Globalization and Monetary Policy in Nigeria

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Abstract: In this paper, the influence of globalization on monetary policy in Nigeria is explored for the period 1986 through 2020. The variables that were used in capturing globalization include trade openness, remittances, and foreign direct investment; while monetary policy was measured using the real interest rate. The study utilized the autoregressive distributed lag approach (ARDL) of bounds testing for cointegration and the error correction model, given that the variables were stationary in mixed order of levels and first difference as reported by the augmented Dickey-Fuller unit root test. Findings from the bounds test revealed that a long-run relationship exist among the variables of interest. Further, the short-run ARDL model revealed that foreign direct investment has a positive and significant influence on the real interest rate while the effect of trade openness and remittances are negative and also significant. In the long-run, the effect of foreign direct investment on real interest rate remains positive but insignificant, while the effect of trade openness remained negative and significant. The study concluded that an increases in globalization through foreign direct investment (financial globalization) could increase domestic interest rate while its effect through trade openness (trade liberalization) could lead to a reduction in the domestic rate of interest.

Keywords: Foreign Direct Investment, Trade Openness, Remittances, Real Interest Rate.

1. Introduction

The expansion of the size and complexity of international financial markets has been one of the most noticeable aspects of the global economy over the last decade, with increasing gross holdings of cross-country bonds and equities for a large group of countries as a result of financial globalization. Economists and policymakers have speculated about the implications of financial globalization for monetary policy design. Most central banks now follow an inflation-targeting policy, either explicitly or implicitly. Price stability, as defined, is the primary goal of monetary policy under this policy. The optimality of price stability as the sole goal of monetary policy in an open economy is determined by the structure of international financial markets. Large gross holdings of various financial instruments (Lane and Milesi-Ferretti (2001,2006); Devereux and Sutherland (2007); Fergusen, (2005); Fisher (2006), and Rogoff (2006)).

Some worry that globalization will erode central banks' ability to control inflation within their own countries. Any inflation caused by excess "liquidity" in globalized financial markets will be determined solely by global, rather than national, forces, hence, making central banks powerless to intervene (Davis, 2008). Woodford (2007) regards this as a misunderstanding. Although globalization certainly poses new challenges, central banks, large and small, still retain considerable power to keep inflation in check. As shown by Woodford (2007), domestic savings and investment rates, as well as the monetary policies that influence them, continue to be important determinants of inflation and are not subordinate to global savings and investment rates. He also refuted the notion that as international trade in goods and services expands, domestic economies will inevitably face inflation when global demand exceeds global production capacity. He believed that domestic policies to combat domestic inflation would overwhelm the impact of global inflation. This argument has led to Michael Woodford's dilemma saying:

> *"I find it difficult to construct scenarios under which globalization would interfere in any substantial way with the ability of domestic monetary policy to maintain control over the dynamics of domestic inflation."- Davis (2008).*

Several theoretical models of open economies and macroeconomics have been put up to show the relationship between globalization and local policies. The LM equation, the IS equation, and the AS equation are three structural equations of a well-known model of the monetary transmission mechanism. These models include the Swan model, the Mundell model, and the Mundell-Fleming model. The Swan model believes that the task of managing internal and external policies should be done using fiscal policies while monetary policy should be ignored. The Mundell model believes that fiscal policy should be assigned the task of stabilizing the domestic economy, the task of stabilizing the balance of payments should be assigned to monetary policy. The Mundell-Fleming model in a fixed exchange rate regime shows that monetary policy can be used to enhance internal and external balance. If a country's interest rate is lower than the world interest rate, it will lead to a large outflow of capital, putting upward pressure on the exchange rate. Monetary policy is used to defend the exchange rate by purchasing domestic currency in order to reduce the money supply, raise interest rates, and remove upward pressure on the fixed exchange rate. This has led to the Mundell-Fleming trilemma, or impossibility trinity, because countries cannot simultaneously maintain a fixed exchange rate, free capital mobility, and an independent monetary policy.

Globalization has led to the formation of monetary unions in different regions of the world. A monetary union provides a model of policy coordination where a nation gives up its own currency and adopts a common currency in a coalition with other nations, e.g., the European Union, WAEMU, etc. For a monetary union to succeed, the coalition must represent an optimal currency area, *and an* exchange rate target zone. The Mundell-Fleming model of small open countries and the optimum currency area have presented the following conditions for countries that want to form a monetary union. These include free capital mobility across countries, small open countries with no significant influence on other economies, and flexible exchange rates and prices.

