



Monetary Policy Target and Money Demand Function in Nigeria

Patience Madunatum

Date of Submission: 25-12-2024

Date of Acceptance: 05-01-2025

Abstract

The ever need for improved economic activities by individuals, firms and governments is anchored on money demand function. Thus, this study examined the impact of monetary policy targets on money demand function in Nigeria from 1985 to 2023. The major variables employed in the study include the dependent variable of broad money demand (M_2) while monetary policy targets, which were disaggregated into real operating targets, inflation targets and interest rate targets served as the independent variables. Anchored on classical and the Keynesian theories of demand, this study employed autoregressive distributed lag (ARDL) technique to estimate the impact of monetary policy targets on money demand function in Nigeria. The results show that operating target, interest rate target, and inflation rate targeting have significant impacts on money demand in Nigeria. These findings show the practical usefulness of monetary policy targeting in achieving monetary policy objectives in the Nigerian economy. Specifically, proxied with targeted real gross domestic product and interest rate, operating target helps the Central Bank of Nigeria (CBN) to determine how much money and credit to add to the banking system to achieve and maintain monetary policy goals. Thus, this study recommends that The CBN should always set clear and flexible operating targets that align with economic conditions to stabilize money demand. This can be achieved by regularly reviewing and adjusting these targets to reflect changes in the economy.

Key Words: *Money demand function, Monetary policy targets, Operating targets, Interest rate targets, Inflation rate targets, Central Bank of Nigeria.*

I. INTRODUCTION

Money demand function has remained an important area of concern in the field of macroeconomics (Nwachukwu, Egbeoma&Nkwede, 2021). This can be attributed to the fact that money demand function is a reflection of the behaviour of individuals and businesses in an economy in terms of

how much liquidity (money) they wish to hold which is based on certain macroeconomic influences (Jhingan, 2013). Money demand can also be influenced by transactional, precautionary and speculative motives thereby establishing the role of income and interest rate in influencing money demand (Iriabije& Effiong, 2022; Nwachukwu et al., 2021). Moving ahead, Milton Friedman leading the monetary school of thought argued that money demand is dependent on the permanent income of individual as well as the future expectation of return from their wealth, shares and bonds (Bitrus, 2011).

Based on this theoretical evidences, empirical studies both in developed and developing economies have been at the forefront investigating money demand, its determinants and stability. This is so because money demand is an important indicator of the monetary policy direction in any economy (Aiyedogbon, Ibeh, Edefe, &Ohwofasa, 2013; Imimole &Uniamikogbo, 2014). A large number of studies in developed countries indicates that money demand has become unstable which has been attributed to monetary aggregates, financial reforms and innovation. (Kumar, 2013). That of developing countries show similar result. Nigeria being no different have had considerable studies on money demand function and its determinants with the TATTTO DEBATE being the first recognised (Tomori, 1972 as cited in Bitrus, 2011). However, most of these studies have considered the actual values of monetary policy obtained in their economies as determinants of money demand stability with little emphasis on the targeted values. This is what is termed monetary policy targets.

Monetary policy targets is defined as the monetary policy framework practiced in an economy (Bernanke, 2020). They are specific economic variables that central banks aim to influence through their policy actions. These targets are said baseline or expectations that central banks wish to achieve. According to Tule, Okpanachi, Ogiji and Usman (2018), using monetary policy targets ensure the effectiveness of monetary policy through the stability of the money demand. Therefore, when monetary policy targets lose their relevance, money demand instability occurs which



indicates less ability to signal the appropriate stance of monetary policy in an economy (Okonkwo, Ajudua & Alozie, 2014).

In this regard, the Central Bank of Nigeria has implemented different monetary policy targets to ensure money demand stability. For instance, Nigeria at various times, adopted exchange rate targeting under the pegged exchange rate regime (Ayinde, Adeyemi & Ali-Balogun, 2023). Also, Nigeria adopted the interest rate targeting as an instrument of monetary policy to stabilise money demand as opposed to financial market liberalization previously upheld by developed countries (Nwachukwu et al., 2021). Currently, Nigeria employs monetary targeting to stabilize money demand, but this approach has had limited success which have led to the consideration of adopting inflation targeting since 2007 (Bassey & Essien, 2014). However, this shift remains unofficial because the CBN has been cautious about fully implementing inflation targeting (Sanusi, 2010). Despite these transitions in monetary policy targets, available data from the Central Bank of Nigeria's statistical bulletin (2022) shows that the main monetary policy targets in Nigeria are the inflation rate target, interest rate target and real gross domestic product target, which are the primary focus of this study.

Despite decades of the Central Bank of Nigeria (CBN) using monetary policy targets as a tool for economic redirection, the impact on money demand stability remains unclear amid increasing fluctuations. This instability is apparent in the Nigerian economy's response to policies such as the global shocks, cashless policy and the Naira redesign and reissuance (Akpanung & Umkanagwa, 2018; Nakorji & Asuzu, 2019). Therefore, monetary demand instability poses significant challenges for monetary authorities since it limits their ability to adopt appropriate monetary instruments in the pursuit of various macroeconomic goals in Nigeria (Edet et al., 2017; Nwachukwu et al., 2021).

Previous empirical researches have focused on the stability of money demand and its determinants in Nigeria. However, these studies primarily used actual monetary policy variables without considering the impact of monetary policy targets on money demand. Therefore, this study aims to build upon existing literature by examining the influence of monetary policy targets on money demand in Nigeria. That is, to evaluate the effectiveness of these policy targets, particularly inflation rate targets, and interest rate targets, in shaping the behaviour of individuals and businesses regarding holding money. This research

disaggregates these targets to ascertain their impact more clearly.

The general aim of this study is to investigate the impact of monetary policy targets on money demand in Nigeria. However, specific objectives of this study include to determine the impact of operating target on money demand in Nigeria; evaluate the impact of interest rate target on money demand in Nigeria; and examine the impact of inflation rate target on money demand in Nigeria. This study covers the period 1985 to 2023 based on available datasets from the Central Bank of Nigeria Statistical Bulletin. The major variables employed in the study include broad money demand (M_2) which serves as the dependent variable and monetary policy targets which is disaggregated into real operating targets, inflation targets and interest rate targets which were the main independent variables. This study also introduces credit to private sector target as a control variable into the model.

II. LITERATURE REVIEW

2.1 Conceptual Literature Review

a) The Concept of Money Demand

The concept of money demand is very much important in an economy because of the role it plays in bringing about effectiveness in monetary policy (Imimole & Uniamikogbo, 2014). It has been captured using different variables by previous empirical studies. First, money demand is viewed in its narrow sense (M_1) which is the sum of deposit and currency held by individuals. Second, money demand in a broader sense includes M_2 and M_3 . M_2 includes all the elements of narrow money as well as savings and time deposit while M_3 includes M_2 as well as currency, deposits with an agreed maturity of up to two years and so on. This study conceptualises money demand using the M_2 given that it gives a broad concept of money demand compared to M_1 and due to its data availability in Nigeria.

b) Monetary policy target

Monetary policy targets are specific economic variables that central banks aim to influence through their policy actions. These targets are essential for guiding economic growth, controlling inflation, and managing employment levels (Bernanke, 2020). Monetary policy targets emanate from the monetary policy framework adopted by an economy (Connell, 2008). Monetary policy targets respond to changes in monetary policy framework which has gradually evolved with historical developments or prevailing domestic market conditions that has affected the effective



delivery of its mandates and outcomes (Dogo et al., 2016). In this regard there are different monetary policy framework which includes exchange rate targeting, monetary targeting, interest rate targeting and inflation targeting (Connell, 2008). Other aggregates which central banks sometimes target, but are not necessarily part of any monetary policy framework include nominal GDP, bank credit, asset prices and credit to private sectors (Dogo, et al., 2016).

