MONETARY POLICY, FINANCIAL INTERMEDIATION AND HOUSEHOLD DEBT IN NIGERIA

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Abstract

The study examined the effect of monetary policy on financial intermediation and household debt in Nigeria from 1986 to 2018. The Vector Auto regression (VAR) estimation technique was used for the data analysis. Time series data for the analysis were sourced from the 2018 CBN statistical bulletin. The findings of the study revealed that monetary policy rate has a negative effect on financial intermediation in Nigeria. It also revealed that monetary policy rate have negative effect on household debt in Nigeria. From the findings, it was revealed that the MPR as a monetary policy instrument is not effective in stimulating the activities of financial intermediaries in channelling funds and credits among lenders and borrowers, most especially the households in Nigeria. As a result, the study recommended among others that, the Central Bank of Nigeria should ensure a downward review of the monetary policy rate as well as device measures to ensure that monetary policy is implemented with a view to maintaining a stable interest rate.

Keywords: Monetary Policy, Financial Intermediation, Household Debt and Broad Money Supply.

Introduction

The economic development of a country, to a large extent, is dependent on the operation of her monetary policy. The focus of every country's monetary policy is to promote economic activities through money supply. Overtime, a lot of changes have occurred in the conduct of monetary policy globally especially in the 1990s (Agbada & Osuji, 2013). Monetary policy has played a major role in stimulating economic growth and price stability all over the world, as it has become one of the most viable and most used economic tool by monetary authorities across the world in tackling macroeconomic instability. The Central Bank of Nigeria, Research Department (2016) referred to monetary policy as the process by which the central banks or monetary authorities of a country controls the supply, availability and cost of money in order to attain a set of objectives usually geared towards promoting national economic goals. It is therefore the deliberate actions taken by the central bank to stabilize the economy.

Ekwe, Ogbonnaya and Omodero (2017) noted that monetary policy is used by the central banks for achieving certain national goals or objectives such as low unemployment, high output growth rate, low inflation rate and stable exchange rate. These are referred to as the "goals" or "ultimate goals" of monetary policy.

In Nigeria, monetary policy has evolved over the years to cover both the direct and indirect era, with adoption of exchange rate target (1959-1973) and monetary target (1973–till date) strategies. However, independent monetary policy did not commence till 1979. By 1983, the CBN switched to the indirect approach to monetary policy. This approach neither precluded nor changed the goals of monetary policy: achievement of domestic price and exchange rate stability; maintenance of a favourable balance of payment position; development of a sound financial system; and promotion of rapid and sustainable rate of economic growth.

Ogiriki and Andabai (2014) pointed out that financial intermediaries have become the engine of growth and development by the process of financial intermediation. Channeling of funds from surplus to deficit units of the economy will encourage, largely, productive innovation.

Most policymakers in Nigeria suggests that household debt can affect consumption decisions through debt servicing costs as interest rates change and borrowing constraints are imposed by financial intermediaries (Olawale, 2015). The financial intermediaries play the role of channeling funds in form of credit or loan for investment to the private sector and households who need them to put them into productive means. Financial intermediaries are not just agents who screen and monitor on behalf of savers. They are active counterparts themselves offering a specific product that cannot be offered by individual investors to savers, namely cover for risk. They use their reputation and their balance sheet and off-balance sheet items, rather than their very limited own funds, to act as such counterparts. As such, they have a crucial function within the modern economy.

Household debt has been on a secular rise across a wide range of economies. In many cases, this reflects the deepening of financial markets and, in particular, the ability of households to tap human and non-human wealth in ways that had not previously been available. Macroeconomic impact of and the risks from household debt depend not only on the average debt level but also its distribution across households. For instance, higher-income households might be at lower risk of debt default than lower-income households. From a monetary policy perspective, a key consideration is the extent to which household debt levels and distribution affect monetary policy transmission.

In modern times where, large share of households hold debt, monetary policy can also have a direct effect on household spending via its effects on households' cash flows and disposable income. The increase in household debt can be due to numerous macroeconomic and domestic characteristics (Turinetti & Zhuang, 2011). In recent times, household debt has become an important topic of discussion due to the rapid rise in its level in many developed

and developing economies. Household debt problem had initiated economic slowdown and financial crises resulting in unsustainable global financial stability. Studies have shown that rise in household debt has impacted the economic and social aspects including criminal issues, bankruptcy, family breakup, unemployment and other social problems.

