

Monetary Policy and Domestic Private Investment in Nigeria



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ABSTRACT: This paper empirically examined the effect of monetary policy on domestic private investment in Nigeria from 1981 to 2018. In order to achieve our objectives, annual time series data of the dependent variable – domestic private investment (DPI) and independent variables – money supply (MS), government domestic debt (GDD), government domestic savings (GDS), interest rate (INT) and consumer price index (CPI) were collected from secondary sources like CBN Statistical Bulletin and WDI. Thereafter, the data were analyzed using descriptive statistics and the econometrics technique of Vector Error Correction Mechanism (ECM) method of analysis. The results of analysis indicated that a long run relationship exists among the variables. Furthermore, the paper revealed that money supply (MS), government domestic savings (GDS), interest rate (INT) and consumer price index (CPI) have a negative and insignificant effect on domestic private investment in the long run but interest rate is significant at 5%, while government domestic debt (GDD), has a positive and insignificant effect on domestic private investment (DPI) in the long run in Nigeria within the period. Based on the above findings, the paper recommends as follows: Expansionary monetary policy should be formulated that will reduce interest rate, encourage borrowings and savings. This will expand commercial banks and other credit granting financial institutions which will encourage real investment in the economy.

KEY WORDS: Domestic Private Investment, Money Supply, Gross Domestic Debt, Gross Domestic Savings, Inflation and Interest Rate.

1.0 INTRODUCTION

Monetary policy is the Macroeconomic policy laid down by the Central bank as a major economic stabilization weapons designed to regulate, control the volume, cost and availability and direction of money and credit in an economy to achieve some specific macro-economic policy objectives. Anyanwu (1993), stated that the control of money and Banks credit thereby regulating cost of credit in such a way that it will affect aggregate demand in a direction that would continue to the achievement of healthy balance of payment, price stability and job opportunity. Therefore, to achieve these broad objectives, the monetary authority (Central Bank) deliberately comes up with the monetary policy as one of the policy measures.

The behaviour of the monetary sector can be influenced by the monetary policy. This is because changes in the behaviour of monetary sector influences various monetary variables or aggregates (Nzotta, 2014). This implies that, when monetary policy is in force, it will affect the level of money supply by either expanding or through contraction. The level and the structure of interest rate are also influenced by the monetary policy. To support this, Khan (2010), argues that monetary policy objectives are concerned with the management of numerous monetary targets which include; boosting growth, attaining full employment, stabilizing price, averting economic crisis, stabilizing real exchange rate and interest rates. It is clear that these objectives are all not consistent with each other, it depends upon the one assigned by monetary authorities or country priorities. It is observed that more attention is given to lowering inflation and price stability.

Monetary policy as a tool of economic stabilization was given impetus by Milton Friedman who held that only money matters and as such monetary policy is a more potent instrument of stabilization than fiscal policy in Nzotta (2014). Friedman followers were known as monetarists. Their emphasis is on the role of money in explaining short-term changes of national income. That is changes in money supply causes change in national income. More so, the monetarists believe that all recessions and depressions are caused, by severe contraction of money and credits, while booms and inflation are caused by excessive increase in the money supply, (Jhigan 1980).

Investment is a component of aggregate demand. Iyoha, (2004), emphasize that, it is the most volatile component of aggregate demand and fluctuation in its level is highly correlated with fluctuation in Gross National Product known as business cycle. Real investment can be classified as private and public, while public investment is autonomous; private investment is determined by

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monetary and macroeconomic variables in the economy. Financial investment being an avenue to create wealth is different from real investment, which increases the productive capacity of the economy, create employment and expand production beyond national consumption, a prerequisite for economic growth, full employment, price stability and external balance. Domestic investment is a tool for measuring the level of Gross Domestic product (Amer, Umer and Mohammad, 2014).

