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EFFECT OF MONETARY POLICY ON PRIVATE SECTOR INVESTMENT IN NIGERIA

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Abstract

Monetary policy plays a vital role in macroeconomic stabilization in an economy, but evident from numerous indices, illustrate sub-optimal performance of the private sector in the economy. It is on this bases that this study examines the effect of monetary policy on private sector investment in Nigeria spanning the period 1986 to 2023. The data used for the study was secondary time series annual data which were sourced from central bank of Nigeria (CBN), National bureau of statistics and world development indicator. The statistical software used to analyze the data is Stata version 15.0 and the techniques of analysis used in this study is Vector error correction model (VECM), this was achieved after conducting the unit root stationarity test, the variables such as private sector investment (PSI), exchange rate (EXR), interest rate (INTR) inflation (INF) and broad money supply (BMS), were found to be stationary at first difference 1(1), thereafter the cointegration test was conducted since there exist a long run association between the dependent variable and the independent variables this justifies the adoption of the VECM.. The findings revealed that broad money supply and exchange rate has positive effect on private sector investment, while interest rate and inflation rate were found to have a negative relationship with private sector investment. The study recommends low interest rate since it makes borrowing cheaper for businesses. This will enhance private sector investment as credit will become affordable for companies' investment expansion or new project.

Keywords: Monetary Policy, Private sector investment, VECM, Nigeria.

JEL Classification: C22, E52, E22, C32.

1. Introduction.

In most developed and developing countries investment driven by the private sector is recognized as a catalyst for attaining the twin goals of broad sustainable economic growth and poverty alleviation as investment allows for entrepreneurship as well as create employment opportunities that brings about increase in income for the poor and the rich alike. Investment comprises both private and public components. In contemporary years; developing nations have placed more emphasis on the development of the private sector since it has remained amongst the key determinate of development of contemporary economies across the world. Anadabai (2017) emphasized that the private sector affects economic growth positively through its capacity building, employment generation and income-generation opportunities in the economy.

Monetary policy plays a crucial role in influencing private sector investment in Nigeria, as it does in many other economies. Thus, the growth of a vibrant private sector in an economy to a large extend depend greatly on an effective and efficient monetary policy instrument. Monetary policy is implemented in Nigeria through the central bank of Nigeria (CBN), which has a direct impact on private sector investment in the country. The central bank sets the monetary policy rate (MPR) which serves as the benchmark interest rate for the country, when the CBN lowers the MPR, borrowing becomes cheaper for businesses, and this can stimulate private sector.

Discussing the effect of monetary policy on private sector investment kahn (2015) observed that monetary policy objectives are concerned with the management

of multiple monetary targets among them price stability, promotion of growth, achieving full employment, smoothing the business cycle, preventing financial crisis, stabilizing long-term interest rate and the real exchange rate. According to Onuorah and Chigbu (2012), 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. The specific objective and the focus of monetary policy may change from time to time, depending on the level of economic development and economic fortunes of the country. Basically, emphasis of monetary policy is always tending towards maintaining price stability, or ensuring low inflation rate. In the same vein, Nwoke, Ihemeje and Anumadu (2016) pointed out that one of the major goals of monetary policy in Nigeria is stabilization of economic growth through investment.

In order to foster economic growth, the Nigerian government has implemented a number of monetary policies through the Central Bank of Nigeria over the years. The issue of investment that would spur economic growth still exists in Nigeria, even if monetary policy manipulation is becoming more and more important. These issues include unstable foreign currency rates, high unemployment rates, and high rates of inflation. According to Nwoke, Ihemeje, and Anumadu (2016), these issues have led to a rapid slowdown in Nigeria's economic expansion. The administration of monetary policy has had a significant role in directing and influencing private sector investment in the Nigerian economy over the years.

The efficiency of monetary policy has been impacted by the lack of regular or consistent adjustments, which makes it challenging for the private sector to function efficiently. Therefore, in light of this, the main purpose of this study is to examine the effect of monetary policy on private sector investment in Nigeria. To investigate and analyze the constraints to monetary policy application in Nigeria.

The rest of the paper is structured as follows: Section two deals with the literature review, while section three describes the methodology to be used in the study then followed by the discussion of the major findings and result in section four while section five concludes and suggest possible recommendations.

