CAUSATIVE ANALYSIS OF FOREIGN CAPITAL INFLOW AND ECONOMIC GROWTH IN NIGERIA: A TODA-YAMAMOTO APPROACH

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ABSTRACT

This study explored the causative effect between foreign capital inflows and economic growth in Nigeria, using time series data from 1980 to 2022. Foreign aid, external debt, remittances and Foreign Direct Investment (FDI) were used as proxies for foreign capital inflows, while real Gross Domestic Product (GDP) was used as a measure of economic growth. Data used were sourced from the CBN Statistical Bulletin and World Development Indictors (WDI) database. The variables were first subjected to unit root tests, using Augmented Dickey-Fuller method, to determine the stationary property of the series. The results obtained indicates that some of the variables are integrated at level, while others at first difference; a mixture of I(0) and I(1). Toda-Yamamoto causality test was used to determine the causative direction between foreign capital inflow and economic growth. The results indicated that there is a unidirectional causality running from foreign aid to GDP and from remittances to GDP. The results also revealed no causality between GDP and FDI, and between GDP and external debt. It is therefore recommended that policymakers in Nigeria should ensure a sound macroeconomic policy environment that is stable to stimulate domestic savings, attract additional FDI and utilize external debt effectively. The need for diversification of the economy through industrialization, agriculture, trade and services is also paramount to reduce such substantial dependence on capital from foreign sources.

Keywords: Foreign aid, FDI, external debt, Remittances, Economic Growth, causality

JEL: F36, F35, F34, F32, E01

1. INTRODUCTION

Foreign capital inflows come in various forms and through different sources. The most notable forms include foreign grants and aids, foreign loans, Foreign Direct Investment (FDI), remittances and Foreign Portfolio Investment (FPI) (Ayebaemi & Moses, 2022). The notable forms of foreign aid are basically loans and grants. Although loans come with the repayment obligations with the accrued interest, which may however be on concessional terms referred to as 'soft loan', however, grants do not require repayment or any other financial obligation (Oluitan & Dada, 2020). Many developing economies consider foreign aid as a lifeline to their respective growth process, including Nigeria (Isiaka & Makinde, 2020). All over the world, foreign aid provides supports to such economies that are considered economically disadvantaged, in the forms of both welfare and social infrastructure, including water supply, education, health facilities, environmental safety, security, transportation, among others, with the aim of enhancing human capital development and sustainable economic growth in those countries. For instance in 2023, total global Official Development Assistance (ODA) stood at US$ 223.7 billion, which represented a growth of more than four-fold in the last 60 years. Aid

to African countries stood at US$ 53.5 billion in 2022, which was 25.6 percent of the global aid receipts in that year (OECD, 2024). This amount was equivalent to 0.37 percent of the Gross National Income (GNI) of the donor countries under the auspice of Development Assistance Committee (DAC). It is important to note that such proportion falls short of the commitment of DAC members, which is denoting at least 0.7 percent of their GNI to ODA.

Nigeria benefits from foreign assistance and indeed currently enjoys funding at about the same level as it did in the early 1980s. During the last quarter of 2023 alone, the total foreign capital inflow to Nigeria was US$ 1,088.48 million, which was 2.62 percent higher than US$ 1,060.73 of the preceding quarter (NBS, 2024). Although, this is quite an impressive figure, however, the country is still typified with high unemployment level, low income, high level of poverty, low industrial capacity utilization and other socioeconomic problems. For instance, the most recent Multidimensional Poverty Index (MPI) survey conducted by the National Bureau of Statistics indicated that 63 percent of Nigerians are multidimensionally poor (NBS, 2023). The country has been experiencing significant inflows of foreign aid into the various sectors of the economy, which have brought about gross dependency on the aid over years. Even though the inflow of foreign aid should have been an augmentation to the recipient nation's capital formation, but in many instances its adversities exceed the benefits. The situation is such that the economy of Nigeria does not maximize its productive capacities, and thus, operates at a level below maximum potentials due to inflows of foreign capital. It is astonishing that despite all the foreign aids received by Nigeria has not really reduced most of the socioeconomic problems confronting the country. This over-dependence on foreign aid inflow by Nigeria has in the long run exerted negative consequences on the country's quest to improve its internal productive capacity utilization as it is reluctant to develop its domestic use of its human and mineral resources. Consequently, unemployment and poverty rates have remained unresolved in the country thereby retarding economic growth (Uzonwanne & Uju, 2015).

