The Impact of Quantitative Tools of Monetary Policy on the Performance of Deposit Money Banks in Nigeria (1986-2019)

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The goal of this study is to provide empirical evidence about the impact of commercial bank Treasury bill subscription, monetary policy rate, liquidity ratio, and cash reserve ratio on the profitability of Nigerian deposit money banks. The ex post facto research design was adopted for this investigation. Ordinary Least Square was utilized for a regression analysis of the data. According to the results, there is a strong correlation between treasury bills subscription and private sector lending. The research found that the cash reserve ratio correlates highly with private sector lending. The research suggests that the Nigerian government implement measures that would assist deposit money institutions in the country to enhance their lending facilities, particularly for the private sector. To make bank borrowing appealing and inexpensive for investors, the monetary authority must also appropriately handle the quantitative instruments of monetary policy.

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1. INTRODUCTION

The Central Bank's resources for conducting monetary policy is heavily reliant on the maturity of the economy as a whole and the financial system in particular. In Nigeria, monetary policy has evolved over the years to cover both the direct era and the indirect era, with adoption of exchange rate target (1959-1973) and money targeting (1973-date) [1,2]. To conduct monetary policy, some monetary variables, which the Central Bank controls, are adjusted and these monetary variables include monetary aggregates (CBN, 2017). The deregulation exercise of 1986 led to the adoption of indirect monetary policy (i.e the use of quantitative instruments) with the open market operation as the primary tool.

"This was complemented by reserve requirements, discount window operations, foreign exchange market intervention and injection/withdrawal of public sector deposits in and out of the Deposit Money Banks" [3-6]. According to Anowor and Okorie [7], if the economy slows and employment declines, policy makers will be inclined to soften monetary policy to stimulate aggregate demand. Money printing is a kind of monetary policy expansion. If, on the other hand, the economy is exhibiting indications of overheating and inflation pressures are mounting, the Central Bank would likely tighten the economy via monetary policy in an effort to reduce aggregate demand growth to levels below the economy's ability to produce [8,9].

Quantitative instruments are used to indirectly affect the nationwide availability of credit. Bank rates, OMOs (open market operations), and reserve ratio (CRR and LRR) variations are all examples of such techniques. Nigeria's monetary policy relies heavily on the sale of treasury bills via the open market operation (OMO), a primary quantitative instrument. In 2018, commercial banks subscribed to a total of $1,834 billion in treasury bills. From 2017 (CBN Bulletin, 2018) we see a decrease to 2,550.05. The Cash reserve ratio (CRR) will increase from 22.5% to 27.5%, as decided by the Monetary Policy Committee (MPC) in January 2020. Since 2016, it has averaged 22.5%. The Committee also decided to keep the monetary policy rate unchanged at 13.5%. Both 2018 and 2019 had rates of 14%. Since 2011 [10], the liquidity ratio has been unchanged at 30%.

It is not uncommon for private economic actors' bottom lines to be impacted by monetary policy. It results from the fact that policy changes have an impact on not just market interest rates but also the standing of private economic actors including bank balance sheets, company net worth, and consumer net worth. Therefore, the loan portfolios of banks and other economic entities may be shown to be affected by monetary policy via the balance sheet channel. For instance, if the policy rate is raised, cash flow would decrease, net worth will decrease, interest rates on loans will rise, and total spending will go down (CBN, 2016) [11]. According to Onodugo, Okoro, Benjamin, and Vincent [12], Nigerian commercial banks are the industry leaders in Nigeria. Credit provided to the private sector is mostly comprised of bank loans.

