Examining the Impact of Financial Openness on Domestic Interest Rate in Nigeria

INNOCENT CHILE NZEH, BENEDICT I. UZOECHINA, JOAN NWAMAKA OZOH, UJU VICTORIA OKOLI

Abstract

The sensitive role played by domestic interest rate in the economy has made studies on its determinants paramount. This study therefore used the autoregressive distributed lag (ARDL) bounds framework to investigate the impact of financial openness on domestic interest rate in Nigeria over the period from 1980–2020. The study included three de facto financial openness measures, namely: foreign direct investment (FDI) inflows, FDI outflows and portfolio investment as well as one de jure financial openness measure, namely: capital account openness. The short-run results revealed that while FDI inflows had a negative but non-significant impact on domestic interest rate, the impact of FDI outflows was positive and significant. The short-run results also indicated that while foreign portfolio investment had a positive but non-significant impact on domestic interest rate, the impact of capital account openness was positive and significant. In the long-run, the study revealed that FDI inflows had a negative but non-significant impact on domestic interest rate. In another vein, while FDI outflows was found to impact on domestic interest rate positively, the impact of capital account openness was also found to be positive. The study therefore concludes that domestic interest rate in Nigeria was influenced positively by both FDI outflows and capital account openness in the two time horizons and this has implications for monetary policy setting. Based on these findings, the study recommends that apart from the traditional policies used in the control of domestic interest rate, monetary authorities in Nigeria should also regulate capital outflows in their quest to direct interest rate to a desired direction.

Keywords

Financial openness; interest rate; FDI; capital flows; capital account; ARDL

JEL Codes

E22; E43; E32

DOI

http://dx.doi.org/10.37355/acta-2023/1-02

1 Introduction

Financial openness has of recent times become a policy focus of many economies, especially less developed economies that need capital inflows to support their quest for growth. The increased financial integration resulting from financial openness has engendered global economic development as a result of cheap access to capital in international markets. The paradigm shift from financial repression to financial liberalization is upon

the realization that foreign investors will channel their investments to financial jurisdictions where returns on investment are guaranteed. Prior to the current surges in financial openness among countries, financial repression was the order of the day, especially in developing countries. As observed by Sulaiman, Oke and Azeez (2012), before the recent financial liberalization, the practice of financial repression was a major feature of governments of developing countries. The study noted that during this period, the role of resource allocation was vested in the government or its agencies, thus relegating the market forces to the background.

Notwithstanding the positive side of financial openness, some views have been expressed concerning its capability to cause some changes in the macroeconomic environment and domestic interest rate is among the macroeconomic variables likely to be affected. As contended by Aslanoğlu (2012), in order to avoid the appreciation of domestic currency in a period of rising portfolio investments, the monetary authorities could either embark on open market operations (OMO) or the purchase of foreign currency. The use of OMO to sterilize huge capital inflows leads to a rise in domestic interest rate as the open market sale of domestic bonds encourages the widening of interest rate differentials (Okpanachi, 2013). As observed by Ljubaj, Martinis and Mrkalj (2010), the rise in domestic interest rate owing to this policy could lead to further rise in capital inflows since foreign investors may try to take advantage of it by investing more in the domestic economy. The implication of this development is a repeated need to engage in further sterilization. On the other hand, if the monetary authorities embark on the purchase of foreign exchange rate to sterilize the rising inflows, such practice encourages a rise in money supply and consequently, a decline in domestic interest rate. Falling domestic interest rate in relation to foreign interest rate may lead to capital outflows which drains liquidity in the system. On the contrary, the fall in domestic interest rate has the tendency to boost domestic investment as the cost of capital becomes cheap.

With this brief scenario, it is obvious that financial openness could have dual impact on domestic interest rate as it could either raise it or reduce it. If financial openness encourages capital inflows, such phenomenon raises money supply and thus, lowers domestic interest rate. On the other hand, if it raises capital outflows, money supply reduces and such has the tendency to raise domestic interest rate. Worthy of note is that each direction the interest rate moves as a result of financial openness has implications for the macroeconomic environment. Past studies have focused on the impact of financial openness on the economic growth. These studies neglect the fact that the impact of financial openness on economic growth is not a direct process, but key variables such as interest rate are impacted before they transmit to economic growth. This paper therefore advances the frontier of knowledge on this topic by empirically examining the behaviour of domestic interest to fluctuations in the indicators of financial openness in Nigeria. The choice of the country is based on, among others, the fact that it is among the biggest economies in Africa and as such, major destination for capital flows. The rationale for disaggregating the indicators of financial openness and examining their individual impact on domestic interest rate is very germane for policy simulation in Nigeria.

The rest of the study is structured as follows: Section 2 deals with a review of relevant literature. In section 3 data and the methodology used in the study were presented

as well as model specifications and the technique of estimation. In section 4, the results of the analysis were presented and discussed. Section 5 presents the conclusion of the study with accompanying policy recommendations.