Fundamentally, Nigeria's socioeconomic problem has, been connected to the inadequacy of infrastructural facilities, poor policy framework and or implementation, unfavorable macroeconomic environment, stagnant technology, unemployment and over reliance on on oil as its major source foreign earning, amongst other limitations. Despite the notable donor intervention arrangements for the Nigerian economy, it is still characterized by high poverty rate, unfavorable terms of trade, higher inflation rates, budget deficits, increasing debt service burden, and depreciating exchange rates (Oluitan & Dada, 2020). In fact, the World Bank estimated the poverty rate in the country to have reached almost 39 percent in 2023, placing Nigeria as the second-largest poor country after India (World Bank, WB, 2023).

Literature is replete with researches in this area of foreign capital inflows-economic growth nexus. Some of these studies focus on impact analysis of the former on the latter, without any attempt to investigate the direction of causality. Moreover, these studies reported mix results, thus lacked consensus on whether foreign aid promotes or retards economic growth in the recipient countries. At one hand, are those who assert that foreign capital inflow, in whatever form, has been effective in promoting sustainable growth of Gross Domestic Product (GDP) in those countries which helps them to develop their capacities and transform their economies (Ewubare & Ozigbu, 2019; Osahon & Hilda, 2018; among others). On the other side, some of the studies concluded that the positive effect of foreign capital inflow on economic growth would be felt at the short-run, up to an optimal point in which any additional inflow only affects the growth adversely due to overdependence on foreign assistance and poor management of domestic resources; thus, in many of the developing countries receiving the aid, poverty worsens and underdevelopment persists (Yiew & Lau, 2018; Duru et al., 2020; among others). There are also controversies on the direction of foreign capital inflow and growth rate of the

economy; whether the foreign aid causes poor growth or the reverse is the case is still unresolved in the literature.

Most of the studies reviewed observed the existence of positive relationship between foreign aid and economic growth (Abdul et al., 2018; Mukaddas, 2020; Fasanya & Onakoya, 2012; Ugochukwu et al., 2016; Ewubare & Ozigbu, 2019; Osahon & Hilda, 2018; Saibu & Obioesiob, 2017; Fashina, et al., 2018; Modibbo et al, 2019; Albert et al, 2021; Girma, 2015). Conversely, the works of Kolawole, (2013), Uzonwanne & Uju, (2015), Mbah & Amassoma, (2014), Yiew & Lau, (2018) and Duru et al., (2020) found that a negative relationship existed between foreign aid and economic growth. Kolawole (2013) in particular, asserted that foreign aid has no effect on real growth in Nigeria. This lack of consensus necessitates continuous re-assessment of the relationship between foreign capital inflows and economic growth in Nigeria.

The main objective of this paper is to investigate the direction of causality between foreign capital inflows (measured in form of foreign aid, external debt, remittances and foreign direct investment) and Economic Growth in Nigeria from 1980 to 2022. The rest of the paper is divided into four sections. Section two reviews the relevant literature, section three discusses the methodology, section four presents the analysis of results, lastly, section five contains the conclusion and policy recommendations.

2. LITERATURE REVIEW

2.1. Empirical Review

Various studies have sought to examine the relationship between various channels of foreign capital inflow and economic growth. While some researchers conducted impact analysis, others were concerned with the direction of causation between the two, both in Nigeria and elsewhere. A handful of these researches is reviewed below.