However, the CBN's monetary policy and other inherent linked risks still pose significant challenges that must be addressed by the government. The CBN data report (2018) shows that the agricultural sector receives a very small share of loans and advances from commercial banks. Since 2016, the total amount of loans given to this industry has remained at 500 billion Japanese yen. According to the National Bureau of Statistics (2019), agricultural loan made up just 4.49 percent of private sector credit in 2019. The CBN Annual Reports (2018) state that the banking system's ability to fund the economy fell to 21 percent in 2018 from 22.8 percent in 2017. Private sector credit as a percentage of GDP decreased to 17.8 from 19.6 in 2017. In a similar vein, the ratio of banking system assets to GDP decreased to 42.6% at the end of 2018 from 45.1% at the end of 2017 (CBN Bulletin, 2018). According to NBS (2019), private sector credit fell to 17,187.77 Billion in Q4 2018 from the previous year's Q4.

The goal of this study is to provide empirical evidence about the impact of commercial bank Treasury bill subscription, monetary policy rate, liquidity ratio, and cash reserve ratio on the profitability of Nigerian deposit money banks.

2. LITERATURE REVIEW

2.1 Conceptual Review

2.1.1 Economics of Nigeria's central bank

The Central Bank's control of the money supply and the interest rate constitutes the

macroeconomic policy known as monetary policy. Afolabi, Adeyemi, Salawudeen, and Fagbemi [13] described monetary policy as "the deliberate action of the monetary authorities to influence the quantity, cost, and availability of money and credit in order to achieve desired macroeconomic objectives of internal and external balances." According to Udude [4], monetary policy is an endeavour by monetary authorities to manage the money supply and new credit creations with the aim of accomplishing broad economic objectives. The Central Bank uses the management of the money supply, sometimes known as monetary policy, to further the goals of economic policy as a whole.

"To achieve some specified macroeconomic policy objectives and to counter all undesirable trends in the economy, the Central Bank employs monetary policy to regulate and control the volume, cost, availability, and direction of money and credit in the economy" [14]. Monetary policy includes, but is not limited to, policies that control the amount of currency in circulation. According to the CBN annual report (2018), the value of money in circulation includes both currency held by the non-bank public (notes and coins) and deposits held by deposit money banks. There are two measures of money supply in Nigeria, M1 and M2, that are used for monetary policy. Currency held by the general public outside of financial institutions and demand deposits (current accounts) held by deposit money banks make up M1, the narrow measure of money supply. Including M1 together with savings and time deposits and foreign currency deposits at deposit money institutions results in M2, the broader measure of money supply. Financial liquidity is quantified by the M2 index.

According to Udeh [15], the principal weapon the government uses to manage the banking industry is monetary policies implemented by the Central Bank. The many tools used to oversee financial institutions are integral parts of these monetary policies. The instruments may operate as a militating or mitigating element in increasing bank profitability since they are external to the banks. "Central banks around the world, including the Central Bank of Nigeria (CBN), use monetary policy instruments like the bank rate, open market operations, changing reserve requirements, and other selective credit control instruments to influence money in circulation in order to achieve certain objectives" [16]. The central bank may affect some parts of commercial banks' balance sheets via direct monetary policy tools.

Monetary policy instruments in Nigeria have undergone a wide range of gyrations in response to shifts in economic indicators. Bank operations are unavoidably impacted if these rules are altered [16]. The banking legislation passed in 1952 is widely regarded as the foundation of monetary policy in the nation. Due to the high stakes involved in the banking industry, including the supply of loan services and the need for transaction deposits, banks are subject to stringent oversight. In response to the many bank failures in the 1940s and 1950s, new banking regulations were enacted. Other monetary strategies emerged in 1958, 1969, and 1979, and this trend continues to this day [15].

Osakwe, Ibenta, and Ezeabasili [17] break down the history of Nigeria's monetary policy into two distinct periods: the period of direct control (1959–1986) and the period of market-based regulations (1986–present). The CBN issued sector-specific instructions to set interest rates, manage the currency exchange rate, provide loans to preferred industries, and other such tasks during the period of direct control. Market-based tools include the monetary policy rate, treasury bills rate for open market operations (OMO), and the reserve requirement; direct policies include moral suasion, interest rate, and regulation of the banking sector, as noted by the CBN (2018).

