



POLAC ECONOMIC REVIEW (PER)  
DEPARTMENT OF ECONOMICS AND MANAGEMENT SCIENCE  
NIGERIA POLICE ACADEMY, KANO



## EMPIRICAL ANALYSIS OF THE EFFECT OF EXCHANGE RATE CHANNEL OF MONETARY POLICY TRANSMISSION MECHANISM ON NIGERIAN ECONOMY

Sadiq Muhammed Turi

Central Bank of Nigeria

### Abstract

*This study examined the effect of exchange rate channel of monetary policy transmission mechanism on Nigerian economy spanning the period 1986-2020. Data were generated from the Central Bank of Nigerian (CBN) Annual Statistical Bulletin. The study used ARDL model and analysed the effect of monetary policy transmission mechanism on economic growth in Nigeria. Gross domestic product (GDP) was proxy for economic growth while exchange rate (ER) and interest rate (IR) were monetary policy transmission mechanism variables. The study finds that exchange rate and interest rate have negative effects on gross domestic product and are statistically significant on real gross domestic product (economic growth) in Nigeria during the period under study. The study, therefore, recommends that there should be efficient manipulation of exchange rate and interest rate that will give both local and foreign investors confidence to borrow for investment which would consequently increase production and economic growth in the country through the Central Bank of Nigeria.*

**Keywords:** Exchange Rate, Interest Rate, Monetary Policy, Transmission Mechanism

### 1. Introduction

Monetary policy has impact on real variables through manipulation in money aggregate or some form of interest rate (Ozdogan, 2009). Monetary policy changes are transmitted to real sector variables via the channels of monetary policy. Traditional theory identifies three channels namely; the interest rate, the exchange rate, and the asset/equity channel. However, recent works have added two more channels, the Credit and Expectations channels (Mishkin., 1996). Monetary policy transmission mechanisms are the channels through which changes in the policy rate, affect the behaviour of other economic variables, mainly prices and output (Adebiyi & Mordi, 2009). Monetary policy affects prices in the economy through the following channels: consumption and investment decisions; exchange rate; asset prices; credit; and expectations. The transmission channel of interest rates to consumption and investment decisions is the most known monetary policy transmission mechanism (Anoruo, 2002).

Anyanwu (1993) posits that monetary policy is an indispensable economic weapon of stabilization which involves different measures articulated to regulate and

control the quantum, cost, availability and direction of money and credit with the sole purpose of achieving some predetermined macroeconomic goals. Really, the attainment of this intention has to do with the existing transmission mechanism and the modus operandi capable of touching effectively on appropriate macroeconomic variables, thereby stabilizing the economy and impacting on economic growth and development.

The exchange rate channel is one of the primary transmission channels of monetary policy in open economies, especially those with flexible exchange rate regimes. Monetary policy can influence the exchange rate through interest rates (the popular uncovered interest rate parity condition), direct intervention in foreign exchange markets or through inflationary expectations (Dabla-Norris and Floerkemeier, 2006). In this channel, monetary policy affects economic activity (output) through net exports. On the demand side, expansionary monetary policy, leads to a fall in interest rates relative to the foreign inducing capital outflows leading to a depreciation of the local currency makes exports cheaper resulting in increased net exports and

consequently aggregate demand and output (Mishkin (1996, 2001)). On the supply, expansionary monetary policy which depreciates the local currency raises the domestic price of imported goods, which leads to inflation pressures through the exchange rate pass-through (Butkiewicz & Ozdogan, 2009).

The strength of the exchange rate channel is affected by several factors such as the exchange rate regime, sensitivity of the interest rates, the size and openness of the economy, degree of capital mobility and the degree of expenditure switching between domestic and imported goods (Boivin et al., 2010; Mishra et al., 2010; Tahir, 2012). The exchange rate channel postulates that when the economy is open, a monetary contraction will increase the domestic interest rate up to the foreign one and, thereby, appreciates domestic currency in nominal and/or real terms. Accordingly, this appreciation impacts the economy through international competitiveness and the costs of imported goods.