Policymakers worldwide especially in Nigeria believed that allowing greater access to credit would reduce unemployment through increased capital projects and in the long-run strengthen capital markets whereas on the demand side, the availability of credit would give more households the opportunity to consume now for future payment (Hurwitz & Luiz, 2007; Nomatye & Phiri, 2017). In as much as credit can lead to rising levels of household consumption, it can also lead households to spend money that they do not have. This in turn, lead to household debts which also comes as a result of poor money management skills and planning.

Over the years, the rapid accumulation of debts as projected by the amount of credit to the private sector in Nigeria, has attracted much attention due to its potential effect on the sustainability of households, individuals, and the stability of the financial intermediaries. The increasing number of households and those in the private sector defaulting on their payments of debt has risen concerns on the ability of households to repay what they owe most especially, in cases of economic meltdown. This happens as a result of the default role of financial intermediation which include lack of access to credit, which is a vital element of private sector led growth in Nigeria (Olawale, 2015).

For instance, from 1986 to 1990, credit to private sector (CPS) as a share of Nigeria's GDP grew downwards from 7.5 percent to 6.7 percent; while in 2000, CPS as a share of GDP rose to 7.6 percent from 6.9 percent in 1991. Then in 2009, CPS as a share of GDP increased further and stood at 20 percent. However, from 2010 to 2018, the share of CPS from the nation's GDP reduced from 18.6 percent to 17.6 percent respectively (Central Bank of Nigeria [CBN], 2018). This trend however, reflects a poor financial service or intermediation on private sector and household. Therefore, it has not been able to establish whether the household debt in the private sector is increasing or decreasing.

In addition, literature like Meniago, Mukuddem-Petersen, and Monghale (2013) revealed that with escalating debt, the household and private sector may be led to a resultant effect of unemployment shocks, asset price shocks, and income shocks. Olawale (2015) added that financial intermediaries will experience loses in their credit portfolios and the general economy will contract. However, based on some empirical studies, this can be triggered by the actions of the monetary policy system, as this can affect the savings and investment decisions of the households and private sector (Nomatye and Phiri, 2017; Okoro et al., 2018).

Moreover, other things being equal, given the system of monetary policy in Nigeria, higher interest rate can discourage the attractiveness of loans and credits by financial intermediaries

to finance consumption or investment by households and the private sector. Thus, as provided by CBN (2018), given the high interest rates in Nigeria which grew from 12 percent in 1986 to 27 percent in 2018, this reflect a problem of the fact that households and the private sector could be exposed to the high risk of been unable to repay their loans which in turn, reduces the quality of services by financial intermediaries in Nigeria.

Household debt generally has become a more serious challenge as many bankruptcy cases and social problems evolve due to the inability to pay the huge commitment. This study is therefore aimed at examining the interactions between financial intermediation and monetary policy, and the effect of such interaction on household debt in Nigeria from 1986 – 2018.

Literature Review

Conceptual Literature

This section discusses the basic relevant concepts used in this study. These include the followings.

Concept of Household Debt

Debt is the outcome of a contract between lenders and borrowers. It can be described as an amount of money borrowed by one party from another. A debt arrangement gives the borrowing party permission to borrow money under the condition that it is to be paid back at a later date, usually with interest (Olawale, 2015).

Household debt as posited by Betti, Dourmashkin, Rossi, and Yin (2007), consists of debt incurred by the household sector. While according to Organization for Economic Co-operation and Development (OECD, 2018), household debt is defined as all liabilities that require payment of payments of interest or principal by household to the creditor at a date or dates in the future. Consequently, all debt instruments are liabilities, but some liabilities such as shares, equity and financial derivatives are not considered as debt. Debt is thus obtained as the sum of the following liability categories, whenever available or applicable in the financial balance sheet of the households and non-profit institutions serving households sector, such as currency and deposits; securities other than shares, except financial derivatives, loans; insurance technical reserves, and other accounts payable.

Therefore, household debt can be defined in several ways, based on what types of debt are included. Common debt types include home mortgages, home equity loans, auto loans, student loans, and credit cards. It can also be measured across an economy, to measure how indebted households are relative to various measures of income (i.e. pre-tax and disposable income) or relative to the size of the economy. However, the burden of debt can also be measured in terms of the amount of interest it generates relative to the income of the borrower or the credit granted to the household, especially in the private sector.

Concept of Financial Intermediation

According to OECD (2018), financial intermediation is a productive activity in which an institutional unit incurs liabilities on its own account for the purpose of acquiring financial assets by engaging in financial transactions in the market. The role of financial intermediaries is to channel funds from lenders to borrowers by intermediating between them.