Agunbiade and Mohammed (2018) examined the impact of Foreign Aid (FA) on the Economic Growth in Nigeria. The study made use of secondary data and conducted time series analysis. The paper employed Augmented Dickey-Fuller (ADF) statistics and tested for the unit root problems in the variables which were found to be integrated after differencing. Subsequently, vector error correction model (VECM) and Johansen cointegration tests were carried out. The study found out that foreign aid inflow does not show any significant impact on the level of real GDP in Nigeria. Thus, the study concluded that foreign aid does promote sustainable growth which would transform the lives of Nigerians over the study period. The authors however recommended that foreign aid received be invested in productive ventures and that government should ensure creation of institutional framework to monitor the utilization of such aids in sustainably productive activities.

Yiew and Lau (2018) examined the impact of official development assistance (ODA) on economic growth in a panel study of 95 different developing countries. The paper included FDI and population growth as controlled explanatory variables. The results indicated that an oscillatory relationship between ODA and economic growth which depicted a U-shape. At the initial stage, ODA adversely affected economic growth in those 95 countries; however, the adversity vanished after some periods, which metamorphosed into a positive effect on economic growth. Further, the results strongly support the hypotheses that GDP growth is strongly dependent on both FDI and population growth, suggesting that ODA is the least determinant of GDP is those countries.

Sheikh *et al*., (2018) assessed the impact of foreign debt and foreign aid on economic growth in Somalia from 1970 to 2014. Both Augmented Dickey−Fuller (ADF) and Philip-Perron (PP)

tests for the unit root problem were carried out which revealed that the variables are I(1). Cointegration test of Johansen type was conducted to ascertain long-run relationship between the variables. Subsequently, ordinary least squares (OLS) method was employed. The results of the study indicated that foreign debt does not affect economic growth, while foreign aid has positive effect on economic growth in the country.

Fashina, *et al* (2018) investigated the relationship between foreign aid and human capital in promoting economic growth in Nigeria. Engle-Granger test for integration was carried to ascertain the long-run relationship among the variables, which was supplemented by VECM estimation technique. The results suggest that persistent increase in foreign aid flows beyond a particular point (the optimal point) may adversely affect growth thus confirming the proposition of the Medicine Model. Meanwhile, the VECM results indicated that growth in Nigeria is sensitive to human capital shock via education but the response from aid shock was quite insignificant in the long run. One implication of the results is that government expenditures on education with additional inflows of aid can promote economic growth in the country. The study however, considered only aggregated foreign aid for its scope and analysis.

Modibbo, *et al*, (2019) examined the effect of foreign aid on economic growth of 11 OPEC-member countries between the period 2010 and 2017. The study employed both difference and system generalized method of moment (GMM) estimators. Immediate lagged value of economic growth was found to be a significant positive determinant of its contemporaneous value. However, foreign aid exhibited negative significant effect on economic growth.

Isiaka and Makinde (2020) explored how economic growth was influenced by foreign aid in Nigeria from 1990 to 2017. The study adopted OLS method prior to which a unit root test was carried out using Augmented Dickey-Fuller method which revealed an I(1) process in the series. The co-integration test conducted revealed the existence of long-run relationship. Thereafter, the Error Correction Model (ECM) indicated that 6% of the short-run disturbance in the model is adjusted in each period, indicating slow adjustment process to long-run equilibrium path. The study concluded that foreign aid is a significant positive determinant of economic growth in Nigeria.

Again, Oluitan and Dada (2020) studied the effect of foreign capital flow on economic growth in Nigeria, between the period of 1960 and 2016. Foreign aid and FDI were used as proxies of foreign capital flow and the study controlled for domestic investment. Error Correction method of analysis was adopted after time series scrutiny of the variables. The results revealed that foreign aid is a positive determinant of economic growth. Thus, as Nigeria receives foreign aid its economic growth, measured in GDP, accelerates.