2 Literature Review

2.1 Theoretical Literature

Some theoretical views have been raised concerning the impact of financial openness on the economy. Jorgenson (1963) examined the influence of real interest rates on investment. By deriving the desired stock of capital, the study noted that this is a function of real output and the opportunity cost of capital. It was the conclusion of the paper that the desired capital stock has a positive link with output and inversely related to the cost of capital. Thus, a fall in the real interest rate leads to a decline in the opportunity cost of capital, while raising the desired capital stock and investment. In their study, McKinnon and Shaw (1973) postulated that both the quantity and quality of total investment can be lowered by financial repression, while financial liberalization has the tendency to raise investment; encouraging productivity. The scholars contended that the regulation of interest rate owing to financial repression results in low interest rate, retards savings and thus, reduces investment. The conclusion of the McKinnon and Shaw (1973) hypothesis is that deregulating interest rate raises interest rate which enhances both savings and investment, hence an improvement in economic growth.

In a different vein, Bacchetta (1992) observed that financial liberalization encourages capital inflows which raises capital stock. The study noted that higher domestic interest rate encourages inflows of foreign capital, causing domestic currency appreciation. However, rising domestic interest rate also results in arbitrage in foreign and domestic interest rates, causing capital outflows which end up resulting in domestic currency depreciation. To corroborate the positive impact of financial openness, Levine (2001) noted that financial openness helps to develop the domestic financial system, encouraging domestic investment and the efficient allocation of capital. Notwithstanding the hypothesized positive effects of financial openness, some scholars have raised concern that it may not actually encourage economic growth. Some scholars such as Stiglitz (2000) are thus of the view that financial openness does not actually guarantee welfare, especially in view of the inherent distortions among which are barriers to trade, weak institutions and imbalances in the economy.

2.2 Empirical Literature

The role of financial openness in the economy has sparked off research interests across different countries as empirical evidences have shown that financial openness affects the macroeconomic variables in different ways.

In Nigeria, Sulaiman, Oke and Azeez (2012) employed the Johansen co-integration in addition to the error correction model (ECM) to show that financial liberalization enhanced economic growth. In support of this, Orji, Ogbuabor and Orji (2015) adopted the ordinary least squares (OLS) and the cointegration technique to reveal that both financial liberalization and private investment influenced economic growth positively and significantly in Nigeria. On the other hand, the paper observed that real lending rate adversely impacted economic growth. In another study for Nigeria, Saifullahi and Nuruddeen (2015) used the vector error correction model (VECM) and Granger causality test to show that a negative relationship existed between real GDP and financial openness.

For Asian countries, findings by Wei (2015) indicated that, while de facto indicators of financial openness encouraged economic growth, de jure indicators adversely affected it. For sub-Saharan African countries, Egbetunde, Ayinde and Balogun (2017) employed both panel cointegration and panel error correction techniques to reveal that trade openness and price stability were important factors for interest rate liberalization. In another cross-country study involving 135 countries, Aizenman, Cheung and Ito (2017) observed that in developing countries, high nominal interest rate encouraged the substitution of the real interest rate on private savings. However, in industrial and emerging economies, when nominal interest rate was less than 2.5%, the substitution effect prevailed. In another study for Nigeria, Ajogbeje, Adeniyi and Egwaikhide (2018) revealed that capital mobility had significant effect on interest rate in the long run. More so, finding of the study indicated that exchange rate stability and monetary independence had no effect on interest rate.

In Pakistan, Hye and Lau (2018) investigated the impact of financial and trade liberalization on private savings using the ARDL approach to cointegration. The results indicate that public savings, deposit rate, private income and financial system liberalization had a positive impact on private savings. However, capital account liberalization, old age dependency and financial openness were found to negatively impact on private savings. Trade liberalization was also revealed to have negative impact on private savings even though the result was not significant. In another country-specific study, Fasanya and Olayemi (2020) used the autoregressive distributed lag (ARDL) bounds technique to show that a strong relationship exists between the indicators of financial liberalization and economic growth in Nigeria.

In another study for Nigeria, Afolabia (2020) used the dynamic ordinary least square (DOLS) estimation technique to investigate the effect of financial liberalization, trade openness and their interactive effects on the economy over the period from 1981 to 2018. Findings of the study showed that financial development, interest rate spread and exchange rate impacted on the real GDP significantly, but trade openness and its interaction with financial development were not found to significantly have an impact.

In sub-Saharan African (SSA) countries, Aremo and Arambada (2021) used the difference generalized method of moments (GMM) and system GMM to investigate the individual and joint impacts of financial openness and trade openness on economic growth over the period from 1980 and 2017. Findings of the study revealed that in low income countries, trade openness had a positive and significant impact on economic growth. On the other hand, financial openness and the joint trade and financial openness were not found

to have significant positive impact on economic growth. The result for middle-income countries showed that the impact of trade openness on economic growth was mixed, while both financial openness and the joint trade and financial openness were not able to improve economic growth.

Aman *et al.* (2022) employed annual panel data for 35 developed and emerging countries to examine if financial openness in the countries sampled can assist in preserving their external price competitiveness in the presence of trade openness and institutional quality. Findings of the study revealed that only financial openness can hardly assist export competitiveness, unless this is complemented with greater trade openness. Also stronger institutional quality was found to support financial openness in achieving export competitiveness at both cross country and regional analyses.