The ability of Central banks to control relative price pressure using monetary policy has been a source of concern in the present era of globalization through interdependency, trade liberalization and coordination. However, it is believed that Central banks can control domestic inflation. Although globalization has not significantly altered the ability of Central bank's monetary policy in providing long-term price stability, it, however, disrupts the monetary policy's ability to achieve this in difference ways. For example, global price shocks can derail the monetary policy ability to identify temporary relative price adjustment and real inflation. This could be seen by persistence changes in exchange rate, foreign disturbances, etc. (Pianalto, 2003). Globalization can fuel economic crisis, such as in the case of 2007-2009 global economic recession. Immediate cause of the global recession was the collapse of U.S. housing market, resulting to surge in mortgage loan defaults, which became heavy burden on the financial institutions that originated and invested in them. Many of these currency crises led to major economic, social, and political upheavals. And currency policies have joined or even supplanted trade policies as a major source of friction among governments in today's globalized economy. The ongoing conflict between Russia and Ukraine has had an impact on commodity prices, and as a result, countries have been raising interest rates steadily to combat growing inflation.

The IMF now recognizes that capital flows carry risks, and that liberalizing capital flows before countries reach a certain level of financial and institutional development can amplify those risks. The IMF's new perspective on cross-border capital flows may contradict other international commitments, such as those in trade and investment treaties. According to the IMF, countries that are the source of excessive capital flows should pay closer attention to the potentially negative spill over effects of their macroeconomic policies. Despite acknowledging the risks associated with capital flows, the IMF sees capital account liberalization as the ultimate goal of macroeconomic policy. This IMF decision still places the majority of the burden on emerging market and developing countries, and it lacks solid analysis and recommendations on how source countries should regulate capital flows. The conditions under which the IMF approves capital-flow regulations are overly stringent and inconsistent with economic theory, analysis, and country experience, (Gallagher (2012); IMF (2011[ab], 2012[ab]). Studies has shown that globalization could be harmful and erode the monetary policy of emerging markets and developing economies. In spite of these evidence, some countries still involve in policies that encourages globalization through monetary unions, open economy, trade liberalization among others. Since Nigeria has not been left out on this dilemma, this study is carried out to examine the impact of globalization on monetary policy in Nigeria.

The main objective of this study is to examine the impact of globalization on monetary policy in Nigeria with the specific objectives as empirically examining the impact of trade openness, FDI, and remittances on interest rate in Nigeria and determining the causality between the independent variables and the dependent variable.

Monetary policy is used by the monetary authorities of a country, like the Central Bank or Currency Board, to control the supply of money, often targeting an inflation rate or interest rate to ensure price stability and general trust in the currency. Monetary policy authorities in Nigeria have over time found it difficult to manage price fluctuations using these tools. Many believe that the influence of international monetary policies caused by globalization significantly contributed to the failure of the Central Bank of Nigeria to achieve its monetary policy objectives. For example, payment for international transactions using foreign currency (US dollars), which is relatively scarce, has contributed to the high exchange rate and inflation in Nigeria. Also, the belief that lowering interest rates below the international rate is believed to cause capital outflow, hence, forcing the CBN to keep the monetary policy rate above double digits despite headline inflation in the country. This study is therefore necessary to examine the impact of globalization on monetary policy in Nigeria. The study will also make policy recommendations that will guide the monetary authorities on how best to adopt and expose the economy to external policies.

2. Literature Review

Since the introduction of globalization and monetary cooperation among nations, the concern over how these two policies affect the monetary policies and monetary independence of member nations has been of great concern. Economists have observed that the great depression of 1929, which lasted until about 1939, the global economic meltdown of 2007, and the recent spike in inflation in many countries are functions of globalization.

Monetary policy has a major impact on financial conditions, including interest rate and asset price levels. Changes in the financial condition in turn affect a variety of decisions made by people and enterprises, including those about how much to spend, produce, and invest. Participants in the financial markets of today are aware that these markets are highly responsive to global economic and political events and that they transcend national boundaries. The transmission mechanism can be used to gain a proper understanding of how globalization impacts monetary policy. In Nigeria, the CBN influences financial conditions through the regulation of the monetary policy rate, the rate at which commercial banks lend to its customers. This interest rate affects the level of saving and money that flows in the economy, the level of investment in the economy, and the level of production.

Worldwide risk-sharing may result from the increased international mobility brought on by economic globalization. A domestic business climate improvement can result in a greater output response than in a closed economy. On the other hand, net emigration and capital outflows could amplify a negative shock. In terms of dampening, businesses may decide to increase their foreign production or use imported inputs if a boom results in increased domestic cost pressures. vis-a-vis. Lane (2019) External shocks can significantly influence the domestic economy in a globalized economy. An improvement in financial circumstances and a boost to domestic consumption and investment result from lowering the policy interest rate. Without a monetary policy reaction, the shock to foreign demand results in significant drops in output, exports, and inflation. Reactive monetary policy lessens the shock since it curbs consumer and company borrowing and spending.

Three channels-aggregate demand, complex financial, and exchange-rate competitiveness-are used by monetary policy spillovers to spread. Portfolio rebalancing is one way that the financial channel has another dimension. Effects on cross-border portfolio balance result from the short- and long-term bond portfolios' inadequate substitutability. This happens even while short-term rates remain unchanged since bond supplies have a direct impact on the term premium. Changes in the relative pricing of domestic and imported commodities function as the classic exchange rate channel of monetary policy spillovers. When domestic monetary policy is tightened, the exchange rate typically rises, which results in domestic and international spending diverging. Exchange rates as a financial channel and cross-border portfolio rebalancing are simply two aspects of a more complicated and broadly defined financial channel, respectively. Kolasa and Wesolowski (2018). Eser, Lemke, *et al.* (2019), Bergant, Fidora, and Schmitz (2018).