Domestic private investment play key role in increasing capital formation and brings about long run economic growth. Through the control of monetary policy targets, such as the price of money (interest rate both short term and long term), the quantity of money and reserve money amongst others; monetary authorities directly and indirectly control the demand for money, money supply, or the availability of money and hence affect output and private sector investment (Tobias and Manbo, 2012). Thus, monetary policy that facilitates credit to private sector investment encourages the growth of private investment, whilst tight monetary policy that restricts credit to businesses discourages private sector growth. From the above the study tends to examine the effect of monetary policy on domestic private investment in Nigeria for the period 1981 – 2018.

However, the rest parts of the paper are as follow: Section two discusses conceptual, theoretical and empirical studies on the effect of monetary policy on domestic private investment, section three discusses the methods adopted in the study, section four present and analyse result, while section five concludes and make recommendations from the findings.

2.0 REVIEW OF RELATED LITERATURE

This section takes care of the conceptual and theoretical frameworks as well as the review of empirical studies that are deemed relevant to this study

2.1 Conceptual Framework

Investment is a key macroeconomic variable necessary for economic growth and development of every country. It comprises of both private investment and public investment. However, developing countries have placed emphasis on the improvement of the private sector, since it is the main engine room for economic growth across the globe.

In Nigeria government over the years has introduced several measures to naturalize the private sector and thus economic growth. Accord to IMF County Report (2011), for Country to have accelerated economic growth and development, it seeks nothing more than 20% of natural business to be in the hand of the state, and the rest, although operated mostly informally, in the hands of private sector.

Meanwhile, Domestic Private Investment is classified as Gross Domestic Private Investment and Net Domestic Private Investment. Gross Private Domestic Investment is the measure of physical investment used in computing GDP in the measurement of nation's economic activity. This is an important component of GDP because it provides an indicator of the future productive capacity of the economy. (Wikipedia).

Net Private Domestic Investment: Expenditure on capital goods to be used for productive activities in the domestic economy that are undertaken by the business sector during a given time period, after deducting capital depreciation. In general, capital depreciation was between 50 to 85 percent of gross investment.

On the other hand, monetary policy is defined as "any policy measure designed by the Federal Government through the CBN to control cost availability and supply of credit (CBN, 2009). Monetary policy deals with discretionary control of money supply by the monetary authorities (Central Bank with Central Government) in other to achieve stated or desired economic goals. Governments try to control the money supply because most governments believe that its rate of growth has an effect on the rate of inflation. Hence monetary policy comprises those government actions designed to influence the behaviour of the monetary sector. Jhingan (2005) defined it as the use of money supply to regulate the level of economic activities in a country. Monetary policy is essentially a programme of action undertaken by the monetary authorities generally the central bank, to control and regulate the supply of money with the public and the flow of credit with a view to achieving predetermined macroeconomic goals (Dwivedi, 2005). Monetary policy consists of a Government's formal efforts to manage the money in its economy in order to realize specific economic goals.

2.2 Domestic Private Investment and monetary policy in Nigeria

Nigerian government early 1960s and up to 1985 was involved in direct productive activities while encouraging private sector investment. At that time government took control of the economy with the hope of accelerating the growth process. With the increase in oil revenue inthe middle of 1970s brought in the needed financial resources. Government, therefore, went beyond the role of providing an enabling environment by establishing and owning companies in all sectors of the economy. The structural adjustment programme (SAP) in 1986 was established with the objective among others of facilitating the development of the private sector, whose role could determine the level of economic growth of the Nigerian economy. However, the expected investment boom after structural adjustment programme was not feasible and not much was recorded in terms of domestic

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investment. The Domestic Private Investment (DPI) share of the Gross Domestic product (GDP) is still below 10 percent and the ratio has since been declining (Apkokodije, 1998). Government's policy response in form of trade reforms and other macroeconomic reforms with the hope of promoting and encouraging domestic private investment still remains disappointing. In 2007, then president of the federal Republic of Nigeria, President Umaru Musa Yaradua on realizing the need for increased, private domestic investment in the economy encouraging the Organized private sector (OPS) to expand its domestic investment. He also stressed the need for the banking sub-sector to play a more visible role in supporting the growth of the real sector of the economy and promoting a vibrant capital through the provision of financial credit to local industries for the processing for export earning, thereby will lead to economic growth.

