest rate structure", for short), on the one hand, and bank profitability – return on assets – on the other.

Ekpung (2015), examined the impact of monetary policy instruments on the profitability of commercial banks in Nigeria using the Zenith Bank Plc. experience. The paper used descriptive research design. It utilized time series data collected from published financial statements of Zenith Bank Plc. as well as Central Bank of Nigeria Bulletin from 2005 to 2012. The study discovered that cash reserve ratio, liquidity ratio and interest rate did not have significant impact on the profit before tax of Zenith Bank Plc. However, minimum rediscount rate was found to have significant effect on the profit before tax of the bank. The paper concluded that a good number of monetary policy instruments do not impact significantly on profitability of commercial banks in Nigeria.

Anowor and Okorie (2016), opined that Nigeria has over the years been controlling her economy through various macroeconomic policies of which monetary policy is among using some monetary policy instruments in efforts to drive along the desired path. They carried out a reassessment of the impact of monetary policy on economic growth of Nigeria adopting the Error Correction Model approach. The study utilized time series secondary data spanning between 1982 and 2013. The result showed that a unit increase in Cash Reserve Ratio (CRR) led to approximately seven units increase in economic growth in Nigeria.

Onodugo, Okoro and Amujiri (2013), examined the impact of monetary policy regimes on the performance of commercial banks in Nigeria. The study was divided into Structural Adjustment Program (SAP) period (1986-1999) and post-SAP period (2000-2013). The study discovered that monetary policy regimes during the SAP period did not have significant impact on the total assets value, deposit mobilization, loans and advances and credit to the private sector respectively.

Dare and Okeya (2017), assessed the impact of monetary policy on the performance of commercial banks in Nigeria using the United Bank for Africa (UBA) Plc. as a case study. The study made use of a panel cross sectional data covering the period from 2009 to 2014. Multiple linear regression technique was employed to test the relationships inherent in the explanatory and dependent variables with the aid of Statistical Package for Social Sciences (SPSS), Version 20. The estimated model expresses banks' operating performance as a function of monetary policy represented by Monetary Policy Rate (MPR), Cash Reserve Requirement (CRR) and Liquidity Ratio (LR) while Return on Assets (ROA) is used as a proxy for banks' credit performance. The study found out that there is a positive but statistically insignificant relationship between MPR and ROA in the chosen bank. The analysis further

indicated negative and statistically insignificant relationships between CRR, LR and ROA. The study concluded that the rationale for the statistically insignificant relationships observed might not be far from the commercial banks low rate of compliance with monetary policy guidelines.

Afolabi, Adeyemi, Salawudeen and Fagbemi (2018), investigated the relationship that exists between monetary policy instruments and Deposit Money Banks' Loans and Advances in Nigeria. An annual time series data covering a period of 36years from 1981-2016 were sourced from Central Bank of Nigeria and used for the study. The study employed Toda and Yamamoto granger non-causality model to examine the relationship existing between Deposit Money Banks loan and advances and monetary policy variables in Nigeria. The findings revealed that structural changes in monetary policy system exerted positive significant impact on loan and advances of Deposit Money Banks in Nigeria. Findings also revealed bidirectional relationship existing between MPR and loan and advances of Deposit Money Banks in Nigeria. Precisely, MPR proved to be a significant variable which causes Deposit Money Bank loans and advances in Nigeria. The other explanatory variables; broad money supply (LM2), liquidity ratio (LR), inflation rate (IFR) and cash reserve ratio (CRR) does not granger cause loan and advances of Deposit Money Banks in Nigeria within the study period.

Osakwe, Ibenta and Ezeabasili (2019), examined the effect of monetary policy on the performance of the Manufacturing sector in Nigeria. The explanatory variables were monetary policy rate, Treasury bills rate, Cash reserve requirement and money supply; while the dependent variable is the Manufacturing (MANU) sector output. The study covered a period of 32 years (1986 to 2017). The results indicated that: monetary policy tools have significant effect on the manufacturing sector output in Nigeria in the short run only. The study concluded that monetary policy tools may not be a long run policy instrument for the growth of the manufacturing sector output in Nigeria but rather short run instruments.

Research Methodology

The research design used for this study is the ex-post-facto research design which considers the past in order to produce explanations for things that had already occurred. Secondary data was used for this research study. The data for the analysis was sourced from the CBN annual reports and accounts and from the CBN statistical bulletin from 2000 till 2020. Ordinary least square regression analytical tool was used in analyzing the data.