In addition, Pierre (2001) posited that a financial intermediary is an institution or individual that serves as a middleman among diverse parties in order to facilitate financial transactions. According to him, common types of financial intermediary include commercial banks, investment banks, stockbrokers, pooled investment funds, and stock exchanges. Financial intermediaries reallocate otherwise uninvested capital to productive enterprises through a variety of debt, equity, or hybrid stake holding structures.

In conjunction with the words of Pierre (2001), Wright and Quadrini (2012) added that a financial intermediary is typically an institution that facilitates the channeling of funds between lenders and borrowers indirectly. That is, savers (lenders) give funds to an intermediary institution (i.e. bank), and that institution gives those funds to borrowers (i.e. spenders) and this may be in the form of loans.

Concept of Monetary Policy

According to the CBN (2006), monetary policy in the Nigerian context refers to the actions of the Central Bank of Nigeria to regulate the money supply, so as to achieve the ultimate macroeconomic objectives of government.

In addition, monetary policy is the process by which the monetary authority of a country, like the central bank or currency board, controls the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency. Further goals of monetary policy are usually to contribute to economic growth and stability, to lower unemployment, and to maintain predictable exchange rates with other currencies (Roger, 2010).

Okoro, et al (2018), noted that, the monetary authority or the apex bank such as Central Bank of Nigeria (CBN) controls the affairs of the economy by regulating the cost of borrowing. This is aimed at stabilizing the economy through the stimulation of investment in order to achieve and maintain low unemployment and predictable exchange rates with other currencies, and as well promotes the intermediary role of the financial institutions.

Furthermore, to induce growth in the economy and facilitate intermediation of the financial system, the CBN uses monetary policy tools such as open market operations, bank rate, and moral suasion among others, to control the supply of money, exchange rates, and interest rates. The key objective of monetary policy in Nigeria is to ensure price and monetary stabilities. These are mainly achieved through the savers who avail investors extra funds for investment at a suitable interest rate. Banks and other related institutions should therefore be properly supervised to ensure financial sector soundness and to facilitate adequate intermediation for the maintenance of efficient system (Okoro et al., 2018).

Theoretical Framework

This study was anchored on the theorem of Modigliani and Miller known as financial intermediation theory. Given the fact that monetary policy can focus exclusively on a very limited set of financial market prices (i.e. short-term interest rates and the exchange rate), information can be obtained at no cost, if financial transactions are costless, and if other frictions are also absent. The Modigliani and Miller (1958) theorem therefore states that the value of a firm and its investment decisions are independent of the source of finance. In other words, a firm is indifferent to funding a given capital project through debt or equity. This means that if a bank refused to fund a worthwhile project, a firm could always turn to the equity market or to another financial institution to raise the requisite funds.

With respect to the monetary policy and its transmission mechanism, Claus and Smith (1999) added that if the Modigliani-Miller theorem holds, it implies a particular kind of separation between the financial and real sectors of the economy. Once the level of short-term interest rates and the exchange rate are known, the financial sector is irrelevant to an understanding of macroeconomic developments. This has a number of practical implications in Nigeria. First, it means that the Central Bank of Nigeria (CBN) can ignore financial quantities, such as the quantity of credit extended by banks and measures of the money stock. Secondly, it means that macro-econometric forecasting models need not bother with financial sector developments, once a single interest rate and the exchange rate have been taken into account.

Thirdly, it means that monetary policymakers in Nigeria can ignore signals such as the quality of bank loans, the net worth of firms, and the capital of financial intermediaries. It also means that they can ignore signals from "credit spreads", which are the differences between interest rates paid on risky debt instruments and those paid on risk-less government securities.

Empirical Literature

Household indebtedness is believed to have led to severe economic slowdown and financial crises resulting in prolong global financial instability. The followings are review of some relevant empirical literatures.

Masturah, Nur and Siti (2016) examined household debt and macroeconomic variables in Malaysia from 2008-2015. The study employed Ordinary Least Square (OLS) method and used quarterly macroeconomic variables such as base lending rates, housing price index, GDP and unemployment, as independent, and household debt as dependent variables. The result from the analysis of the time series data showed that housing price index was the most significant variable, followed by base lending rate, unemployment and GDP. The result further showed that while housing price index and GDP showed positive relationship, base lending rate and unemployment showed negative effects on the rise of household debt in Malaysia within the study period.

Korea experienced a rapid increase in household debt in the early 2000s. Chung (2009) in a study on "household debt, the saving rate and monetary policy: the Korean experience" using descriptive statistical analysis, observed that the heavy burden of debt repayment in the household sector made the Korean economy less stable. The study further observed that the rapid increase in household debt was due to low interest rates, rising house price and aggressive marketing of loans to households. Proper conduct of a country's monetary policy by the central bank was recommended in order to militate consumption volatility.