Moreover, Duru, *et al*., (2020) investigated the effect of foreign aid on economic growth in Nigeria from 1984 to 2017. Autoregressive Distributed-Lag (ARDL) method was employed for the study. Although the results of the bounds test revealed existence of long-run relationship, however, foreign aid did not show any impact on economic growth in Nigeria both in the short-run and the long-run. Furthermore, the results revealed that the impact of foreign aid on economic growth in Nigeria was contingent on the quality of the macroeconomic policy environment. Thus, the study concluded that the quality of macroeconomic policy environment determines the effectiveness of foreign aid in promoting growth in Nigeria.

In a panel study, Rao, *et al*., (2020) examined the interconnectedness among foreign aid, FDI and economic growth in South-East and South Asian countries over the period of 1980–2016. Using panel methods, the study found that foreign aid is negatively correlated to both FDI and economic growth. It also proved that FDI positively influences economic growth. Moreover,

governmental financial assistance to private sector for domestic investment was found to be a positive determinant of economic growth and FDI flows in those countries.

In Nigeria, Ubi and Ebi (2021) also investigated the relationship between foreign aid and the development process between the period 1980 and 2018. Specifically, Pearson correlation method was employed to establish the link between foreign aid and the selected development indicators. The results revealed that the correlation between aid and development indicators is both time- and sector-specific. Periods of very high foreign aid inflows seemed to support improvement in most of the development indicators. Also, health and education appeared to be more positively responsive to changes in foreign aid inflow than other development indicators like economic growth, and roads infrastructures. Thus, the paper recommended that largest chunk of foreign investments and donations should be channeled to the health and education sectors.

In the same vein, Albert *et al*, (2021) examined the relationship between foreign aid and economic growth in Nigeria from 1988 to 2018 using OLS technique. GDP growth rate was used as proxy for economic growth which was regressed against poverty rate, unemployment rate and foreign aids. The results indicated that foreign aids positively determines GDP growth rate, while poverty and unemployment rates were found to be adversely affecting the GDP growth rate over the study period. Hence, the study recommended that Nigerian government should put in place appropriate policy measures that would ensure effective utilization of foreign aid while alleviating poverty and unemployment.

El-Rasheed and Abdullahi (2022) employed annual time series data of Nigeria between 1990 and 2020 and examined the relationship between FDI and economic growth in Nigeria. The study controlled for gross fixed capital formation, total labour force and exchange rate as explanatory variables, and utilized ARDL bounds and Granger-causality techniques for its analysis. The ARDL result indicated FDI, exchange rate depreciation and capital formation have long term effects on GDP, while labour force exerted negative effect on economic growth. Meanwhile, the causality test revealed bidirectional causation between FDI and economic growth. The major shortcoming of this study is that of Granger causality test in a model that has a mixture of both I(0) and I(1) variables.

Nnubia, *et al*, (2022) examined the relationship between foreign debt, foreign aid and economic growth in Nigeria using secondary data sourced from the CBN spanning the period of 1986 to 2016. The paper employed the use of Pearson Correlation Matrix. Findings revealed that economic growth, proxied by GDP, has a strong positive correlation with foreign reserves, foreign aid and rate of openness of the economy; but has negative correlation with external debts at 5% level. The study therefore recommended that policymakers in Nigeria should focus on reducing the cost of capital and avoid excessive external borrowing unless when necessary.

In a somewhat different study, Salisu and Haladu (2022) examined the joined shocks effects of remittances and monetary policy on economic growth in Nigeria using quarterly data from 2010 Q1 to 2021 Q4. Zivot and Andrew unit root test was used in the paper, to determine the stationarity property of the variables in the presence of structural breaks. Subsequently, Structural Vector Autoregressive (SVAR) model was used on GDP, remittances, and monetary policy rate. The results from the impulse response functions revealed that, remittances transmit negative shocks to GDP while the shock effect of real exchange rate to GDP was negative. Monetary policy rate transmitted positive shock to during the period. The Granger causality results showed bi-directional causality between real exchange rate, money supply, and remittances on one hand, and GDP on the other. The study is limited to the use of remittances as the only measure foreign capital inflow.