The strength of monetary policy to achieve her objectives depends on the efficiency of its transmission mechanism. By transmission mechanisms, it means the various channels through which monetary impulse is transmitted to the target variable. The target could be economic growth or inflation. Therefore, understanding the transmission process of the different channels is the determinant to answer a series of monetary policy questions (Mishkin, 1995). Yet there are multiple different perspectives among economists on this issue, especially on the importance of each channel. Under different conditions or different development levels of financial markets, the impacts of monetary policy on the economy through each channel are not the same (Senbet, 2008). For example, in the developing countries like Nigeria, the monetary transmission mechanism is somewhat less efficient than in developed countries (Mishra, 2010).

As monetary Policy Committee raises the target for the monetary policy rate, real interest rates also tend to increase, which in turn tend to lead to a decrease in investment and consumption of firms and households, reducing the demand for goods and services in the

economy, thus contributing to the reduction of inflation (Ajayi, 2007).

Another important transmission channel of monetary policy operates through the exchange rate, especially in open economies. When the exchange rate rises, the domestic currency tends to depreciate reducing the price level of tradable goods expressed in national currency (Boivin, Kiley & Mishkin, 2010). The exchange rate, by its turn, affects inflation trend through two mechanisms. The first is the decrease in the prices of imported consumer goods and inputs used in the domestic production. The other mechanism operates through the aggregate demand. The cheaper dollar discourages exports and stimulates imports. Thus, the demand for domestic goods falls, reducing the pressure on the price level (Mbutor, 2009).

Changes in the interest rate also affect economic agents' wealth. An increase in the interest rate, by discouraging economic activity and corporate profits, tends to depress stock prices (Adofu & Audu, 2010). This reduction in the value of the financial wealth of households and corporations discourage consumption and investment plans. Monetary policy also works through the credit channel. A rise in the monetary policy rate tends to increase bank lending rates as well, reducing the supply of credit and/or its attractiveness to households and firms, discouraging consumption and investment (Itodo, Eche, & Kamo, 2012).

The failure of the monetary policy in curbing price instability has caused growth instability as Nigeria's record of growth has been very poor. An examination of the summary of the long-term pattern reveals the following secular swings: Rapid Decline (1965-68) (Civil War Years), Revival, (1969-1971) Boom, (1972-1980) crash, (1981-84) Renewed Growth, (1985-1991) Wobbling, 1992-2010) (CBN, 2010). More so despite the various monetary regimes that have been adopted by the Central Bank of Nigeria over the years, economic growth still remains a major threat to Nigeria's economic development. Nigeria has experienced high volatility in economic growth. The growth of money supply is correlated with this high inflation episode because money growth was often in excess of real economic growth (Bernanke, & Gertler, 2000). Moreso, the dualistic nature of financial and product market in Nigeria constitutes a fundamental constraint militating

against the formulation and efficient implementation of monetary policy. The informal sector in Nigeria accounts for about 30 percent of the GDP, thus the existence of a large informal credit market and exchange rate market in Nigeria has many implications for the transmission mechanism of monetary policy (Bhattacharya, Haslag, & Martin, 2009). Furthermore, the payment system is a vital link between the financial and the real sector of the economy. The payment system in Nigeria is predominantly cash and the prominence of cash for transaction purposes increases the volume of money/currency in circulation which renders monetary control difficult. In the light of the above therefore, this study intends to subject these issues to empirical examination in order to evaluate the effect of monetary policy transmission mechanism on economic growth in Nigeria.

This study assessed the effect of exchange rate channel of monetary policy transmission mechanism on economic growth in Nigeria. The study is organised into five parts: Part one is the general introduction of the study; the second part reviewed related literature review and theory while part three is the methodology of the study. The fourth part deals with data presentation and analysis of results while the last part drawn conclusion and recommendations.

## 2. Literature Review

### 2.1 Conceptualization

**Monetary Policy:** According to CBN (2006), monetary policy concept was defined as “Any policy measure designed by the federal government through the CBN to control cost availability and supply of credit. It also referred to as the regulation of money supply and interest rate by the CBN in order to control inflation and to stabilize the currency flow in an economy. Also CBN (1997), defined monetary policy as combination of measures designed to regulate the value, supply and cost of money on an economy in consonance with the expected levels of economic activities.