Monetary policy is one of the policies that government influences the money supply through adjustment of the interest rate, bank reserve requirements and the sale of government securities and foreign exchange. Monetary policy can either be contractionary monetary policy is the use of monetary tools to reduce money supply or raise interest rate. By so doing it will crowd out domestic private investment because of the cost of borrowing. This will then lead to low productivity and unemployment in the economy. Expansionary monetary policy is aimed at increasing money supply or to reduce interest rate thereby encouraging domestic private investors because of reduced cost of borrowing in the economy. Accommodative policy tends to lower the cost of capital in order to stimulate economic activities and engender economic growth, while monetary policy is neutral when such policy is not targeting the expansion of economic activities nor reducing inflation. The Central Bank of Nigeria (CBN), founded in 1958, through its activities and the monetary policy committee (MPC) is responsible for monetary and credit policy in Nigeria. The monetary policy has seen two major regimes known as the direct control (pre 1986) and indirect control (post 1986). The former focused on direct monetary controls and the later issues market mechanism approach (known as indirect control) using several monetary instruments (Central Bank of Nigeria 1986 and Ikhede, 1996).

2.3 Theoretical Framework

This study is knotted on IS-LM Model theory of Hick-Hansen 1970s and Milton Friedman (1959) as it linked to the long existing debate of the monetarists view (based on quantity theory of Money) and the Keynesian view (based on 'General theory of money' or basic Keynesian model). However, the linkage of these theories to the study is briefly explained below:

2.3.1 The IS-LM model

The investment and savings, liquidity and money (IS-LM) model presents a suitable model to explore the effects of monetary policy on private domestic investment while capturing the interplay of variables, where private sector investment is determined by five key variables such as money supply, interest rate, government domestic savings, government domestic debt and inflation. The IS curve shows combinations of interest rates and level of output where planned spending is equal to income. Also, the LM curve or money market equilibrium represents the combination of interest rate and levels of income where demand for real balance is equal to the supply. Along the LM curve, the money market is in equilibrium, Dornbusch et al (2004).. The IS-LM model attempts to explain a way to keep the economy in balance through equilibrium of money supply versus interest rate.

2.3.2 Monetarist Theory

The monetarists championed by Milton Friedman (1959) emphasize the importance of controlling the money supply to control inflation and manage aggregate demand. The monetarists are generally critical of expansionary fiscal policy, arguing that it will cause just inflation or crowding out and therefore fiscal action is not helpful, adding that the market forces work better when left to themselves. Government intervention can often times destabilize things more than they intend to help. The Monetarists advice and suggested laissez faire in the system. The theoretical foundation of the monetarist is the quantity theory of Money also believing that the economy is inherently stable. Monetarism's essence can be stated in the form of a few central propositions where the over-whelming influence of money is the center piece. Monetarists assign causal role to money, and since money is treated by them as exogenous it is possible to control disturbance or disequilibrium in the economy by controlling the money supply, and hence money matters.

Furthermore, monetarists are of the view that money and income are directly correlated. Anyanwu (1996) has it that, monetary change affects long-run stock of real capital and hence output- Fluctuation in money, national income is attributed largely on monetary policy whose effect is transmitted to national income both through the bond field and other channels.

Therefore, the monetarists conclusion can be reached without a vertical LM curve since, the LM curve continuously moves and affects income and activities in the long-run unlike the IS-curve which shifts in a once-for all form in the short-run. Thus, to the monetarists, the demand for money is stable than the Keynesian consumption function.

2.3.3 Classical Theory on Private Sector Investment

This theory emphasizes how private sector investment is negatively affected by changes in monetary policy such as government domestic debt. This situation created a competition with the private sector for scarce loanable funds available in the economy.