In Africa, using a VECM framework, Raboloko and Zimunya (2015) identified the factors that are influential in determining the growth of household debt in Botswana using data collected from 1994 to 2012. The empirical findings indicated that GDP per capita, interest rates and money supply determined changes in household debt in the long-run and household debt, interest rate and money supply, in the short-run.

In a similar vein, Meniago, Mukuddem-petersen and Monghale (2013) investigated the prominent factors that contribute to the rise in the level of household debt in South Africa using a Vector Error Correction Model (VECM) and quarterly time series data for the period 1985 to 2012. From the study, increase in household debt was found to be significantly affected by positive changes in consumer price index, gross domestic product and household consumption. Furthermore, house prices and household savings were found to have positively contributed to a rise in household debt. This relationship was however found to be statistically insignificant. Household borrowing was further found to be affected by negative changes in income and the prime rate.

Meanwhile in Nigeria, Shittu (2012) investigated the financial intermediation and economic growth in Nigeria using time series data spanning from 1970 to 2010. The result of the investigation revealed the existence of a positive relationship between economic growth and financial intermediation in Nigeria. Out of the two financial intermediation indicators used in the research, only broad money supply was positive and had significant impact on economic growth.

Okoro, et al (2018) examined the impact of financial intermediation on monetary policy effectiveness in Nigeria. The purpose of the study was to estimate the impact of interest rate on bank loans and advances, and the impact of cash reserve ratio on demand deposit. The data for the study were sourced from CBN statistical bulletin and the Ordinary Least Square (OLS) method was used for the analysis. The results showed that interest rate had significant impact on bank loan and advances, while cash reserve ratio had positive and significant impact on demand deposit.

Agbada and Osuji (2013) analyzed the trends in financial intermediation and output (GDP) in Nigeria from the banking crises period (1981 to 2011). The study used the endogenous components of financial intermediation such as demand deposit, time/savings deposits, and credit (loans and overdraft) as explanatory variables to predict the outcome of the dependent variable output (GDP). The data for the study were sourced from CBN statistical bulletin, 2011 while regression estimation was carried out using IBM SPSS statistic 20. The result did not only reveal that there exists a positive growth relationship between financial intermediation and output in Nigeria, but also that there existed elements of negative short-run growth relationship, especially for the periods that suffered financial shocks resulting from the global financial crisis and perhaps, numerous bank failures.

Edori, Edori, and Needam (2016) examined the relationship between financial intermediation and economic growth in Nigeria using time series data spanning from 1986 to 2014. The result of the Ordinary Least Square (OLS) analysis revealed that broad money supply and insurance intermediation ratio had positive and significant influence on the growth of the Nigerian economy while other variables such as the credit to private sector are negatively significant. The result also concluded that in Nigeria context, economic growth determined the financial sector development.

Most of the studies reviewed on the determinants of household debt and it's affects on the economy were not Nigerian based but focused on foreign economies (Yahong, 2015; Jacobsen, 2004; Magri, 2007; Meng et al., 2013; Raboloko & Zimunya, 2015; Meniago et al., 2013; Nomatye & Phiri, 2017). The studies also did not capture the effect of financial intermediation and monetary policy on household debt in those economies. In addition, all the few Nigerian based studies reviewed, captured the effect of financial intermediation and monetary policy on the growth of the economy without examining their effects on household debt. This study thus intends to fill these and other gaps. The study shall therefore use time series data from the CBN statistical bulletin to examine the effect and long-run relationship between household debts, financial intermediation, and monetary policy in Nigeria from 1986 - 2018 using relevant indicators such as credit to private sector, monetary policy rate, broad money supply and interest rate.

Methodology

This study adopted the Vector Auto regressive (VAR) model and the Johansen Co-integration test. The secondary and annual time series data used for the analysis covered the period of 33years (1986 – 2018). The period 1986 was chosen as base year because it marks the beginning of Structural Adjustment Programme (SAP) when market mechanism became the vital instrument use to achieve monetary policy objectives as against the period before when monetary policy operation was carried out through direct monetary controls. The study used relevant data obtained from various issues of Central Bank of Nigeria (CBN) statistical bulletin.

