

Government Fiscal Policy and Foreign Direct Investment in Nigeria: An Application of VAR Model

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ABSTRACT

Purpose: The aim of this paper is to examine the impact of key fiscal policy variables (government capital expenditure, government revenue, government recurrent expenditure, external debt and tax revenue) on foreign direct investment and to check if there exists a causal relationship between fiscal policy and Foreign direct investment in Nigeria.

Approach/Methodology/Design: Times series Econometrics methods such as Vector Autoregressive (VAR) Model, unit root test, cointegration test, Lag selection test and Granger causality test on annual data obtained from CBN statistical bulletin and National Bureau of Statistics spanning 1985 to 2020 were used.

Findings: The results of the unit root test showed that FDI, government capital expenditure, government revenue and tax were stationary at order one (1), while recurrent expenditure and external debt were stationary at order zero (0). Also there exists co-integration among all the variables in the model. The findings showed that fiscal policy has insignificant impact on foreign direct investment in Nigeria.

Originality/value: The results of this paper give valuable information on the relationship that fiscal policy may have with foreign direct investment and a need for a well-articulated and coordinated fiscal policy to attract FDI in Nigeria for optimum growth and development.

INTRODUCTION

The use of government spending and income (taxes) to influence economic activity in order to achieve macroeconomic goals is known as fiscal policy. It is concerned with the administrative government's and the ministry of finance's policies and actions that affect government revenues, government expenditures, and federal debt management in order to achieve sustainable growth, price stability, and a healthy balance of payment situation (Iyoha & Oriakhi, 2002). Government expenditure, government revenue, recurrent expenditure, government debts, and tax are all important fiscal policy instruments. Fiscal policy has traditionally been viewed as a tool for demand management and stabilization, as adjustments

in spending and taxation can act as counter-cyclical measures to mitigate the impacts of the business cycle on the economy (CBN, 2013).

Foreign Direct Investment in Nigeria is an investment undertaken by an enterprise that is either wholly or partly foreign owned. The Investment Code that created the Nigerian Investment Promotion Commission (NIPC) (Decree No.16 of 1995) and the Foreign Exchange (Monitoring and Miscellaneous Provision) Decree, also enacted in 1995, gives full backing for FDI in Nigeria (Olukoyo, 2012). Nigeria has a high potential to attract significant foreign direct investment inflow. Most countries strive to attract FDI because of its acknowledged advantages as a tool of economic development. Africa and Nigeria in particular, joined the rest of the world in seeking FDI as evidenced by the formation of the New Partnership for Africa's Development (NEPAD), which has the attraction of foreign investment to Africa as a major component. FDI has a direct impact on host economies, both in developed and developing countries (Louis Kouamé Caningan, 2012). Indeed, FDI can have technological spin-offs, contribute to the formation of human capital, facilitate integration into international trade, foster the creation of a more competitive business climate and this in relation with local enterprises and thus serve their development.

Fiscal policy has possible channels through which they can affect FDI. Investors would always want to associate themselves with a country that have a favourable tax policy and availability of social amenities such as electricity, good road etc. Countries seeking to attract FDI according to Yosra, Anis and Houria, (2013) should create a more favourable climate for Multinational Enterprises (MNCs) through the improvement of political institutions and economic policies that stimulate FDI inflows. As a result of globalization, there has been a flow of FDI. Multinational companies are increasingly looking to invest where the institutional environment is favourable and in host countries with a transparent institutional framework characterized by a coherent fiscal policy. Nigerian government more and more are seeking to attract FDI, and have sought to create a more favourable climate for Multinational Enterprises through the improvement of political institutions and economic policies that stimulate FDI inflows, Agbaeze, et. al (2017). There are several factors that are being addressed such as corruption, political instability, macroeconomic instability that affect the investment climate. Some host countries implement fiscal policy resulting in high tax rates coupled with poor infrastructure. Thus, appropriate fiscal policy such as government capital expenditure, favourable value added tax and company's tax as well as debt to address macroeconomic problem as well as encourage foreign investment in any economy become necessary given that a poorly designed fiscal policy is an indicator of underdeveloped economy. Arguably, this lag in FDI flows to Nigeria relative to other countries of the world emanated from the fiscal instrument.