2. Literature Review

2.1 Theoretical framework

Expected Profit Theory of Investment

This study is anchored on the expected profit theory of investment which postulates that investment expenditure is mainly determined by profit anticipations of investors. Meyer and Kuh (1957) who advocated this theory claimed that the investment behaviour of private firms was perceptible to such factors as well as the expected profitability of an investment proposal. In this regard, Duesenbery (1958), posited that the choice of investing in a project depends on the discernment of the profitability or otherwise of the anticipated project.

Anyanwu (1995) asserted that the reason for the anticipated profit theory of investment runs as: if a surplus of the cost of external (debt) financing over the opportunity cost of internal financing exists and there is a rise in the cost of external financing resultant upon an increase in the amount of fund to be elevated, there is a clear preference of internal financing above external financing as seen from firms behavior over time; then if there exists an instability in the level of business activity, then the disparities in retained earnings could be deliberated upon a crucial determinant of investment spending. The theory seems more relevant to the investment behaviour of firms in emerging countries like Nigeria because of the limited nature of external finance. Nevertheless, in these countries, the repulsion of business owners` illusion of business ownership discourages them from obtaining from external source.

2.2 Empirical Review

Olonila, Amassoma and Babatunde (2023) in their study examined the impact of monetary policy on credit and investment in Nigeria from the period 1981 to 2020. The study made use of secondary data. The study applied the use of autoregressive distributed lag model (ARDL). The findings of the study indicate that bank loans and investment have a long-term relationship with monetary policy, in addition it was also discovered that while bank loans to private sector and the liquidity ratio had short term negative effects on investment, the cash reserve ratio, monetary policy,

money supply and inflation rate had long-term positive effects on investment in Nigeria. Recommendation was made on the need for CBN to adjust the monetary policy rate by reducing the cash reserve ratio, which will increase liquidity and allows the banks to discharge their credit capacity with the purpose of improving investment in Nigeria.

Kabiru (2022) investigated monetary policy and its impacts on private sector performance in Nigeria. The study used annual time series data spanning the period 1981 to 2021 on four variables. Credit to private sector as a percentage of exchange rate. The study employs the use of ARDL method to analyze the data. The result shows that broad money supply has a significant positive impact on the performance of private sector on both the short run and the long run. Real interest rate and exchange rate were found to have a negative impact on private sector performance in both short run and long run. the study further recommends that the government should maintain the expansionary monetary policy that allows for the flow of more financial resources from the financial sector to the private sector thereby promoting the private sector performance in Nigeria.

Oyakegha and Arepo (2022) examined the impact of monetary policy performance in Nigeria for the period 1995 to 2019. The study used private sector output as proxy for private sector performance and initiated as the dependent variable; whereas, broad money supply, liquidity rate and credit ratio respectively were used as the independent variables to measure monetary policy. The findings of the study revealed a positive significant effect of credit ratio private sector output in Nigeria. Thus, there is a long-run equilibrium effect on monetary policy and private sector. The study recommends a strong macro-economic policy such as (monetary and fiscal) should be employed to maintain and stabilize the economy.

Ebisine and Oki (2021) investigated the effect of monetary policy on domestic private investment in Nigeria. The study employed time series data spanning the period 1981 to 2018 to achieve the objectives. the dependent variable is domestic private investment (DPI) while the explanatory variables are money supply (MS), government domestic savings (GDS), interest rate (INT), government domestic debt (GDD) and consumer price index (CPI). The results of the findings revealed that a long run relationship exists among the variables. Additionally, the study revealed that money supply (MS), government domestic savings (GDS), interest rate (INT) and consumer price index (CPI) has an inverse 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. The study further recommends that Expansionary monetary policy ought to be articulated that will reduce interest rate, encourage borrowings and savings.