Exchange rate targeting is a monetary policy target used by the central bank aiming to maintain its country's currency at a specific value relative to another currency or a basket of currencies (Krušković, 2020). According to Dogo et al. (2016), it functions as a tool for managing a country's currency value, affecting various macroeconomic variables such as interest rates, inflation, and economic growth. Imimole & Uniamikogbo (2014) stated that monetary targeting involves actively targeting of monetary aggregates including narrow money, bank reserves and broad money through the manipulation of monetary instruments.

For interest rate targeting, central banks target their baseline interest rate to influence prevailing market conditions as well as the level and direction of other interest rates in the market (Mordi et al. (2012) while inflation targeting is a monetary policy strategy which uses inflation expectation (Bulut, 2018). Fabris (2018) noted that inflation is usually targeted within the range of 1% and 3%. Other monetary target includes the nominal or real gross domestic target which involves the central bank setting and pursuing a growth rate that is considered sustainable without causing undesirable inflation.

Monetary policy targets tackle numerous economic issues, such as managing inflation, stabilizing the currency, and promoting economic growth which affect money demand within an economy (Kiley & Roberts, 2017). Specifically, Nakorji and Asuzu (2019) clearly explained that targeting interest rates impacts money demand by influencing the opportunity cost of holding money. Similarly, Okafor (2021) noted that growth-oriented targets increase economic liquidity by boosting spending and investment. Furthermore, setting inflation targets to stabilize prices creates predictable economic conditions that facilitate investment and spending decisions. Summarizing these, Owoye and Onafowora (2007) stated that identifying growth targets for money supply and manipulating interest rates and reserve money are crucial for controlling liquidity and managing inflation. This study specifically focuses on interest

rate, inflation rate, and real gross domestic product targets, given the availability of data in Nigeria.

2.1.2 Review of Basic Theory

a) Classical Theory of Money Demand:

The classical theory of money demand is based on the foundational principles and contributions of the classical economists such as Adam Smith and J.B. Says (Abiola & Egbuwalo, 2012). This stands on the general notion that supply creates demand. However, specific detail about the money demand was discussed in the Quantity theory of money by Fisher (1911). According to the theory, the value of money held is inversely related with the price level which on its own depends on the stock of money available (Nwachukwu et al., 2021). Hence, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa.

In this theory, certain assumptions are made such as the economy naturally progresses toward a long-term full-employment equilibrium, with the price level is being influenced by the quantity of money in the economy. In addition, money supply is exogenous and the income velocity of money is stable (Onakoya & Yakubu, 2016). Therefore, if the velocity is stable, then the demand for money is stable. Hence, there is a tight link between the amount of money and the level of nominal income. These assumptions are mathematically expressed as in the Fisher equation $MV = PQ$

Where: M is the stock of money, V is its velocity (how many times a unit of money turns over during a period of time), P is the price level and Q is quantity which represents the national income. This theory suggests that the demand for money is considered to depend on the price level and real GDP, but not on interest rates.

The classical quantity theory of money demand was highly criticised based on its several assumptions. The theory was criticised for overemphasis on price level and its assumption of long run equilibrium. The theory also majorly focused on transactional motive of money demand largely ignoring the speculative motive which was later introduced by Keynes. Lastly, the classical theory assumes the stable velocity of money (the rate at which money circulates in the economy). However, empirical evidence suggests that the velocity of money can be highly unstable due to changes in financial innovation, monetary policy, and economic conditions. Despite these criticisms, the classical theory of money demand is highly



relevant is the theory provided foundational ground for other theories in explaining money demand.

b) Keynesian Theory of Money Demand

The Keynesian theory of money demand can be linked to the liquidity preference theory by Keynes (1936) which was discussed in his book “the general theory of employment, interest and money”. This theory was developed to counter the classical demand for money underlining idea that money demand is dependent on price level. According to Keynes, money demanded is as a result of its liquidity which simply means conversion of an asset into raw cash (Nwachukwu et al., 2021). Keynes (1936) clearly explained that the reason for money demand were based on three motives which included transaction, precautionary and speculative motive. According to him, transaction motive for money demand means people need money for their daily transactions while precautionary motive is the demand for money by people for unforeseen events (Tule et al., 2018). Here, he stressed that money demand is a function of real income (Y). For the speculative motive of money demand, people hold money to take advantage of future opportunities and investment which he also stressed is a function of interest rate.

This theory is based on the assumption that interest rate could fall to a point where it may not be able to rise again; this was Keynes position of liquidity trap where the economy will be thrown into recession (Edet et al., 2017). Most importantly, this theory does not postulate that economy moves to a long run full-employment equilibrium (Onakoya & Yakubu, 2016). Hence focus on short run equilibrium. It is assumed that the interest rate has an important effect on the money demand and the income velocity of money is not stable. In conclusion, the Keynesian demand for money is important because it stresses the demand for money in any period will depend on both the current nominal interest rate and the expected future interest rate in addition to the transaction and precautionary motives which depend on income.

2.2 Empirical literature

Bitrus (2011) investigated the demand for money in Nigeria from 1985 to 2007 using annual time series data on both narrow and broad money, income, interest rate, exchange rate and the stock market. The study employed the use of multiple regression analysis and CUSUM stability test. The study showed that money demand function is stable in Nigeria for the sample period and that income is the most significant determinant of the demand for money. It was also gathered that stock market

variables can improve the performance of money demand function in Nigeria

Aiyedogbon, Ibeh, Edefe and Ohwofasa (2013) carried out an empirical analysis of money demand function in Nigeria from 1986 to 2010 using the vector error correction model. In the long run, it was shown that interest rate, inflation rate and trade openness have negative impact on money demand while the impact of gross fixed capital formation, exchange rate and government expenditure on the other hand are positive on money demand in Nigeria. In the short run, lag values of money demand, gross capital formation, interest rate and exchange rate have negative relationship with current money demand while the impact of inflation rate and trade openness are positive. The test of stability shows that real money demand function in Nigeria is stable as neither the CUSUM nor the CUSUMSQ plots cross the 5 percent critical boundaries

In testing for the stability of money demand function in Nigeria, Imimole and Uniamikogbo (2014) used quarterly data from 1986 to 2010 with the aid of autoregressive distributed lag (ARDL) bounds testing procedure. The empirical results indicated that in the long-run and short run, real GDP and real effective exchange rate have a positive significant impact while short term domestic interest rate has a positive insignificant impact on real money demand. Contrary, inflation rate has a negative significant impact while foreign real interest rate has a negative insignificant impact on money demand.

In another study, Okonkwo, Ajudua and Alozie (2014) carried out an empirical analysis of money demand stability in Nigeria using the error correction method. Their study's result showed that national income (GDP), interest rate (INT) and inflation (INF) are not significant at current values. However, the lags of these variables are significant 1 percent, 5 percent and 10 percent respectively. Also, all the independent variables had an inverse relationship with money demand except for national income (GDP).