An economic model called the Porter Diamond describes the elements that give a company an advantage over its rivals in a specific area. Michael Eugene Porter, an academician from the United States, created the Porter Diamond model. It shows how businesses that enjoy a national competitive edge continue to do so in global marketplaces as well. Four Factors-Company Strategy, Structure, and Rivalry; Factor Conditions; Related and Supporting Industries; and Demand Conditions-combine to form a special framework on which the model is built. The influence of luck and the involvement of the government on a business's competitive edge.

Ca' Zorzi, Dedola, *et al.* (2020) distinguish between pure monetary policy shocks by removing the bias resulting from current central bank information effects. The findings point to a hierarchy in the global spillovers from European Central Bank (ECB) and US Federal Reserve monetary policy: whereas spillovers to consumer prices are very moderate in both directions, shocks to Federal Reserve monetary policy have a greater impact on euro area financial markets and real activity. The findings further show that economic and financial variables in the rest of the world are substantially more impacted by Federal Reserve monetary policy than by ECB monetary policy.

Eregha and Egwaikhide (2018) The analysis offers compelling evidence that monetary policy choices made by Central Bankers in the nations in the West African Monetary Zone were influenced by global inflation and the production gap (WAMZ). When predicting domestic inflation and establishing monetary policy guidelines, it is advised that global variables be taken into consideration and given the proper weight.

The impact of globalization on the performance of Nigerian banks was evaluated by Akinola (2012). The findings demonstrated that the performance of banks was significantly and favorably impacted by globalization. Wider market penetration of banks in the nation—both nationally and internationally—led to higher profitability. The study came to the conclusion that while globalization had little impact on market structure, it significantly enhanced the performance of Nigerian banks.

The effects of globalization on Nigeria's financial sector development are modelled in the study by Omojolaibi, Stanley, and Mesagan (2016). The findings from the study have demonstrated that the development of Nigeria's financial industry is significantly impacted by globalization. Higher rates of globalization are linked to a strong financial system in Nigeria and act as an economic booster. To stimulate additional financial inflow, the study recommends interest rate targeting in addition to creating an atmosphere that is supportive of the financial system.

The economic integration brought on by globalization and the impact of the capital market in Nigeria are examined by Adediran, Adeyemo, and Alalade (2015). They identify the nature of the link and the importance of the capital market and globalization for economic growth by using import plus export divided by the growth ratio as the framework to describe globalization, and the capital market is regulated by a price index as a proxy (by GDP). Their findings imply that sound financial and economic reforms are required for Nigeria to experience sustained development. For Nigeria to achieve sustained development, however, exports must rise, imports must fall, and the exchange rate must be managed.

The economic effects of financial globalization on the Nigerian economy are examined by Awoyemi and Jabar (2014). The study's conclusion is that the Nigerian financial system is still being gradually incorporated into this globalization process. This was done through the domestic savings channel and the technology transfer channel, both of which have a significant impact on economic growth in Nigeria. To ensure that the advantages of the current financial market evolution are perpetuated, authorities must tighten regulations, improve policy execution, manage risks more effectively, and mitigate systemic risks. These actions will boost investor confidence and ensure financial stability.

In their work, Ojoh and Akpochafo (2019) use time series data to gather empirical evidence from a small open economy (Nigeria) to determine whether the trilemma policy mix is valid or not. The cointegration test, which is based on the econometric methods employed for the empirical research, indicates that there is no long-term link between the variables, showing a high level of monetary independence by monetary authorities in the implementation of monetary policies. Significant tests favour exchange rate volatility while assuming global capital mobility. In order to reduce the effects of global shocks and crises and to promote the growth of the capital sector, they advise that monetary authorities should make the most of monetary independence and stronger regulations.

The efficiency of monetary policy in Ghana is examined by Chiaraah (2019) while taking into consideration how trade openness and trade policy affect this effectiveness. The empirical finding demonstrates that monetary policy becomes less successful in reducing the rate of inflation as trade openness increases, which leads to a long-term drop in domestic GDP. Although the study's findings supported the theoretical link between trade openness, inflation, and production, they also showed that the negative impact of trade openness on inflation is lessened when monetary policy is taken into account. The findings suggest that trade openness makes it difficult for Ghana's monetary policy to control inflation, even while it can successfully lead to a drop in output.

Hossain and Maitra's (2020) examination of the role of monetary policy and trade openness in boosting income in India using monetary policy instruments discovered a significant positive impact of the broad money supply, both in the short and long runs, as well as a negative long-run impact of the real interest rate and a positive long-run impact of the real effective exchange rate on the variations of income. However, trade openness has a negative long-term effect while helping to increase income in the short run. The interest rate has also changed in response to monetary policy tools, income, and openness, showing that these tools are effective across both monetary regimes.