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That is to say that when there is increase in government expenditure financed by changes in the monetary policy. It will decrease the ability of private sector investment to access funds for investment. The displacement of private sector investment by government borrowing was termed crowding out effect. Barro (1997) stated the two ways in which private sector investment can be displaced is either arising from on tax cut or increase in government consumption spending. This situation induces the increase in public debt which will cause the decline in private investment that may result from a tax cut financed by a government budget deficit and the decrease in private consumption and investment that resulted from an increase in government consumption respectively.

2.3.4 Keynesian Theory on Private Investment

The Keynesian believed in using fiscal policy to stimulate economic growth. This is achieved through the use of budget deficit. They assume that the economy is not at full employment and that the interest rate sensitivity of investment is low. Increase in government spending will in a little way increase interest rate whilst increasing output and income. The Keynesians also argued that government expenditures increase private investment due to the positive effect of government spending on the expectations of the investors.

Their point is as a result of the multiplier effect where a change in government spending induces a greater change in output. Barro (1997) illustrates the point by explaining that in the Keynesians model an increase in aggregate demand leads to increased output, that entails more real income, hence a further increase in aggregate demand.

2.4 Empirical Review of Literature

Payne (2005) employed Engle-Granger and error correction model (ECM) to study the relationship between savings and investment in Mexico over the period 1960 – 2002. The study show that the savings and investment are co-integrated, thereby indicating low capital mobility in accordance with F. H hypothesis. However, the coefficient of error correction model is positive and statistically significant with a binding inter-temporal budget constraint and an adjustment parameter of 0.242.

Narayan (2005) studied the relationship between investment and saving for the period 1960 – 1999 by applying. Autoregressive Distributed lag (ARDL) model and Granger causality test for Japan. The author found long run relationship between savings and investment which suggest that there must be granger causality in at least one direction. Therefore, the Granger causality test results suggest bidirectional causality relationship between savings and investment. Thus, lending support to Feldstein and Horioka (1980) hypothesis.

Zulkefly (2010) search the impacts of monetary policy on institutions investment in Malaysia, the study used dynamic neoclassical framework in an autoregressive distributed lagged (ARDL) mode, the study showed the impact of monetary policy on institutions investment spending, the study also reveals that the impact of monetary policy channels to the institutions investment are heterogeneous, therefore the small institutions that faced financial constraint responded more to monetary tightening as compared to the large institution.

Bakare (2011) carried out empirical of the consequence of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria adopting the ordinary least square multiple regression analytical method. The multiple results showed a significant but negative relationship between floating foreign exchange rate and private domestic investment in Nigeria. The findings and conclusion of the study support the need for the government to dump the exchange regime and adopt purchasing power parity which has been considered by researchers to be more appreciate in determining realistic exchange rate for naira and contribute positively to macroeconomic performance in Nigeria.

Onourah et al (2011) examined the impact of monetary policy on micro-economy in relation to private investment in Nigeria. Correlation analysis was performed and showed the relationship between private investment (PI) and Money Supply (MS), Interest Rate (IR), Credit (CD), Inflation (INF), Exchange Rate (EXR) and GDP is significant at 0.01 level of significant with IR, INF and EXR. The Interest rate (IR) is only significant with INF. CD is significant at 0.01 level of significance with P1, MS, EXR and GDP. INF is significant with IR. Money supply was found to be effective monetary policy instrument than interest rate. This is based on the fact that private investment react more to changes in money supply than interest rate in Nigeria, however, the correlation result showed that private investment increase as money supply increase.

Nazar and Bashiri (2012) investigate the relationship between real exchange rate uncertainty and private investment in Iran for the period of 1988 to 2008 by suing quarterly data and applying bivariate generalized autoregressive conditional heteroscedasticity (Bivariate GARCH) model in the Iranian economy. The study reveals that real exchange rate uncertainty significantly influence private investment and has a negative effect on it and that private investment uncertainty affects the level of private investment negatively.