Onakoya and Yakubu (2016) examined the stability of money demand function in Nigeria using annual time series data on broad money, real GDP growth rate, inflation rate and interest rate from 1992 to 2014. The study employed the Ordinary Least Squares (OLS) technique and the result showed that all the variables had a negative significant impact on broad money demand.

Edet, Udo and Etim (2017) modelled the demand for money function in Nigeria from 1986 to 2013. By employing the Parsimonious error



correction model, the result revealed that while income enhances the desire to hold money, interest rate and expected inflation rate impacted negatively on money demand. Further result of the Friedman restated hypothetical model showed that increase in return to other money assets such as savings deposit, equity and treasury bill reduces economic agent's desire to hold money.

Nwachukwu, Egbeoma and Nkwede (2021) examined money demand function in Nigeria using Toda-Yamamoto Approach from 1980 to 2019. It was shown that real income and interest rate both have positive impact on money demand while inflation rate both at a year and two years period lags had negative impact on money demand in Nigeria.

Iriabije and Effiong (2022) examined money demand function using Nigerian data from 1986 to 2021. With the Robust Ordinary Least Squares estimation method, the income level exerted a positive and significant effect on money demand, while interest rate put forth a negative but insignificant impact. Also, it was found that the price level and exchange rate directly and significantly affect Nigeria's current money demand function.

III. RESEARCH METHODOLOGY

This study is anchored on an eclectic theoretical framework, combining both the Classical and the Keynesian theory of demand. The classical theory of money demand was postulated by Irving (1911) and the Keynesian theory of money demand by Keynes (1936). The classical quantity theory of money postulates that demand for money is dependent on the price level and gross domestic product. On the other hand, the Keynesian money demand theory states that people hold money for transactional, precautionary and speculative purposes.

3.1 Model Specification

Based on the theoretical framework of the Classical and Keynesian theories of demand, this study further modifies the model of Nwachukwu et al. (2021) which is specified as;

$$M_d = f(GDP, INT, INF)$$

(3.1)

This is to fulfill the specific objectives of this study which is focused on the impact of monetary policy targets on money demand. Therefore, this study uses the targeted gross domestic product, targeted interest rate and targeted inflation rate instead of their actual values. Also, this study introduces the targeted credit to private sector into the model. Hence, the functional model is expressed as;

$$M_d = f(TRGDP, TINT, TINF, TCPS, NDC, NCGS) \quad (3.2)$$

The mathematical function is stated as

$$M_d = TRGDP - Tr - TINF + TCPS + NDC + NCGS \quad (3.3)$$

Econometrically, the above model is restated as $LN M_d_t = \beta_0 + \beta_1 LN TRGDP_t - \beta_2 LN Tr_t - \beta_3 LN TINF_t + \beta_4 LN TCPS_t + \beta_5 LN NDC_t + \beta_6 LN NCGS_t + \mu_t$ (3.4)

Where; M_d is Money Demand, TRGDP is targeted real gross domestic product; Tr is targeted interest rate; TINF is targeted inflation; TCPS is targeted credit to private sector; NDC is net domestic credit; NCG is net claims on the government sector; β_0 is intercept or constant; β_1 to β_6 is slope coefficient; μ is error term and t represent time series data.

3.4 Estimation Procedure and Technique

The estimation procedure starts the descriptive statistics. The descriptive statistics provides a summary of the characteristics of datasets that was used in the study by looking at the central of tendency and central of dispersions.

Autoregressive Distributive Lag (ARDL) framework provided by Pesaran and Shin (2001) was used as the estimation technique of the study. This technique is adopted because it has better small sample properties than alternative methods like Engel-Granger (1987), Johansen and Julius (1990), and Philip and Hansen (1990). This method avoids the classification of variables as I(1) and I(0) by developing bands of critical values which identifies the variables as being stationary or non-stationary processes. The ARDL method can distinguish between dependent and explanatory variables.

IV. RESULTS AND DISCUSSION OF FINDINGS

4.1 Data Presentation and Analysis

The summary of the analyses and other preliminary tests discussed in section three are presented in Table 4.1.

Table 4.1: Summary of Descriptive Statistics

	MD	TRGDP	TR	TINF	TCPS	TNDC	TNCGS
Mean	15.31757	4.520998	11.20779	12.30484	21.99380	18.09818	13.05017
Median	16.12517	4.090000	10.28833	10.71000	20.00000	16.25000	10.20000



Maximum	19.39180	10.00000	23.24167	30.00000	47.50000	87.00000	96.60000
Minimum	9.033901	-2.900000	4.206848	5.000000	-2.100000	-72.30000	-150.3000
Std. Dev.	3.352106	2.641645	4.105270	5.502009	11.20313	23.48780	37.49810
Skewness	-0.727869	-0.031384	0.691335	1.948671	0.414840	-0.761918	-1.864593
Kurtosis	2.191493	3.453304	3.571240	6.772310	2.893303	8.926265	10.94244
Jarque-Bera	4.505889	0.340315	3.636901	47.80686	1.137099	60.84439	125.1074
Probability	0.105089	0.843532	0.162277	0.000000	0.566346	0.000000	0.000000
Sum	597.3852	176.3189	437.1038	479.8889	857.7581	705.8291	508.9566
Sum Sq. Dev.	426.9914	265.1750	640.4231	1150.340	4769.382	20963.72	53432.08
Observations	39	39	39	39	39	39	39

Source: Researchers' Computation using E-Views 10.0

Table 4.1 shows the data's central tendency, variability, skewness, and kurtosis for each variable in our model. The mean values of all the variables showed the average values of the variables over the years which incidentally lied between the maximum and minimum values. Also from the foregoing analysis results, while targeted interest rate (TR), targeted inflation rate (TINF) and targeted credit to private sector (TCPS) were positively skewed, money demand (MD), targeted RGDP, targeted net domestic credit (TNDC), and targeted net claims on the government sector (TNCGS) were all negatively skewed.

From table 4.1, all variables showed a leptokurtic or positive kurtosis with values greater than 3 except for money demand (MD) and targeted credit to private sector (TCPS) that are platykurtic.

This means that MD and TCPS' distributions are flatter than a normal distribution and have relatively fewer extreme values or outliers compared to the sample mean. It suggests that the values tend to cluster more closely around the mean, and there is less variability in the tails of the distributions. The Jarque-Bera test matches the skewness and kurtosis of the data to see if it matches a normal distribution. From the report, the probability of the Jarque-Bera test statistics for all the variables indicates that they are normally distributed.

4.1.2: Stationary or Unit Root Test

The augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root test results are presented in Table 4.2.

Table 4.2: Unit Root Test Results

Variables	ADF Stat	5% Critical Value	Order of Integration	PP Stat	5% Critical Value	Order of Integration
MD	-5.51	-1.95	I(1)	-5.49	-2.94	I(1)
TRGDP	-7.78	-2.94	I(1)	-8.22	-2.94	I(1)
TR	-4.33	-2.95	I(1)	-7.45	-2.94	I(1)
TINF	-3.37	-2.94	I(1)	-11.39	-2.94	I(1)
TCPS	-6.90	-2.94	I(1)	-9.55	-2.94	I(1)
TNDC	-6.78	-2.94	I(1)	-16.47	-2.94	I(1)
TNCGS	-14.10	-2.94	I(1)	-30.45	-2.94	I(1)

Source: Researchers' Computation using E-Views

Evidence from unit root results in Table 4.2 shows that all the variables included in the model were stationary at first difference, since the decision rule is to reject null hypothesis if the ADF or PP statistic value exceeds the critical value at a chosen level of significance (in absolute terms), and accept stationarity when ADF statistics is greater than criteria value and also if the probability values are less than or equal to 0.05. Having obtained stationarity at first difference, the ARDL bound test was conducted to check for the existence of long-run relationships among the variables.