In a cross-country study, Nzeh *et al.* (2023) investigated the impact of financial liberalization and institutional quality on the economic performance of the Asian Tigers and the SANE countries. By using annual series that spanned the period from 1996–2020 under the framework of the fully modified ordinary least square (FMOLS), the study showed that while FDI outflows, capital account openness, governance effectiveness and FDI inflows had a positive and significant impact on GDP per capita in the Asian Tigers, the impact of political stability was negative and significant. On the other hand, results for the SANE countries revealed that trade openness and FDI inflows had a positive and significant impact on GDP per capita, while the impact of capital account openness was found to be negative and significant.

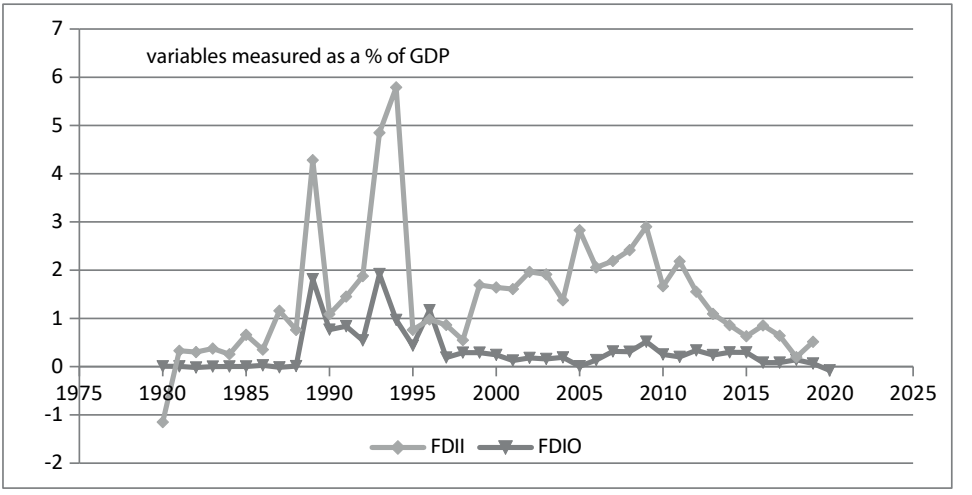
From the foregoing empirical studies, it should be noted that past studies on financial openness were silent on its role in influencing domestic interest rate. With the exception of Ajogbeje, Adeniyi and Egwaikhide (2018) which revealed the influence of capital mobility on interest rate in Nigeria, other studies reviewed concentrated mainly on the impact of financial openness on economic growth. This study therefore contributes to literature by disaggregating the measures of financial openness and evaluating their individual influence on domestic interest rate in Nigeria.

2.3 Trend analyses of Some Variables

In this sub-section, the study provides trend analyses of some of the variables used in the study. Evidence in Figure 1 shows that the trend of FDI inflows exceeded that of FDI outflows in Nigeria in all the sample period. The trend result indicates that prior to 1989, FDI inflows was very low and it should be noted that these periods coincided with the pre-structural adjustment programme (SAP) era when the country had not embraced fully financial openness. It should be noted that the SAP was implemented in Nigeria in1986 as an economic blueprint meant to realign the country's economy. The country had the highest FDI inflows in 1994 but after this period, there was a sharp decline. During the pre-SAP era, the trend of FDI outflows was flat all through until in 1989 when it experienced a rising trend. With the exception of 1989 and 1993 when the FDI outflows attained a peak, the trend for other subsequent years was almost flat. Evidence of the trend of FDI flows indicated that before the commencement of the SAP in 1986, the country practiced financial repression that hindered FDI flows but the emergence of the SAP liberalized

the financial sector and this resulted in improved capital flows. Evidence also indicated that in 2005 and 2009, FDI inflows rose high after which it trended low. The trend of FDI outflows however marginally rose from 2006 through 2009. The rise in the activities of the Nigerian capital market within these periods led to the rising trend in these variables, but the aftermath of the global financial crisis of that period caused the fall in their trend after 2009.

Figure 1: Trend in FDII and FDIO from 1980–2020

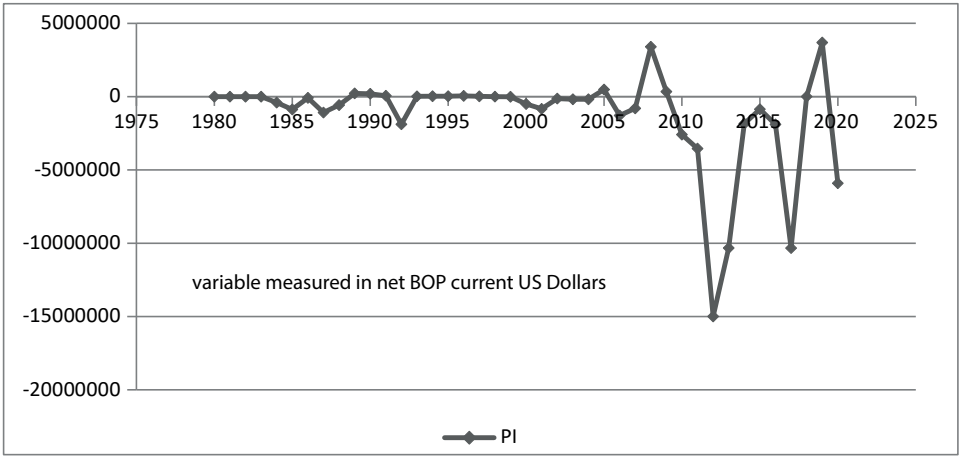


Note: FDII – foreign direct investment inflows, FDIO – foreign direct investment Outflows