Model Specification:

The dependent variable included in the VAR model for the study was the household debt which is proxied by credit to private sector (CPS), financial intermediation which is proxied by money supply (M_2), and monetary policy which is proxied by monetary policy rate (MPR) and interest rate (INT).The mathematical form of the model was specified as;

[1] $$CPS = f\,(M_2, MPR, INT)$$

Where;

CPS = Credit to private sector (proxy for household debt);

M_2 = Broad money supply (proxy for financial intermediation);

MPR = Monetary policy rate;

INT = Interest rate.

The econometric form of the model is specified as;

[2] $$CPS = a_0 + a_1 M_2 + a_2 MPR + a_3 INT + e_t$$

Where;

α_0 = Constant term

α_1- α_3 = Coefficients to be estimated

e_t = Stochastic term

The VAR specification was represented by equation [3];

[3] $$Y_t = c + b_1 Y_{t-1} + b_2 Y_{t-2} + \cdots + b_p Y_{t-p} + e_t$$

Where;

Y_t = Variables in the VAR model

e_t = Error term

$b_1, b_2, \ldots, b_p$ = Coefficients of the variables.

The VAR specification views movements in the endogenous variables as fundamentally reflecting the effect of exogenous shocks hitting the economy. Thus, a VAR is an *n* variable model in which each variable is in turn explained by its own lagged values, plus (current) and past values of the remaining *n-1* variables.

Therefore, Equation [2] can be expressed in VAR form as;

[4] $\qquad CPS_t = b_0 + b_1 CPS_{t-1} + b_2 M_{2t-1} + b_3 MPR_{t-1} + b_4 INT_{t-1} + e_t$

[5] $\qquad M_{2t} = a_0 + a_1 CPS_{t-1} + a_2 M_{2t-1} + a_3 MPR_{t-1} + a_4 INT_{t-1} + e_t$

[6] $\qquad MPR_t = \beta_0 + \beta_1 CPS_{t-1} + \beta_2 M_{2t-1} + \beta_3 MPR_{t-1} + \beta_4 INT_{t-1} + e_t$

[7] $\qquad INT_t = \delta_0 + \delta_1 CPS_{t-1} + \delta_2 M_{2t-1} + \delta_3 MPR_{t-1} + \delta_4 INT_{t-1} + e_t$

Where;

$b_0, a_0, \beta_0 \ \& \ \delta_0$ = Intercepts of the models

$b_1, a_1, \beta_1 \ \& \ \delta_1 \ \ to \ \ b_4, a_4, \beta_4 \ \& \ \delta_4$ = Coefficients of the variables

e_t = Residual terms in the model.

Based on the above VAR specifications, the model for the effect of monetary policy on financial intermediation and household debt were given as follows:

[8] $\qquad M_{2t} = a_0 + a_1 CPS_{t-1} + a_2 M_{2t-1} + a_3 MPR_{t-1} + a_4 INT_{t-1} + e_t$

[9] $\qquad CPS_t = b_0 + b_1 CPS_{t-1} + b_2 M_{2t-1} + b_3 MPR_{t-1} + b_4 INT_{t-1} + e_t$

Equation [8] was used to examine the effect of monetary policy on financial intermediation in Nigeria while Equation [9] on the other hand was used to examine the effect of monetary policy on household debt in Nigeria.

Estimation Procedure

In carrying out the VAR analysis, the annual time series data was subjected to stationary test using the Phillips-Perron. In addition, the appropriate lag length analysis was carried out. The Johansen Co-integration test was used to ascertain the long-run relationship between the variables in the model. In addition, VAR impulse response function and variance decomposition analysis for shock responses were carried out. Furthermore, to ensure stability and absence of autocorrelation in the VAR model, the study employed Stability and the Durbin-Watson tests respectively.

Presentation and Discussion of Results

Unit Root Test Result
Table 1:Phillips-Perron unit root test result.

Variable	Order of Stationarity	PP Calculated	PP Critical Value	Order of Integration	Decision
CPS	At level	-0.428514	-3.557759	1(0)	Not stationary
	1st difference	-4.303708	-3.562882	1(1)	Stationary
M_2	At level	-1.182180	-3.557759	1(0)	Not stationary
	1st difference	-4.994098	-3.562882	1(1)	Stationary
MPR	At level	-3.260544	-3.562882	1(0)	Not stationary
	1st difference	-7.738380	-3.562882	1(1)	Stationary
INT	At level	-2.794914	-3.557759	1(0)	Not stationary
	1st difference	-7.255199	-3.562882	1(1)	Stationary

Computed at 5% PP critical value.
Source: Author's computation using Eview10.0

Table 1 showed the unit root test result. At 5% critical value, none of the times series data employed was stationary at level but at first difference.