2.2 Theoretical Review

This research is grounded on the monetarist and Keynesian perspectives on interest and money. The Keynesian Revolution may be traced back to the publication of John Maynard Keynes' "General Theory of Employment, Interest, and Money" in 1936. Based on the Keynesian mechanism, monetary policy affects investment choices made by financial institutions like banks and the general public, which in turn affects production and income through the multiplier process [3]. According to Keynes, the government should use fiscal measures to stabilise the economy and keep unemployment low while stimulating growth. Since monetary policy alone may sometimes be ineffective (Onyemaechi, 2005), he suggests a combination of monetary and fiscal measures.

2.3 Empirical Review

Okoroafor [18] looked at how various monetary policy tools affected Nigeria's economic growth from 1980 to 2006. The research used the t-ratio

to determine that just two of the six chosen explanatory factors significantly affected the amount of economic growth in Nigeria between the two time periods (before and after deregulation). In light of the relatively minor character of most of the variables, the research finds that policy design and execution discrepancies seem to impede the full influence of monetary policy on the economy and should be closely monitored.

Monetary policy of Nigeria's commercial banks was the subject of an empirical study by Akanbi and Ajagbe [19]. Statistical analysis revealed that liquidity ratio and cash ratio contributed significantly to the profit of the sampled banks, whereas the lending rate decreased as interest rates rose.

Isedu [20] studied the impact of monetary policy on Nigeria's economy. The findings imply that Nigeria's efforts to apply monetary policy to stabilize the country's income, balance of payments, and consumer price index have been successful. Nigeria's monetary strategy is successful at home but fails to achieve its goal of external balance. The findings tended to support the hypothesis that Nigeria's monetary policy had an effect on the country's macroeconomic performance.

Onodugo, Okoro, Amujiri, and Onodugo [12] studied the effect of different monetary policy regimes on the success of Nigeria's commercial banks. Structural Adjustment Programme (SAP) years (1986–1999) and post–SAP years (2000–2013) were analyzed separately. Researchers found little evidence that changes in monetary policy regimes over the SAP era affected asset values, deposit mobilization, loan and advance activity, or private sector credit.

Using macroeconomic time series variables such as the exchange rate, interest rate, liquidity ratio, money supply, and commercial bank loans and advances, Jegede [2] analyzed the impact of monetary policy on commercial bank lending in Nigeria between 1988 and 2008. The results showed that the lending practices of commercial banks were affected positively by the interest rate and exchange rate but negatively by the liquidity ratio and money supply. The most important takeaway is that monetary policy tools are ineffective in the long term to increase commercial bank loans and advances, whereas the cash reserve ratio is more influential on banks' overall credit. That is why it is crucial for

central banks to work on creating indirect monetary tools and regulating the money supply effectively.

Junesuh [21] looked at the challenges that arise when two securities, such as treasury bills and central bank bills, are employed as monetary policy tools by industrialized countries. Interestingly, developed nations often use just treasury notes or only central bank bills, whereas less developed nations use both types. It has been shown that treasury notes are used more often than central bank bills, especially in developed nations. Use of two securities is also associated with more government debt, lower central bank profits, and a more fragmented bond market.

According to Kelilume [22], central banks in both rich and developing nations utilize the monetary policy rate as a powerful weapon to influence other rates, as well as the movement of macroeconomic aggregates. The research analyzed the ripple impact of Nigeria's monetary policy rate. Key results indicate that, in Nigeria, retail interest rates both short and long-term are sticky with respect to the pass-through of monetary policy rate. The correlation between the policy rate and the interbank rate is the sole indicator of the success of monetary policy.

Akomolafe, Danladi, Babalola, and Abah studied the effect of monetary policy on the efficiency of Nigeria's commercial banks in 2015 [23]. Profit before taxes (PBT) was employed as a proxy for commercial banks' performance, while interest rates and M2 were used as proxies for monetary policy. Bank earnings are positively correlated with monetary policy, as measured by money supply and interest rate.