Source: WDI (2020)

With respect to the trend in the portfolio investment as shown Figure 2, evidence shows that the trend was flat up until 2008 when it rose relatively high. The Nigerian capital market experienced a boom within this period until the effect of the subprime mortgage crisis that hit the global financial markets. After 2008, there was a drastic fall in portfolio investment as the trend approached negative between 2012 and 2017. In 2019, the variable trended up but descended sharply within the same period. In a nutshell, the trend of portfolio investment for Nigeria is an indication of the extent of the capital market development in the country.

Figure 2: Trend of Portfolio Investment

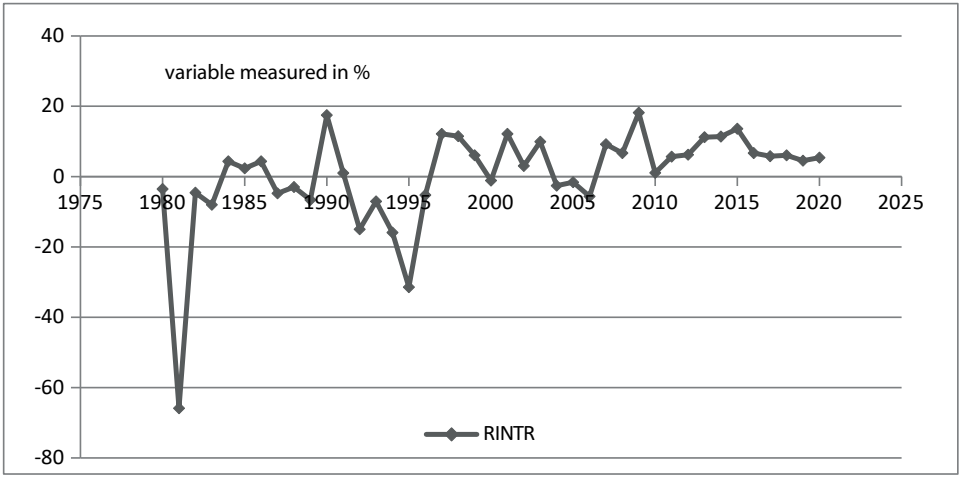


Note: PI – portfolio investment

Source: WDI (2020)

In Figure 3, the trend of real interest rate shows that the trend fluctuated heavily within the period. In 1980, 1992, 1994 and 1995 the trend of real interest rate was negative. Two scenarios played within these periods which can be argued to be responsible for the development. One is the impact of financial repression which shaped the interest rate regime of that period until the introduction of SAP which liberalized the interest rate. The second phenomenon that may have led to the negative trend of interest rate is the military regime which was in place within these periods. After 1996 the trend of interest rate became positive all through the sample period. Evidence reveals that interest rate was high around 2007 through 2009 after which it experienced a drastic fall. The impact of the boom and burst that occurred within this period can be held responsible for the trend.

Figure 3: Trend of Real Interest Rate



Note: RINTR – real interest rate

Source: WDI (2020)

3 Data and Methodology

3.1 Data

This study used annual series that covers the period from 1980 to 2020. Real interest rate is used as a proxy for domestic interest rate. The study decomposed financial openness indicators into *de facto* and *de jure* measures. The *de facto* measures included in the study are: foreign direct investment (FDI) outflows, foreign direct investment (FDI) inflows and portfolio investment, while the *de jure* measure included is the capital account openness (KAO) index. Exchange rate is also included to serve as a control variable. Foreign direct investment inflows is measured as net inflows (% of GDP), while foreign direct investment outflows is measured as net outflows (% of GDP). Portfolio investment is measured as net balance of payment in current US Dollars and real exchange rate is measured using 2010 as the base year. Data on all the series was obtained from the data bank of the World Bank Development Indicators, except data on capital account openness which was sourced from Chinn and Ito (2006).

3.2 Model Specification

As noted earlier, the study employed the ARDL bounds test by Pesaran, Shin and Smith (2001) to investigate the cointegration among the series as well as the short run and the long run impact of the independent variables on the dependent variable. The main strength of the ARDL is that it can be applied even though the series are integrated of order one *I(0)*, integrated at first difference *I(1)* or an admixture of *I(0)* and *I(1)*. Another strength of the ARDL cointegration approach is that it has superior properties in small sample (Pesaran & Shin, 1999). Also, even when the model's regressors are found to be endogenous, the ARLD approach provides long-run estimates that are unbiased as well as valid t-statistics (Narayan, 2005). As noted by Banerjee and Newman (1993), the ARDL leads to the derivation of the dynamic error correction model (ECM) by way of a simple linear transformation. From the ECM, the short run dynamics can be integrated with the long run equilibrium and still retains the long run information. The study employed both the augmented Dickey Fuller (ADF) and the Phillip-Perron (PP) unit root tests to examine the order of integration of the series and the cointegrating relationship among the series was examined using the autoregressive distributed lag (ARDL) bounds test. Having established that the series are cointegrated, the study investigated both the long run and the short run impact of financial openness on domestic interest.