Model Specification

The ordinary least square regression econometric model for the study is stated below

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad \ldots\ldots\ldots\ldots (1)$$

$$TPSC = \beta_0 + \beta_1 MPR + \beta_2 LQR + \beta_3 CRR + e \quad \ldots\ldots\ldots\ldots (2)$$

Where:

TPSC = Total Private Sector Credit

MPR=Monetary Policy Rate
LQR=Liquidity Ratio
CRR=Cash Reserve Ratio
Bo = Constant Term
B1, β2, β3 = Coefficients of the independent variables
e= Error Term
This model is in line with the model that was adopted in the works of Dare and Okeya (2017).

Data Presentation

Table 1: Dependent and Independent variables

YEAR	TPSC	MPR	LQR	CRR
	N BILLION	%	%	%
2000	508.30	14.0	64.1	5.1
2001	796.16	20.50	52.9	10.8
2002	954.63	16.50	52.5	10.6
2003	1210.03	15.00	50.9	10.0
2004	1519.24	15.00	50.5	8.6
2005	1976.71	13.00	50.2	9.7
2006	2524.30	10.00	55.7	2.6
2007	4813.49	9.50	48.8	2.8
2008	7799.40	9.75	44.3	3.0
2009	8912.14	6.00	30.7	1.3
2010	7706.43	6.25	30.4	1.0
2011	7312.73	12.00	42.0	8.0
2012	8150.03	12.00	49.7	12.0
2013	10005.59	12.00	63.2	12.0
2014	12889.42	13.00	38.3	20.0
2015	13086.20	11.00	42.3	20.0
2016	16117.20	14.00	46.0	22.5
2017	15775.44	14.00	49.1	22.5
2018	15417.47	14.00	61.0	22.5
2019	15946.18	13.50	75.8	22.5
2020	18579.99	11.50	30.00	22.5

CBN Statistical Bulletin

Data analysis Table 2: Descriptive statistics of the input data

	TPSC	MPR	LQR	CRR
Mean	8190.500	12.50000	48.97143	11.9046
Median	7799.400	13.00000	49.70000	10.6000

Maximum	18579.99	20.50000	75.80000	22.50000
Minimum	508.3000	6.000000	30.00000	1.000000
Std. Dev.	6054.377	3.249038	11.51821	7.925937
Skewness	0.182965	0.052377	0.218060	0.187313
Kurtosis	1.662550	3.743566	3.020508	1.617406
	TPSC	**MPR**	**LQR**	**CRR**
Jarque-Bera	1.682342	0.493381	0.166794	1.795422
Probability	0.4312050	0.781382	0.919986	0.407501
Sum	172000.5	262.5000	1028.400	250.0000
Sum. Sq. Dev	7.33E+08	211.1250	2653.383	1256.410
Observations	21	21	21	21

Source: Authors computation from E-views 9

From table 2, total private sector credit of deposit money bank average 8190.500 between 2000 and 2020 while monetary policy rate of deposit money banks average 12.50000 between 2000 and 2020. Also, liquidity ratio and cash reserve ratio of deposit money banks average 48.97143 and 11.90476 respectively between 2000 and 2020. The Jarque–bera probability for total private sector credit of deposit money bank, monetary policy rate, liquidity ratio and cash reserve ratio of deposit money banks are all above 0.05 which shows that all the variables are normally distributed.

Test of Hypothesis One

Ho: There is no significant relationship between monetary policy rate and total private sector credit of deposit money banks.

H1: There is a significant relationship between monetary policy rate and total private sector credit of deposit money banks.

Table 3: Regression Estimates for MPR and TPSC
Dependent Variable: TBSC
Method: Least Squares
Sample: 2000-2020
Included observations: 21

VARIABLE	Coefficient	Std. error	t-statistics	Probability
MPR	-412.6418	416.8884	2.989814	0.0247
C	13348.52	5376.140	2.482919	0.0225

R-squared	0.249775	Mean dependent var.	8190.500
Adjusted R-squared	0.123205	s.d dependent variable	6054.377
S.E of regression	6065.447	Akaike info criterion	20.34636

Sum squared resid	6.97E+08	Schwarz criterion	20.44584
Log likelihood	-211.6367	Hannan quinn criter	20.36795
F- statistics	0.979731	Durbin-watson stat	2.098026
Prob(F-statistics)	0.024704		