Tobias et al (2012) study the relationship between monetary policy and private sector investment in Kenya from 1996 to 2009. The methodology draws upon unit roots and co-integration test using a vector error correction model to explore the dynamic

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relationship of short run and long run effects of the variables due to an exogenous shock. The variables are stationary in first differences and using ordinary least squares the estimated long run relationship is implying that government domestic debt and Treasurer Bill rate are inversely related to private sector investment, while money supply and domestic savings have positive relationship with private sector investment consistent with the IS-ML model.

Ndikumana (2014), searched the implication of monetary policy for domestic investment through its impacts on bank lending to the private sector and interest rates in Sub-Saharan African countries, the study based on a sample of 37 Sub-Saharan African countries over 1980 – 2012, the study found that monetary policy affects domestic investment negatively indirectly through the bank lending or quantity channel, as well as directly through the interest rate or cost of capital channel.

Olanrewaju (2015) examined the impact of monetary policy on private capital formation in Nigeria. The study made use of secondary data sourced from the Central Bank of Nigeria Statistical Bulletin for the period 1986 – 2003. The ordinary least square multiple regression technique was employed alongside the R² goodness of fit test, F - Statistics and the Durbin-Watson test. The OLS multiple regression obtained result showed that the GDP growth rate has been attracting significant private investment given the period of study.

Lucky et al (2017) examined the effect of monetary policy transmission mechanisms on the domestic real investment in Nigeria for the period 1981 to 2015. Time series data were sourced from Central Bank of Nigeria statistical bulletin. Domestic real investment was modeled as the function of percentage of credit private sector to gross domestic product, naira exchange rate per US dollar, maximum lending rate; monetary policy rate, prime lending rate, net domestic credit, savings rate and Treasury rate, Granger causality test and Johanson co-integration test in vector error correction model (VECM) setting were employed. The result proved that CPS/GDP, MLR, NDC and SR have positive relationship with domestic real investment in Nigeria, while EXR, PLR and TBR have negative relationship with domestic real investment in Nigeria.

Sesay et al (2017) examine the rate of changes in monetary policy in Sierra Leone has affected the behaviour of private sector investment, for the period 1980 to 2014. The study uses econometric technique such as Unit Root Test, Johansen Co-integration and Error Correction Model (ECM). The result suggest that money supply and gross domestic saving exert positive and statistically significant effect on private sector investment, whereas treasury bill rate inflation and gross debt exert a negative effect.

2.5 Summary of literature Review / Research Gap

From the reviewed Literature, it is observed that few studies on the effect of monetary policy and domestic private investment have been carried out. Also related works such as monetary policy on Micro Economy and private investment, Investment and Savings, monetary policy and Institutional investment etc. have been carried out. Meanwhile most of the works reviewed that examine the effect of monetary policy and Domestic Private Investment considered using four independent variables. But the present studies deviate from these scholars by examining monetary policy and domestic private investment by examining Domestic private investment on Government domestic debt, Government domestic saving, money supply, interest Rate and Inflation. Besides these variables, the period of study extends from 1981 – 2018. This is the gap the study filled in the literature.

3.0 METHODOLOGY

This work adopted the ex-poste research design. It made use of the econometric procedure to establish the relationship between monetary policy and domestic private investment in Nigeria over the period under study.

The required data to examine the effect of monetary policy and domestic private investment is tested based on time series data spanning from 1981–2018. The data were sourced from the Central Bank of Nigeria (CBN) Statistical bulletin and World Development Index (WDI).

The analytical framework of this study imitates the previous studies such as Lucky and Uzah (2017) with further modification. Lucky and Uzah (2017), who studied monetary policy mechanism and Domestic Real Investment used Domestic real investment as dependable variable, while credit to private sector, exchange rate, Interest rate, interest rate channel (MPP), Prime lending rate, net domestic credit, saving rate, Treasury bill as independent variable. But the present study deviates from these scholars by looking at monetary policy on domestic private investment using Domestic Private Investment (DPI) as dependent variable and government domestic debt, government domestic saving, money supply, Interest rate, Inflation as independent variables.