In order to examine the relationship between private sector financing and sustainable economic growth in Nigeria, Adewole and Aderemi (2021) made use of annual time-series data from 1992-2019 and employ multiple regression and Granger causality to ascertain the correlation between private sector and economic growth. The findings of the study shows that credit to private sector has a significant positive influence on economic growth. Similarly, unidirectional causality was found between the broad money supply and economic growth, and one-way reaction runs from GDP to commercial bank loans to small scale and medium enterprises. Bello, Abraham and Kabir (2021) in their study used annual time series which span the period from 1986-2017 and applied Autoregressive Distributive Lag method to determine the impact of bank credit on Manufacturing sector in Nigeria. The result showed that bank credit has a significant positive effect on manufacturing sector output in Nigeria. Similarly,

In order to ascertain how variations in the inflation rate impact the efficiency of monetary policy instruments to stabilize the Nigerian economy and encourage investment, Ezeibekwe (2020) used time series data from 1981 to 2018 and apply the vector error correction model. The study suggests that the level of inflation affects how interest rates affect investment. Interest rate instruments that directly modify interest rates, such as the monetary policy rate (MPR), are effective stabilization tools when inflation is low but ineffective when inflation is high. As inflation increases, the amount to which interest rates affect investment diminishes. Low interest rates on bank

loans are too responsible for this. Moreover, the degree of inflation has no effect on the money supply objective on investment.

2.3 Gap in Literature

Based on the extant review made, some of the study contended that monetary policy has a positive effect on private sector investment, while others are of the opinion that it has a negative effect, also some held the view that there is no link between monetary policy and private sector investment. Consequently, related studies showed different techniques of analysis, variables used, results found and time period incorporated under review which hinge on the country of study. In light of this, this study attempts to close the gap by conveying the three concepts together and adapting the work of Ebisine and Oki (2021) who empirically examined monetary policy effect on domestic private sector investment in Nigeria which is the main objective of the study. Ebisine and Oki (2021) adopted Vector error correction model (VECM) on six variables namely domestic investment as the dependent variable, and other explanatory variables are broad money supply, interest rate and consumers price index, government domestic savings, and government domestic debt. It was observed that none of the study made use of inflation rate, broad money supply, real interest rate and real exchange rate to dictate its impact on private sector investment and incorporating the variable together, thus this study tend to fill the gap by incorporating inflation rate and extending the time frame to 2023, also the study will employ the use of Stata to analyze the variables.

3. Methodology

3.1 Data and Sources

This study aimed at investigating the empirical examination of monetary policy and private sector investment in Nigeria, also the study adopts the Vector Error Correction Model (VECM) to examine the objectives of the study. Annual time series data spanning the period 1986 to 2023 covering a period of 37 years was used for the study, the reason for the choice of year is due to the availability of data and to capture the different regime in which there were various monetary policy rate initiated by the CBN as to ascertain how it affect the private sector investment. The data were sourced from central bank of Nigeria (CBN) bulletin, National bureau of statistics (NBS) and World development indicator (WDI).

3.2 Model Specification

The baseline model incorporated for this study is centered on the theoretical exposition of Keynesians and Monetarists regarding the ability of monetary policy to impact investment and a modified model of Ebisine and Oki (2021). The relationship expressed in this research is between PSI which is a function of Exchange rate, Interest rate, Inflation, and Broad money supply. The model of analysis for this study is given in the following functional form as,

$$PSI=F\ (EXR, INTR, INF, BMS) \ldots\ldots\ldots (1)$$

Where: PSI- Private sector investment, which is the dependent variable. EXR- Exchange rate. INTR- Interest rate. INF- Inflation rate. BMS- is broad money supply, are all the independent variables. And it is time trend which consists of years spanning from 1986 to 2023.

Equation (1) is transformed into an econometric model and is expressed as

$$Y=\beta o +\beta_1 EXR_t+\beta_2\ INTR_t+\beta_3\ INF_t+\beta_4\ BMS_t+\mu t \text{----(2)}$$

In a more explicit form, the model was thus transformed and written in a log-linear form, this enables the variables to be in the same unit and base.

$$\text{Log PSI} = \beta_0 + \beta_1\ \text{LogEXR}_t + \beta_2\ \text{Log INTR}_t + \beta_3\ \text{Log INF}_t + \beta_4\ \text{LogBMS}_{t+}\ \mu_t \text{ ----------(3)}$$

Where Log = Natural Logarithm.

Y =PSI.