4.1.3 Co-integration Test Result

Co-integration test was conducted to ascertain the existence of long-run relationships between the variables included in the model. This study employed ARDL Bound test because of the order of integration of variables. ARDL Bound test allows for dynamic co-integration assessments of variables that not integrated at level. The result of the ARDL Bound test is shown in Table 4.3.



Table 4.3: ARDL Bound Test Results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.088617	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99
Actual Sample Size	36		Finite Sample: n=40	
		10%	2.218	3.314
		5%	2.618	3.863
		1%	3.505	5.121
			Finite Sample: n=35	
		10%	2.254	3.388
		5%	2.685	3.96
		1%	3.713	5.326

Source: Researchers' Computation using E-Views

The ARDL F-Bound test result in Table 4.3 shows the existence of long-run relationship between the variables given the absolute values of the 5% critical value at lower bound [I(0)] and upper bound [I(1)] are less than the F-statistic of 6.08. Thus, the null hypothesis that there is no long-run relationship between the variables was rejected and the alternative hypothesis that there exists long-run relationship between the variables was accepted. This also implies that targeted RGDP, targeted interest rate, targeted inflation rate, targeted credit to private sector, targeted net domestic credit, and

targeted net claims to government sector (TNCGS) can be used to forecast money demand trends in Nigeria. To better understand this, a correlation analysis was done to show the degree and nature of associations that exist between the variables.

4.1.4. Correlation Test

Correlation test as explained in the preceding section, shows the degree and nature of association that exists between variables contained in a model. The result of the correlation matrix is shown in Figure 4.4.

Table 4.4: Correlation Matrix Result

Correlation	MD	TRGDP	TR	TINF	TCPS	TNDC	TNCGS
MD	1.000000						
TRGDP	0.228021	1.000000					
TR	-0.616188	0.067305	1.000000				
TINF	-0.176761	-0.337141	0.007420	1.000000			
TCPS	0.191401	0.686106	0.069418	-0.167213	1.000000		
TNDC	0.191862	0.127285	0.012251	-0.127403	0.342375	1.000000	
TNCGS	0.196053	-0.047541	-0.158715	-0.046707	-0.110726	0.313617	1.000000

Source: Researchers' Computation using E-Views 10.0

As shown in Table 4.4, each cell in the table shows the correlation between two specific variables. For example, the correlation between money demand (MD) and targeted RGDP is 0.22, which indicates that targeted RGDP is weakly related to money demand, while targeted interest rate (TR) is averagely and negatively related to money demand. None of these variables were found

to be not basically related to money demand. The correlation coefficients along the diagonal of Table 4.4 are all equal to 1 because each variable is perfectly correlated with itself.

4.1.5 ARDL Long-run and Short-run Estimations

ARDL estimation technique helps to show dynamic (long and short run) relationships between the



dependent variable and independent variables. The result of the ARDL long-run estimation is shown in

Table 4.5.

4.1.5.1 ARDL Long-run Estimate

Table 4.5: ARDL Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MD(-1)	0.917322	0.066072	13.88359	0.0000
TRGDP	-0.114636	0.059865	-1.914908	0.0692
TRGDP(-1)	-0.028428	0.055617	-0.511130	0.6146
TRGDP(-2)	0.144869	0.051134	2.833123	0.0100
TR	0.076911	0.047995	1.602468	0.1240
TR(-1)	-0.040759	0.049345	-0.826006	0.4181
TR(-2)	-0.069533	0.044557	-1.560520	0.1336
TINF	0.082637	0.021955	3.763844	0.0011
TINF(-1)	-0.011909	0.028690	-0.415078	0.6823
TINF(-2)	-0.011595	0.027395	-0.423272	0.6764
TINF(-3)	-0.061913	0.023930	-2.587188	0.0172
TCPS	0.022486	0.013650	1.647305	0.1144
TNDC	-0.007434	0.004493	-1.654578	0.1129
TNCGS	-0.002113	0.002508	-0.842819	0.4088
C	1.642607	1.834371	0.895460	0.3807
R-squared	0.984947	Mean dependent var		15.73645
Adjusted R-squared	0.974912	S.D. dependent var		3.138454
S.E. of regression	0.497110	Akaike info criterion		1.734326
Sum squared resid	5.189483	Schwarz criterion		2.394125
Log likelihood	-16.21786	Hannan-Quinn criter.		1.964613
F-statistic	98.14758	Durbin-Watson stat		2.110967
Prob(F-statistic)	0.000000			

Source: Researchers' Computation using E-Views

Table 4.5 shows the ARDL long-run regression result. The model has an R-squared of 0.9849 which implies that approximately 98% of the variations or dynamics in money demand is accounted for by government expenditure and other regressors proxied by targeted real GDP, real interest rate, inflation rate, credit to private sector, net domestic credit, and net claims on government sector. This is supported by the adjusted R-squared value of 0.9748 – implying 97% accuracy of the independent variables in accounting for the variations in the dependent variable. Furthermore, the result shows an F-statistic value of 98.14 with probability value of 0.000000. This shows that the explanatory variables (targeted real GDP, real interest rate, inflation rate, credit to private sector, net domestic credit, and net claims on government sector) jointly maintain a highly significant impact on money demand. By implications, monetary policy target significantly impacts money demand function in Nigeria. The result also presents a Durbin-Watson statistic of 2.11. As a rule of thumb,

this value is approximately 2, hence, the model is free of autocorrelation.

The individual variables in Table 4.6 are evaluated at 5% significance level using their probability values. Targeted RGDP (TRGDP) lagged twice have significant impact on money demand only in the second lag. This means that the targeted RGDP in the second lagged period has significant impact on money demand in Nigeria. Targeted real interest rate (TR) does not have a significant impact on money demand in both first and second lag. There exists a positive and significant relationship between the current targeted inflation rate and money demand function in the current period in Nigeria. That is, 1% rise in inflation would increase money demand in the current period. Furthermore, with a coefficient of 0.02, targeted credit to private sector (TCPS) insignificantly increases MD by 2% while targeted net domestic credit insignificantly reduces MD by 0.7% in the current period. Finally, relating to the significance of the individual variables, targeted net claims to government sector was found to have



negative multiplier effect on money demand in Nigeria. That is, a 1% increase in targeted net claims to government sector will reduce money demand by 0.02%. An observable outcome of this ARDL long-run estimation result shows that only targeted inflation rate had significant long-run relationship with money demand in the current period.

4.1.5.2 ARDL Short Run Estimates (Error Correction Model)

Having presented the long run estimate, the error correction modelling is estimated to reconcile the long-run behaviour of cointegrated variables with their short-run responses. The error correction model shows the dynamic error analysis of the cointegrated variables. Its speed of adjustment from one period to another is expected to have a negative sign, assume values between 0 and 1 and also be significant at the 5% to show a strong convergence process to the long-run equilibrium. The result of ECM specification is reported in Table 4.6.