Asaleye, *et al* (2023) used Nigeria's quarterly data, ranging from 2002 to 2021, to investigate the asymmetric effects of aggregated aid inflows on growth and employment in the country. The study employed Non-linear ARDL and VECM techniques for the analysis. The results obtained showed both positive and negative shock effects of aggregate aid on growth in the long run and short run, respectively. On the other hand, positive shocks were found to reduce employment in the long run. For sector effects, the findings revealed that positive shock in education and health aid increases employment in the long run, while positive shock in health and industry aid undermines growth in the short run. Overall, the variance decomposition indicated that aggregated aid shock affects economic growth more than employment. The study did not however investigate the direction of causality among the variables.

Rojik *et al* (2024) employed the use of ARDL and Granger Causality models to assess the impact of foreign aid (measured in ODA and foreign loan) on the growth of Nigerian economy from 1980 to 2019. The findings of the paper indicated that ODA and credit extensions did not contribute to the progress of the Nigerian economy; they instead retarded it, both the short and long run. However, labour force, which used as controlled variable, contributed positively to economic progress in Nigeria. In contract, gross capital formation did not show any impact on economic growth during the period. The Granger causality test revealed absence of causal relationship between ODA and economic growth in Nigeria. However, this study suffers some limitations in terms of the period covered by the study, the use of only two variables to capture foreign aid, as well as methodological defects as Granger Causality test employed does not match the data generating process of the variables.

From the foregoing, the connection between foreign capital inflows and economic growth lacks consensus and the findings differ depending upon several factors including the data, models, period and case study. Again, none of these studies established the direction of causality between those indicators of foreign capital inflows and economic growth. This paper employs Toda-Yamamoto approach, which matches the data generating process of the variables, to investigate the direction of causality. Moreover, foreign capital inflow is deconstructed into various components (aid, loan, remittance and FDI) to see the plausible causality of each on economic growth which none of the previous had considered.

3. METHODOLOGY

3.1 Theoretical Framework

Earlier economic growth theories of the mid-twentieth century, such as Harrod-Domar and Solow, stressed that the primary hindrance to development of many developing countries was poor capital formation in achieving sustainable growth. Thus, it was opined that, the development assistance was important for these countries to fill the finance gap and technology gap. These were known as saving gap and trade gap.

Therefore, this paper adopted the Chenery and Strout Two-Gap model. This is because for many years, the standard model used to justify the Aid or Capital inflows was the "Two-Gap" model of Chenery and Strout (1966). They argue that, foreign capital inflows promote structural transformation, which in turn, stimulate growth. Using Two-Gap model of economic development, they posit that, the savings gaps and foreign exchange gap are the constraints on the attainment of the ideal growth rate in LDCs. This economic theory of foreign aid asserts that official development assistance promotes economic growth by complementing domestic capital formation. This can be achieved through the Two-Gap model. The model is expressed in equation 1 below:

$$I = I_d + I_f = S_d + KIM = S \qquad (1)$$

Where, I stands for total investment, which the sum total of domestic I_d and foreign I_f investments. While S is the total savings comprising of domestic savings S_d and foreign capital import KIM. The model perfectly fits into our analysis as it shows the role of both foreign investments and foreign capital inflow on the equilibrium output of a domestic economy.

3.2 Research Design

The problem a researcher strives to solve determines the choice of a research design. Ex post facto time series research design is used for the purpose of this study. The paper employs secondary data and appropriate econometric models to establish the causality relationship between the variables of interest. Specifically, the study uses time series design in order to establish the causal link between foreign capital inflow (measured in foreign aid, remittances, FDI and foreign debt) and economic growth measured in GDP in Nigeria.

3.2 Method of Data Analysis

This paper investigates the direction of causality among foreign aid, external debt, remittances, foreign direct investment and economic growth in Nigeria as pointed in the objective. However, the study has reviewed models used by various empirical studies. It employs Toda-Yamamoto (1995) causality approach owing to the time series properties of the individual series. Toda-Yamamoto (T-Y) method is an improved technique over the traditional Granger Causality method. It is normally employed when the concerned series are integrated of different orders.