β_O =intercept of the model or constant term of stochastic term

$\beta_1\ \beta_2 \beta_3 \beta_4$=coefficient of explanatory variables

U=error term

T=time period

f = functional notation

The Vector error correction model was employed in achieving the objectives. The VECM like the Vector Autoregression (VAR) model is an n-equation, n-variable model in which each variable is in turn explained by its own lagged values, plus the current and past values of the remaining n-1 variables. A

typical VECM model is expressed in Equation [4] as:

$$Y_t = c + b_1 Y_{t-1} + b_2 Y_{t-2} + \ldots\ldots + b_p Y_{t-p} + e_t \text{ -----(4)}$$

Where: Y_t are the variables in the VECM model;

e_t is the error term; and

$b_1, b_2, \ldots\ldots, b_p$ are the coefficients of the variables.

Therefore, the variables used for the study can be expressed in VECM form as thus;

$$\Delta LPSI_{t-1} = \lambda 0 + \lambda 1 \Delta LEXR_{t-1} + \boldsymbol{\lambda} 2 \Delta LINTR_{t-1} + \lambda 3 \Delta LINF_{t-1} + \lambda 4 \Delta LBMS_{t-1} + \lambda 5 ECM\text{-}1_{t-1} + \upsilon_t \text{ --- (5)}$$

From the above equation (5), ECM-1 is the error correction component which is also the estimation of the lagged error series and υt is the random error term. However, the adjustment speed of the model of this study will be expressed by this method.

3.3 Economic A-priori Expectation

The economic a-priori expectation which is also known as economic criteria denotes the relationship postulation of economic theory that established the relationship between the dependent and explanatory variables of the model. However, the result of the estimates of the model will therefore be interpreted on the basis of the supposed signs of the parameters as established by economic theory.

Table 1: Summary of A-priori Expectation

Regressand	Relationship	Regressor
PSI	+	BMS
PSI	+	EXR
PSI	-	INF
PSI	-	INTR

Source: Authors compilation, 2024.

Table 2: Data Measurement

Variables	Type	Individual Indicator	Measurement/Definition	Data Source
PSI	Dependent	Private sector investment (₦'M)	Private sector Investment refers to the performance of private sector. It is measured by their output in millions of Naira.	CBN, 1986-2023
EXR	Independent	Real exchange rate	The real Exchange Rate is the value of the Naira in terms of the Dollar, and it measures the exchange rate fluctuations (Adesete & Jokosenumi, 2018),	WDI , 1986-2023
INF	Independent	Inflation consumers price (annual %)	This denote the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at a specified interval, such as yearly.	WDI, 1986-2023
INTR	Independent	Real interest rate	Real Interest Rate refers to the payment annually charged on the borrowed funds, and it is measured by the monetary policy rate as a proxy for the bank lending rate (Ogunsakin, 2014).	WDI, 1986-2023

BMS	Independent	BMS (% GDP)	Captured by the ratio of broad money supply to GDP, Broad money supply refers to the aggregate that measures the amount of money in circulation (Seysay & Abdullai, 2017.	WDI, 1986-2023

Source: Authors compilation 2024.

3.4 Methods of Data Analysis

Before conducting the VECM analysis, there are some pre-estimation tests that will be carried out. This test includes the Descriptive statistics, followed by the unit root test for stationarity, the two test that was utilized is the Augmented Dicky Fuller (ADF) and the Phillip Perron (PP) test and it will be based on trends. It is important to determine the order of lag selection before proceeding to conduct the Johansen cointegration test for long-run relationship among non-stationary variables. Afterward the analysis of the VECM will be carried out.

Subsequently, there are some post-estimation tests also known as residual diagnostic tests that was carried out to determine the credibility of the conclusions drawn from the VECM model analysis. These tests will include the autocorrelation or serial correlation test to check for the presence or absence of Autocorrelation in the VECM using the VEC Residual Serial Correlation LM test; and the Normality test to determine whether the variables are normally distributed.

4. Results and Discussion

Descriptive statistics enables us to have a glimpse of the data used in the study, Common sample descriptive statistics was used because there are no missing values in our data understudy Thus, the descriptive statistics for the variables employed are presented in table 3 below. The data comprises of 34 observations for each variable.