Governments have introduced various economic reforms in order to attract foreign direct investment in Nigeria. Federal government granted amnesty to the Niger-Delta Militant in order to create conducive environment for the investors to thrive. Also, a wide range of incentives including reduction in bureaucracy in obtaining visa entry to Nigeria by foreign investor was announced, sending top government officials to abroad to campaign for FDI into Nigeria and establishing Nigeria Business Mission abroad entrusted with the task of selling the economic investment climate back at home. Similarly, in the year 2012, Nigeria made concerted effort to attract FDI, Cookey, Otto and Adeneye (2014). The economic reforms introduced were the austerity measures in 1980's, tax incentives such as tax breaks and tax holidays, the structural adjustment programme in 1986, privatization and commercialization of some government parastatal, passage of the Debt Management Act, the passage of Fiscal Responsibility Act 2007 and the Public Procurement Act, all in 2007 (Adeyemi & Odetayo,

2017). All these economic reforms were introduced either to increase revenue (thereby attracting FDI) or to reduce expenditure. Despite all these economic reforms, FDI flows have steadily declined in recent times and country continued to record budget deficit.

Many empirical studies in the literature have examined fiscal policy and foreign direct investment. Most of these studies Norashida, et. al (2019), and Wanjala (2016) used combined variables without tax revenue. This study differs from these previous studies by incorporating tax revenue for fiscal policy as an important incentive to attract and promote FDI in the country. Again, most of the studies like (Ogege & Boloupremo (2020) and Adeyemi & Odetayo (2017) , made use of OLS estimation techniques which is not adequate in generating consistent and robust coefficient estimates about the study variables, thereby providing a gap in the methodology used. This paper adopted Vector Autoregressive (VAR) model, which allows for a more robust co-integration that plays well with small sample sizes. Our results will add to existing knowledge on the effectiveness of fiscal policies for attracting inflow of FDI in Nigeria, which remain scanty. The paper is divided into five parts, introduction, literature review, research methodology, results and discussion while the last part deals with policy implication, conclusion and recommendations.

Research Objectives

To examine the impact of key fiscal policy variables (government capital expenditure, government revenue, government recurrent expenditure, external debt and tax revenue) on foreign direct investment in Nigeria. To examine whether there exists a causal relationship between fiscal policy and foreign direct investment in Nigeria.

Contribution to Knowledge

Most literature that studied the impact of fiscal policy on foreign direct investment such as Norashida, et. al (2019), and Wanjala (2016) found that fiscal policy have positive and significant impact on foreign direct investment. This study will add to literature as it tries to have a deeper insight on the impact of fiscal policy key variables on foreign direct investment using VAR Model and also using tax revenue which is an important key variable to measure fiscal policy which were not used in the previous studies. These will show whether fiscal policy through government capital expenditure, government revenue, government recurrent expenditure, external debt and tax revenue has any impact in attracting foreign direct investment in Nigeria.

REVIEW OF LITERATURE

Fiscal policy and Foreign Direct Investment have inspired a lot of theoretical and empirical effort. This section examines the review of some related literature on Fiscal policy and Foreign Direct Investment in Nigeria.

Conceptual Literature Fiscal Policy

Fiscal policy refers to the means by which a government monitors its revenue and adjusts its expenditure to influence the country's economy. It can be defined as the use of income and expenditure instruments or policies to regulate the economic activities in a country. Fiscal policy plays an important role in determining the stability of an economy because it affects the level of income and employment (Semmler & Zhang, 2004). Fiscal policy sustainability is the ability of government to maintain its expenditure and revenue in the long run without threatening its solvency.

Foreign Direct Investment (FDI)

Babasanya (2018) defined foreign direct investment as an investment into production of goods and services by a citizen of another country, either by buying a company or expanding operations of an existing business in another country. Todaro and Smith (2003) defined Foreign Direct Investments as an overseas investment by private multinational corporations. Foreign direct investment also include opening of a subsidiary, acquiring an existing foreign business, or through a means of merger or joint venture with a foreign company (Aladelusi & Olayiwola, 2021). Foreign Direct Investment represents a veritable source of foreign exchange and technological transfer, especially to a developing economy like Nigeria (Akubueze, 2020). The United Nations defined foreign direct investment (FDI) as investment in enterprise located in one country but effectively controlled by residents of another country (UNCTAD, 2009 cited in Akubueze, 2020).