The impact of monetary policy on bank profitability was studied by Borio, Gambacorta and Hofmann [24]. Information from 1995-2012 was collected from 109 significant multinational banks with headquarters in 14 key advanced economies. The overall level of short-term rates and the slope of the yield curve (the "interest rate structure", for short) were shown to positively correlate with bank profitability, as measured by return on assets.

Ekpung, Udude, and Uwalaka [25] looked at how monetary policy affected the efficiency of the Nigerian banking industry. From 1970 to 2006, we looked at a subset of indicators using an OLS regression approach. Overall, the data

demonstrated that monetary policy had a significant impact on banks' deposit liabilities. Individually, it was found that the Deposit Rate (DR) and the Minimum Discount Rate (MDR) negatively impacted the deposit liabilities of Nigerian banks, while the Exchange Rate (EXR) had a positive and statistically significant impact on these same banks. This study found that monetary policy in Nigeria significantly impacts the size of banks' deposit liabilities.

Udeh [15] used the Zenith Bank Plc to analyse how monetary policy tools affected the profitability of commercial banks in Nigeria. experience. The research method employed in this work was descriptive. The analysis made use of time series data extracted from Zenith Bank Plc's SEC filings. Together with the Central Bank of Nigeria Bulletin, which was published between 2005 and 2012. The research showed that Zenith Bank Plc's profit before tax was unaffected by changes in the cash reserve ratio, liquidity ratio, or interest rate. It was discovered, however, that the bank's minimal rediscount rate significantly affected its earnings before taxes. The article found that the profitability of commercial banks in Nigeria was not substantially affected by several monetary policy measures.

According to Anowor and Okorie [7], Nigeria has been able to steer her economy down the right route by using a number of different macroeconomic strategies, monetary policy chief among them. Using the Error Correction Model methodology, they reevaluated the effect of monetary policy on Nigeria's economic expansion. Secondary data in the form of a time series were used to analyse trends between 1982 and 2013. The findings revealed that a rise in Nigeria's Cash Reserve Ratio (CRR) resulted in a growth rate of almost seven percentage points.

According to Oladele [26] analysis, Nigerian banks continue to hold a significant portion of the banking industry's overall assets and deposit liabilities. Despite considerable restraints placed by government laws, institutional restrictions, and other macroeconomic considerations, their total loans and advances, a key component of total credits to both the public and private sectors, are nonetheless on the rise. This research was conducted to learn how interest rates in Nigerian deposit money banks affect their bottom lines. The study's findings revealed a positive and statistically significant connection between

banks' profit margins and the interest rate at which they lend. The interest rate between banks has a notable beneficial effect on bank profits. The interest rate on treasury bills had a positive, statistically significant link with the profitability of banks, and so did the interest rate on monetary policy.

Dare and Okeya [27] used the United Bank for Africa (UBA) Plc as an example of a commercial bank in Nigeria to evaluate the effect of monetary policy on the bank's performance. case study style. This research used panel cross-sectional data from 2009 to 2014 to draw its conclusions. With the help of SPSS Version 20, a multiple linear regression analysis was performed to examine the connections between the independent and dependent variables. The estimated model uses the Monetary Policy Rate (MPR), the Cash Reserve Requirement (CRR), and the Liquidity Ratio (LR) to describe banks' operational performance as a function of monetary policy, while Return on Assets (ROA) stands in for banks' credit performance. A positive correlation between MPR and ROA was discovered, albeit it was judged to be statistically insignificant for the selected bank. CRR, LR, and ROA were shown to have negative and statistically negligible correlations. The research found that commercial banks' inadequate compliance with monetary policy requirements may explain the statistically insignificant associations identified.