**Exchange Rate:** The balance of payments can be in deficit or in surplus and each of these affect the monetary base, and hence the money supply in one direction or the other. By selling or buying foreign exchange, the Central Bank ensures that the exchange rate is at levels that do not affect domestic money

supply in undesired direction, through the balance of payments and the real exchange rate. The real exchange rate when misaligned affects the current account balance because of its impact on external competitiveness. Moral suasion and prudential guidelines are direct supervision or qualitative instruments. The others are quantitative instruments because they have numerical benchmarks (Ajie & Azuna, 2018).

**Monetary Policy Transmission Mechanism:** The transmission channels of monetary policy vary across countries. According to Obafemi and Ifere (2015), certain factors that may be responsible for this variations may include; “macroeconomic environment and structural economic conditions, the extent of development of capital markets, the health of and extent of development within the financial system as well as the major monetary policy instruments used by a country” According to Sanusi (2009), “an efficient and effective transmission mechanism of monetary policy can only be assured in an economically safe and sound environment characterized by a competitive banking system”.

**The Exchange Rate Channel:** A third view argues that the exchange rate channel is an additional transmission mechanism by referring to the asset theory of the exchange. Oguda and Chinda (2018) argue that, when exchange rates are flexible, foreign reserves are fixed and the exchange rate is determined by long-run considerations such as purchasing power parity. Nonetheless, in the short-run the exchange rate is determined by asset market equilibrium conditions, as the relative price of two currencies which satisfies their demand and supply. When the exchange rate determined by the asset equilibrium is not consistent with the demand and supply of goods, a current account and a corresponding capital account imbalance occurs. This alters the ratio of domestic to foreign assets, which in turn changes the level of the exchange rate that is consistent with the stock market equilibrium.

**Economic Growth:** This study views the concept of economic growth as an increase in the per-capital income of an individual in the economy. The economy of a nation is considered to have grown when the nation’s capital dividend by the total population of such

a country increases sustainability (Boivin, Kiley, & Mishkin, 2010). It may not be wise to consider a nation's economy as increasing when there are fluctuation in the per capital income of such a nation within a short period of time.

## 2.2 Theoretical Review

### 2.2.1 Keynesian Liquidity Theory of Money

The Keynesian Liquidity Theory is most valuable in explaining the effect of interest rate mechanism on economic development. According to this theory, the rate of interest is determined by the demand for and the supply of money. The theory is therefore characterized as the monetary theory of interest, as distinct from the real theory of the classical. The supply of money according to the theory is the total quantity of money in the country for all purposes at any time. Though, the supply of money is a function of the rate of interest to a degree, yet it is considered to be fixed by the monetary authority, that is the supply curve of money is taken as perfectly inelastic

On the other end, demand for money (addressed as liquidity preference) is the desire to hold cash. The money in cash "lulls disquietude" and the rate of interest which is demanded in exchange for it is a "measure of degree of disquietude". The rate of interest in Keynes's word is the premium which has to be offered to induce people to hold their wealth in some form other than hoarded money. "The higher the liquidity preference, the higher the interest rate that would be paid to the holders of cash to induce them to part with their liquid assets". The lower the liquidity preference, the lower will be the rate of interest that will be paid to cash holders. According to Keynes, there are three motives behind the desire of the people to hold liquid cash; these are; transactionary, precautionary and speculative motives

**i. Transactionary motive;** this relates to the needs to hold cash balances to meet current transactions of personal business exchanges. It is further divided into the income and business motive. The income motive is meant to bridge the interval between the receipt of income and its disbursement, while the business motive is to bridge the gap between the time of incurring business cost and the time of the receipt of the sale proceeds. Hence transactionary demand depends on the

level of income, employment and prices, the business turnover, the normal period between the receipt and disbursement of income, amount of salary or income and on the possibility of getting a loan.

**ii. Precautionary motive;** this relates to provide for contingencies requiring sudden expenditures and for unforeseen opportunities of advantageous purchases. Both individuals and businessmen keep cash in reserves to meet unexpected needs. Individuals hold some cash to provide for illness, accident, unemployment and other unforeseen contingencies. Similarly, businessmen keep cash in reserves to tide over unfavourable conditions or to gain from unexpected deals. Money held for precautionary motive is rather like water kept in reserve in water tank. It depends upon the level of income, business activity, opportunities for unexpected profitable deals, availability of cash, the cost of holding liquid asset in bank reserves, etc. Keynes holds that transactionary and precautionary motives are relatively interest inelastic, but are highly income elastic. The amount of money held under these two motives ( $M_1$ ) is a function of ( $L_1$ ) of the level of income ( $Y$ ) and is expressed as  $M = L_1(Y)$ .