According to Ogbonna and Ejem (2020), FDI has a negligible and significant association with the rate of monetary policy and the degree of trade openness, but not with the liquidity ratio or the prime lending rate. The central bank of Nigeria should further lower the rate in order to entice foreign investors to conduct more business in Nigeria, but it is known that monetary policy rates have a large but unfavourable relationship with FDI. Again, since the issue of countries having an autarky (closed economy) has been completely eliminated by globalization and trade liberalization, the majority of beggars thy neighbour policies should be abandoned at the very least to increase the level of economic openness. Additionally, the CBN should implement monetary policy with the intention of promoting FDI in Nigeria.

In a linear Autoregressive Distributed Lag (ARDL) model, Henry and Abalis (2019) examine how personal remittances affect monetary policy variables. For this study, three equations were created and secondary data from 1980 to 2016 was gathered. The 10% and 5% thresholds of significance were used to test the study's hypotheses. The outcome showed that in both the long and short terms over the study period, personal remittances and the consumer price index have a positive and significant impact on the overall money supply. As a result, it was advised that the CBN implement rules that will encourage the transmission of remittances through financial institutions and forbid transfer through alternative channels in order to maintain track of all remittances that arrive in the nation.

3. Methodology
3.1 Research Design

This study will be quantitative in nature using secondary data. Econometric procedure will be adopted to empirically examine the impact of globalization on monetary policy in Nigeria. The study shall adopt a one multiple regression model to capture the impact of globalization on monetary policy in Nigeria.

3.2 Model Specification

The model that will be adopted to analyse the collective impacts of independent variables on the dependent variable is stated below.

$$INT= f(FDI, REM, TOP, GRT, MSS, INF) \qquad\qquad (1)$$

The econometric version of the model is stated as follows:

$$INT = \beta_0 + \beta_1 FDI + \beta_2 REM + \beta_3 TOP + \beta_4 GRT + \beta_5 MSS + \beta_6 INF + e_i \qquad\qquad (2)$$

Where: INT – Is the Real Interest rate use as a proxy for monetary policy
TOP–Trade Openness (proxy for Export + Import a ratio of GDP)
FDI – Foreign Direct Investment
REM– Remittances
GRT – Growth Rate of Gross Domestic Product
MSS – Growth Rate of Broad Money Supply
INF – Inflation Rate.

β_0 *– Constant term*
$\beta_1, \beta_2, …, \beta_6,$ *– Coefficients of the independent variables*
e_i *– error term*

3.3 Data Collection and Sources

The study will assess secondary data from the CBN statistical bulletin, Nigeria Bureau of Statistical (NBS) bulletins, and annual reports from 1986 – 2020.

3.4 Method of Analysis

The study will adopt the following methods to analysis the data. First, an Augmented Dickey-Fuller (ADF) – Unit Root-test will be adopted to test for stationary. Second, the Autoregressive Distributed Lag (ARDL) test will be adopted to assess the long-run and short run impact of the independent variables on the dependent variables.

4. Empirical Findings

4.1. Stylized Fact on Real Interest Rate in Nigeria

The real rate of interest in the Nigerian economy has been showcasing some sort of volatility over the years, with prevalence of positive and negative rates in some periods. In 1986, the real interest rate was 4.31% but recorded a negative rate for three consecutive years (-4.77% in 1987, -2.96% in 1988, and -6.61% in 1989) following the introduction of the structural adjustment programme (SAP). This rate rose substantially to 17.47% in 1990 after the periods of negative rates, but could not be sustained for a long period as the rate declined to 0.99% in 1991 and thereafter maintained negative values for five consecutive years with -31.45% in 1995 and an average of -14.93% between 1992 and 1996. However, the period 1997 through 1999 maintained a positive real interest rate averaging 9.89% but plummeted to -1.14% in 2000.