In 2017, Olaoluwa and Shomade evaluated how changes in monetary policy have affected the lending practises of Nigeria's commercial banks. Findings showed that interest rate, currency rate, and deposit and reserve requirement influenced bank lending behaviour over the study period. The results also shown that the commercial bank lending rate is positively correlated with all other factors except interest rate and reserve requirement. According to the study's findings, a long-term correlation exists between deposits and the lending rate at Nigeria's commercial banks.

Uloma [3] investigated the relationship between the turnover ratio of commercial banks in Nigeria and the monetary policy tools used by the Nigerian monetary authorities. The study set out to determine the true nature and the extent to which monetary policy instruments have impacted banking performance in Nigeria by looking at the effects of money supply, liquidity ratio, monetary policy rate, and cash reserve

ratio on turnover ratios at commercial banks. The results showed that the previous high level of fabricated and embellished balance sheet may have rendered the monetary policy instruments ineffective and the outcomes unpredictable. However, the CBN's monetary policies have tended to produce better outcomes after the introduction of key reforms in the wake of the financial crisis, including prudential requirements and standardised financial statement reporting. As the Monetary Policy Rate (MPR) has replaced other methods previously used by the CBN to signal its monetary stance, a monetary policy reaction function that accurately reflects the Bank's decision-making intentions is necessary to aid economists and financial markets in foreseeing the future course of monetary policy.

The link between monetary policy instruments and Loans and Advances from Deposit Money Banks in Nigeria was studied by Afolabi, Adeyemi, Salawudeen, and Fagbemi in 2018. The research examined yearly time series data from the Central Bank of Nigeria spanning 36 years, from 1981 to 2016. To investigate the connection between monetary policy factors in Nigeria and loan and advance activity at Deposit Money Banks, the researchers used the Toda and Yamamoto granger non-causality model. The results showed that the loan and advance rates of Deposit Money Banks in Nigeria improved significantly after structural adjustments were made to the country's monetary policy regime. The results also showed that MPR and loan and advance activity at Nigerian deposit money banks are related in both directions. Loans and advances from Nigeria's Deposit Money Banks have been shown to be significantly influenced by MPR. Loans and advances from Nigerian deposit money banks are not granger caused by broad money supply (LM2), liquidity ratio (LR), inflation rate (IFR), or cash reserve ratio (CRR) throughout the research period.

Akarara and Azebi [28] looked at the efficiency of various monetary policy instruments in bringing down inflation in Nigeria. A long-term connection between inflation and the chosen monetary policy variables was found, as shown by the Johansen co-integration test. The estimated model was shown to have a self-equilibrating mechanism of 12%, as shown by the Error Correlation Model (ECM) result. Inflation may be managed in the short and long term with the use of the Treasury Bill Rate (TBR), according to the study's findings. Short-term inflation may be

managed effectively via the use of the Exchange Rate (EXR) and the Money Supply (MS) as instruments of monetary policy. In the long term, the Monetary Policy Rate (MPR) proves to be successful.

Osakwe, Ibenta, and Ezeabasili [17] looked at how changes in monetary policy impacted Nigeria's manufacturing industry. The output of the Manufacturing (MANU) sector served as the dependent variable, with the monetary policy rate, the rate on Treasury bills; the cash reserve requirement, and the money supply serving as the explanatory factors. The research spanned 32 years, from 1986 to 2017. The findings showed that in the short term only, monetary policy instruments had a considerable impact on industrial production in Nigeria. The research found that monetary policy instruments might be ineffective as a long-term policy instrument for increasing industrial production in Nigeria.

The subscription of commercial banks to Treasury bills has not been included as a monetary policy variable in previous research on the topic of monetary policy and bank lending in Nigeria. Previous studies did not include the time span that this one did; therefore, the Bank credit did not apply. This research aims to fill that void by analyzing the connection between open market activities, namely the subscription of Treasury bills by commercial banks, and banks' loans to the private sector from 1986 to 2019.