**iii. Speculative motive;** money is held for securing profit from knowing better than the market what the future will bring forth. Individuals and businessmen have funds, after keeping enough for transactionary and precautionary purposes, like to gain by investing in bonds. Money held for speculative purposes is a liquid store of value which can be invested at an opportune moment in interest bearing bond or securities. The speculative demand for money is therefore a decreasing function of the rate of interest to the matter of expectation about a safe future rate of interest. The higher the rate of interest the lower the speculative demand for money and vice versa.

### 2.3 Empirical Literature Review

Mushtaq and Siddiqui (2016) studied the effect of interest rate as a monetary policy variable on bank deposits in 46 countries across the world between 1999 and 2014. The study used bank deposits as the dependent variable and also used interest rate as the independent variable coupled with the use of the Panel Auto Regressive Distributed Lag modeling technique; it was revealed that interest rate has positive effect on bank deposit. Hence, it was recommended that

depositors' behaviour should be considered while making policies.

Onyeke (2016) investigated the impact of monetary policy on stock returns in Nigeria over a monthly time period covering January 2003 to June 2014. The explanatory variables employed are consumer price index, inter-bank rate, open buy-back, Treasury bill rate, and exchange rate while the all share index is the dependent variable. The dynamic interactions among the variables are based on variance decompositions and impulse response functions generated from the VAR. The estimated results revealed that monetary policy variables did not have a significant impact on the prices of stock in Nigerian equity market.

Onyeiwu (2012) examined the impact of monetary policy on the Nigeria economic using the Ordinary Least Squared method (OLS) to analyze data between 1981 and 2008. The result of the analysis shows that monetary policy presented by money supply exerts a positive impact on GDP growth and balance of payment but negative impact on rate of inflation. Furthermore, the finding of the study supports the money-price-output hypothesis for Nigeria economy. Obviously, the empirical studies on the monetary policy and real output growth in Nigeria is still scanty.

Olusanya and Akinade (2012) look at analysis of causality between Monetary Policy and Economic Growth in pre-and post-deregulated Nigeria economy between 1970–2009. Granger causality analyses was used in order to test the causality between money supply and economic growth. The result showed causality relationship from economic growth (GDP) to money supply (MS) in the pre-deregulation era while in the post-deregulation era; there is no causality relationship between economic growth (GDP) and money supply (M2). Hence, there is a one-way relationship between money supply and economic growth.

Bakare (2011) examined the determinants of money supply growth and its implications on inflation in Nigeria. The study employed quasi-experimental research design approach for the data analysis. This design combined theoretical consideration (a priori criteria) with empirical observations and extracted maximum information from the available data. The

Nigeria's secondary data were processed using E-view for windows econometric packages. The results of the regression showed that credit expansion to the private sector determines money supply growth by the highest magnitude in Nigeria. The results also showed a positive relationship between money supply growth and inflation in Nigeria. It demonstrated that a one (1) percent rise in money supply in the current period leads to 5.6 percent rise in inflation. All in all, our findings discovered that changes in money supply are concomitant to inflation in Nigeria and strongly support the need for regulating money supply growth in the economy

Ahmed and Suliman (2011) examined the long-run relationship between three macroeconomic variables, real Gross Domestic Product (GDP) Money Supply (MS) and Price Level (CPI) for the Sudan economy using annual data over the period 1960 to 2005. Granger causality test has been applied and in order to investigate the existence of long-run relationship, co-integration analysis has been employed. The result shows no causality between real GDP and money supply in the cause of Sudan during the period 1960 – 2005.