The Model

The study will follow a simple linear specification of the multivariate time series function using the partial adjustment approach to estimating given parameters of a model. In so doing, the vector error correction model (VECM) shall be used. The VECM will help to capture the long run dynamics of monetary policy and domestic private investment variables (See Engle and Granger, 1987). The model is given as:

$$DPI = f(GDD, GDS, MS, INT, CPI) \dots\dots\dots (3.1)$$

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Where:

DPI = Domestic Private Investment

GDD = Government Domestic Debt

GDS = Government Domestic Saving

MS = Money Supply

INT = Interest Rate

CPI = Consumer Price Index

For the purpose of empirical computation, equation (3.1) converges to:

$$DPI_t = \lambda_0 + \lambda_1 GDD_t + \lambda_2 GDS_t + \lambda_3 MS_t + \lambda_4 INT_t + \lambda_5 CPI_t + \mu_t \dots\dots\dots(3.2)$$

Where:

λ_0 = The constant term

λ_s = The parameters of the estimates

μ_t = The error terms

Dependent variable response to the set of the explanatory variables in the above model may not be automatic, in other words, it is rarely instantaneous. Sometime the dependent variable responds to the explanatory variables with a lapse of time (Gujarati, 2004). Hence, equation (2) transform into a dynamic model as follow:

$$\log DPI_t = \lambda_0 + \lambda_1 \log GDD_{t-1} + \lambda_2 \log GDS_{t-1} + \lambda_3 \log MS_{t-1} + \lambda_4 \log INT_{t-1} + \lambda_5 \log CPI_{t-1} + \mu_{t-1} \dots\dots\dots(3)$$

Where t-i = the lag length. We shall use Akaike Information Criteria (AIC) to determine the optimal lag length of the model. This method has gain prominence recognition among econometricians. There may be possibility of the model processing nuisance lag length after applying the AIC. If that occurs, we shall introduce Granger–marginalization procedure so as drop the redundant lag(s). This will make our model to parsimonious.

4.0 RESULTS AND DISCUSSIONS

In this section, the analysis of the results was conducted in five phases. It begins with the descriptive statistics analysis of the data and thereafter conducted the unit root test. Furthermore, co-integration and the long run estimation of the VECM were conducted.

4.1 Descriptive Statistics

The result of the descriptive statistics as presented in Table 1 below shows that, the standard deviation of MS was the most volatile in the series with a value of 7536.495 while INT was the least volatile variable with a value of 4.628256. The calculated values for the skewness statistic for all the variables – DPI, MS, GDD, GDS, INT and CPI were positively skewed. Again, the kurtosis statistics for MS and GDS were normally distributed while DPI, GDD, INT and CPI were leptokurtic meaning that their distributions were peaked relative to normal. Based on these observations, it therefore means that there is unit root (non-stationarity) in the series. Thus, estimating these variables at level might not give good results, hence, the need to conduct the unit root test. The unit root test is conducted to test whether or not the variables were stationary. The study adopts the Augmented Dickey Fuller (ADF) unit root tests procedures.

Table 1: Descriptive Statistics

	DPI	MS	GDD	GDS	INT	CPI
Mean	36.22035	5153.387	2574.968	2971.068	17.57684	19.44591
Median	35.31548	753.7050	846.5300	331.4300	17.54000	12.94178
Maximum	89.38613	25079.72	12774.40	15067.12	29.80000	72.83550
Minimum	14.16873	14.47000	11.19000	6.560000	7.750000	5.382224
Std. Dev.	19.57248	7536.495	3723.529	4558.248	4.628256	17.21901
Skewness	0.987202	1.337830	1.587103	1.388389	0.203869	1.733626
Kurtosis	3.620793	3.431295	4.306538	3.495471	3.668072	4.826944
Jarque-Bera	6.782449	11.62986	18.65583	12.59699	0.969903	24.31931
Probability	0.033667	0.002983	0.000089	0.001839	0.615727	0.000005
Sum	1376.373	195828.7	97848.80	112900.6	667.9200	738.9447
Sum Sq. Dev.	14174.03	2.10E+09	5.13E+08	7.69E+08	792.5680	10970.29
Observations	38	38	38	38	38	38

Source: Author's Computation (2020)

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4.2 Unit Root Test

The results of the unit root test using the ADF at constant and trend as reported in Table 2 shows that DPI, MS, GDD, GDS, INT and CPI were stationary in their 1st difference.