Table 3: Descriptive statistics

	LPSI	LEXR	LINTR	LINF	LBMS
Mean	10.3429	4.1939	1.6665	2.7203	2.9792
Maxi	14.9442	6.0544	2.9003	4.2882	4.1473
Mini	6.0854	0.5621	-0.4931	1.6842	0.6694
Std. Dev	2.5018	1.4481	0.9687	0.6965	0.5928
Skewness	-0.2289	-3.3625	-0.1791	-0.2399	1.5777
Kurtosis	2.7001	17.396	3.9528	2.2607	9.0512

Source: Authors Computation using Stata 15.0, 2024.

As depicted from the above table, it is evidenced that between 1986 to 2023 Log private sector investments has the highest average value of 10.3429 followed by exchange rate, broad money supply, inflation and interest rate, with their respective average values of 4.1939, 2.9792, 2.7203 and 1.6665. LPSI has the highest standard deviation value of 2.5018; this indicates that the LPSI does not deviate from the mean because it is close to the size of the mean, also LPSI is the most volatile, while LBMS is the least volatile. Having a negative Skewness value of the variable denotes that the variables skewness tailed toward the left, except for LBMS which skewed to the right. The kurtosis confirms that LEXR, LBMS and LINTR having value of (17.396, 9.0512 & 3.9528) which is greater than 3, it implies that the variables are highly peaked, while LPSI and LINF with values of (2.7001 & 2.2607) are less peaked-platokurtic.

Table 4: Stationary Tests Results for Variables

ADF and PP at level

Variables	ADF @ Level Z-(t)	5% Critical Values	Remark	PP @Level Z(rho)	5% Critical Values	Remark
LPSI	1.515^{n}	-1.604^{n}	1(0)	0.589^{n}	-5.396^{n}	1(0)
LEXR	0.144^{n}	-1.602^{n}	1(0)	0.267^{n}	-5.387^{n}	1(0)
LINTR	-1.166^{n}	-1.600^{n}	1(0)	-4.912^{n}	-5.300^{n}	1(0)
LINF	0.418^{n}	-1.604^{n}	1(0)	0.399^{n}	-5.396^{n}	1(0)
LBMS	-0.247^{n}	-1.604^{n}	1(0)	0.053^{n}	-5.396^{n}	1(0)
ADF and PP at First difference						
Variables	**ADF,1st difference Z-(t)**	**5% Critical Values**	**Remark**	**PP,1st difference Z(rho)**	**5%Critical Values**	**Remark**
LPSI	-4.810**	1.604**	1(1)	-50.136**	-5.340**	1(1)
LEXR	-2.397**	-1.604**	1(1)	-29.379**	-5.388**	1(1)
LINTR	-2.799**	-1.600**	1(1)	-26.532**	-5.300**	1(1)
LINF	-7.276**	-1.604**	1(1)	-32.0935**	-5.388**	1(1)
LBMS	-6.380**	-1.604**	1(1)	-32.735**	-5.388**	1(1)

Source: Author's compilation using Stata 15.0 (2024)

Note: *, ** and ******* represent significance levels at 10%, 5% and 1% respectively. The letter *n* denotes no significance.

The results of the unit root test in table four (4) above incorporated the Augmented Dicky Fuller (ADF) and Phillip Perron (PP) at constant and trend. It was observed that LPSI, LEXR, LINTR, LINF, and LBMS, were not stationary at level because the chosen 5% critical value is greater than the Z(t) and Z(rho) values of both ADF and PP, but after differencing the variables they were all stationary in their 1st difference i.e 1(1), this is due to the fact that the Z values of both ADF and PP are all greater than the 5% critical values, this justifies the use of Johansen Cointegration to check if long run relationship exist between the dependent and independent variables.

Table 5: Selection of order criterion

Lag	LL	LR	DF	P	FPE	AIC	HQIC	SBIC
0	-16.5784				0.000019	3.31975	3.27509	3.53704
1	41.8026	116.76	25	0.000	1.6e.07	-1.81578	-2.08376	-0.512051
2	752.662	1421.7	25	0.000	8.8e.52*	-107.33	-107.824	-104.942
3	2041.81	2578.3	25	0.000	0.000	-304.124	-304.705	-301.299
4	2082.37	81.127	25	0.000	0.000	-310.365*****	-310.945*****	-307.54*****

Note: * denotes Lag order selection.