### **2.3.1 Monetary Policy Instruments and Economic Growth Relationship**

The impact of monetary policy on growth has generated large volume of empirical studies with mixed findings using cross sectional, time series and panel data. Monetary policy is generally believed to be associated with growth, or more precisely, it is held that appropriate monetary measures in particular circumstances can be used to stimulate economic growth and development (Arestis, Demetriades, & Luintel, 2017). Economic theories exist that tend to explain the role of money in the economy. Notable among them according to Bernanke and Gertler (1995), are the Keynesian theory and the quantity theory. Within them, however, are subgroups of variants of each. Keynesians are of the opinion that money is only one financial asset among many that changes in the quantity of money affect the real sector only indirectly via portfolio adjustments, and the economic stabilization requires the use of fiscal policy as well as monetary policy. The role of economic policy in the achievement of macroeconomic objectives has been

extensively dealt within Keynesian analysis of an activist macroeconomic policy. The Keynesian analysis leads to the conclusion that demand management policies can and should be used to improve macroeconomic performance. An activist macroeconomic policy involves setting monetary and fiscal variables in each time period at the values which are thought necessary to achieve the government's objectives. A basic premise of Keynesian economics is that the private sector is inherently unstable. It is subject to frequent and quantitatively important disturbances in the components of aggregate demand. It is the task of counter cyclical or stabilization policies to offset these private sector disturbances and so keep real output close to its market clearing equilibrium time path (Omotor, 2007). According to Anyanwu (2003), countries seeking for sustainable economic growth after a period of macroeconomic imbalances must first get stabilized. In Nigeria, monetary policy effectively implemented is an important tool for stable economic growth.

### 2.3.2 Exchange Rate and Economic Growth

Exchange rate policy has been identified as one of the endogenous factors that can affect the economic performance of a nation. Exchange rate plays a key role in international economic transactions because no nation can remain in isolation due to varying factor endowment. Movements in the exchange rate have ripple effects on other economic growth (Mohammed & Ahmad, 1995).

In Nigeria today, exchange rates and its constant movement is of great importance to the general public because one way or the other its fluctuation has an effect on the competence of the economy to attain optimal productive capacity. This is alarming given its macro-economic importance specifically in a high import dependent country like Nigeria (Ibeabuchi, 2007). The Exchange rate reflects the ratio at which one currency can be exchange with another currency, namely the ratio of currency prices. It is the value of a foreign nation's currency in terms of the home nation's currency. It also specifies how much one currency is worth in terms of the other. A correct or appropriate exchange rate has been one of the most important factors for economic growth in the economies of most developed countries, whereas regular fluctuations or inappropriate exchange rate has been a major obstacle

to economic growth of many African countries of which Nigeria is inclusive (Nouri & Samimi, 2011).

The foreign exchange rate is determined independently to the economic growth rate. The exchange rate can have an influence on economic growth. And the economic growth rate can influence the exchange rate. But, with many other variables at work, there is no direct link. A strong exchange rate is often considered to be a sign of economic strength. It can become a symbol of national pride. Often politicians are worried if they see a 'weakening' in the exchange rate. They will point to a strong exchange rate as a symbol of economic success (Ogbulu, 2009).

In the long-term, a strong (appreciating) exchange rate tends to occur in countries with low inflation, improving competitiveness and a strong economic performance. For example, Japan and Germany saw a sustained rise in their exchange rates in the post-war period because they had a good economic performance (Saibu & Nwosa, 2011). In the short-term, a strong exchange rate could be due to a variety of other factors. For example, the Swiss Franc appreciated in 2012 because it was seen as a relative safe haven compared to the Eurozone currencies (Onyeiwu, 2012). Short-term movements in the exchange rate can be misleading to the overall economic situation because it might be driven by speculation rather than long-term economic improvement.

## 3. Methodology

### 3.1 Sources of Data

This study analysed the effect of exchange rate channel of monetary transmission mechanism on economic growth in Nigeria spanning the period 1986-2020. Gross domestic product (GDP) was proxy for economic growth as the dependent variable while exchange rate (ER) was used as explanatory variables

### 3.2 Model Specification

In view to analyse the effect of exchange rate channel of monetary transmission mechanism on economic growth in Nigeria, the study specified the stochastic model below:

$$GDP = \delta_0 + \delta_1 ER + \delta_2 IR \epsilon_t \dots \dots \dots 1$$

Where; GDP = Gross Domestic Product; ER = Exchange rate, IR= Interest rate

A priori expectation:  $\delta_1$  and  $\delta_2$  are expected to be negative

### 3.3 Estimation Technique

This study employed the use of ARDL model to trace the effects of exchange rate channel of monetary policy transmission on economic growth in Nigeria. The study investigates stationarity of the time series data through the use of Augmented Dickey-Fuller (ADF) test and also employed the bounds testing approach to co-integration based on Autoregressive Distributed Lag (ARDL) model framework, as proposed by Pesaran, Shin, and Smith (2001).