Theoretical Literature Eclectic paradigm theory

This paper adopts the theory of eclectic paradigm developed by John Dunning (1993). This is among the theories that justify the critical role FDI inflows play in promoting the growth of an economy and the benefits a company stands to gain in undertaking foreign direct investment. The theory combines the main components that are significant to other assumptions of FDI which illustrates the motivation for foreign investment in three main ways, namely, Location-specific advantages (L), Internalization advantages (I), and Ownership-specific advantages (O) ((Dunning, 2001, Aladelusi & Olayiwola, 2021). The ownership advantage allows competition in the market despite the difficulties of being a firm and the main elements include trademark, production techniques and return to scales. The locational advantage focuses on benefits such as raw materials, labor, market size, tax and tariff regulations that makes one country more eye-catching site for FDI relative to other countries.

Moreover, Internalization theory of Eclectic paradigm linked Multinational Enterprises (MNEs) with trade that makes co-opted dealings via FDI more effective. It is about the motivation for transnational companies to embark on FDIs. Internalization advantage involves transaction-costs, and arises when it is cheaper to exploit ownership and location advantages through FDI rather than exporting. With internalization, companies have ample opportunities to fully exploit the ownership advantage which emanate from the know-how of advertising and marketing a commodity. Succinctly, internalization and ownership advantages are investor specific determinants while the location advantage is specific to the host country (Aladelusi & Olayiwola, 2021). The import of this theory is very crucial for this study considering that this study centers on the role fiscal incentives play in attracting FDI inflows into an economy and for that matter the Nigerian economy.

Empirical Literature

Evans, et. al (2022) assessed the impact of fiscal policy on foreign direct investment in Kenya. Using a time series secondary data from the period of 1987 to 2017, the study employed Descriptive Statistics methodology. FDI is the dependent variable while fiscal policy with external public debt, domestic debt, infrastructure and tax were the explanatory variables. The result shows that government expenditure on infrastructure, tax and FDI are positively and significantly related, external debt and FDI are negatively and significantly related while Domestic debt and FDI are negatively and significantly related. The study recommended that to attract more FDI investment, Kenyan Government should implement

trade-balanced actions, limiting corruption, implementing income-collection tax policies and promoting international trade in order to ensure competitiveness in Kenyan products.

Niti (2014) carried out a study in India with the aim of investigating the influence of fiscal policy on the inflows of FDI. The work considers the FDI inflows' determinants with reference to the components of fiscal policy (capital expenditure and tax treaties). A regression model was employed to estimate the panel equation and fixed effects model approach was adopted. With respect to the data analysis, openness to FDI and infrastructure were indicated as significant determinants of FDI while the variables of the fiscal policy adopted were not significant. It was concluded that while a competitive fiscal policy enhances business operations, it may not be considered as a prime factor in investment decisions.

Agbaeze, et. al (2017) investigated the impact of Fiscal policy on FDI in Nigeria using a secondary data spanning from 2000 to 2014. Nigeria's gross domestic product, foreign direct investment, government revenue, government expenditure, balance of payment and government total debt are the independent variables while FDI is the dependent variable. The regression analysis technique was used to test the hypotheses. The study founded that coefficient of determination R² explained a total variation of 93% (percent) of the dependent variable (FDI) which means that measures of fiscal policy instability are important predictor of FDI. The study revealed that fiscal policy measures of the federal government have not significantly improved FDI. The study concluded that Fiscal Policy instability on FDI could be as a result of the insufficient domestic investment to accelerate growth. The study recommended that government should ensure sound and stable macroeconomic environment that will attract investors.

Wanjala (2016) examined the influence of fiscal policy factors on the inflows of FDI in Kenya for the period of 2000 to 2014. The variables used in this work include government expenditure on infrastructure, BOP (current account deficit) and total external government debt. The secondary data employed were analyzed using the Bivariate Linear Regression technique. The finding shows that government expenditure on infrastructure significantly and positively influences the inflows of FDI. The current account deficit on BOP was revealed to have adverse and insignificant association with the inflows of FDI and finally, it was indicated that external government debt is adversely and insignificantly associated with the inflows of FDI to Kenya.