Source: Authors computation using Stata 15.0, (2024).

The lag order selection criteria were adopted to obtain optimal lag length for the model. All information criteria suggested a lag of four except final information criterion (FPE) which suggest lag two. Therefore, a lag length of four (4) of the Akaike information criterion (AIC) was used in building the short run VEC model.

Table 6: Johansen Test for Cointegration

Maximum Rank	Parms	LL	Eigen values	Trace Statistics	5% Critical Values
0	55	.	1.00000	1371.8937	68.52
1	64	.	1.00000	882.6632	47.21
2	71	.	1.00000	425.9002	29.68
3	76	.	1.00000	0.0000*	15.41
4	79	.	1.00000	0.0000	3.76
5	80	.	1.00000		

Source: Authors computation using Stata 15.0, (2024).

The Johansen tests for cointegration revealed that the trace statistics show the existence of two cointegrating associations between log (PSI) and its determinants at 5% level of significance, because the trace statistics values of (0.0000 & 0.0000) is less than the 5% critical values of (15.41 & 3.76) respectively. The conclusion drawn from this result is that there exists a long run relationship between log (EXR), log (INTR), log (INF), and log (BMS).

Table 7: Vector Error Correction Model (VECM) Estimate Johansen Normalization Restriction Impose.

Beta	**Coefficient**	**Std.error**	**Z**	**P>(Z)**	**[95% Conf**	**Interval**
-Ce1						
LPSI	1	.	.	.	.	.
LEXR	-1.784561	0.1432567	5.13	0.000	1.064164	1.924774
LINTR	1.494469	0.2195473	6.81	0.000	21.32504	3.456789
LINF	28.70648	3.76611	7.62	0.000	-18.04857	36.08792
LBMS	-14.63085	1.743767	-8.39	0.001	17.30456	-11.21313
Constant	-11.52229	.	.	.	.	.

Source: Authors computation using Stata 15.0, (2024)

Note: the signs of the coefficient are reversed in the long-run. and LPSI is positioned as the dependent variable**.**

From the result obtained in table 7 above it is seen that in the long run, log exchange rate (LEXR) and log broad money supply (LBMS) has a positive impact on log private sector investment (LPSI) and the coefficient with P-values less than 5% level of significant indicated that they are statistically significant, also their signs indicate that they both conform to the apriori expectation. Suggesting that they are relevant to predict changes or movement in LPSI, therefore this is consistent with the study done by Kabiru (2022). While log interest rate (LINTR) and log inflation (LINF) are both having a negative or inverse relationship with LPSI, and are all found to be statistically significant with LPSI. Therefore, since LINTR has a negative relationship with LPSI this conform to the apriori expectation and is also in consonance with the study done by Ezeibekwe (2020). Similarly, in the case of inflation it also conforms to the apriori expectation and is also in line with the study conducted by Ebisine and Oki (2021), who both found LINF to have an inverse relationship with LPSI. Therefore, findings aligned with some of the empirical studies reviewed. Additionally, all the independent variables (LEXR, LINTR, LINF and LBMS) have asymmetric effect on LPSI in the long run average.

Table 8: VECM short run form, Error Correction Model

Number of Obs = 34

D_LPSI	Coef	Std.err	Z	P>(Z)	95% Conf	Interval
D_LEXR	1.467359	0.1585187	1.14	0.256	-0.130454	0.4909281
D_INTR	0.7367113	2.41162	0.31	0.016**	-3.989977	5.4634
D_INF	-0.2006874	0.1515042	-1.32	0.000**	-0.4976302	0.0962553
D_BMS	0.0753655	0.056118	1.34	0.017**	-0.0346237	0.1853548
ECM(t-1)	-0.410265	0.2591344	-5.44	0.000**	-1.918159	-0.9023707
Cons	0.7178517	1.415697	0.51	0.026**	-2.056863	3.492567

Source: Authors computation using Stata 15.0, (2024), **Note:** ** Significant at 5%.