## 4. Data Presentation and Analysis of Results

### 4.1 Stationarity Test Result

Below performing any econometrics estimation using time series data that are highly volatile, the data need to undergo stationarity test to avoid spurious regression result. The stationarity test was performed using the ADF test which shows the order of integration and the number of times the series were differenced. The variable were stationary at level and at first difference implying an integrated order of I(0) and I(1) respectively.

**Table 1: Stationarity Test Result**

| VARIABLES                                                                                            | ADF TEST<br>LEVELS | AT                      | ADF TEST AT FIRST<br>DIFF |                         | ORDER OF<br>INTERGRATION |
|------------------------------------------------------------------------------------------------------|--------------------|-------------------------|---------------------------|-------------------------|--------------------------|
|                                                                                                      | ADF<br>statistics  | Critical<br>Value at 5% | ADF statistics            | Critical<br>Value at 5% |                          |
| $\Delta$ GDP                                                                                         | -4.301649          | 2.43917                 | -3.836268                 | 2.43917                 | I(0)                     |
| $\Delta$ ER                                                                                          | -1.482927          | 2.50628                 | -3.153853                 | 2.50628                 | I(1)                     |
| $\Delta$ IR                                                                                          | -3.10636           | 2.49274                 | -4.219326                 | 2.49274                 | I(0)                     |
| $\Delta$ = Difference Operator, I(d) = No. of times of integration, Level = 5% level of significance |                    |                         |                           |                         |                          |

**Source:** Author's compilation from E-views 10.0, 2021

The result of stationarity test presented in table 1 show the results of the stationarity test. The results revealed that gross domestic product (GDP) and interest rate (IR) are stationary at level [I(0)] while exchange rate (ER) is stationary at first difference [I(1)]. The result shows that the variables employed in respect to this study are

combination of I(0) and I(1) series or are integrated of different orders. The study therefore performed co-integration test for appropriate examination of the long-run relationship among the variables.

### 4.2 ARDL Co-integration Test Result

**Table 2: F-Bound Test for Co-integration  $H_0$ : No Co-integration**

| Test Statistic                 | Value | Degree of freedom  | Probability        |
|--------------------------------|-------|--------------------|--------------------|
| <i>F-statistic</i>             | 84.59 | (8,185)            | 0.0000             |
| <i>Chi-square</i>              | 732.4 | 7                  | 0.0000             |
| <i>Pesaran Critical values</i> |       | <i>Lower bound</i> | <i>Upper bound</i> |
|                                |       | 1.65               | 2.75 (10%)         |
|                                |       | 2.38               | 3.21 (5%)          |
|                                |       | 2.47               | 3.72 (1%)          |

**Source:** Author's compilation from E-views 10.0

The F-bound test of co-integration is presented in table 2. The results indicates that the calculated *Chi-square* value is 732.4 and is higher than all the Pesaran lower

and upper bound limits at 1%, 5% and 10% respectively and the probability value is 0.000 which is less than 0.05. Therefore, the null hypothesis of no co-integration

among the variables of the study is rejected and alternative hypothesis is accepted. This means that there is long-run relationship among the variables of the study.

**Table 3: Estimated Long-run Coefficients of ARDL Model**

| Variable          | Coefficient | Std. Error   | t-Statistic | Prob. |
|-------------------|-------------|--------------|-------------|-------|
| D(ER-1)           | -0.0642     | 0.0108       | -2.197      | 0.003 |
| D(IR-1)           | -0.3391     | 0.0297       | 4.1836      | 0.000 |
| C                 | -1.2183     | 2.5327       | 0.3672      | 0.142 |
| R-Squared         | 0.874       | Mean Dep Var | 124.8       |       |
| Adjusted R-Square | 0.839       | S.D Dep Var  | 153.7       |       |

**Source:** Author's compilation from E-views 10.0

The long-run ARDL estimation is presented in table 3. The results revealed that exchange rate (ER) has negative relations with economic growth over the study period. A unit increase in exchange rate decrease economic activities (GDP) by about 0.06% and the variables is statistically significant as indicated by the

probability value of 0.003 which is less than 0.05. Similarly, interest rate (IR) is also negative and statistically significant. A unit increase in interest rate (IR) will lead to decrease in economic activities in the country by 0.33%.