Subsequently, the Nigerian economy experienced positive real interest rate for three consecutive years (2001 to 2003) which averaged 8.37% before plunging again to an average of -3.28% for three consecutive years of negative rate (2004 to 2006). From 2007 till 2020, the Nigerian economy has continued to record positive rate of interest. This behaviour is reflected in Figure 1.
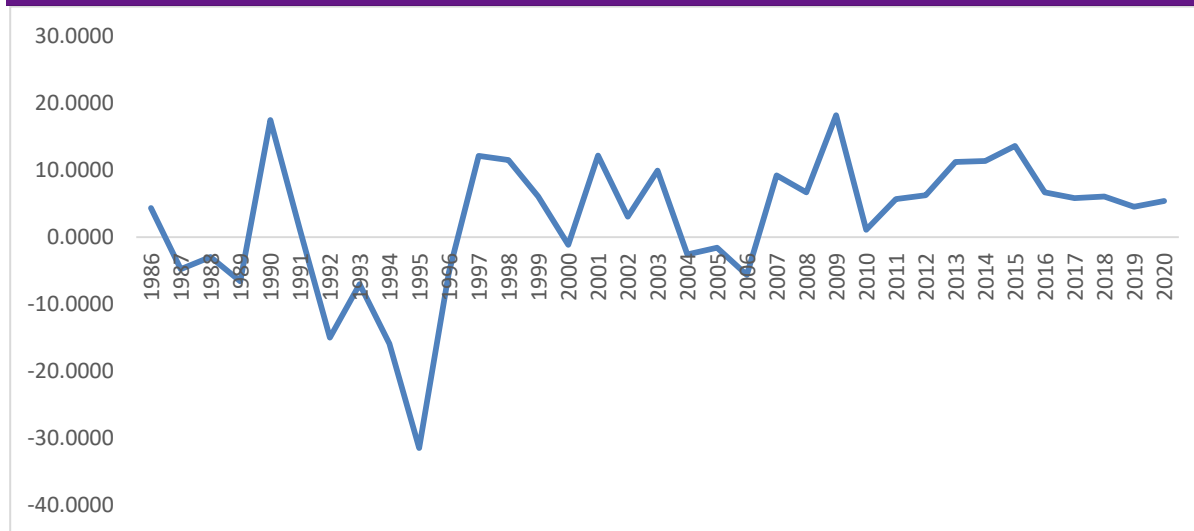
Figure 1: Trend of Real Interest Rate in Nigeria

As could be observed from Figure 1, the period 1986 to 2006 has recorded eras of both positive and negative real rate of interest but the economy experienced positive rate of interest from 2007 till 2020. For instance, the real rate of interest as at 2010 was 1.07%; rose consistently to 13.60% in 2015 and then maintained a declining trend to 4.52% and 5.37% in 2019 and 2020 respectively. It is worth noting that to achieve a reasonable level of investment, the economy must maintain some positive level of real interest rate to attract savings.

4.2. Unit Root Test

The unit root test is executed under the augmented Dickey-Fuller (ADF) approach which assumes the existence of a constant and trend. Table 1 captures the result of the test, where I(0) means that the variable is stationary at level and I(1) implies that the variable is stationary at first difference.

Table 1: Augmented Dickey-Fuller Unit Root Test Result

Variable	ADF Statistic at Level	ADF Statistic at First Difference	Order of Integration
INT	-4.1330 [-3.5485]	-----------	I(0)
FDI	-4.3409 [-3.5485]	------------	I(0)
REM	-2.5724 [-3.5485]	-5.7257 [-3.5530]	I(1)
TOP	-3.3290 [-3.5485]	-7.2297 [-3.5530]	I(1)
GRT	-3.5769 [-3.5485]	------------	I(0)
MSS	-3.9694 [-3.5485]	-------------	I(0)
INF	-2.8301 [-3.5875]	-6.5809 [-3.6032]	I(1)

Note: The values in the square brackets represents the 5% critical values.
Source: Researchers' Computation.

As could be observed from Table 1, some variables are I(0) while others are I(1) in nature. Interest rate (INT), foreign direct investment, growth rate of gross domestic product (GRT) and growth rate of broad money supply are all stationary at level; while remittances, trade openness, and inflation rate are all stationary at first difference. as the variables are in mixed order of integration of levels and first difference, the use of the autoregressive distributed lag (ARDL) bounds testing to check on the existence of cointegration among the variables becomes paramount.

4.3. Cointegration Test

The test for cointegration (levels relationship) which is geared towards detecting if a long-run relationship exists among the variables interest is conducted, and Table 2 presents the result.

Table 2: Bounds Test for Cointegration Result

Null Hypothesis: No Levels Relationship				
Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	7.5975	10%	1.99	2.94
k	6	5%	2.27	3.28
		1%	2.88	3.99

Source: Researchers' Computation.

Based on the decision rule, the F-statistic should be greater than the 5% critical upper bound value for cointegration to exists. As could be observed from Table 2, the F-statistic of 7.5975 is greater than the 5% critical upper bound statistic of 3.28 hence, the null hypothesis of "no levels relationship is rejected" and it is concluded that a long-run relationship exists among the variables. Consequently, the short-run error correction model is to be estimated to obtain the short-run estimates; while the long-run estimates is to be obtained in similar process.

4.4. Short-Run Autoregressive Distributed Lag (ARDL) Error Correction Model

Table 3 captures the result of the short-run error correction model. The error correction term (ECT) is expected to be negative and statistically significant if any form of correction is to take place in the model.