Table 4.6: ARDL Short-run Estimation Result

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TRGDP)	-0.114636	0.039163	-2.927119	0.0081
D(TRGDP(-1))	-0.144869	0.041261	-3.511060	0.0021
D(TR)	0.076911	0.030617	2.512068	0.0202
D(TR(-1))	0.069533	0.032670	2.128364	0.0453
D(TINF)	0.082637	0.017407	4.747467	0.0001
D(TINF(-1))	0.073508	0.020895	3.517998	0.0020
D(TINF(-2))	0.061913	0.017054	3.630353	0.0016
CointEq(-1)*	-0.082678	0.014404	-5.739795	0.0000

Source: Researchers' Computation using E-Views

As shown in Table 4.6, both current and lagged values of targeted RGDP (TRGDP) have negative impacts on money demand in the short run. This is seen in the coefficient values of -0.11 and -0.14 for the present value and lagged value respectively. This indicates that a 1% increase in TRGDP reduced money demand by 11% and 14% respectively. Relating to targeted real interest rate (TR), it had positive impact on money demand in both current and lagged periods. This implies that in the short run, a 1% increase in TR increases money demand by 7% and 6% respectively.

Targeted inflation rate (TINF) had positive impact on money demand in the current period. TINF had a value of 0.08 in the current period. In the lagged period, with a value of 0.07, TINF also

had positive impact on money demand in Nigeria. This implies that a 1% increase in TINF increased money demand by 7% in the first lagged period and 6% in the second lagged period. Finally, the error correction term satisfied the a priori expectation as it assumed a value between 0 and 1, which is correctly signed. Its co-efficient is -0.08, suggesting that the speed of adjustment from the short run back to the long run if there is disequilibrium in the model is 8%.

From the regression analysis, it is observed that all the variables conform to the a priori expectation of the study in the short run except for targeted RGDP and real interest rate. Thus, table 4.7 summarises the a priori test of this study.

Dependent Variable	Independent Variables	Expected Relationships	Observed Relationships	Conclusion
Md	TRGDP	+	-	Not Conformed
	Tr	-	+	Not Conformed
	TINF	+	+	Conformed
	TCPS	+	+	Conformed
	NDC	+	+	Conformed
	NCGS	+	+	Conformed

Table 4.7: Summary of A Priori Test

Source: Researchers' Compilation (2024)



2. Statistical Criterion (First Order Test)

To check if the statistical criterion is met, the R², adjusted R² and the F-test of the long-run estimate was applied here.

(a) The Coefficient of Determination (R²)

From the study regression result, Table 4.5 shows that the coefficient of determination (R²) is given as 0.9849, which implies that 98.4% of the variations in money demand are accounted for or explained by the joint variations in targeted RGDP, real interest rate, inflation, credit to private sector, net domestic credit, and net claims to government sector in Nigeria, while other possible determinants of money demand not captured in the model explain about 1.6% of the variation in money demand in Nigeria. This shows a high explanatory power of the model used in this study.

(b) The Adjusted Coefficient of Determination (Adjusted R²)

The adjusted R² which is more suitable for multiple regression analysis in table 4.6 supports the claim of the R² with a value of 0.9749 indicating that 97.4% of the total variation in the dependent variable (money demand) is explained by the independent variables jointly. Thus, this supports the statement that the explanatory power of the variables is extreme high and very strong.

(c) The F-test

The F-test is instrumental in verifying the overall significance of an estimated model. The hypothesis tested is:

H₀: The model has no goodness of fit

H₁: The model has a goodness of fit

Decision rule: Reject H₀ if F_{cal} > F_{tab} (k-1, n-k) at 5% level of significance.

Where

V₁ / V₂ Degree of freedom (d.f)

V₁ = k-1; V₂ = n-k

n (number of observation); k (number of parameters)

k-1 = 7 - 1 = 6

n-k = 39 - 6 = 33

Therefore, from the F-table, F_{0.05(6,33)} = 2.42 (From F-table) F-table

F-statistics = 98.1475 (From Regression Result) F-calculated

Therefore, since the F-calculated > F-table, the study rejects H₀ and accept H₁ that the model has goodness of fit and is statistically different from zero. In other words, there is significant impact of the independent variables on money demand in Nigeria.

3. Econometric Criterion (Second Order Test)

In this subsection, the following econometric tests are used to evaluate the result obtained from the study model; autocorrelation, multicollinearity, heteroscedasticity, normality and stability test.

(a) Test for Serial Correlation

Using Breusch-Godfrey Serial Correlation LM Test shown in Table 4.8, the test for serial correlation was conducted.

Table 4.8: Summary of Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.312626	Prob. F(2,19)	0.7352
Obs*R-squared	1.146944	Prob. Chi-Square(2)	0.5636

Source: Researchers' Computation using E-Views

Hypothesis

H₀ = There is no serial correlation

H₁ = There is serial correlation

Decision Rule: Since it is observed that the p value obtained is 0.73, we accept the null hypothesis that there is no serial correlation and reject the alternate hypothesis. Therefore, the variables in the models are reliable for predictions.

(b) Test for Multicollinearity

This tests for the existence of a "perfect," or exact, linear relationship among some or all explanatory

variable of a regression model. The basis for this test is the correlation matrix obtained using the series. If correlation coefficient is greater than 0.8, the study concludes that there is multicollinearity but if the coefficient is less than 0.8 there is no multicollinearity. The study therefore, concluded that the explanatory variables do not have perfect or exact linear correlation. The result is presented in and summarized in table 4.9 below.

Table 4.9: Summary of Multicollinearity Test

Variables	Correlation Coefficients	Decision
MD and TRGDP	0.2280	No Multicollinearity
MD and TR	-0.6161	No Multicollinearity



MD and TINF	-0.1767	No Multicollinearity
MD and TCPS	0.1914	No Multicollinearity
MD and TNDC	0.1918	No Multicollinearity
MD and TNCGS	0.1960	No Multicollinearity
TRGDP and TR	0.0673	No Multicollinearity
TRGDP and TINF	-0.3371	No Multicollinearity
TRGDP and TCPS	0.6861	No Multicollinearity
TRGDP and TNDC	0.1272	No Multicollinearity
TRGDP and TNCGS	-0.0475	No Multicollinearity

Source: Researchers' Computation using E-Views

The degree of relationship among the independent variables has also been explicitly revealed by the correlation matrix table which can be seen in Table 4.2. However, since the goal is to verify the absence of multicollinearity, the correlation coefficients of all these relationships are observed. Following the rule of thumb that a correlation coefficient below 0.8 will not cause a multicollinearity issue, it is clearly seen that these

variables can be safely used in the estimation since they all have coefficients less than 0.8. There will not arise any problem of multicollinearity in the regression analysis

(c) Test for Heteroscedasticity

This test is conducted to see whether the error variance of each observation is constant or not.

Table 4.9: Summary of Breusch-Pagan-Godfrey Heteroskedasticity Test:

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.312626	Prob. F(2,19)	0.7352
Obs*R-squared	1.146944	Prob. Chi-Square(2)	0.5636

Source: Researchers' Computation using E-Views

The hypothesis testing is thus:

H₀: There is no heteroscedasticity in the residuals

H₁: There is a heteroscedasticity in the residuals

The decision rule is to accept the null hypothesis that there is homoscedasticity (that is, no heteroscedasticity) in the residuals if the probability of the calculated F-test statistic (F) is greater than the 0.05 level of significance chosen in the study. Hence, P(F) = 0.7352. This means that the probability F statistic is greater than 0.05 level of

significance. Therefore, the study accepted the null hypothesis that the model has no heteroscedasticity in the residuals and therefore, the data is reliable for predication.