Norashida, et. al (2019) analyzed the impact of government fiscal policy on Foreign direct investment in seven countries which include Indonesia, Malaysia, Thailand, Singapore, Philippine, China and India using a panel data spanning from 1982 to 2016. Pooled Mean Group were employed to examine the association between variables adopting capital, market size, infrastructure and macroeconomic stability as control variables. Result showed that government expenditure significantly and positively contributes to the inflows of FDI in the long run.

Abille et al. (2020) attempt to explore the function of fiscal incentives in attracting foreign direct investment inflows into Ghana by using data from 1975 to 2017. This was done by applying the distributed lag (ARDL) bounds test technique, which showed that corporate tax rates have a significant negative impact on FDI inflows into the Ghanaian economy in the long run. They recommended that the Ghana Revenue Service redesign the corporate tax administration in the country to control policy lapses.

Magdalena and Elena (2018) appraised the influence of fiscal and monetary policies on the FDI attraction in Romania using time series data spanning from 2000–2010. In response to empirical literature and analysis, some dimensions of macroeconomic policy that are short-term in nature were investigated within the context of crisis, because economic recovery and growth facilitated by the FDI inflows. The outcomes of the empirical analysis revealed that FDI inflows are attracted by monetary factors such as inflation and rates of interest while the fiscal factors especially direct taxes appear to be less significant in the short-term, but play an important role in the long-term.

Ogege and Boloupremo, (2020) examined the Influence of Government Fiscal Policy on Foreign Direct Investment in Nigerian Economy, pre and post military rule. The study used time series data spanning from 1981-1999 (military era) and 2000-2018 (post-military era) and employed Augmented Dickey Fuller test (ADF) to assess the stationarity and sequence of integration of the variables. The Ordinary Least Square technique and correlation analysis were deployed to test the long-run association that exists among the variables. The result found that inflation has a significant positive influence on FDI in the military era in Nigeria; government expenditure is positively and significantly associated with FDI for both military and post military era; government domestic debt is adversely and insignificantly associated with FDI for both military and the post military era while foreign exchange rate is positively and significantly associated with FDI in the military and adversely associated with FDI in post-military era.

Sadibo and Adedeji (2020) examined the effect of fiscal policy on foreign direct investment as well as the impact of Foreign Direct Investment on economic growth in Nigeria over the period of 1981-2017. Secondary data were sourced from Central Bank of Nigeria Statistical Bulletin and Annual Reports. The study employed VECM estimation technique and the findings showed that corporate income tax as an indicator to fiscal policy has a positive effect on foreign direct investment and government expenditure has a negative effect on foreign direct investment. Also, foreign direct investment has a significant impact on economic growth and corporate income tax and interest rate and exchange rate have a negative and significant relationship on economic growth. The paper recommended that the government should ensure a strict fiscal policy discipline and also government need to demonstrate high level of commitment to selectively choosing investors so as to favor the economy and not investor's selfish interest as this will promote economic growth.

Dornean and Oanea (2014) analyzed the impact of fiscal policy on FDI on the context of crisis in Central and Eastern European Countries. Government revenue and government expenditure were used as proxies to fiscal policy and the study employed a regression model and panel data methodology. The result showed that financial crisis affect the magnitude of FDI response to financial policy, while in normal times, FDI responds to only at government expenditure changes.

METHODOLOGY AND PROCEDURES

Theoretical Framework

The model for this study is in line with the empirical study of Agbaeze, et. Al (2017) with modification. This study included Tax revenue to see the effect of fiscal policy on foreign direct investment in Nigeria. The model was formulated and analyzed using econometric tools of Vector Autoregressive (VAR) model, unit root test, cointegration and causality tests. The study employed five explanatory variables namely (government capital expenditure (GCEXP), government revenue (GTREV), recurrent expenditure (REXP), external debt

(EXD) and TAX revenue and foreign direct investment (FDI) is the dependent variable. The model for the impact of fiscal policy on foreign direct investment in Nigeria is stated as follows:

Model Specification

The functional specifications of the models are:

$$FDI = f(FDI, GCEXP, GTREV, REXP, EXD, TAX) \dots\dots\dots(1)$$

$$GCEXP = f(GCEXP, FDI, GTREV, REXP, EXD, TAX) \dots\dots\dots(2)$$

$$GTREV = f(GTREV, FDI, GCEXP, REXP, EXD, TAX) \dots\dots\dots(3)$$

$$REXP = f(REXP, FDI, GCEXP, GTREV, EXD, TAX) \dots\dots\dots(4)$$

$$EXD = f(EXD, FDI, GCEXP, GTREV, REXP, TAX) \dots\dots\dots(5)$$

$$TAX = f(TAX, FDI, GCEXP, GTREV, REXP, EXD) \dots\dots\dots(6)$$

A VAR model describing the relationship between fiscal policy and foreign direct investment in Nigeria may be specified as follows:

$$\begin{aligned} \text{LNFDI}_t &= \beta_{0t} + \sum_{i=1}^k \beta_{1j} \text{FDI}_{t-j} + \sum_{i=1}^k \beta_{2j} \text{GCEXP}_{t-j} + \sum_{i=1}^k \beta_{3j} \text{GTREV}_{t-j} + \\ &\quad \sum_{i=1}^k \beta_{4j} \text{REXP}_{t-j} + \sum_{i=1}^k \beta_{5j} \text{EXD}_{t-j} + \sum_{i=1}^k \beta_{6j} \text{TAX}_{t-j} + \mu_t \\ \text{LNGCEXP}_{2t} &= \beta_{02t} + \sum_{i=1}^k \beta_{12j} \text{FDI}_{t-j} + \sum_{i=1}^k \beta_{22j} \text{GCEXP}_{t-j} + \sum_{i=1}^k \beta_{32j} \text{GTREV}_{t-j} + \\ &\quad \sum_{i=1}^k \beta_{42j} \text{REXP}_{t-j} + \sum_{i=1}^k \beta_{52j} \text{EXD}_{t-j} + \sum_{i=1}^k \beta_{62j} \text{TAX}_{t-j} + \mu_t \\ \text{LNGTREV}_{3t} &= \beta_{03t} + \sum_{i=1}^k \beta_{13j} \text{FDI}_{t-j} + \sum_{i=1}^k \beta_{23j} \text{GCEXP}_{t-j} + \sum_{i=1}^k \beta_{33j} \text{GTREV}_{t-j} + \\ &\quad \sum_{i=1}^k \beta_{43j} \text{REXP}_{t-j} + \sum_{i=1}^k \beta_{53j} \text{EXD}_{t-j} + \sum_{i=1}^k \beta_{63j} \text{TAX}_{t-j} + \mu_t \\ \text{LNREXP}_{4t} &= \beta_{04t} + \sum_{i=1}^k \beta_{14j} \text{FDI}_{t-j} + \sum_{i=1}^k \beta_{24j} \text{GCEXP}_{t-j} + \sum_{i=1}^k \beta_{34j} \text{GTREV}_{t-j} + \\ &\quad \sum_{i=1}^k \beta_{44j} \text{REXP}_{t-j} + \sum_{i=1}^k \beta_{54j} \text{EXD}_{t-j} + \sum_{i=1}^k \beta_{64j} \text{TAX}_{t-j} + \mu_t \\ \text{LNEXD}_{5t} &= \beta_{05t} + \sum_{i=1}^k \beta_{15j} \text{FDI}_{t-j} + \sum_{i=1}^k \beta_{25j} \text{GCEXP}_{t-j} + \sum_{i=1}^k \beta_{35j} \text{GTREV}_{t-j} + \\ &\quad \sum_{i=1}^k \beta_{45j} \text{REXP}_{t-j} + \sum_{i=1}^k \beta_{55j} \text{EXD}_{t-j} + \sum_{i=1}^k \beta_{65j} \text{TAX}_{t-j} + \mu_t \\ \text{LNTAX}_{6t} &= \beta_{06t} + \sum_{i=1}^k \beta_{16j} \text{FDI}_{t-j} + \sum_{i=1}^k \beta_{26j} \text{GCEXP}_{t-j} + \sum_{i=1}^k \beta_{36j} \text{GTREV}_{t-j} + \\ &\quad \sum_{i=1}^k \beta_{46j} \text{REXP}_{t-j} + \sum_{i=1}^k \beta_{56j} \text{EXD}_{t-j} + \sum_{i=1}^k \beta_{66j} \text{TAX}_{t-j} + \mu_t \end{aligned}$$