Chiawa *et al*. (2012) and Rauf *et al*. (2012) have found the T-Y to be superior to Granger Causality test as it does not require the pre-testing of variables for cointegration. Therefore, the T-Y approach overcomes the problem of asymptotic critical values when causality tests are done in the presence of different orders of integration or absence of cointegration. Besides this, the T-Y test minimizes the risks associated with the possibility of wrongly identifying the order of integration of the variables. Furthermore, the T-Y approach is applicable to any arbitrary levels of integration in the variables.

3.3 Model Specification

In this subsection we follow the usual 3 stages of estimating TY causality estimates. We began by using ADF technique to test for the time series properties to determine the maximum order of integration (d_{max}) of the variables in the model. In the second stage, the paper determines the optimal lag-length (p) which is to be obtained from the VAR estimation of the variables in their levels. In the determination of p, all the different lag length criteria were used, including Akaike's Information Criterion (AIC), Schwarz Information Criterion (SC), Final Prediction Error (FPE) and the Hannan Quinn (HQ) Information Criterion. In the final stage, the paper tests for the T-Y causality; this is done by using the Modified Wald (MWALD) Procedure to test for the VAR (k). The optimal lag length is equal to $k = (p + d_{max})$. The MWALD test has an asymptotic chi-squared distribution with p degrees of freedom in the limit when a VAR $(p + d_{max})$ is estimated.

To test for TY causality between two variables, the following bivariate VAR (k) model is constructed:

$$X_t = \alpha_1 + \sum_{i=1}^{h+d} \beta_{1i} X_{t-i} + \sum_{j=1}^{l+d} \delta_{1j} Y_{t-j} + \varepsilon_{1t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

$$Y_t = \alpha_1 + \sum_{i=1}^{h+d} \beta_{2i} X_{t-i} + \sum_{j=1}^{l+d} \delta_{2j} Y_{t-j} + \varepsilon_{2t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Where:

d is the maximum order of integration

h and d are the optimal lag length
ε_{1t} and ε_{2t} are the errors terms which are assumed to be white noise.
For the bivariate VAR equation (2) above, the null (H_0) and alternative (H_1) hypotheses are specified as follows:
H_0: Y_t does not Granger cause X_t, if $\sum_{j=1}^{l} \delta_{1j} = 0$
H_1: Y_t does Granger cause X_t, if $\sum_{j=1}^{l} \delta_{1j} \neq 0$
For the bivariate VAR equation (3) above, the null (H_0) and alternative (H_1) hypotheses are specified as follows:
H_0: X_t does not Granger cause Y_t, if $\sum_{j=1}^{l} \delta_{2j} = 0$
H_1: X_t does Granger cause Y_t, if $\sum_{j=1}^{l} \delta_{2j} \neq 0$
The causality between two variables can be described as unidirectional, bidirectional or no causality.
When either null hypothesis of equation (2) or equation (3) is rejected then unidirectional causality occurs. For instance, if the null hypothesis of equation (2) is rejected and that of equation 3 is accepted, then we can conclude that changes in Y_t are caused by changes in X_t, but if we fail to reject the null hypothesis of equation (2) and reject the null hypothesis of equation (3), then we can conclude that changes in X_t are caused by changes in Y_t.
Bidirectional causality exists when both null hypotheses of equation (2) and equation (3) are rejected. However, we conclude that no causality exists if neither null hypothesis of equation (2) or (3) is rejected.

3.4 Variables Measurement, Description and Data Sources

Table 1 below summarizes the description and measurement of the variables considered in this study, including the sources from which the data used were generated.