The functional link between domestic interest rate and financial openness can be specified as follows:

$$RINTR_t = \phi_0 + \phi_1 FOPEN + \phi_3 CV + \varepsilon_t \quad (1)$$

where $RINTR_1$ = real interest rate, $FOPEN$ = financial openness indicators: foreign direct investment inflows, foreign direct investment outflows, portfolio investment and

capital account openness. CV = control variable denoted by the real exchange rate and ε_t = error term. The ARDL form of equation 1 is specified as follows:

$$\Delta RINTR_i = \psi_0 + \sum_{i-1}^{p} \psi_1 \Delta RINTR_{t-1} + \sum_{t=0}^{p} \psi_2 \Delta FDII_{t-1} + \sum_{t=0}^{p} \psi_3 \Delta FDIO_{t-1} + \sum_{t=0}^{P} \psi_4 \Delta PI_{t-1}$$
$$+ \sum_{t=0}^{p} \psi_5 \Delta KAOPEN_{e-1} + \sum_{t=0}^{p} \psi_6 \Delta REXCHR_{t-1} + \psi_7 RINTR_{i-1} + \psi_8 FDII_{t-1} +$$
$$\psi_9 FDIO_{t-1} + \psi_{10} PI_{t-1} + \psi_{11} KAOPEN_{t-1} + \psi_{12} REXCHR_{t-1} + \varepsilon_t \quad (2)$$

where $RINTR$ = real interest rate (a proxy for domestic interest rate), $FDII_i$ = foreign direct investment inflows, $FDIO$ = foreign direct investment outflows, PI = portfolio investment, $KAOPEN_i$ = capital account openness and $REXCHR$ = real exchange rate.

The short-run parameter coefficients for Nigeria are: $\psi_1, \psi_2, \psi_3, \psi_4, \psi_5, \psi_6$, while the long-run parameter coefficients are: $\psi_7, \psi_8, \psi_9, \psi_{10}, \psi_{11}$ and ψ_{12}. In order to test for the existence of co-integration, the computed F-statistic is compared with the critical bounds. That is, the upper critical bound *1(1)* and the lower critical bound *1(0)*. Cointegration exists in the series if the computed F-statistic is greater than the upper critical bound. However, the series are not co-integrated if the computed F-statistic falls below the lower critical bound. The existence of cointegrating relationship among the variables means that the ECM has to be specified. The ECM is specified as follows:

$$\Delta RINTR_t = \psi_0 + \sum_{i-1}^{p} \psi_1 \Delta RINTR_{t-1} + \sum_{t=0}^{p} \psi_2 \Delta FDII_{t-1} + \sum_{t=0}^{p} \psi_3 \Delta FDIO_{t-1} + \sum_{t=0}^{P} \psi_4 \Delta PI_{t-1}$$
$$+ \sum_{t=0}^{p} \psi_5 \Delta KAOPEN_{t-1} + \sum_{t=0}^{p} \psi_6 \Delta REXCHR_{t-1} + \lambda ECM_t + \ell_t \quad (3)$$

where λ = represents the coefficient of ECM

4 Results and Discussion

The two pre-diagnostic tests the study conducted are the unit root test and the cointegration test. The results of the ADF test in Table 1 indicated that real interest rate, foreign direct investment inflows and portfolio investment achieved stationarity at level at the 5% level of significance. However, exchange rate, foreign direct investment outflows and capital account openness achieved stationarity after a first difference. In Table 2, the results of PP test indicated that real interest rate, foreign direct investment inflows, foreign direct investment outflows and portfolio investment achieved stationarity at level at the 5% level, while exchange rate and capital account openness achieved stationarity at first difference. In summary, the unit root results indicated that the series exhibited a mixture of *I(0)* and *I(1)*, thus supporting the suitability of the ARDL.

Table 1: Result of ADF Unit Root

Variable	ADF Level t-stat	ADF Level Critical value at 5%	ADF First Diff. t-stat	ADF First Diff. Critical value at 5%	Order of Integration
RINTR	-4.61	-2.93	-12.85	-2.93	*I(0)*
EXCHR	-1.94	-2.93	-4.36	-2.93	*I(1)*
FDII	-8.19	-2.94	-8.19	-2.94	*I(0)*
FDIO	-2.52	-2.93	-5.38	-2.94	*I(1)*
KAOPEN	-1.40	-2.93	-5.68	-2.94	*I(1)*
PI	-3.79	-2.93	-3.17	-2.95	*I(0)*

Table 2: Result of PP Unit Root

Variable	PP Level t-stat	PP Level Critical value at 5%	PP First Diff. t-stat	PP First Diff. Critical value at 5%	Order of Integration
RINTR	-4.61	-2.93	-12.27	-2.93	*I(0)*
EXCHR	-2.05	-2.93	-4.35	-2.93	*I(1)*
FDII	-4.03	-2.93	-13.79	-2.94	*I(0)*
FDIO	-4.00	-2.93	-11.89	-2.93	*I(0)*
KAOPEN	-1.46	-2.93	-5.66	-2.94	*I(1)*
PI	-3.70	-2.93	-14.62	-2.93	*I(0)*

The result of the ARDL cointegration in Table 3 was evaluated by comparing the F-statistic with both the upper critical bound *I(1)* and the lower critical bound *I(0)* at the chosen level of significance. In retrospect, the condition for the existence of cointegration is that the value of the F-statistic should be greater than the upper critical bound. However, the series are not cointegrated if the value of the F-statistic is less than the lower critical bound. At the 10% level, finding in Table 3 revealed that the value of the F-statistic (3.78) is greater than the upper critical bound (3.35). Consequently, the study concludes that the series are cointegrated.