Table 3: Short-Run ARDL Result

Variable	Coefficient	Standard Error	t-Statistic	Probability
Δ(FDI)	1.4104	0.5606	2.5161	0.0247**
Δ(FDI(-1))	2.6349	0.5537	4.7585	0.0003**
Δ(REM)	-0.3142	0.5417	-0.5801	0.5711
Δ(REM(-1))	-2.1030	0.5220	-4.0287	0.0012**
Δ(TOP)	-0.2835	0.0847	-3.3455	0.0048**
Δ(TOP(-1))	0.3194	0.0906	3.5269	0.0034**
Δ(GRT)	-0.3016	0.2147	-1.4044	0.1820
Δ(GRT(-1))	0.4311	0.2119	2.0345	0.0613*
Δ(MSS)	-0.1079	0.0390	-2.7657	0.0152**
Δ(MSS(-1))	-0.0870	0.0395	-2.2044	0.0447**
Δ(INF)	-0.6120	0.0514	-11.9029	0.0000***
$ECT_{(-1)}$	-1.2901	0.1351	-9.5483	0.0000***
R-squared	0.9332		S.E. of regression	3.4811
Adjusted R-squared	0.8982		Durbin-Watson stat	1.7164

*Note: *, **, and *** means that the variable(s) is significant at 10%, 5%, and 1% respectively.*
Source: Researchers' Computation.

The result in Table 3 which is the short-run estimates reveals that changes in foreign direct investment and its one-period lag exert positive and significant short-run effect on the real interest rate. This is an indication that a higher inflow of FDI will cause a higher rate of interest. Consequently, a 1% increase in FDI will lead to a 1.41% increase in real interest rate; while the past period FDI increases real interest rate by 2.63% on the average. Changes in remittances (REM) is observed to put forth a negative but insignificant influence on real interest rate, while its one-period lag put forth a negative and significant effect. Thus, the past period remittance reduces the real interest rate by 2.10% on the average.

For trade openness (TOP), the influence of its changes is observed to influence real interest rate negatively and significantly, while the effect of its one-period lag is positive and also significant. Thus, a 1% increase in trade openness reduces the real rate of interest by 0.28% on the average while its one-period lag reduces the real rate of interest by 0.32% on the average. The growth in output (GRT) showcases a negative but insignificant effect on real interest rate; while its one-period lag put forth a positive and significant effect. hence, the past value of GRT increase real interest rate by 0.43% on the average.

Changes in the growth rate of broad money supply (MSS) and its one-period lag exert negative and significant influence on real interest rate. The implication here is that a higher growth rate in money supply implies more money in circulation which will beat down the rate of interest. Thus, a 1% increase in money supply reduces the real interest rate by 0.11% on the average; while the one-period lag of MSS reduces the rate of interest by 0.09% on the average. Changes inflation (INF) proves to exerts a negative and significant influence on real interest rate. This is because the price level is used to deflate the interest rate to have the real interest rate. Therefore, higher price level will correspond to a lower real interest rate and vice versa. From the coefficient, a 1% increase in inflation will prompt a 0.61% decrease in real interest rate on the average.

The error correction term (ECT) is negative and significant at 1% level, implying that the model is capable of adjusting to attain long-run equilibrium. Consequently, out of the entire distortions in the model, it takes less than a year for the model to be fully restored to equilibrium since 129% of the distortions is corrected annually. It follows that it will take about eight months for equilibrium in the model to be fully restored. The R-squared is a reflection that the explanatory variables predicts 93.32% of the overall variations in real interest rate.

4.5. Long-Run Estimates

The long-run result of the estimated model is presented in Table 4 where some of our variables of interest still maintains the same a priori sign as it was in the short-run result.

Table 4: Long-Run Result

Variable	Coefficient	Standard Error	t-Statistic	Probability
FDI	0.0163	2.1156	0.0077	0.9940
REM	-0.3957	0.3962	-0.9987	0.3349
TOP	-0.2900	0.1085	-2.6735	0.0182**
GRT	-0.0104	0.3160	-0.0328	0.9743
MSS	0.0177	0.0926	0.1912	0.8511
INF	-0.5852	0.1124	-5.2082	0.0001***
C	25.7773	5.1441	5.0111	0.0002**

EC = INT - (0.0163FDI -0.3957REM -0.2900TOP -0.0104GRT + 0.0177 MSS -0.5852INF + 25.7773)

*Note: ** and *** means that the variable(s) is significant at 5% and 1% respectively.*
Source: Researchers' Computation.

From Table 4, it can be observed that foreign direct investment still has a positive influence on real interest rate, though such effect is insignificant; while the effect of remittance and trade openness remain negative, though with only trade openness exerting a significant effect. consequently, a 1% increase in trade openness culminates to a 0029% decrease in real interest rate in the long-run. Also, the long-run effect of the growth rate of GDP on real interest rate remains negative but insignificant; while that of inflation also remains negative and significant. Therefore, a 1% increase in the inflation rate will culminates to a 0.59% decrease in real interest rate. In the long-run, growth rate of broad money supply has a positive but insignificant effect on the real interest rate. by holding all the variables constant, the real interest rate will be 25.78% in the long-run and such is statistically significant.