Table 2: Unit Root Test Results

Augmented Dickey Fuller (ADF) Test					
Variables	Level	5% C.V.	1 st Diff.	5% C.V	Status
LOG(DPI)	-2.313144	-3.536601	-5.627046	-3.540328	I (1)
LOG(MS)	-0.488534	-3.536601	-3.712912	-3.540328	I (1)
LOG(GDD)	-1.297634	-3.536601	-4.652342	-3.540328	I (1)
LOG(GDS)	-1.182492	-3.536601	-4.455876	-3.540328	I (1)
LOG(INT)	-3.285540	-3.536601	-5.797589	-3.544284	I (1)
LOG(CPI)	-2.610194	-3.536601	-4.389753	-3.544284	I (1)

Source: Author's Computation (2020)

4.3 Johansen Cointegration Test

We used the Johansen approach to test if there exists, at least a linear combination of the variables with unit roots that is stationary.

Table 3: Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob. **
None *	0.842769	177.1865	95.75366	0.0000
At most 1 *	0.802958	110.5851	69.81889	0.0000
At most 2 *	0.530310	52.10887	47.85613	0.0189
At most 3	0.329588	24.90428	29.79707	0.1649
At most 4	0.233979	10.50923	15.49471	0.2436
At most 5	0.025058	0.913596	3.841466	0.3392

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

Source: Author's Computation (2020)

The Johansen tests revealed that the trace statistics show the existence of three cointegrating relationships between log (DPI) and its determinants at 5% level of significance (Table 3). The conclusion drawn from this result is that there exists a unique long run relationship between log (MS), log (GDD), log (GDS), log (INT), log (CPI), and log (DPI).

4.4 Parsimonious Error Correction Model

Table 5 below presents the estimated coefficients of the long run relationship between the variables in the model.

Table 5: Estimated Long Run Coefficients Using the VECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.072677	0.039326	1.848053	0.0811
DLOG(DPI(-1))	0.276270	0.181592	1.521373	0.1455
DLOG(DPI(-2))	0.379341	0.163357	2.322164	0.0322
DLOG(DPI(-3))	0.941761	0.141700	6.646165	0.0000
DLOG(MS)	-0.367171	0.191956	-1.912789	0.0718
DLOG(MS(-1))	-0.487503	0.146685	-3.323472	0.0038
DLOG(MS(-2))	0.960371	0.171949	5.585215	0.0000
DLOG(GDD)	0.278370	0.111194	2.503474	0.0221
DLOG(GDD(-1))	-0.198983	0.112896	-1.762525	0.0950
DLOG(GDS)	-0.190758	0.114085	-1.672069	0.1118
DLOG(GDS(-1))	0.400654	0.130180	3.077694	0.0065
DLOG(GDS(-3))	-0.557162	0.115302	-4.832203	0.0001
DLOG(INT(-3))	-0.246498	0.059244	-4.160688	0.0006

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DLOG(CPI(-2))	-0.036406	0.020123	-1.809198	0.0872
DLOG(CPI(-3))	0.050472	0.018061	2.794562	0.0120
ECM(-1)	-1.041553	0.217659	-4.785260	0.0001
R-squared	0.852989	Mean dependent var		-0.0333
Adj R-squared	0.730479	S.D. dependent var		0.1146
S.E. of regression	0.059473	Akaike info criterion		-2.5014
Sum squared resid	0.063666	Schwarz criterion		-1.7831
Log likelihood	58.52388	Hannan-Quinn criter.		-2.2564
F-statistic	6.962638	Durbin-Watson stat		1.9979
Prob(F-statistic)	0.000098			