(d) Test for Stability

The stability of a model is verified by its ability to justify that coefficients of the model are stable over sample interval and the stability of this model was verified using the CUSUM and CUSUM Square.



Figure 4.1: Diagram of CUSUM

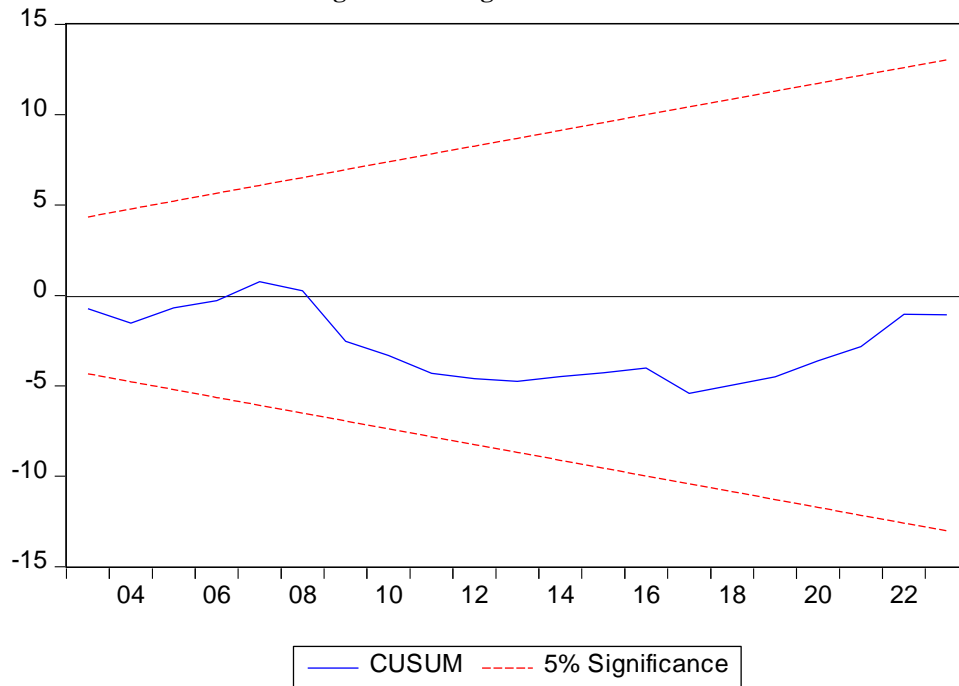
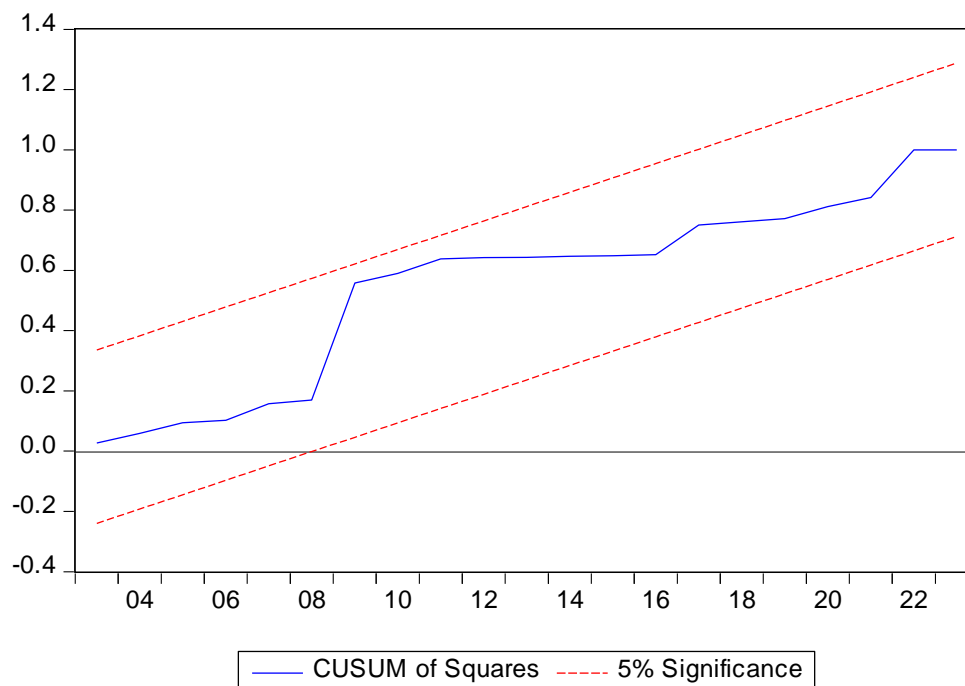


Figure 4.2: Diagram of CUSUM SQUARES



Source: Researchers' Computation using E-Views

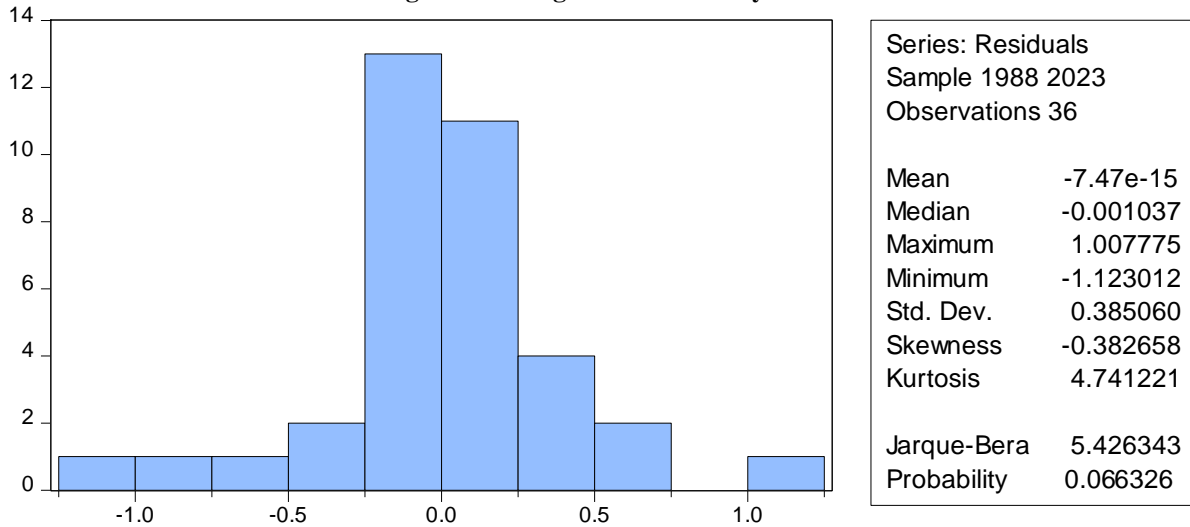
The results of the stability tests shown in Figure 4.3 revealed that the CUSUM plot line falls within -2.5 and +2.5 standard errors and the CUSUM of squares plot line falls within -0.4 and +0.4 standard errors all at 5% level of significance. This shows that the model is stable over the period under study.

(e) Test for Normality

The Normality test for the model can be found in Figure 4.3.