4.6. Stability Test

To test whether the estimated parameters are stable for making inference, the stability test under the cumulative sum (CUSUM) of squares is conducted and Figure 2 reflects the result.
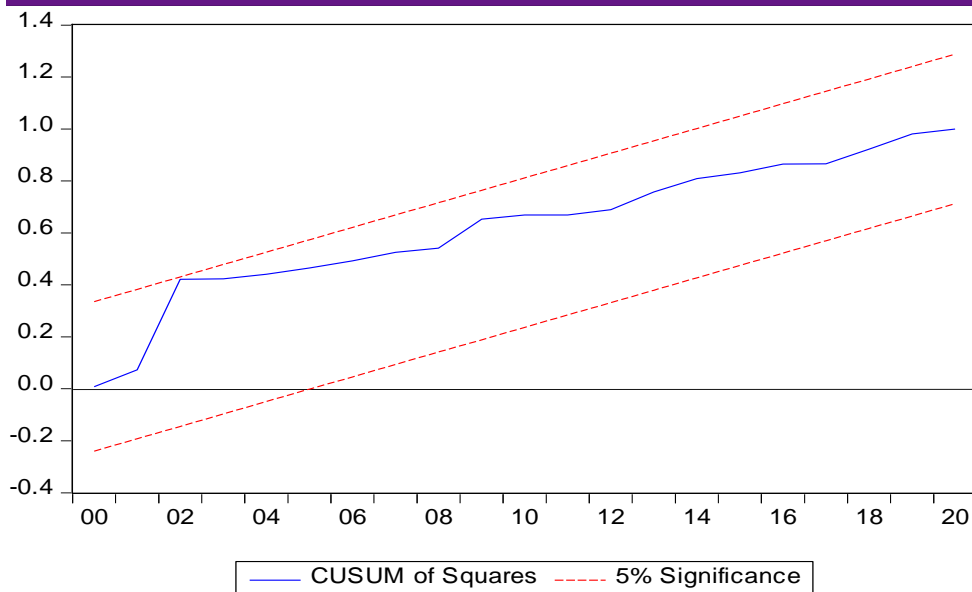
Figure 2: Cumulative Sum of Squares Test for Stability.

The stability test requires that for the parameter estimates to be stable, the CUSUM of squares line must lie within the 5% upper and lower bounds value. Therefore, we can categorically affirm that our parameter estimates are stable given that Figure 2 supports the rule for stability.

5. Conclusion

This study explored how globalization influences monetary policy in Nigeria. The study utilizes the real interest rate to capture monetary policy while foreign direct investment (FDI), remittances, and trade openness were used to capture globalization. The rationale behind this is that globalization influences capital movement and as such, it could affect the monetary policy stance of the monetary authority. Studies have portrayed the influence of globalization sequel to the global financial crisis of 2007 to 2008 as it affects the monetary policy of the domestic economy (see Diebold *et al*., 2008; Byrne *et al*., 2010; Egwaikhide & Eregha, 2018). This has made Fatima (2013) to opine that recent concerns have been on the international macroeconomics has been on "global factors affecting the main elements if monetary policy". The implication here is that globalization could affect the monetary policy stance of the domestic economy through its influence on international capital movements. By using data from 1986 to 2020, this study empirically examined whether these measures of globalization could affect the real interest rate in Nigeria. The study utilizes the augmented Dickey-Fuller (ADF) approach in testing for stationarity; the autoregressive distributed lag (ARDL) bound testing for cointegration; and the error correction model to ascertain both the short-run and long-run model.

From the ADF test for stationarity, the findings supported that the selected variables were stationary in mixed order (specifically, at levels and first difference). Data with this order of integration are best analysed using the ARDL approach hence, the use of the ARDL bounds test for cointegration which our findings supported evidence of cointegration among the variables. Also, the short-run model revealed that foreign direct investment exerted a positive effect on real interest rate implying that an increase/decrease in FDI will lead to an increase/decrease in the real interest rate. For trade openness and remittances, the effect is observed to be negative implying that the real interest rate will decrease/increase if the two identified variables increases/decreases. Other notable variables that could have a significant short-run influence on the real interest rate include growth rate of GDP, growth rate of broad money supply, and the rate of inflation which all exerted a negative effect on the variable of interest. The long-run model reveals that the only variable that exerts a significant influence on real interest rate is trade openness, with the effect being negative and significant. The study concludes that an increases in globalization through foreign direct investment (financial globalization) could increase domestic real interest rate while its effect through trade openness (trade liberalization) and remittances could lead to a reduction in the domestic rate of interest. Consequently, globalization influences the monetary policy of Nigeria both in the short-run and in the long-run.

References

Adediran, O. A., Adeyemo, K. S., & Alalade, A. (2015). Globalization, capital market and economic development in Nigeria. *Journal of Governance and Regulation, 4 (1).*

Akinola, G. O. (2012). Effect of globalization on performance in the Nigerian banking industry. I*nternational Journal of Management and Marketing Research,* 5(1).

Awoyemi, B., & Jabar, A. (2014). Financial globalization: Economic Implications for Nigeria. *IOSR Journal of Humanities and Social Science (IOSR-JHSS) 19(4), 113-117.*

Bergant, K., Fidora, M., & Schmitz, M. (2018). International capital flows at the security level – Evidence from the ECB's Asset Purchase Programme. ECMI Paper, No 13926;

Byrne, J. P., Kontonikas, A., & Montagnoli, A. (2010). The time-series properties of U.K.

inflation: Evidence from aggregate and disaggregate data. Scottish Journal of Political Economy, 57 (1), 33–47.