3. METHODOLOGY

This study used an ex-post facto research strategy, which looks to the past for answers to questions about the present. The term "ex-post facto design" refers to a process that occurs after the fact, when all relevant information is already available. It seeks to understand what may have brought about a preexisting connection between variables (Adefila, 2008). Ex post facto analysis involves attempting to do things like explain a result in terms of its causes, measure the impact of one variable on another, and put a proposition through statistical hypothesis testing. As a result, the impact of Nigeria's monetary policy's quantitative instruments on deposit money banks' performance was studied using an ex-post facto final measure design. The information utilized in this study came from secondary resources. Both quantitative and qualitative information was collected from official Central Bank of Nigeria (CBN) publications such the annual report, monetary policy guidelines,

statistical bulletin, National Bureau of Statistics reports, and online journals and literature.

3.1 Model Specification

The model specification for establishing an empirical relationship between the quantitative monetary policy tools and credit to private sector is given as:

$$CPS = f (TBS, MPR, LQR, CRR) \qquad (1)$$

Explicitly, it may be written as:

$$CPS = \beta_0 + \beta_1 TBS + \beta_2 MPR + \beta_3 LQR + \beta_4 CRR + e \qquad (2)$$

This model is akin to the model that was adopted in the works of Afolabi, et al [13] where:

CPS = Credit to Private Sector
TBS= Treasury bill Subscription of Commercial Banks
MPR=Monetary Policy Rate
LQR = Liquidity Ratio
CRR = Cash Reserve Ratio
B_0 = Constant Term
B_1, β_2, β_3, β_4 = Coefficients of the independent variables
e= Error Term

3.2 Data Analysis

3.2.1 Descriptive statistics

The table above shows that Credit to Private Sector of deposit money bank average 26.44382 between 1986 and 2019 while Cash Reserve Ratio of deposit money banks average 8.550000 between 1986 and 2019. Also Liquidity Ratio and Monetary policy Rate of deposit money banks average 46.86765 and 13.76471 respectively between 1986 and 2019. However treasury Bills Subscription of deposit of deposit money banks average 819.8350 between 1986 and 2019. The Jarque –bera probability for Cash Reserve Ratio, Liquidity Ratio, and Treasury Bills Subscription are all above 0.05 shows that all the variables are normally distributed except for Credit to private Sector and Monetary Policy Rate.

3.2.2 Treasury bills subscription and credit to private sector

The p-value (0.0179) is less than 0.05; therefore, we reject the null hypothesis. Therefore, there is a significant relationship between Treasury Bills Subscription and credit to private sector. The coefficient value of -0.069606 reveals that there is a negative relationship between treasury bills subscription and credit to private sector of deposit money banks in Nigeria. It follows that an increase in treasury bills subscription will result in a decrease on credit to private sector of deposit money banks in Nigeria. The R-squared of 0.162966 reveals that only about 16% of the variation in credit to private sector of deposit money bank in Nigeria is explained by variation in treasury bills subscription. The probability F–statistics is less than 0.05 suggesting that the relationship between credit to private sector and treasury bills subscription of deposit money banks in Nigeria is significant. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation.

3.2.3 Monetary policy rate and credit to private sector

The prob (F-statistic) (0.0337) is less than 0.05; therefore, we reject the null hypothesis. Therefore, there is a significant relationship between monetary policy rate and credit to private sector. The coefficient value of 0.020691 reveals that there is a positive relationship between monetary rate and credit to private sector. It follows that an increase in the monetary policy rate will result to an increase on credit to private sector. The R-squared of 0.236413 reveals that only about 24% of the variation in credit to private sector is explained by variation in the monetary policy rate. The probability F–statistics is less than 0.05 suggesting that the relationship between total bank credit and monetary policy rate is significant. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation.