Where:

FDI = Foreign Direct Investment, GCEXP = Government Capital Expenditure, GTREV = Government Revenue, REXP = Recurrent Expenditure, EXD = External Debt, TAX = Tax
 α = The intercept which shows the degree of drift in the parameters, U_t = Error Term. The data set was converted to log form in order to bring them into uniformity before the estimation. The VAR model is specified as:

$$\Delta \text{FDI}_{t-j} = \beta_0 + \beta_1 \text{GCEXP}_{t-j} + \beta_2 \text{GTREV}_{t-j} + \beta_3 \text{REXP}_{t-j} + \beta_4 \text{EXD}_{t-j} + \beta_5 \text{TAX}_{t-j} + \delta_1 \text{VAR}_{-1} + \mu_t$$

Where: VAR_{-1} is the vector auto regression term, β_t captures the short-run impact while δ_1 captures the long-run impact.

Granger Causality Test

The Causality test is useful to check for the direction of causality between two variables. It is used to test for a causal relationship between fiscal policy indicators lead to foreign direct investment or whether foreign direct investment lead fiscal policy in Nigeria using Granger causality test. The Decision rule is: if the p-value is below 5% critical value, we reject the null hypothesis that there is no granger causality; otherwise do not reject the null hypothesis.

Sources of Data

This study employed Secondary data from CBN Statistical Bulletin and annual report from the period of 1985 to 2020.

RESULTS AND DISCUSSION

Multicollinearity Test

A correlation test was carried out to establish the existence of multicollinearity among the variables. For the variables under consideration, the values obtained are as follows:

Table 1: Result of Correlation Matrix

	FDI	GCEXP	GTREV	REXP	TAX	EXD
FDI	1.000000	0.300154	0.623039	0.219913	0.271631	-0.307892
GCEXP	0.300154	1.000000	0.791258	0.906139	0.886052	0.592353
GTREV	0.623039	0.791258	1.000000	0.817840	0.850757	0.312800
REXP	0.219913	0.906139	0.817840	1.000000	0.988232	0.715442
TAX	0.271631	0.886052	0.850757	0.988232	1.000000	0.638860
EXD	-0.307892	0.592353	0.312800	0.715442	0.638860	1.000000

Source: Author's compilation from Eview

The result above shows that four of our focal variables, GCEXP, GTREV, REXP and TAX have positive relationships with the FDI. The relationships are actually strong at 30%, 62%, 21%, and 27% respectively, while EXD has a negative relationship with FDI at (-30 %).

Augmented Dickey-Fuller (ADF) Unit Root Test Results

In literature, most time series variables are non-stationary and using non-stationary variables in the model might lead to spurious regression (Granger 1969). Using the Augmented Dickey Fuller (ADF) test for the unit root test, the result in table 2 shows thus:

Table 2: Summary of Unit Root Test

Variable	ADF Statistics	5% Critical Value	Probability	Order of Integration
FDI	-6.910763	-2.951125	0.0000	1(1)
GCEXP	-6.862133	-3.595026	0.0000	1(1)
GTREV	-5.495998	-2.951125	0.0001	1(1)
REXP	-3.763371	-2.963972	0.0000	1(0)
TAX	-3.808555	-3.658446	0.0378	1(1)
EXD	-3.685987	-2.948404	1.0000	1(0)

Source: Author's compilation from Eview

The stationarity test result indicates FDI, GCEXP, GTREV and TAX are stationary and integrated of order one at 5% level of significance, while REXP and EXD are stationary and integrated of order zero at 5% level of significance. A cointegration test is therefore, conducted.

Lag Selection Test

The result of lag selection test presented in table 3 indicates lag 2 as being selected in LR, FPE, AIC SC HQ criterion respectively, hence, lag 2 is selected for the regression estimation.