**Table 4: Estimated Short-run Coefficients of ARDL Model**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| D(ER)    | -0.0281     | 0.04236    | -3.4282     | 0.003 |
| D(IR)    | -0.1939     | 0.10589    | 4.5428      | 0.019 |
| ECMt(-1) | -0.0823     | 0.19517    | -4.4607     | 0.002 |

**Source:** Author's compilation from E-views 10.0

The short-run ARDL estimation is presented in table 4. The results show that the Error Correction Term (ECM (-1)) is negative, as expected, and is highly statistically significant. The negative sign implies that there is adjustment from short-run to long-run equilibrium among the variables of the study. That is, gross domestic product responds to deviations from equilibrium such that if the short run variables deviate from equilibrium, they tend to re-adjust back to equilibrium in the long run. The coefficient of ECM(-1) indicates an annual speed of adjustment of about 0.06% from long-run disequilibrium per annum. This means that about 0.06% of the disequilibrium errors, which occurred the previous years, are corrected in the current year. The coefficients are statistically significant and have the expected signs. The result shows that 1% increase in exchange rate (ER) and interest rate (IR) decreases gross domestic product (GDP) by about 0.03% and 0.19% respectively. These results are in

tandem with the result of long-run ARDL model, but differ only in the magnitudes of the estimated coefficients.

## 5. Conclusion and Recommendations

This study analysed the effect of exchange rate channel of monetary policy transmission mechanism on the economy of Nigeria. The results indicates that exchange rate channels of monetary policy transmission has inverse relationship with economic growth and also statistically significant. The finding by this study that the exchange rates channel of monetary policy transmission is strong in stimulating economic growth Exchange rate channel have been revealed in this study as a significant monetary policy channel of transmission. The government should straighten its currency by devaluation of it local currency to encourage local investors deals with their international business.

## References

- Adebiyi, M. A. & Mordi, C. N. O. (2009). Monetary policy transmission mechanism in estimated dynamic stochastic general equilibrium (DGSE) for the Nigerian economy. *CBN Economic and Financial Review*
- Adofu, I.M. and Audu, S. I. (2010). An Assessment of the Effects of Interest Rate
- Ahmed, E. M. And Suliman, S. Z. (2011). The Long-Run relationship between Money Supply, Real GDP on Price Level: Empirical Evidence from Sudan. *International Journal of Economics, Commerce and Management*, 5(2): 40-68.
- Ajayi, M. (2007). Monetary policy transmission mechanism in Nigeria. *Central Bank of Nigeria Economic and Financial Review*, 45(4), 91-107.
- Ajie, G. N. & Azuna, D (2018). Monetary Policy and Bank Performance in Nigeria: A Co-Integration Investigation. *African Journal of Finance and Research*, 23(11), 67-84
- Anoruo, E. (2002); Stability of the Nigeria M2 Money Demand Function in the SAP Period- Economic Bulletin Vol. 14, No.3
- Anyanwu, J. C. (1993) Monetary Economics: Theory, Policy and Institution. Onisha Hubrid Publisher.
- Anyanwu, J.C. (2003). Monetary economics: Theory, policy and institution. Onitsha: Hybrid Publishers Ltd.
- Arestis, P.; Demetriades, G & Luintel, G (2017). Financial Development and Economic Growth: The role of stock markets. *Journal of Finance and Banking*, 34(11), 116-141
- Bakare, F. (2011). "An Empirical Study of the Determinant of Money Supply Growth and its Effects in Inflation rate in Nigeria." *Journal of Research in International Business and Management*. Vol. 1 (5), pp.124-129.
- Bernanke, B., & Gertler, M. (2010). Monetary policy and asset price volatility (No. w7559). National Bureau of Economic Research Inc., Massachusetts.
- Bhattacharya, J., Haslag, J., & Martin, A. (2009). Optimal monetary policy and economic growth. *European Economic Review*, 53(2), 210-221.
- Boivin, J., Kiley, M. T., & Mishkin, F. (2010). How has the monetary transmission mechanism evolved over time? NBER Working Papers, (15879), National Bureau of Economic Research, Inc
- Butkiewicz, J. and Ozdogan, Z. (2013). 'Financial Crisis, Monetary Policy Reform and the Monetary Transmission Mechanism in Turkey', University of Delaware Economics Department WP No. 2013/08
- CBN (1997) "Monetary policy in Nigeria", CBN Briefs Series No 97/03, June
- Central Bank of Nigeria Annual Report and Statement of Accounts, CBN, Abuja – years 2009, 2010, 2011, 2012, 2013, 2014 and 2016.
- Dabla-Norris E. and Floerkemeier, H. (2006). 'Transmission Mechanisms of Monetary Policy in Armenia: Evidence from VAR Analysis', IMF Working Paper No. 06/248.
- Ibeabuchi, O. (2007). Overview of monetary policy in Nigeria. *Central Bank of Nigeria Economic and Financial Review*.
- Itodo, A.I Eche, E. and Kamo, K. (2012). The impact of interest rate deregulation on Economic growth in Nigeria. *IJE Journal* vol.6 pp 349-362.
- Mishkin, F. S. (2007). Housing and monetary transmission mechanism. Staff Working Papers in the Finance and Economic Discussion Series (FEDS) Jackson Hole Symposium, Jackson Hole, Wyoming
- Mishkin, F. (1996). 'The Channels of Monetary Transmission: Lessons for Monetary Policy', NBER Working Paper no. 5464.
- Mishra, P., Montiel, P., and Spilimbergo, A. (2010). 'Monetary Transmission in Low-Income Countries', IMF Working Paper, No. 10/223.
- Mohammed, C. and Ahmad, A. (1995). Symposium on the Monetary Transmission Mechanism, *Journal of Economic Perspectives*, 9(4) fall, 3-10.