Table 3: ARDL Bounds Test Result

Test Statistic	Value	K
F-statistic	3.78	5
	Critical Value Bounds	
Significance	*I(0)*Bound	*I(1)*Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Since the cointegration result has revealed that the series are cointegrated, the study went ahead to examine both the short-run and the long-run impact of financial openness on domestic interest rate in Nigeria. The short-run ARDL results in Table 4 indicate that in the short-run, FDI inflows had a negative impact on interest rate, even though the result is not significant. This finding is in line with the apriori expectation as rising FDI inflows raises money supply which depresses domestic interest rate. Finding however revealed that FDI outflows impacted interest rate positively and significantly. One unit rise in FDI outflows led to a rise in interest rate by 24.40 percent. This finding is equally in line with apriori expectation as rising FDI outflows reduces money supply, leading to a rise in domestic interest rate. The study contends that the reason for the non-significant impact of FDI inflows on domestic interest rate could be because the institutional bottlenecks and other factors such as poor infrastructural facilities in the country discourage massive penetration of FDI. In recent times, instead of the country attracting FDI, some multinational companies have relocated to nearby countries owing to harsh business environment. Therefore, FDI inflows within the study period was not enough to raise the monetary aggregates which should exert a significant negative pressure on domestic interest rate. The positive and significant impact of FDI outflows on domestic interest rate finds support in the above contention as investors prefer to channel their investments to financial jurisdictions where the return on investment is guaranteed. Consequently, massive FDI outflows within the study period reduced money supply which transmitted positively to domestic interest rate.

In another vein, portfolio investment was found to positively influence interest rate; however the result was not significant. This outcome does not follow a priori expectation since portfolio investment is expected to raise money supply and hence, a reduction in interest rate. The study is of the opinion that one plausible reason for the outcome could be because of the possible capital reversal associated with portfolio investment in the short-run. The abrupt capital reversal nature of portfolio investment therefore led to the reduction in money supply instead of the investment raising the liquidity position in the country. Such phenomenon again is in support of our earlier argument that the investment climate in the country does not instill confidence on investors. The study did not find exchange rate to significantly impact on interest rate, but capital account openness indicated a positive and significant impact on domestic interest rate. One unit rise in capital account openness raised interest rate by 32.97 percent. The study argues that the reason for the positive impact of capital account openness on domestic interest

rate could be because the openness policy attracted more capital outflows than capital inflows. Such tendency could reduce money supply, exerting a positive influence on domestic interest rate. The contention of the study that capital account openness led to capital outflows equally finds support in our earlier arguments. The ECM result revealed a negative and significant coefficient, thus supporting the result of the cointegrating relationship among the series. The meaning of the ECM result is that the system adjusts to equilibrium after a shock at a speed of 98 percent.

Table 4: Results of Short-run ARDL (1, 0, 1, 0, 0, 0)

Short run Results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FDII)	-4.43	2.65	-1.66	0.10
D(FDIO)	24.40	9.83	2.48	0.01
D(PI)	0.00	0.00	0.34	0.73
D(KAOPEN)	32.97	9.56	3.44	0.001
D(EXCHR)	0.01	0.02	0.71	0.47
ECM(-1)	-0.98	0.17	-5.78	

The long-run ARDL results in table 5 revealed that FDI inflows had a negative impact on interest rate but the result is not significant. However, FDI outflows impacted positively on interest rate and the result was significant. If FDI outflows rose by one unit, interest rate rose by 42.54 percent. The two results are in line with the short-run results which revealed that similar scenarios played out the time horizons. Finding also revealed that capital account openness had a positive impact on interest rate in the long-run and the result was significant. One unit rise in capital account openness resulted in a rise in interest rate by 33.53 percent. However, both portfolio investment and exchange rate did not have significant impact on interest rate.

Table 5: Results of Long-run ARDL (1, 0, 1, 0, 0, 0)

Long run Results				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDII	-4.50	2.74	-1.64	0.11
FDIO	42.74	15.30	2.79	0.008
PI	0.00	0.00	0.34	0.73
KAOPEN	33.53	9.58	3.49	0.001
EXCHR	0.01	0.02	0.69	0.48
C	25.78	8.07	3.19	0.003

The post-diagnostic results in appendix 1 revealed that the model is well specified. Also, there is no presence of serial correlation and the error term is homoscedastic, but the errors are not normally distributed. The model stability test indicated that while the plot of CUMSUM revealed that the model is stable as the plot falls inside the critical bands of

the 5% confidence interval, the CUMSUM of squares result exhibited an outlier because the plot falls outside the critical bands of the 5% confidence interval.