Table 3: Summary of VAR lag order Selection result

Endogenous variables: FDI GOVCAPEXP GOVTREV RECUREXP TAX EXDEBT
Included observations: 25

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1523.737	NA	5.67e+45	122.3790	122.6715	122.4601
1	-1383.418	202.0592	1.48e+42	114.0334	116.0811	114.6014
2	-1324.510	56.55211*	4.24e+41*	112.2008*	116.0037*	113.2555*

*indicates lag order selected by the criterion

Source: Author's computation from Eviews

Johansen Test of Cointegration

To establish whether long-run relationship exist among the variables or not, cointegration tests are conducted by using the multivariate procedure developed by Johansen (1988) and Johansen and Juselius (1990). It offers two tests, the trace test and the Eigen value test, with a view to identify the number of cointegrating relationships. The hypothesis to be tested is:

$H_0: \phi = 0$ (the variables are not co-integrated)

$H_1: \phi < 0$ (the variables are co-integrated)

The results of the conducted Johansen tests for co-integration amongst the variables is specifies in table 4a and 4b below:

Table 4a: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.897680	149.5572	95.75366	0.0000
At most 1 *	0.796145	92.56604	69.81889	0.0003
At most 2 *	0.686470	52.80737	47.85613	0.0159
At most 3	0.478513	23.81084	29.79707	0.2085
At most 4	0.211946	7.534092	15.49471	0.5165
At most 5	0.061220	1.579363	3.841466	0.2089

The result of the unrestricted cointegration rank test as summarized in table 4a shows that there are at least 3 cointegrating equations at the 0.05 significance level in the trace statistic, therefore there is a long- run relationship between the dependent and independent variables.

Table 4b: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.897680	56.99121	40.07757	0.0003
At most 1 *	0.796145	39.75867	33.87687	0.0089
At most 2 *	0.686470	28.99653	27.58434	0.0328

At most 3	0.478513	16.27675	21.13162	0.2091
At most 4	0.211946	5.954730	14.26460	0.6190
At most 5	0.061220	1.579363	3.841466	0.2089

The result as summarized in Table 4b above shows that there is at least three cointegrating equation in the Max-Eigen statistic. Therefore, in conclusion the result shows that a long-run relationship exists among the variables. Having established that the variables are cointegrated, then we can run a VAR Model.

VAR Estimates

The Table 5 below shows an econometric result of the vector autoregressive model adopted and the result shows that FDI is not statistically significant in both the current year (-1) and the previous year (-2). The estimate of GCEXP in the current year is -0.325757, this implies an inverse relationship between government capital expenditure (GCEXP) and foreign direct investment (FDI). A unit increase in government capital expenditure will result in about 0.325unit decrease in foreign direct investment, all things being equal. In lag 2, GCEXP has a positive coefficient of 0.330575. This also implies that a unit increase in GCEXP will cause a 0.330unit increase in foreign direct investment. This relationship is not statistically significant. The estimates of government revenue (GTREV) in both lags 1 and 2 are 0.451064 and 1.245420 respectively. This indicates that there is a direct relationship between government revenue (GTREV) and foreign direct investment (FDI). This means that a unit increase in government revenue (GTREV) for lag 1 and lag 2 will be about 0.451unit and 1.245unit increase respectively in foreign direct investment, *ceteris paribus*.

Moreover, the estimated value of REXP which is 1.762805 in lag 1 and -1.172163 in lag 2, implies that there exists a direct relationship between REXP and FDI in lag 1 and inverse relationship between them in lag 2. That is, a relative change (increase) in REXP shall result in about 1.762unit increase in lag 1 or 1.172unit decrease in lag 2 in FDI, all things being equal. Considering the estimated value of external debt (EXD) which is -0.067490 in lag 1 and lag 2 is -0.077761 there exist a correspondent inverse relationship between EXD and FDI. This further implies that a relative change (increase) in external debt (EXD) will account for a 0.067unit decrease (lag 1) and 0.077unit decrease (lag 2) in foreign direct investment (FDI), all things being equal. These inverse relationships are not statistically significant.