- Nouri, M. & Samimi, A. J. (2011). "The Impact of Monetary Policy on Economic Growth in Iran". *Middle-East Journal of Scientific Research*, 9(6):740-743
- Obafemi, F. N., & Ifere, E. O. (2015). Monetary policy transmission mechanism in Nigeria: A FAVAR approach. *International Journal of Economics and Finance*, 7(8). <http://dx.doi.org/10.5539/ijef.v7n8p22>
- Ogbulu, M. A. (2009). Capital Market Development and Economic Growth: Application of Co-integration and Causality Tests, *Journal of Finance, Banking and Investment*, Abia State University, Uturu Nigeria.
- Ogunjimi, S.O. (1997) Public Finance for Polytechnics ICAN Students. Lekem Productions, Bida.
- Oguda, F& Chinda, O(2018). Monetary Policy and Credit Condition: Evidence from the Money Market. *Journal of Finance and Banking*, 25(6), 166-183
- Oloyede, J. A. (2002). Principles of International Finance; Forthright Educational Publishers, Lagos.
- Olusanya, S. O. And Akinade, O. M. (2012). Analysis of Causality between Monetary Policy and Economic Growth in Pre- & Post - Deregulated Nigeria Economy (1970 - 2009). *Journal of Humanities and Social Studies*, 5(5): 88-98.
- Omotor, D. G. (2007). Monetary Policy and Economic Growth: Theoretical and Conceptual Issues, CBN Economic and Financial Review, 45 (4) 39-67.
- Onyeiwu, C. (2012). Impact of Monetary policy on Nigeria economic. *Journal of Economics and sustainable \Development*, 3(7):62-70.
- Ozoh, F. O (1998), Monetary Transmission Mechanism: Nigeria Case Study, TSSS Printing Press Ltd, Uturu.
- Peersman, G. and F. Smets (2001). "The Monetary Transmission Mechanism in the Euro Area: More Evidence from VAR Analysis", European Central Bank Working Paper No. 91.
- Saibu, M. O. and Nwosa, L. P. (2011). Effects of Monetary Policy on Sectoral Output Growth in Nigeria (1986–2008). *Journal of Economics and Behavioural Studies*, 2(6): 245-254.
- Sanusi, L. A. S. (2009). Assessment of current development in the Nigerian economy and the CBN policy action. BIS Review, 89.
- Senbet, D. (2008). Measuring the impact and international transmission of monetary policy: A factor augmented vector autoregressive (FAVAR) approach. *European Journal of Economics, Finance and Administrative Studies*, (13).
- Tahir M. N. (2012). Relative Importance of Monetary Transmission Channels: A Structural Investigation; A case of Brazil, Chile, and Korea. University of Lyon Working paper Series