Figure 4.3: Diagram of Normality Test



Source: Researchers' Computation using E-Views

Hypothesis

H₀ = residuals are normally distributed
 H₁ = residuals are not normally distributed

Decision Rule: Since the probability value of the residual is 0.07, we accept the null hypothesis that the residuals are normally distributed and reject the alternate hypothesis that the residuals are not normally distributed.

4.2 Evaluation of Research Hypothesis.

The t-test is used to know the statistical significance of the individual parameters. Two-tailed tests at 5%

significance level are conducted. The result is shown on Table 4.10. Here, the study compares the calculated t-statistic with the tabulated t-statistic at $t_{\alpha/2} = t_{0.05} = t_{0.025}$ (two-tailed test).

Degree of freedom (df) = n - k = 39 - 6 = 33

So, the study has:

$t_{0.025}(33) = 2.042$ tabulated t-statistic

The study employs a 0.05 level of significance and in doing so, the decision rule is to reject the null hypothesis if the t-value is significant at the chosen level of significance; otherwise, the null hypothesis will be accepted. This is summarized in Table 4.10.

Table 4.10 Summary of t-statistics

Variables	t-calculated (t _{calc})	t-tabulated (t _{tab})	Conclusion
TRGDP	-2.92	2.042	Statistically Significant
TR	2.51	2.042	Statistically Significant
TINF	4.74	2.042	Statistically Significant

Source: Researcher's Computation using E-Views.

Hypothesis one:

H₀: Operating target has no significant impact on money demand in Nigeria.

H₁: Operating target has a significant impact on money demand in Nigeria.

Decision Rule: Applying the above decision rule to the first hypothesis, it showed that the calculated absolute t-value of -2.92 is greater than tabulated absolute t-value of 2.042 which result to rejecting the null hypothesis and accepting the alternative hypothesis that operating target has significant impact on money demand in Nigeria.

Hypothesis Two:

H₀: Interest rate target has no significant impact on money demand in Nigeria.

H₁: Interest rate target has a significant impact on money demand in Nigeria.

Decision Rule: Applying the above decision rule to the first hypothesis, it showed that the calculated absolute t-value of 2.51 is greater than tabulated absolute t-value of 2.042 which result to rejecting the null hypothesis and accepting the alternative hypothesis that interest rate has significant impact on money demand in Nigeria.

Hypothesis Three:

H₀: Inflation rate target has no significant impact on money demand in Nigeria.



H₁: Inflation rate target has a significant impact on money demand in Nigeria.

Decision Rule: Applying the above decision rule to the first hypothesis, it showed that the calculated absolute t-value of 4.74 is greater than tabulated absolute t-value of 2.042 which result to rejecting the null hypothesis and accepting the alternative hypothesis that inflation rate has significant impact on money demand in Nigeria.

4.3 Discussion of Findings

Having examined the impact of monetary policy target on money demand in Nigeria, the findings of this study provide valuable insights into practical dynamic relationships that exist between targeted real gross domestic products, targeted interest rate, targeted inflation, targeted credit to private sector, targeted domestic credit, net claims on government sector and money demand function in Nigeria. This, by extension, shows effectiveness of monetary policy mechanisms in Nigeria. From theoretical perspectives of cash-balances theory for example, money demand is significantly influenced by nominal income. Second, interest rate is assumed to have inverse relationship with money demand. These theoretical assumptions coupled with the intent of filling noted research gap held primary focus in the determination of this study's model.

From the first hypothesis and research objective of determining the impact of operating target on money demand in Nigeria, this study found that operating target has significant impact on money demand in Nigeria. This finding shows the practical usefulness of operating targeting in achieving monetary policy targets in the Nigerian economy. Proxied with targeted real gross domestic product and interest rate, operating target helps the Central Bank of Nigeria to determine how much money and credit to add to the banking system to achieve and maintain monetary policy goals. This finding aligns with the study of Kumar, Webber and Fargher (2013) who showed that the Central Bank of Nigeria uses interest rate to control the monetary system of Nigeria. Edet, Udo and Etim (2017) also found that operating target has significant impact on money demand in Nigeria since interest rate influences household and business' desire to keep cash for transactions. Operating target serves as a guide for the day-to-day liquidity management operations of the central bank.

The second finding shows that interest rate target has a significant impact on money demand in Nigeria. This finding conforms to the study of Imimole and Uniamikogbo (2014) who established that in line with operating target, most countries'

central banks adopt interest rate-focused monetary framework. The Central Bank of Nigeria for example, uses its power to independently set monthly interest rates at levels deemed fit for price stability. Alley (2016) also showed that the Central Bank of Nigeria uses short-term interest rates to influence money demand in Nigeria. This, the Central Bank of Nigeria achieves by controlling the short-term interest rates that banks in Nigeria transact at when placing excess reserves or when obtaining short-term funding, either from each other or from the central bank. Second, the study of Ikechukwu, Ito and Christiana (2016) also showed that the Central Bank of Nigeria uses interest rate target to influence money demand by changing the focus of open market operations from monetary quantities to interest rates.

From the third research question and hypothesis, it was found that inflation rate targeting has significant impact on money demand in Nigeria. This implies that the Central Bank of Nigeria's conscious use of monetary policy tools like monetary policy rate and open market operations to achieve targeted inflation rates by reducing money demand are effective. Nevertheless, persistent food inflation leads to contrary practical evidences as against the intent of the CBN as the demand for money by households in Nigeria is significant increased due to food inflation (Bassey & Essien, 2014). Households and firms in Nigeria tend to desire more cash or demand deposits to meet transaction costs (Ekong & Effiong, 2020). The study of Kelikume and Evans (2015) further highlights the impact of inflation rate targeting on money demand as inflation rate targeting seeks to bring about price stability while money demand is a function of income and is greatly influenced by transaction costs. Thus, if prices are stabilized, the desire for cash deposits to meet transaction costs may be shifted to investment-focused actions.

4.4 Policy Implication of Findings

The findings of this study show practical implications of the impact of monetary policy targeting on money demand in Nigeria. First, operating target of the Central Bank of Nigeria relies mostly on interest rate framework to influence money demand in Nigeria. From the findings, while real GDP targeting helps in directing the activities of the country to achieve a set level of national income, it leads to a reduction in money demand since money is directed to investments rather than consumption. This finding also has significant implications for the success of national economic plans like "The National Development Plan 2021 –



2025” which advocates for integrated and multi-sectoral development approach to economic development by highlighting the interplay between real GDP (real sector) and money demand (monetary sector).

Second, given that the findings show that interest rate targeting has significant impact on money demand in Nigeria, the CBN’s traditional monthly review of monetary policy rate and interest rates may have countercyclical effects on firms’ money demand for transactionary and precautionary purposes as they may tend to hold more money rather than invest and future cost of money (loans) may be higher due to increasing monthly interest rate settings by the CBN. Finally, inflation target’s significant impact on money demand, in practical terms, may not lead to money contraction in Nigeria as the country’s inflation is mostly supply driven.