Lag Length Result
Table 2: VAR Lag Length Result

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-791.5518	NA	1.43e+16	51.39044	51.62172	51.46583
1	-662.0128	208.9338*	1.73e+13*	44.64599*	46.03372*	45.09835*
2	-640.5078	27.74840	2.48e+13	44.87147	47.41564	45.70081

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: Author's computation using Eview10.0

From Table 2, the study used the Lag length criterion based on the Schwarz Information Criterion (SC), Akaike Information Criterion (AIC), and Hannan-Quinn Information Criterion (HQ) for its analysis. This study therefore used one lag as selected by the SC, AIC, and HQ criteria for estimating the VAR and Johansen Co-integration test.

Co-Integration Test Result

Table 3 presents the Johansen co-integration test result to ascertain the existence of long-run relationship in the VAR model.

Table 3: Co-integration Test Result

No. of CE(S)	Trace stat.	0.05% CV	No. of CE(S)	Max-Eigen Stat.	0.05% CV
None *	104.9758	69.81889	None *	44.98703	33.87687
At most 1*	59.98880	47.85613	At most 1	22.34860	27.58434
At most 2*	37.64020	29.79707	At most 2	19.02399	21.13162
At most 3*	18.61621	15.49471	At most 3	12.55684	14.26460
At most 4*	6.059368	3.841466	At most 4*	6.059368	3.841466

* denotes rejection of the hypothesis at the 5% level
Source: Author's computation using Eview10.0

The Co-integration test result on table 3 showed that at 5% level, the trace test statistics has 5 co-integrating equations, while the max-eigen value statistics indicates one co-integrating equation. This indicates the presence of long-run relationship among the variables. Furthermore, the alternative hypothesis that there exist a long-run relationship between household debt, financial intermediation, and monetary policy in Nigeria is thus accepted.

Impulse Response Test

The impulses represent the reactions of the variables to shocks hitting the system. The impulse response test results of the VAR model are presented below.

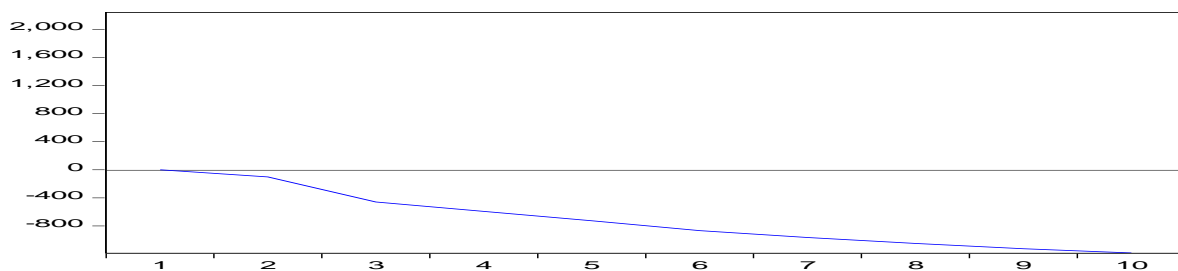1. Effect of Monetary Policy on Household Debt in Nigeria

Figure 1: Impulse Response Result of *CPS* to *MPR*

From Figure 1, the impulse response of household debt (CPS) to shocks from monetary policy rate (MPR) indicates that for ten periods MPR has a negative effect on HD. Thus, under the period of study, monetary policy rate has a negative effect on the household debt in Nigeria. This implies that the use of MPR as a monetary policy instrument is not very effective in stimulating the growth of household debt in Nigeria.

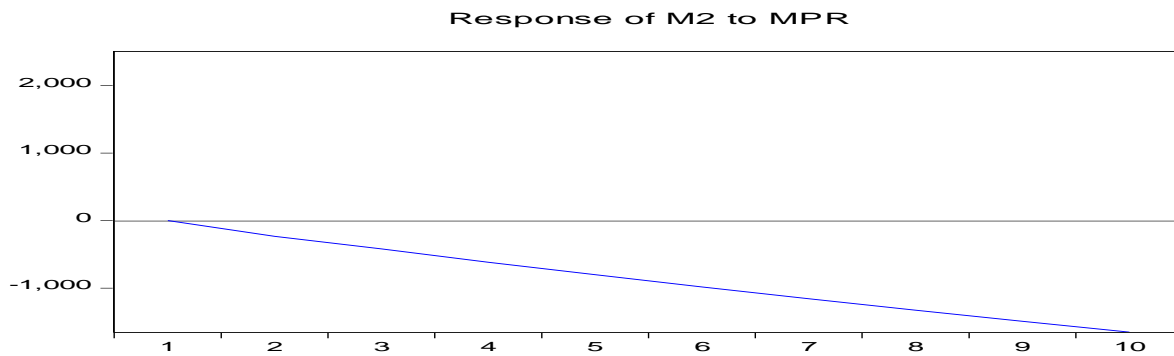2. Effect of monetary policy on financial intermediation in Nigeria.