Source: Author's computation from E views 9

From Table 3 above, the prob (F-statistic) (0.0247) is less than 0.05, therefore we reject the null hypothesis. Therefore, there is a significant relationship between monetary policy rate and total private sector credit of deposit money banks in Nigeria. The T-statistic value of 2.989814 is more than two showing that the relationship between monetary policy rate and total private sector credit of deposit money banks in Nigeria is significant. The coefficient value of -412.6418 reveals that there is a negative relationship between monetary policy rate and total private sector credit of deposit money banks in Nigeria. It follows that an increase in the monetary policy rate will result to a decrease on total private sector credit of deposit money banks in Nigeria. The R-squared of 0.249775 reveals that only about 24% of the variation in total private sector credit of deposit money bank in Nigeria is explained by variation in monetary policy rate. According to the adjusted R-squared, adjusting for the number of repressors, the goodness fit reduces to 0.123205 indicating that only about 12% of total private sector credit is explained by monetary policy rate. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation. We there conclude that a significant negative relationship exists between MPR and TPSC.

Test of Hypothesis Two

Ho: There is no significant relationship between liquidity ratio and total private sector credit of deposit money banks.

H1: There is a significant relationship between liquidity ratio and total private sector credit of deposit money banks.

Table 4: Regression Estimates for LQR and TPSC Dependent Variable: TBSC Method: Least Squares
Sample: 2000 2020
Included observations: 21

Variable	Coefficient	Std. Error	t-statistics	Probability
LQR	-82.00363	119.1125	2.688455	0.0195
C	12206.33	5984.797	2.039557	0.0555

r-squared	0.224339	Mean dependent var.	8190.500
Adjusted r-squared	-0.087012	s.d dependent variable	6054.377

s.e of regression	6135.602	Akaike info criterion	20.37200
Sum of squared resid	7.15E+08	Schwarz criterion	20.47148
Log likelihood	-211.9060	Hannan quinn criter	20.39359
f-statistics	0.473971	Durbin-watson stat	2.157392
Prob(f-statistic)	0.019487		

Source: Author's computation from E views 9

From figure 4, the p-value (0.019487) is less than 0.05, therefore we reject the null hypothesis. Therefore, there is a significant relationship between liquidity ratio and total private sector credit of deposit money banks. The T-statistic value of 2.688455 is greater than two showing that the relationship between liquidity ratio and total private sector credit of deposit money banks in Nigeria is significant. The coefficient value of -82.00363 reveals that there is a negative relationship between liquidity ratio and total private sector bank credit of deposit money banks in Nigeria. It follows that an increase in the liquidity ratio will result in to a decrease on total private sector credit of deposit money banks in Nigeria. The R-squared of 0.224339 reveals that only about 22% of the variation in total private sector credit of deposit money bank in Nigeria is explained by variation in the liquidity ratio. According to the adjusted R-squared, adjusting for the number of repressors, the goodness fit reduces to 0.087012 indicating that only about 8% of total private sector credit is explained by liquidity ratio. The probability F –statistics is less than 0.05 suggesting that the relationship between total private sector credit and liquidity ratio is significant. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation. We there conclude that a significant negative relationship exists between LQR and TPSC

Test of Hypothesis Three

Ho: Cash reserve ratio has no significant effect on total private sector credit of deposit money banks.

H1: Cash reserve ratio has a significant effect on total private sector credit of deposit money banks.

Table 5: Regression Estimates for CRR and TPSC Dependent Variable: TBSC
Method: Least Squares
Sample: 2000 2020
Included observations: 21

Variable	Coefficient	Std. error	t-statistics	Probability
CRR	571.4277	116.2950	4.913604	0.3047
C	1387.789	1651.030	0.840559	0.4110

r-squared	0.559609	Mean dependent var.	8190.500
Adjusted r-squared	0.536431	s.d. dependent var.	6054.377
s.e of regression	4122.178	Akaike infocriterion	19.57654
Sum squared resid	3.23E+08	Schwarz criterion	19.67602
Log likelihood	-203.5537	Hannan-quinn criter	19.59813
f-statistics	24.14351	Durbin-watson stat	2.272132
Prob(f -statistics)	0.034696		

Source: Author's computation from E views 9

From table 5, the p-value (0.0347) is less than 0.05, therefore we reject the null hypothesis Therefore there is a significant relationship between liquidity ratio and total private sector credit of deposit money banks. The T-statistic value of 4.913604 is greater than two showing that the relationship between liquidity ratio and total private sector credit of deposit money banks in Nigeria is significant. The coefficient value of 571.4277 reveals that there is a positive relationship between liquidity ratio and total private sector credit of deposit money banks in Nigeria. It follows that an increase in liquidity ratio will result in an increase on total private sector credit of deposit money banks in Nigeria. The R-squared of 0.559609 reveals that only about 56% of the variation in total private sector credit of deposit money bank in Nigeria is explained by variation in the liquidity ratio. According to the adjusted R-squared, adjusting for the number of regressors, the goodness fit reduces to 0.536431 indicating that only about 53% of total private sector credit is explained by liquidity ratio. The probability F–statistics is less than 0.05 suggesting that the relationship between total private sector credit and liquidity ratio is significant. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation. We there conclude that a significant positive relationship exists between CRR and TPSC.