5 Conclusion and Recommendations

The roles of interest rate in the economy cannot be over-emphasized as it influences savings, investment and economic growth. Therefore, studies directed at its determinants should be of utmost importance to policy makers. In this study, the study set out to examine the impact of financial openness on domestic interest rate in Nigeria over the period from 1980–2020. Key findings in the study are worthy of mention. The short-run results indicated that both FDI outflows and capital account openness had positive impact on interest rate. In the long-run, the study also confirmed outcomes similar with the short-run results. The positive impact of capital account openness on interest rate, in the opinion of the study could be that capital liberalization policy favoured more capital outflows than capital inflows which resulted in rising interest rate within the study period. Another peculiar finding in the study is that portfolio investment did not exert a significant influence on interest rate both in the short-run and in the long-run and this is an indication of the weak development of the capital market in Nigeria. In Nigeria, the monetary authorities often face the challenges of reducing interest rate in order to boost investment and at the same time raising interest rate in a bid to control the price level. Consequently, this study has shown the sensitivity of domestic interest rate to financial openness and hence recommends that in fashioning out monetary policy measures, the monetary authorities should factor in the impact of the various indicators of financial openness on the domestic interest rate. In particular, the monetary authorities should fashion out strategies to regulate capital outflows in order to direct the domestic interest rate to a desired direction.

References

Afolabia, J. A. (2020). Financial development, trade openness and economic growth in Nigeria. *Iranian Economic Review,* 26(1), 237–254. DOI: 10.22059/ier.2020.77972

Aizenman, J., Cheung, Y. & Ito, H. (2017). The interest rate effect on private saving: *Alternative perspectives.* Asian Development Bank Institute Working Paper No. 715.

Ajogbeje, K., Adeniyi, O. & Egwaikhide, F. O. (2018). Policy trilemma and interest rate behaviour in Nigeria. *CBN Journal of Applied Statistics,* 9(2), 7–41.

A**man, Z., Granville, B., Mallick, S. & Nemlioglu, I.** (2022). Does greater financial openness promote external competitiveness in emerging markets? The role of institutional quality. *International Journal of Finance & Economics,* 1–25. DOI: 10.1002/ijfe.2695

Aremo, A. G., & Arambada, O. D. (2021). Effect of trade openness and financial openness on economic growth in sub-Saharan African countries. *African Journal of Economic Review,* 9(1), 109–130.

Aslanoğlu, E. (2012). How does stability in financial openness affect growth? *Topics in Middle Eastern and African Economies,* 14, 164–189.

Bacchetta, P. (1992). Liberalization of capital movements and of the domestic financial system. *Economica, New Series,* 59(236), 465–474.

Chinn, M. & Ito, H. (2006). What matters for financial development? Capital controls, institutions and interactions. *Journal of Development Economics,* 81(1), 163–192.

Egbetunde, T., Ayinde, T. O. & Balogun, A. (2017). Interest rate liberalization, financial development and economic growth in sub- Saharan African Economies. *African Journal of Economic Review,* 5(2), 109–129.

Fasanya, I. O. & Olayemi, I. A. (2020). Modelling financial openness growth-nexus in Nigeria: Evidence from bounds testing to cointegration approach. *Future Business Journal,* 6(4), 2–11.

Hye, Q. M., & Lau, W. (2018). Does financial and trade liberalization drive private savings in Pakistan? *Asian Development Policy Review,* 6(4), 198–212.

Jorgenson, D. (1963). Capital theory and investment behavior. *The American Economic,* Review, 53(2), 247–259.

Levine, R. (2001). International financial liberalization and economic growth. *Review of International Economics,* 9(4), 688.

Ljubaj, L., Martinis, A. & Mrkalj, M. (2010). Capital inflows and efficiency of sterilization: Estimation of sterilization and offset coefficients. Croatian National Bank Working Paper No. 24.

Mackinnon, R. I. (1973). *Money and capital in economic development.* Washington D.C.: Brookings Institution.

Nzeh, I. C., Ogwuru, H. O. R., Izuogu, A. C. & Ogaraku, N. B. (2023). Drivers of economic performance: Do institutional quality and financial liberalization matter? Evidence from SANE and Asian Tigers. *International Journal of Advanced Economics,* 5(2), 29–47. DOI: 10.51594/ijmer.v5i2.442

Okpanachi, U. (2013). An assessment of monetary policy response to capital inflows in Nigeria. *CBN Journal of Applied Statistics,* 3(2), 5–98.

Orji, A., Ogbuabor, J. E. & Orji, O. (2015). Financial liberalization and economic growth in Nigeria: An empirical evidence. *International Journal of Economics and Financial Issues,* 5(3), 663–672.

Pesaran, M., & Shin, Y. (1999). *An Autoregressive Distributed-lag Modelling Approach to Co- integration Analysis.* Cambridge: Cambridge University Press.

Pesaran, M., Shin, Y. & Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics,* 16(3), 289–326.