3.2.4 Liquidity ratio and credit to private sector

The p-value (0.3155) is greater than 0.05, therefore we accept the null hypothesis. Therefore there is no significant relationship between liquidity ratio and credit to private sector. The coefficient value of -0.377018 reveals that there is a negative relationship between liquidity ratio and credit to private sector. It follows that an increase in the liquidity ratio will result to a decrease on credit to private sector. The R-squared of 0.201477 reveals that only about 20% of the variation in credit to private sector is explained by variation in the liquidity

ratio. The probability F –statistics is greater than 0.05 suggesting that the relationship between credit to private sector and liquidity ratio is not significant. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation.

Table 1. Results of descriptive statistics

	CPS	CRR	LQR	MPR	TBS
Mean	26.44382	8.508824	46.86765	13.76471	819.8350
Median	20.90500	5.550000	46.25000	13.50000	485.4900
Maximum	90.76000	22.50000	75.80000	26.00000	2686.460
Minimum	3.810000	1.000000	29.10000	6.000000	1.390000
Std. Dev.	21.82572	6.970256	10.27081	3.836103	917.2261
Skewness	1.496424	1.008235	0.578648	0.721934	0.631886
Kurtosis	5.251631	2.733557	3.518381	4.897200	1.899759
Jarque-Bera	19.87155	5.860949	2.278078	8.052505	3.977501
Probability	0.000048	0.053372	0.320127	0.017841	0.136866
Sum	899.0900	289.3000	1593.500	468.0000	27874.39
Sum Sq. Dev.	15719.95	1603.287	3481.154	485.6176	27763025
Observations	34	34	34	34	34

Source: E-views 10.0

Table 2. Treasury bills subscription and credit to private sector

Dependent variable: CPS
Method: Least Squares
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TBS	-0.069606	0.003848	2.496041	0.0179
C	34.31912	4.695596	7.308788	0.0000
R-squared	0.162966	Mean dependent var		26.44382
Adjusted R-squared	0.136808	S.D. dependent var		21.82572
S.E. of regression	20.27786	Akaike info criterion		8.913959
Sum squared resid	13158.13	Schwarz criterion		9.003745
Log likelihood	149.5373	Hannan-Quinn criter.		8.944578
F-statistic	6.230218	Durbin-Watson stat		2.243775
Prob(F-statistic)	0.017903			

Source: E-views 10.0

Table 3. Monetary policy rate and credit to private sector

Dependent variable: CPS
Method: Least Squares
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPR	0.020691	1.005774	2.020573	0.0337
C	26.15901	14.35652	3.822100	0.0778
R-squared	0.236413	Mean dependent var		26.44382
Adjusted R-squared	0.031236	S.D. dependent var		21.82572
S.E. of regression	22.16398	Akaike info criterion		9.091836
Sum squared resid	15719.74	Schwarz criterion		9.181622
Log likelihood	152.5612	Hannan-Quinn criter.		9.122456
F-statistic	0.043423	Durbin-Watson stat		2.576116
Prob(F-statistic)	0.033714			

Source: E-views 10.0

Table 4. Liquidity ratio and credit to private sector

Dependent variable: CPS
Method: Least Squares
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LQR	-0.377018	0.369695	1.019808	0.3155
C	44.11377	17.72596	2.488653	0.0182
R-squared	0.201477	Mean dependent var		26.44382
Adjusted R-squared	0.001211	S.D. dependent var		21.82572
S.E. of regression	21.81250	Akaike info criterion		9.059866
Sum squared resid	15225.13	Schwarz criterion		9.149652
Log likelihood	152.0177	Hannan-Quinn criter.		9.090486
F-statistic	1.040008	Durbin-Watson stat		2.610238
Prob(F-statistic)	0.315468			