Discussion of Findings

The main aim of this study was to examine the effect of monetary policy instrument on the performance of deposit money banks in Nigeria. To conduct this investigation, the total private sector credit was selected as a measure for bank performance in Nigeria while the selected variables for monetary policy instruments includes; monetary policy rate, liquidity ratio, cash reserve ratio and loan to deposit ratio. The OLS regression were used to examine the variables for relationship.

The findings of the study revealed that monetary policy rate was found to have negative and significant relationship with total private sector credit of deposit money banks. These tend to match the prior expectation of the researcher. The negative relationship indicates that an increase in monetary policy rate would result to a decrease in the total private sector credit and vice versa. These findings tend to disagree with the findings of Dare and Okeya (2017), who found monetary policy rate to have a statistically insignificant relationship with return on asset of commercial banks but tend to agree with the find of Afolabi et all (2018),

who found monetary policy rate to have a significant relationship with loan and advances of deposit money banks.

The finding also revealed that liquidity ratio has a negative and significant relationship with total private sector credit of deposit money banks. However, this tends agree with the findings of Akanbi and Ajagbe (2012) who found liquidity ratio to have a significant relationship with the profit of selected banks. Also, this finding tends to agree with the researcher prior expectation. However, the finding tends to disagree with finding of Jegede (2014), who found liquidity ratio to have an insignificant relationship with commercial bank loan and advances.

The finding of the study revealed that cash reserve ratio has a significant relationship with total private sector credit of deposit money banks. It was shown that cash reserve ratio had a positive and significant relationship with total private sector credit. The positive relationship implies that increase in cash reserve ratio will lead to an increase on total private sector credit of deposit money banks. However, these tend to agree with the priori expectation of the researcher. These finding tend to match the findings of Akanbi and Ajagbe (2012), who found a significant relationship between Cash reserve ratio with the profit of selected banks. However, the findings tend not to align with the findings of Ekpung (2015), who found cash reserve ratio to be insignificant relationship with profit before tax of zenith bank.

Conclusion

From the study conducted it is seen that monetary policy rate, liquidity ratio, and cash reserve ratio all have a role to play on the credit ability of deposit money bank especially relating to the private sector. The study therefore concludes that monetary policy instrument has a significant effect on the performance of deposit money banks in Nigeria. In this paper, we analyzed the dynamic asymmetric effects of MPR changes on commercial bank lending practices. A resilient banking sector depends on efficient usage of external resources (see, for example, (Dovern, Meier and Vilsmeier, 2010 and Briguglio, Cordina, Farrugia and Vella, 2009). To this end, central banks develop tools additional to their conventional tools (such as short-term interest rates) to conduct their policies. The present study provides empirical evidence from Nigeria on the effectiveness of one of these tools. Our evidence indicates that if the CBN increases the cost of borrowing for short-term loans for commercial banks and thus decreases all types of lending, a lower cost of funding is associated with higher lending. When we examine the asymmetric effects of C.B.F. on lending choices, then:

i. There is no sign asymmetry in terms of commercial lending.
ii. However, with tight monetary policy, CBN choose lending that has higher risk exposure and lower maturity for consumers. On the other hand, with a loose monetary policy, CBN extend their credit lines on the types of lending that have lower risk exposure and longer maturities for consumers.

iii. Therefore, we may claim that there is magnitude (an increase versus decrease in MPR) and category asymmetry (across different lending categories).

This study can be extended in various directions as MPR. also affects the liability side of commercial banks' balance sheets. First, a further study could analyze how deposits and their compositions are affected by monetary policy rate changes.

Recommendations

i. Monetary authority should manage the quantitative tools of monetary policy properly for it to be attractive and affordable for investors to borrow money from the bank.

ii. The monetary regulatory body should employ these monetary tools: Monetary policy rate, liquidity ratio, and cash reserve ratio with consideration to financial intermediaries whose continue profitability hugely depend on their capacity to extend credits to the all economic agents.

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