Saifullahi, S., & Nuruddeen, T. (2015). The linkages between trade openness, financial openness and economic growth in Nigeria. MPRA Paper No. 87494. https://mpra.ub.uni-muenchen.de/87494/

Shaw, E. S. (1973). *Financial Deepening in Economic Development.* New York: Oxford University Press.

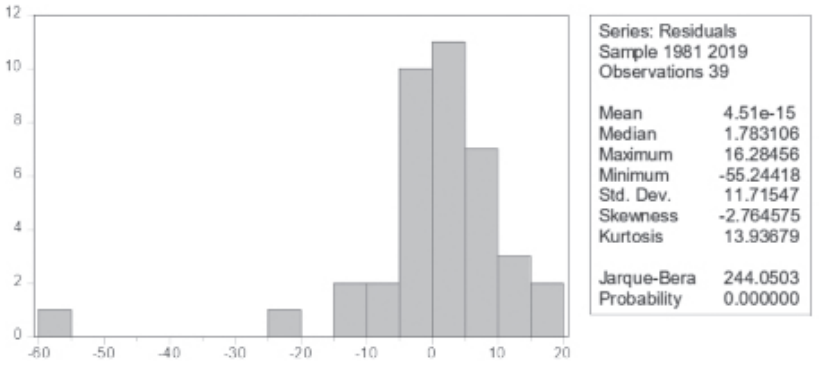
Stiglitz, J. E. (2000). Capital market liberalization, economic growth and instability. *World Development,* 28(6), 1075–1086.

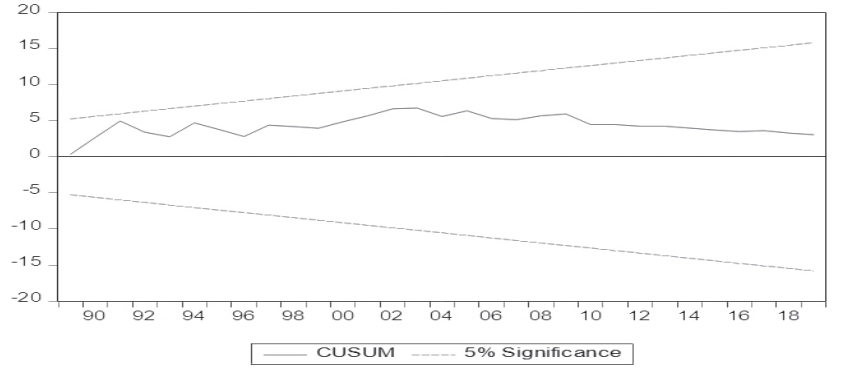
Sulaiman, L. A., Oke, M. O. & Azeez, B. A. (2012). Effect of financial liberalization on economic growth in developing countries: The Nigerian experience. *International Journal of Economics and Management Sciences,* 1(12), 16–28.

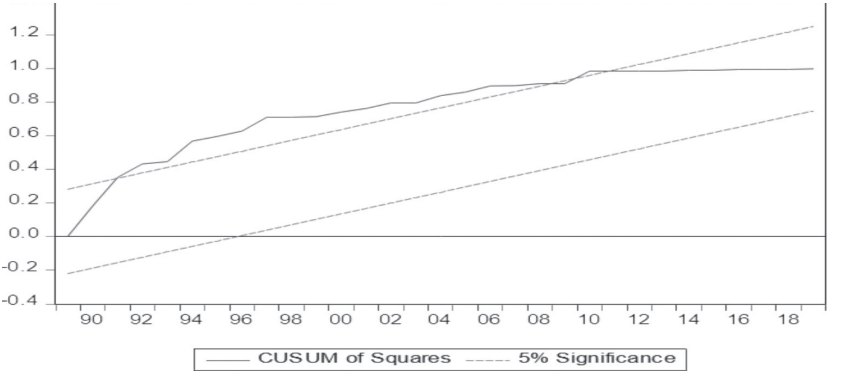
Wei, H. (2015). Does financial openness affect economic growth in Asian economies? A case study in selected Asian economies, 1980–2010. A PhD Dissertation presented to the Graduate Faculty in Economics, City University of New York.

Appendix: Post Diagnostic Results

Test	P-value	Null Hypothesis	Conclusion
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.7199	Ho: No Homoskedasticity	Cannot reject Ho
Serial Correlation: Breusch-Godfrey LM Test	0.7339	Ho: No Serial	Cannot
		Correlation	reject Ho
Jarque-Bera(Normality Test)	0.000	Ho: Normally Distributed	Reject Ho
Model Specification (Ramsey RESET Test)	0.3427	Ho: Correctly Specified	Cannot reject Ho







Contact Address

Innocent Chile Nzeh, Corresponding Author
Department of Cooperative and Rural Development
University of Agriculture and Environmental Sciences
Umuagwo, Imo State
Nigeria
(nzechile@yahoo.com, innocent.nzeh@uaes.edu.ng)

Benedict I. Uzoechina
Joan Nwamaka Ozoh
Uju Victoria Okoli
Department of Economics
Nnamdi Azikiwe University
Awka, Anambra State
Nigeria
(ib.uzoechina@unizik.edu.ng)
(jn.ozoh@unizik.edu.ng)
(uv.okoli@unizik.edu.ng)