In table 8, it can be deduced that both endogenous variable and the explanatory variables are stationary at first difference. This is because the coefficient of the error correction term is negative less than one with value of (-0.410265) with P-value of (0.000) which is significant at 5%. The entire model in the short run reveals that the exogenous variables all did not have the expected outcome. Additionally, the ECT suggests that previous year's error (or deviation from long-run equilibrium) is corrected for within the current years at a convergence speed of 41%.

The independent variables such as EXR, INTR, BMS have positive effect on log PSI and significant at 5% level of significant only EXR is not significant. While BMS has a negative affect PSI but is found to be statistically significant with PSI, because the associated p-value is less than 5% significant level. It implies that since private sector investment is the main driver of Nigeria economy and a favorable monetary policy such as low interest rate increases borrowing by the private sector also it reduces cost for investors. Consequently, stable exchange rate attracts investors in an economy, low inflation rate promotes business confidence and investment in Nigeria economy, in addition easier access to credit facilities encourages investors all this helps to foster growth in the private sector. The coefficient of ECt-1 is valued at (-0.410265) is negative and significant at 5% level. ECt-1 indicates the speed of adjustment of the model from 1986 to 2023. We have observed 41% speed of adjustment in the present analysis. It means that 41%-point adjustment would take place each year towards the long run period. Below is the summary of the speed of adjustment:

$\Delta LPSI_t = \lambda 0 + \lambda 1 \Delta LEXR_t + \boldsymbol{\lambda} 2 \Delta LINTR_t + \lambda 3 \Delta LINF_t + \lambda 4 \Delta LBMS_t + \lambda 5 ECM\text{-}1 + \nu_t$

$\Delta LPSI_{t-1} = 0.000 + 0.256 \Delta LEXR_{t-1} + 0.016 \Delta LINTR_{t-1} - 0.000 \Delta LINF_{t-1} + 0.017 \Delta LBMS_{t-1} - 0.410 ECM\text{-}1_{t-1.}$

Table 9: Autocorrelation at lag 2

Lags	Chi^2	Df	Chi^2
1	27.8304	25	0.31572
2	44.3124	25	0.10000

Source: Authors computation using Stata 15.0, (2024)

From the autocorrelation result obtained in table 9 above, the P-value of both lag 1 and 2 of the Chi shows that it is greater than the 5% (0.05) level of significant, (0.31572 > 0.05) & 0.10000> 0.05). Because the alternate H_1 was rejected as against the H_0 was accepted, this implies that there is no presence of autocorrelation.

Table 10: Normality Test

Variables	Jarque-Berra	Probability
LPSI	1.204	0.54785
LEXR	357.658	0.00000
LINTR	1.468	0.47998
LINF	1.1000	0.57682
LBMS	65.980	0.00000

Source: Authors computation using Stata 15.0, (2024).

For the Jarque-Berra test presented in table 10 above it is seen that LEXR and LBMS they are both normally distributed, but for LPSI, LINTR and LINF they are not normally distributed. This implies that some of the series are normally distributed while some are not normally distributed

5. Conclusion and Recommendations

This study examined the effect of monetary policy on private sector investment in Nigeria by using annual time series data spanning from 1986-2023. The study employs the VECM approach of cointegration. Based on the outcome of the study it is pertinent to stress the significant role that the monetary policy variables play in the overall performance of private sector led investment in the Nigeria economy which is far from being pleasing in spite of efforts made by the various governments. The study also concluded that there is a stable long run relationship between the dependent variables and the independent variables private sector investment, exchange rate, inflation, interest rate and broad money supply (PSI, EXR,INF,INTR and BMS). EXR and BMS has positive relationship with PSI, however, INTR and INF has negative effect on PSI within the study period. Based on the above findings, the study therefore put forward the following recommends as thus;

i. low interest rate should be maintained, since it makes borrowing cheaper for businesses. This will enhance private sector investment as credit will become affordable for firms' investment expansion or new project.
ii. Monetary policy be geared toward implementing policies that will control the inflationary pressure and implement stable exchange rate in order to make and create a conducive environment and eliminate the uncertainty for the private sector to function efficiently.
iii. The central bank should ensure that it manages the liquidity which is crucial in ensuring a conducive environment for investment.
iv. The government should increase access to credit facilities. Lastly, they should also implement targeted interventions (e.g, SMEs support scheme).

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