Table 1: Variables description and their sources

Variable	Notation	Description	Data Source
Growth Domestic Product Growth Rate	GDP	This is the annual percentage growth rate of GDP at market prices based on constant local currency.	WDI
External Debt	EXD	This is the total debt owed to nonresidents repayable in currencies or commodities	WDI
Remittances	REM	Personal remittances comprise personal transfers and compensation of employees.	WDI
Foreign Direct Investment	FDI	FDI is the net inflows of investment to acquire a lasting management interest in an enterprise operating in Nigeria as percentage of the country's GDP.	WDI
Foreign Aid or Official Development Assistance	FAD	Foreign aid comprises of every loan with a grant element beyond 25 per cent. It is also measured as percentage of GDP	WDI

Source: Authors' compilation (2023)

4. PRESENTATION AND ANALYSIS OF RESULTS

The analysis of the data commenced with the results of stationarity test, using Augmented Dickey-Fuller (ADF) test statistic. The result indicates that EXD and REM are integrated of order one I(1) while GDP, FAD and FDI are integrated of order zero I(0).

4.1 Unit Root Tests Result

It is essential to check the stationary for the time series data in order to produce the spurious results. Based on this result below, the maximum order of integration is one ($d_{max} = 1$).

Table 2: ADF unit root tests results

Variable	Augmented Dickey-Fuller (ADF)		
	Level	First Difference	Order of Integration
GDP	-3.920054		I (0)
LEXD	1.743822	-4.681371	I (1)
LFAD	-3.514063		I (0)
LREM	1.376086	-6.227640	I (1)
FDI	-3.298643		I (0)

Source: Author's computation (2024)

4.2 VAR Lag Selection Order

From the VAR at level the lag length selection: Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ) suggest the use of only 1 lag length while, sequential modified LR test statistic (LR), Final prediction error (FPE), Akaike information criterion (AIC) suggests the use of 3 lag length.

Table 3: VAR Lag length selection

Lag	LogL	LR	FPE	AIC	SIC	HQ
1	-1982.696	239.4599	4.66e+38	103.2152	104.4948*	103.6743*
2	-1961.576	30.32509	6.08e+38	103.4142	105.7602	104.2559
3	-1927.069	40.70132*	4.46e+38*	102.9266*	106.3390	104.1509

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SIC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: Author's computation (2024)

The result of the VAR lag order selection indicates that the maximum lag length is 3 in Table 3 above. Based on this result, the optimum lag length is 3 (*k=3*).

Table 4: LM Test for Serial Autocorrelation

Lag	LM-Statistic	P-value	Null Hypothesis	Conclusion
1	21.96380	0.6378	Ho: No Serial Correlation	Cannot reject Ho
2	29.21619	0.2550	Ho: No Serial Correlation	Cannot reject Ho
3	32.96362	0.1320	Ho: No Serial Correlation	Cannot reject Ho

Source: Author's computation (2024)

The LM Test for Serial Autocorrelation was depicted in Table 4. We employed the VAR Lagrange Multiplier (LM) test and tested for serial correlation in the error term. The results

have not shown any evidence of serial autocorrelation in the stochastic random error term as evidenced from p-value which is higher than 5% in the model. Thus, the null hypothesis of no serial correlation cannot be rejected.

The modified Wald test statistic was conducted with the addition of the optimum lag length with the maximum order of integration $(k + d_{max})$ in each of the exogenous variables included in the model, and we obtained that the *k=3.*, while $d_{max} = 1$. Having determined the maximum order of integration and the optimum lag length, the paper ignores the test for co-integration as it will not affect any of the T-Y test procedures. The result of the T-Y test using modified Wald test statistic is presented in Table 5 below.

4.4 Toda-Yamamoto Causality Test

In this subsection, we investigated the direction of causality among foreign aid, external debt, remittances, foreign direct investment and economic growth in Nigeria as pointed in the objective using the Toda and Yamamoto causality test. The Toda-Yamamoto (1995) causality test results are reported in Table 5. The estimates of MWALD test show that the test result follows the chi-square distribution with *k*=3 in accordance with the appropriate lag length along with their associated probability.