Table 5: Summary of VAR Results

Variables	Coefficient	Std. Error	T-Statistic	Prob
C	6.421138	9.796468	0.655454	0.5143
LNFDI(-1)	0.082830	0.345028	0.240068	0.8110
LNFDI(-2)	0.136510	0.321828	0.424171	0.6727
LNGCEXP(-1)	0.325757	0.566577	-0.574957	0.5671
LNGCEXP(-2)	0.330575	0.415506	0.795596	0.4289
LNGTREV(-1)	0.451064	0.637440	0.707617	0.4815
LNGTREV(-2)	1.245420	0.719805	1.730217	0.0879
LNREXP(-1)	1.762805	1.282706	1.374286	0.1736
LNREXP(-2)	-1.172163	1.180524	-0.992918	0.3241
LNEXD(-1)	-0.067490	0.358841	-0.188078	0.8513
LNEXD(-2)	-0.077761	0.382754	-0.203162	0.8396

LNTAX(-1)	-0.319554	1.442909	-0.221465	0.8254
LNTAX(-2)	-1.122582	1.081265	-1.038212	0.3026

R-squared	0.857383	Mean dependent var	21.63222
Adjusted R-squared	0.714766	S.D. dependent var	0.973247
S.E. of regression	0.519785	Akaike AIC	1.835226
T.Sum squared resid	3.242112	Schwarz SC	2.469042
Log likelihood	96.93930	Durbin-Watson stat	2.241042
F-statistic	6.011797		

Source: Author's computation from Eviews

Finally, the estimate of TAX is -0.319554 (lag 1) and -1.122582 in lag 2. This equally shows a correspondent inverse relationship between TAX and FDI. It further implies that a relative unit change (increase) in TAX rate will account for a 0.319unit decrease and 1.122unit decrease in FDI for lag 1 and lag2 respectively. The R-squared which is the coefficient of determination (R^2) in this result is 85% and this shows that GCEXP, GTREV, REXP, TAX and EXD has 85% explanatory power on FDI which is our dependent variable. This therefore, means that the model is good and can be used for economic decision. While the adjusted R- squared value 0.7147 implies that the independent variables can explain the changes in the dependent variable by 71.47% while 28.53% of the changes can be explained by other variables not captured in the model (represented by μ). This implies that all the independent variable namely, GCEXP, GTREV, REXP, TAX and EXD explains about 71% variations noticed in the Foreign Direct Investment.

Granger Causality test

The result of the Granger causality test is presented in table 6 below:

Table 6: Causality Test Lag 2:

Null Hypothesis:	Obs	F-Statistic	Prob
LNGCEXP does not Granger Cause LNFDI	34	0.26007	0.7728
LNFDI does not Granger Cause LNGCEXP		0.97536	0.3891
LNGTREV does not Granger Cause LNFDI	34	0.66711	0.5209
LNFDI does not Granger Cause LNGTREV		0.11469	0.8920
LNREXP does not Granger Cause LNFDI	34	1.72148	0.1966
LNFDI does not Granger Cause LNREXP		1.52684	0.2342
LNEXD does not Granger Cause LNFDI	34	0.29134	0.7494
LNFDI does not Granger Cause LNEXD		1.41086	0.2602
LNTAX does not Granger Cause LNFDI	25	0.15652	0.8562
LNFDI does not Granger Cause LNTAX		0.24085	0.7882

From our result above, all the P-values is greater than critical value of 0.05. There is no causality run from the independent variables (GCEXP, GTREV, REXP, EXD and TAX) to dependent variable (FDI) or from FDI to the independent variables at lag 2. Therefore, we accept the null hypothesis.

CONCLUSION AND SUGGESTION

This study examined the impact of fiscal policy on foreign direct investment in Nigeria. Secondary data from CBN statistical bulletin and National Bureau of Statistics spanning 1985 to 2020 and econometrics methods of unit root test, cointegration test and Vector Autoregressive (VAR) Model were used. The results of the unit root test showed that FDI,

government capital expenditure, government revenue and tax were stationary at order one (1), while recurrent expenditure and external debt were stationary at order zero (0). Also there exists co-integration among all the variables in the model. The findings showed that there is no significant relationship between fiscal policy and FDI in Nigeria. Therefore, the expected transformations of the economy through the fiscal policy indicators under the period of the study covered are not yet optimally realized. The study concluded that there is a need for a well-articulated and coordinated fiscal policy to attract FDI in Nigeria for optimum growth and development. Therefore, the study recommend that Nigerian government should improve the investment climate for foreign investors and create enabling environment through favorable tax policy, improved capital expenditure on power supply and security of lives and properties for foreign investment to thrive. Finally, before external debt is obtained, government should carry out feasibility studies to ascertain the economic advantage or disadvantage of such loans.

Conflict of interest

The authors of this article declare no conflict of interest.

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