Response of M2 to MPR

Figure 2: Impulse Response Result of M_2 to *MPR*.

From Figure 2, the impulse response of financial intermediation (M_2) to shocks from monetary policy rate (MPR) indicates that for ten periods MPR has a negative effect on FI. Thus, under the period of study, monetary policy rate has a negative effect on the financial intermediation in Nigeria.This implies that MPR as a monetary policy instrument is also not effective in stimulating the growth of financial intermediaries. This in turn, impedes the availability of funds or credits to the borrowers (households) in Nigeria.

Variance Decomposition Test

The test of variance decomposition for household debt (CPS) and financial intermediation (M_2) were presented on Tables 4 and 5, respectively.

Table 4: Results of Variance Decomposition Analysis of Household Debt (*CPS*)

Period	S.E.	CPS	M2	MPR	INT
1	819.8998	100.0000	0.000000	0.000000	0.000000
2	1384.192	88.90823	7.231789	0.539483	0.709333
3	1893.237	82.75567	10.63673	1.611813	0.394658
4	2480.267	79.11150	11.80351	1.749515	0.437311
5	3098.139	75.58267	13.62643	1.949294	0.385176
6	3734.348	72.81718	14.78854	2.155657	0.402084
7	4402.061	70.62046	15.68979	2.266451	0.414915
8	5092.477	68.75241	16.47297	2.368122	0.433362
9	5802.387	67.17778	17.10782	2.453862	0.452196
10	6531.427	65.84279	17.63741	2.520884	0.470717

Source: Author's computation using Eview10.0

The variance decomposition of CPS on table 4 indicates that a one standard deviation positive shock or innovation to MPR caused CPS to change by 1.94% in the short-run (i.e. period 5),

and 2.52% in the long-run (i.e. period 10). Other than own shock, MPR had 1.949294% and 2.520884% effects on CPS for periods 5 and 10 respectively. These represent both the short and long run. This result showed that monetary policy rate (MPR) had a minimal effect on household debt (CPS) in Nigeria within the period of the study.

Consequently, variance in CPS caused by financial intermediation (M_2) peaked at 17.6% in the long run from 13.6% in the short run. Lastly, variance in CPS caused by interest rate (INT) was 0.3% in the short run and 0.47% in the long run.

Table 5: Results of Variance Decomposition Analysis of Financial Intermediation

Period	S.E.	CPS	M2	MPR	INT
1	1.914645	78.02372	0.000000	0.000000	0.000000
2	3.116778	71.46266	7.561633	0.154853	1.896924
3	3.855285	67.97018	9.333922	0.974681	2.799215
4	4.509553	67.23137	9.270892	1.005902	3.232011
5	5.062313	66.63995	9.627500	1.038393	3.650567
6	5.514040	66.20381	9.727357	1.100999	4.005214
7	5.912086	66.03368	9.668082	1.105540	4.315754
8	6.261631	65.91814	9.614052	1.105688	4.614707
9	6.569563	65.84450	9.518679	1.103585	4.906824
10	6.845890	65.81685	9.396788	1.093194	5.192334

Source: Author's computation using Eview10.0

The variance decomposition of M_2 on table 5 indicates that a one standard deviation positive shock or innovation to MPR caused M_2 to change by 1.03% in the short-run (i.e. period 5), and 1.09% in the long-run (i.e. period 10). Other than own shock, MPR had 1.038393% and 1.093194% effects on FI for periods 5 and 10 respectively. These represent both the short and long run. The result showed that monetary policy rate (MPR) had a minimal effect on financial intermediation (M_2) in Nigeria.

Consequently, variance in M_2 caused by household debt (CPS) peaked at 65% in the long run from 78% in the short run, however making it the highest source of fluctuation to financial intermediation (M_2). While, variance in M_2 caused by interest rate (INT) was 0.0% in the short run and 5.1% in the long run.

Autocorrelation Test

The Vector Error Correction (VEC) serial correlation LM test was used to test for serial correlation.