Table 5: Toda-Yamamoto Causality (modified WALD) Test Results

Null hypothesis	Chi-sq	d.f.	Probability	Causality
GDP does not granger cause LEXD	0.184493	3	0.9801	No causality
LEXD does not granger cause GDP	1.482443	3	0.6863	
GDP does not granger cause LFAD	0.179775	3	0.9808	Unidirectional causality LFAD →GDP
LFAD does not granger cause GDP	10.53457	3	0.0145**	
GDP does not granger cause LREM	0.179775	3	0.9808	Unidirectional causality LREM → GDP
LREM does not granger cause GDP	10.53457	3	0.0145**	
GDP does not granger cause FDI	1.704401	3	0.6360	No causality
FDI does not granger cause GDP	3.368760	3	0.3382	

Source: Author's computation (2024) from E-views 10.

The result of the modified Wald test as shown in Table 5 above indicates that there is a unidirectional causality between log of Foreign Aid (LFAD) and GDP and between log of Remittances (LREM) and GDP. The result also reveals that there is a no causality between GDP and FDI, and between GDP and log of External Debt (LEXD). This result is not in line with the findings of Duru et al., (2020) who evaluated the nature of causality between foreign capital inflows and real economic growth in Nigeria. They concluded that causality runs from foreign direct investment (FDI) and foreign aid to real GDP (growth). However, the result concurs with the findings of Kolawole, (2013), who examined the relationship between official development assistant (ODA), FDI and economic growth and found no causation between the FDI and economic growth in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This paper examined the relationships between foreign capital inflows and economic growth in Nigeria from 1980 to 2022. In this study, foreign capital inflows were proxied by Foreign Aid, External Debt, Remittances and Foreign Direct Investment while economic growth was proxied by Gross Domestic Product (GDP). The study employed Toda-Yamamoto Causality test to test the causal relationship and the result indicate that there is a unidirectional causality between log of Foreign Aid (LFAD) and GDP and between log of Remittances (LREM) and GDP. The result also reveals that there is a no causality between GDP and FDI, and between GDP and log of External Debt (LEXD). Causality test result of foreign capital inflows to economic growth in Nigeria concluded that, foreign aid contributes to and cause economic growth in Nigeria. However, the result revealed that, the remittances also cause GDP. While, the external debt and foreign direct investment does not granger cause GDP Hence, the foreign direct investment and external debt does not contribute to economic growth.

Another major conclusion from this study is that the causality between foreign capital inflows and Nigeria's economic growth is associated with the foreign aid and remittances. Also, foreign direct investment and external debt was not critical to economic growth in Nigeria.

5.2. Recommendations

The findings of the study have many policy implications on the basis of which the study provides the following policy recommendations to help government achieve the desired economic growth in Nigeria.

1. The policymakers of the government should put in place a sound macroeconomic policy environment that is stable to stimulate domestic saving and ensure the effective utilization of Foreign Aid and External Debt i.e. through the Ministry of Budget and National Planning (MBNP) to coordinate external assistance from all multilateral as well as bilateral because is one of its major functions. The government should ensure that these policies are adequately implemented.
2. The negative relationship between External Debt and FDI on Economic Growth is an indication that, the need for quality institutions and good governance matter. Hence, policymakers should ensure that quality institutions are in place and promote measures of good governance. This may ensure that External Debt is managed prudently.
3. Moreover, there is a need for the diversification of the economy through viable alternatives such as agriculture, industrialization and trade to reduce heavy reliance on foreign aid as a major means of stimulating economic growth.
4. The paper also recommends effective utilization of foreign aids through the fight against corruption. The Economic and Financial Crimes Commission (EFCC) and Independent Corrupt Practices and other Related Offences Commission (ICPC) should be strengthened to fight corruption at all level. This is necessary to stop the menace of diverting public resources, including foreign aid funds, for personal gains.
5. The government should also provide a good enabling environment for the thriving of foreign direct investors through Nigerian Investment Promotion Commission Act. All the obstacles to foreign direct investment in Nigeria should be looked into as a matter of urgency by the government. This is premised on the fact that foreign direct investment in Nigeria was an issue of worry based on its negative relationship with GDP growth rate in the. However, Capital Inflows in form remittances should be encouraged and to avoid embezzlement of those funds.

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