Ca' Zorzi, M., Dedola, L., Georgiadis, G., Jarociński, M., Stracca, L., & Strasser, G. (2020). Monetary policy and its transmission in a globalised world. ECB Working Paper Series No 2407 https://www.ecb.europa.eu//pub/pdf/scpwps/ecb.wp2407~586c50e03f.en.pdf

Chiaraah, A. (2019). Monetary Policy and Trade Openness in Ghana. Ghana Journal of Development Studies 16 (2), 241-266.

Davis, M. (2008). Does Globalization Weaken Monetary Policy? – National Bureau of Economics Research (NBER) Today. https://www.nber.org/digest/mar08/does-globalization-weaken-monetary-policy (Retrieved April 5, 2022).

Devereux, M. B., & Sutherland, A. J. (2007). Financial Globalization and Monetary Policy

IMF Working Paper No. 07/279. https://ssrn.com/abstract=1078785

Diebold, F. X., Li, C., & Yue V. Z. (2008). Global yield curve dynamics and interactions: A

dynamic Nelson–Siegel approach. Journal of Econometrics, 146 (2), 351–363.

Egwaikhide, F. O., & Eregha, P. B. (2018). Globalization and monetary policy rule in West

African Monetary Zone: A generalized method of moment approach. Applied Econometrics (Прикладная эконометрика), 9 57–66.

Eregha, P., & Egwaikhide, F. (2018). Globalization and monetary policy rule in West African Monetary Zone: A generalized method of moment approach. Applied Econometrics, 49, 57–66.

Eser, F., Lemke, W., Nyholm, K., Radde, S., & Vladu, A. (2019). Tracing the impact of the ECB's asset purchase programme on the yield curve. ECB Working Paper, No 2293,

Fergusen, R. (2005). Globalization: Evidence and Policy Implications. San Francisco speech.

Fisher, R. W. (2006) Coping with Globalization's Impact on Monetary Policy. ASSA Meetings speech.

Gallagher, K.P. (2012). The IMF's New View on Financial Globalization: A Critical Assessment. The Frederick S. Pardee Center for the Study of the Longer-Range Future. www.bu.edu/pardee

Henry, J., Abalis, E. (2019). Impact of personal remittances on monetary policy variables in Nigeria: An Autoregressive Distributed Lag (ARDL) approach. *International Journal of Research and Innovation in Social Science (IJRISS),* III(V), 1-8.

Hossain, T., Maitra, B. (2020). Monetary Policy, Trade Openness and Economic Growth in India Under Monetary-targeting and Multiple-indicator Approach Regimes Arthaniti. *Journal of Economic Theory and Practice*, 19(1), 108–124.

IMF (2011ª). IMF Performance in the Run-up to the Financial and Economic Crisis. Washington: International Monetary Fund.

IMF (2011b). Recent Experiences in Managing Capital Inflows—Crosscutting themes and possible Policy Framework. Washington: International Monetary Fund.

IMF (2012a). Liberalizing Capital Flows and Managing Outflows. Background Paper. Washington: International Monetary Fund.

IMF (2012b). The Liberalization and Management of Capital Flows: An Institutional View, Washington: International Monetary Fund.

Kolasa, M. & Wesolowski G. (2018). International spillovers of quantitative easing. *ECB Working Paper,* No 2172.

Lane, P. (2019). Macrofinancial Stability and the Euro. *IMF Economic Review,* 67, 424–442.

Lane, P., Milesi-Ferretti, G. (2001). The external wealth of nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries. *Journal of International Economics,* 55, 263–294.

Lane, P., Milesi-Ferretti, G. (2016). Examining Global Imbalances. *Finance and Development – A Quarterly Magazine of IMF, 43(1).*

Ogbonna, U., Ejem, C. (2020). Sensitivity of foreign direct investment to monetary policy dynamics in Nigeria. *Research Journal of Finance and Accounting,* 11(16), 55-63

Ojoh, J., & Akpochafo, E. (2019). Globalization and Monetary Policy Autonomy in a Small Open Economy: The Trilemma Policy in Nigeria. Continental J. Social Sciences. 11(2), 1 – 14

Omojolaibi, J., Mesagan, E., & Stanley, N. (2016). Globalization and financial development in Nigeria. *Iranian Economic Review*, 20(4), 461-478.

Pianalto, S. (2014). Globalization and Monetary Policy. Global Interdependence Center (GIC) Paris, Paris, France.

Rogoff, K. (2006). Impact of Globalization on Monetary Policy. Mimeo, Harvard University. IMF (2011ab, 2012ab)

Woodford, M. (2007) Globalization and Monetary Control. NBER Working Paper No. 13329 https://www.nber.org/system/files/working_papers/w13329/w13329.pdf (Accessed April 5, 2022)