Table 6: VEC Residual Serial Correlation LM Tests Result

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	29.51298	25	0.2430	1.227798	(25, 57.2)	0.2567
2	32.22056	25	0.1517	1.369116	(25, 57.2)	0.1629

Null hypothesis: No serial correlation at lags 1 to h

| Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	29.51298	25	0.2430	1.227798	(25, 57.2)	0.2567
2	46.00449	50	0.6344	0.860376	(50, 49.0)	0.7010

Source: Author's computation using Eview10.0

The result of the VEC Residual Serial Correlation LM tests on table 8 accepted the null hypothesis of no serial correlation since the probabilities of both lags were greater than the 5% levels.

Stability Test

The Inverse roots of the AR polynomial graph in Figure 3 have roots with modulus, which are less than one, and they lie within the unit circle; it means that the model is stable and the variance decomposition standard errors would be valid and the conclusions of the model would be reliable. Therefore, the VAR model satisfies the dynamic stability condition.

Inverse Roots of AR Characteristic Polynomial
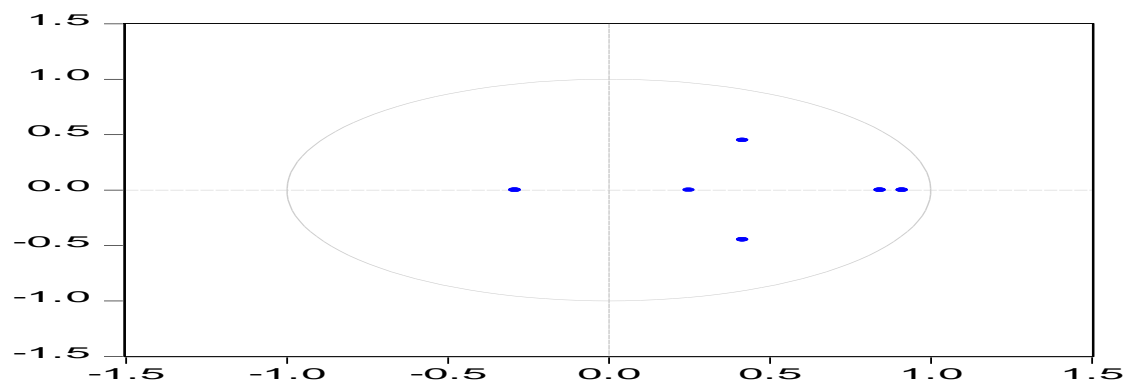
Policy Implications

The VAR estimates from the impulse response and variance decomposition test showed that monetary policy rate (MPR) had a negative effect on household debt (CPS) in Nigeria. The negative effect of monetary policy rate on household debt is implicative of the fact that the use of MPR as a monetary policy instrument is not very effective in stimulating the growth of household debt in Nigeria. This conforms to the findings of Raboloko and Zimunya (2015)

which revealed that GDP per capita, interest rates and money supply determine changes in household debt in the long-run in Botswana.

Secondly, the findings revealed that monetary policy rate (MPR) had a negative effect on financial intermediation in Nigeria (M_2). The negative effect of monetary policy rate on financial intermediation is implicative of the fact that MPR as a monetary policy instrument is also not effective in stimulating the growth of financial intermediaries. This in turn, impedes the availability of funds or credits to the borrowers (households) in Nigeria.

Conclusion and Recommendations
Conclusion

The study examined the effect of monetary policy on household debt and financial intermediation in Nigeria from 1986 to 2018. In achieving the objectives of the study, Vector Autoregression (VAR) estimation technique was employed. The result of the analysis showed that monetary policy rate had a negative effect on household debt in Nigeria. Similarly, monetary policy rate had a negative effect on financial intermediation in Nigeria. The study also revealed that the MPR is not effective as a monetary policy instrument in stimulating the activities of financial intermediaries in channelling funds and credits among lenders and borrowers, most especially the households in Nigeria.

Recommendations

Based on the findings and policy implications revealed from the analysis, the study recommends the following:
1. To address the negative effect of monetary policy rate on household debt and financial intermediation in Nigeria, the study recommends that the Central Bank of Nigeria should ensure a downward review of the monetary policy rate. This is to help stimulate investment in the private sector as well as encourage households to acquire credits and loans with a view of reducing their debts.
2. On the positive effect of broad money supply on financial intermediation and household debt in Nigeria, the study recommends that the Central Bank of Nigeria should adopt broad money supply as a monetary policy tool. It should also integrate into the formal financial sector, the country's large shadow economy to improve monetary policy targets, which in turn will improve the activities of financial intermediaries in channeling funds and credits among households in Nigeria.
3. The study further recommends that the Central Bank of Nigeria should device measures to ensure that monetary policy is implemented with a view to maintaining a stable interest rate. This could lead to increased investment capacity of the private sector and most especially, the households in Nigeria.

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