Source: E-views 10.0

Table 5. Cash reserve ratio and credit to private sector

Dependent variable: CPS
Method: Least Squares
Date: 03/20/21   **Time:** 22:31
Sample: 1986 2019
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CRR	-1.305371	0.503141	2.594444	0.0142
C	37.55100	5.501418	6.825694	0.0000
R-squared	0.173791	Mean dependent var		26.44382
Adjusted R-squared	0.147972	S.D. dependent var		21.82572
S.E. of regression	20.14630	Akaike info criterion		8.900941
Sum squared resid	12987.95	Schwarz criterion		8.990727
Log likelihood	149.3160	Hannan-Quinn criter.		8.931561
F-statistic	6.731140	Durbin-Watson stat		2.014378
Prob(F-statistic)	0.014178			

Source: E-views 10.0

3.2.5 Cash reserve ratio and credit to private sector

The prob (F-statistic) (0.014178) is less than 0.05, therefore we reject the null hypothesis. Therefore, there is a significant relationship between cash reserve ratio and credit to private sector. The coefficient value of -1.305371 reveals that there is a negative relationship between cash reserve ratio and credit to private sector. It follows that an increase in the cash reserve ratio will result to a decrease on credit to private sector. The R-squared of 0.173791 reveals that only about 17% of credit to private sector of deposit money bank in Nigeria is explained by variation in the cash reserve ratio. The probability F–statistics is less than 0.05 suggesting that the relationship between credit to private sector and cash reserve ratio is significant. The Durbin-Watson statistics is up to two therefore the model is free from the problem of auto-correlation.

4. DISCUSSION OF THE FINDINGS

The finding of the study revealed that treasury bills subscription has a significant relationship with credit to private sector. It was shown that treasury bills subscription had a negative and significant relationship credit to private sector. However, these tend to disagree with the apriori expectation of the researcher. The negative relationship implies that increase in treasury bills subscription will lead to a decrease of credit to private sector. These finding tend to match the findings of Oladele [26] who found a significant relationship between Treasury bill rate and profitability of banks. However, the findings tend not to align with the findings of Junesuh [21] who found Treasury bill not to significant in achieving monetary policy. Monetary policy rate was found to have positive and significant relationship with credit of sector. These tend to match the prior expectation of the researcher. The positive

relationship indicates that an increase in monetary policy rate would result to increase in the credit of private sector and vice versa. These findings tend to disagree with that of Dare and Okeya [27] 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 al [13] 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 insignificant relationship with credit to private sector. However this tends disagree with the findings of Akanbi and Ajagbe [19] who found "liquidity ratio to have a significant relationship with the profit of selected banks. Also this finding tends to disagree with the researcher prior expectation". However the finding tends to agrees with finding of Jegede [2] who found "liquidity ratio to have a negative and insignificant relationship with commercial bank loan and advances" [29].

5. CONCLUSION

This study examined the impact of Quantitative tools of monetary policy on the performance of deposit money banks in Nigeria (1986-2019). It was aimed at determining the relationship between treasury bills subscription and credit to private sector; evaluating the nature of relationship between monetary policy rate and credit to private sector; ascertaining the extent of relationship between liquidity ratio and credit to private sector; evaluating the relationship between cash reserve ratio and credit to private sector. The study was anchored on the keynesian theory. The performance of deposit money banks was measured using credit to private sector. Secondary data was sourced and the ordinary least square regression analysis was used for the empirical analysis. The study concluded that there is a significant relationship between treasury bills subscription and monetary policy rate on credit to private sector. The study also concluded that there is no significant relationship between liquidity ratio and credit to private sector. Additionally, the study concluded that there is a significant relationship between cash reserve ratio and credit to private sector.

6. RECOMMENDATION

Government should adopt policies that will help Nigeria deposit money banks to improve on their credit facilities especially to the private sector and there is need to strengthen bank credit to private sector and monetary policy through effective and efficient regulation and supervisory framework. The government should employ other measures to support the monetary policy to control the credit creation of deposit money banks in Nigeria to private sector. 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.The Central bank of Nigeria should redefine these monetary policy instruments to make them more attractive to the banks.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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