V. CONCLUSION AND RECOMMENDATIONS

This study has provided comprehensive insights into influence of monetary policy targeting on money demand function in Nigeria, showing a complex interaction between financial behaviour and economic policies. Nigeria like other countries, uses monetary policy targeting instruments like interest rates, reserve requirements, and open market operations to control inflation, stabilize the currency, and promote economic growth. As shown in this study, one of the most notable impacts of Nigeria’s monetary policy targeting has been on the relationship between money supply and money demand. Targeting mechanisms, such as interest rate adjustments, have been used to influence the cost of borrowing and saving, thereby affecting the demand for money. In theory, when monetary authorities target interest rates, they impact the opportunity cost of holding money versus investing in interest-bearing assets. Lower interest rates typically increase the demand for money for transactions, as the cost of holding liquid assets is reduced. Conversely, higher interest rates tend to decrease money demand by making alternative investments more attractive. In Nigeria, the Central Bank’s use of interest rate targeting has seen varying degrees of success. For instance, in periods of high inflation, higher interest rates have been employed to curb price rises, which in turn has influenced money demand and spending behavior.

Finally, based on the findings of this study, while monetary policy targeting in Nigeria has had a noticeable impact on the money demand function, its effectiveness is moderated by various factors, including the state of the financial system, external

economic conditions, and the structure of the economy. The Central Bank’s ability to manage money demand through policy interventions is inherently linked to the broader economic environment and the responsiveness of financial institutions and economic agents. As Nigeria continues to evolve, ongoing adjustments and refinements to monetary policy targeting will be crucial in ensuring that these tools effectively stabilize the economy and align with the changing dynamics of money demand. The CBN should always set clear and flexible operating targets that align with economic conditions to stabilize money demand. This can be achieved by regularly reviewing and adjusting these targets to reflect changes in the economy.

References

- [1]. Abiola, A. &Egbuwalo, M.O. (2012). Restating Milton Friedman’s quantity theory of money: An error correction approach. *Journal of Emerging Trends in Economics and Management Sciences*, 3(5): 538-546
- [2]. Akpansung, A. O., &Umkanagwa, M. P. (2018). Money Demand Function in Nigeria: Stability and Structural Breaks. *Journal of Economics and Sustainable Development*: 9 (14).
- [3]. Alley, I. (2016). Currency demand and cash policy in Nigeria: implications for monetary policy. *Central Bank of Nigeria*, 54(2), 41.
- [4]. Ayinde, T. O., Adeyemi, F. A., & Ali-Balogun, B. A. (2023). Modelling oil price shocks and exchange rate behaviour in Nigeria—A regime-switching approach. *OPEC Energy Review*, 47(1), 71-83.
- [5]. Bassey, G. E., & Essien, E. B. (2014). Inflation targeting framework for monetary policy in Nigeria: Issues, problems and prospects. *Journal of Economics and Sustainable Development*, 5(12), 88-101.
- [6]. Bitrus, Y. P. (2011). The demand for money in Nigeria. *European Journal of Business and Management*, 3(6), 63-85.
- [7]. Blanchard, O. (2017). *Macroeconomics*. In O. Blanchard, *Macroeconomics*. (Chapter 4, p. 88). Pearson.
- [8]. Central Bank of Nigeria (2011). *Inflation targeting as a monetary policy framework. Understanding Monetary Policy Series No. 12*.
- [9]. Connell, S.O. (2008). *Inflation targeting as a monetary policy framework. Central Bank of Nigeria, Abuja*



- [10]. Dogo, M. Y., Odeniran, S. O., Opadeji, B. O., Oladunni, S., & Umolu, C. V. (2016). Transition From Monetary to Inflation Targeting in Nigeria: A Background Paper. Central Bank of Nigeria.
- [11]. Edet, B. N., Udo, S. U., & Etim, O. U. (2017). Modelling the Demand for Money Function in Nigeria: Is There Stability? *Bulletin of Business and Economics (BBE)*, 6(1), 45-57.
- [12]. Ekong, C. N., & Effiong, U. E. (2020). monetary policy and inflation targeting in Nigeria: The Need for Monetary-Fiscal Coordination. *American Journal of Theoretical and Applied Business*, 6(3), 37-46.
- [13]. Fabris, N. (2018) Challenges for modern monetary policy. *Journal of Central Banking Theory and Practice*, vol 7, no 2, pp 5-24.
- [14]. Faridi, M. Z., & Akhtar, M. H. (2013). An estimation of money demand function in Pakistan: Bound testing approach to co-integration. *Pakistan Journal of Social Sciences*, 33(1), 11-24.
- [15]. Fisher, I. (1911) *The Purchasing Power of Money: Its Determination and Relation to Credit, Interest and Crisis*. New York: Macmillan.
- [16]. Friedman, M. (1956). The quantity theory of money – A restatement; in M. Friedman (ed): *Studies in quantity theory of money*, (Chicago University press).
- [17]. Ikechukwu, A., Itoro, I., & Christiana, N. (2016). The efficacy of Nigeria monetary policy: A comparative analysis. *Scholedge International Journal of Business Policy and Governance*, 3(4), 51-52.
- [18]. Imimole, B., & Uniamikogbo, S. O. (2014). Testing for the stability of money demand function in Nigeria. *Journal of Economics and Sustainable Development*, 5(6), 123-130.
- [19]. Iriabije, A. O., & Effiong, U. E. (2022). An Estimation of Money Demand Function Using Nigerian Data: Implication for Monetary Policy. *Path of Science*, 8(10), 3001-3016.
- [20]. Jhingan, M. L. (2013). *Monetary Economics* (7th ed.). New Delhi: Vrinda Publications.
- [21]. John, O. A., Matthew, E. D. A. F. E., & Ohwofasa, B. O. (2013). Empirical Analysis of Money Demand Function in Nigeria: 1986–2010.
- [22]. Kelikume, I., & Evans, O. (2015). Inflation targeting as a possible monetary framework for Nigeria. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2664755
- [23]. Keynes, J. M. (1936). *The general Theory of Employment, Interest and Money*. London and New York, Macmillan.
- [24]. Kiley, M. T., & Roberts, J. M. (2017). Monetary policy in a low interest rate world. *Brookings Papers on Economic Activity*, 2017(1), 317–396. <https://doi.org/10.1353/eca.2017.0004>
- [25]. Kumar, S., Webber, D. J., & Fargher, S. (2013). Money demand stability: A case study of Nigeria. *Journal of Policy Modeling*, 35(6), 978–991. <https://doi.org/10.1016/j.jpolmod.2013.03.012>
- [26]. Nakorji, M., & Asuzu, O. C. (2019). Money demand in the conduct of monetary policy in Nigeria. *Economic and Financial Review*, 57(1), 1-21.
- [27]. Nwachukwu, U. G., Egbeoma, N. E., & Nkwede, F. Rethinking money demand function in Nigeria using Toda-Yamamoto Approach.
- [28]. Okafor, P. N. (2021). Analysis Of money demand in Nigeria: Implication for inflation targeting
- [29]. Okonkwo, O. N., Ajudua, E. I., & Alozie, S. T. (2014). Empirical analysis of money demand stability in Nigeria. *Journal of Economics and Sustainable Development*, 5(14), 138-144.
- [30]. Onakoya, A. B., & Yakubu, M. M. (2016). The stability of money demand function: Renewed evidence from Nigeria. *Yobe Journal of Economics*, 3(1), 146-155.
- [31]. Owoye, O., & Onafowora, O. A. (2007). Structural adjustment and the stability of the Nigerian moneydemand function. *International Business & Economics Research Journal* 3(8).
- [32]. Tule, M. K., Okpanachi, U. M., Ogiji, P., & Usman, N. (2018). A reassessment of money demand in Nigeria. *CBN Journal of Applied Statistics*, 9(1), 47-75.