Source: Author's Computation (2020)

The coefficient of determination (R^2) of the estimated model indicates that about 85% of the variations in domestic private investment are explained by the combined effects of all the determinants (MS, GDD, GDS, INT and CPI), while the F-Statistics shows that the overall regression is significant at both the 1% and 5% levels. Also, the equation's standard error of 0.059 signifies that in about two-thirds of the time, the predicted value of domestic private investment (DPI) would be within 5.9% of the actual value and given the DW value of 1.998, there was no suggestion of autocorrelation.

The coefficient of the error correction term is statistically significant and carries the expected negative sign at both 5% and 1% level of significant. However, the speed of adjustment is fast, that is 104.15% of the adjustment to equilibrium domestic private investment is expected to occur in the long run. Further, this figure shows the average speed of adjustment of domestic private investment movement to its long-run change in the equilibrium conditions. This result indicates that ignoring error correction in non-stationary time series analysis would lead to misspecification of the underlying process to achieve domestic private investment stability in the Nigeria.

As shown in Table 4, the current value of money supply negatively affects private domestic investment by 37% as well insignificant. But the first lagged value significantly influences the volatility of DPI over time with a strong inertia of 49%. This means that an increase in money supply in Nigeria will have a negative effect on the domestic private investment in the country. But the second lagged value of money supply have a positive impact on the level of domestic private investment (DPI) and is statistically significant at 5% level.

Also, the current value of government domestic debt (GDD) significantly influenced domestic private investment (DPI) by 28% that is if government domestic debt (GDD) increase by one-unit, domestic private investment (DPI) will increased by 0.278 units. This is in consonance with the apriori expectation. But the first lagged value of GDD has a negative impact on domestic private investment (DPI) and as well insignificant at 5% level.

Furthermore, the current and the third lagged value of government domestic savings has a negative influence on domestic private investment. But the current value of government domestic savings is insignificant but the third lag is statistically insignificant at 5% level. But the first lag of government domestic savings has a positive impact on domestic private investment (DPI) which is in agreement with our theoretical expectation and is statistically significant.

The third lagged value of interest rate negatively influence domestic private investment (DPI) and is statistically significant at 5% level. This is also supporting our theoretical expectation. Finally, the second and third lagged value of consumer price index (inflation) have a negative and positive influence on domestic private investment. But the second lag is insignificant at 5%, while the third lag is statistically significant at 5% level.

5.0 CONCLUSION AND RECOMMENDATION

This paper empirically examined the effect of monetary policy on Nigeria's domestic private investment between 1981 and 2018 by employing vector Error correction mechanism (VECM) approach. Data for the empirical analysis were sourced from secondary sources like CBN Statistical Bulletin (Various- Issues) and WDI. The results of analysis indicated there is long run relationship among the variables (money supply, government domestic debt, government domestic savings, interest rate and consumer price index and domestic private investment). Furthermore, the study revealed that money supply (MS) government domestic saving (GDS) and interest rate (INT) have negative and a significant effect on domestic private investment both in the long run while government domestic debt (GDD), and consumer price index (CPI) has a positive and an significant effect on domestic private investment (DPI) in the long run in Nigeria within the period.

In light of the above findings, the paper recommends as follows:

Monetary Policy and Domestic Private Investment in Nigeria

- 1) Expansionary monetary policy should be formulated that will reduce interest rate, encourage borrowings and savings. This will expand commercial banks and other credit granting financial institutions which will encourage real investment in the economy.
- 2) The Central Bank of Nigeria should formulate policies that will enable deposit money banks provide loanable funds to the private sector at a low interest rate.

Interest rate management and reactions to domestic real investment must be factored into the management and formulation of monetary policy in Nigeria and institutional and policy barriers to investment should be removed.

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