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IMPACT OF FOREIGN DIRECT INVESTMENT FROM MULTINATIONAL CORPORATIONS ON ECONOMIC GROWTH IN NIGERIA (2015-2022): EVIDENCE FROM AUTOREGRESSIVE DISTRIBUTED LAG AND VECTOR ERROR MODELS

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ABSTRACT: *The paper provides a comprehensive cointegration analysis of the FDI inflows and economic growth in Nigeria by assessing the economic relationship between the FDI inflows, the real GDP, Inflation rate and Unemployment rate between the periods 2015 to 2022 (representing the administration of Former President Buhari). All the utilized data were sourced from Central Bank of Nigeria (CBN) Statistical Annual Bulletin except for Unemployment rate which was sourced from National Bureau of Statistics (NBS) Labor Force Report 2022. The data consisted of time series variables, namely: FDI inflows, real GDP, Inflation Rate and Unemployment Rate of Nigeria. The data were quarterly time series and covered the periods of 2015 to 2022. Different analysis methods such as descriptive analysis (i.e. time series plots and summary statistics), the Mann-Kendall trend test, Johansen cointegration test, Augmented Dickey–Fuller (ADF) stationarity test, Granger causality test, autoregressive distributed lag (ARDL) model and variance decomposition analysis (VDA) were employed. The empirical findings from the Mann-Kendall test results revealed a significant decreasing trend in the FDI inflows. The findings infer MNCs investment in the country significantly dropped over the period. Furthermore, empirical findings from the Johansen cointegration results affirmed significant cointegration (i.e. causal relationship) between at most three (3) of the considered variables. Specifically, the Granger Causality results found the FDI inflows to significantly* granger-cause (i.e. *economically impact) the real GDP and vice versa, the unemployment rate to significantly granger-cause the RGDP and the FDI inflow, as well as FDI inflows to significantly granger-cause inflation rate. Consequently, empirical findings from the ARDL and VDA analysis significantly established a long-run causal relationship between FDI inflows and RGDP (the economy growth). Explicitly, the results found the FDI to significantly negatively impact the RGDP both in the short-run and long-run. As well as, the RGDP was found to significantly negatively impact the FDI inflow both in short-run and long-run. Thus, the study concludes FDI inflows in Nigeria have been poor and not been encouraging over the years and consequently the FDI had demonstrated to significantly and negatively impact the economic growth of the country in short-run and long-run. The study therefore recommends that the current government of President Bola Ahmed Tinubu should direct more investment into agricultural production, build road networks as well as improve transportation system in order to ensure significant drop in inflation in order to boost the productive capacity of MNCs investors, so that more direct foreign investors can come into the country.*

KEYWORDS: FDI, RGDP, Cointegration, Granger Causality, ARDL, VECM

JEL Classifications: B23, C1, C13, C52

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INTRODUCTION

Debatably, multinational corporations or companies (MNCs) are established among the vital group of actors in the global knowledge-based economy. Ever since the mid-1970s, MNCs have remained focused on expanding the business/industrial activities across the world via the aid of foreign direct investment (FDI) inflow. For example, the famous British East India Company (BEIC) between 1599 and1858, the Royal African Co and Hudson's Bay Co. These companies were established by British merchants with a main goal of engaging in business with America and Africa (Akanegbu, 2014). These companies were the indications of the present-day multinational corporations or companies. In the intervening time, since the Second World War, the scope and dimensions of MNCs has advanced. Indeed, the MNCs' dimensions have been developing and expanding with notable swiftness ever since the advent of deregulation during the 1970s (Nwanganga & Anaba, 2020). Based on the aforementioned, MNCs are business-organizations with their business activities or operations in two (2) or more nations by which means, wealth is created and conveyed in different nations and yield fresh engagements (i.e. employment) directly through crowding-in effects (Tirimba & Macharia, 2014). Therefore, the MNCs' economic role is to channel physical and fiscal capital to nations with wealth deficiencies.

Moreover, one major channel through which the MNCs impact the economic development of a nation is FDI. This is mainly because of their capacities in transferring technological material to their associates, with significant likelihood of 'leaking' into the host-economy (Nwanganga & Anaba 2020). FDI, according to Sani and Oyedokun (2022), is therefore all-encompassing and significant investments made by a MNC or an investor or group of investors into a concern, which is habitually described as purchase of interest(s) in a company by a corporation of an investor positioned outside its borders (Charles & Peter, 2013). Most FDI are holdings or affiliates of MNCs with foreign stakeholders as the parent company of the corporations. Thus, in relation to economic development, one key benefit of FDI is the improvement of the recipient economy (Sani & Oyedokun, 2022). For instance, an emerging economy like Nigeria, FDI aids as a vital means for strengthening her economy since it is one of the sources of funding and capital formation.

Furthermore, a nation's ability to sustain economic growth is a function of the endogenous and exogenous factors (Nwanganga & Anaba, 2020). The endogenous factors such as inflation rate, exchange rate (i.e country's currency power), domestic capital stock, and export rate, as well as the exogenous factors which include external debt rate and FDI play significant roles in every nation's economic growth. Accordingly, Taglan and Neir (2014) perceived that every nation's rate of economic growth by and large rests on the effectiveness of the endogenous factors. Awkwardly, in Nigeria, enormous gaps and deficiency exist on the inside in relation to foreign exchange, capital, technology, or government revenue to drive the country's economic growth target (Sani & Oyedokun, 2022). Also, the country's porous border conditions for regulation of foreign capital entry and the levied restrictions on profit remittance along with capital return are dysfunctional to the economic growth of the country (Lekan & Eniola, 2018). Likewise, Galatti (2019) perceived the introduction of unbefitting smuggled products and technology in Nigeria due to corruption, exploitation and motivating class-conflict hence the presence of negative influence of FDI in the country. Additionally, while scrutinizing the influence of FDI to the nations' economic growth, Kadii and Egbu (2020) identified the influence of MNCs via FDI as oligopolistic in nature with their asset descended in the direction

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of nations through the premier fiscal proceeds and investments' security, of which the business environments of Nigeria has suggestively dropped-off from the investment's indices. This seems worrisome, that in the face of hosting MNCs long before independence and beholding the activities of the MNCs developing over time, yet the country still struggles to grow socioeconomically. Thus, it is against the above mentioned contradictory views, this paper assesses the impact of FDI inflows (which are majorly from MNCs) on the Nigeria economic growth during the preceding government administration (2015–2022).

This paper evaluated the impact of FDI inflows from MNCs on the economic growth of Nigeria within the period 2015-2022. Explicitly, the paper assessed the trend of FDI inflows into Nigeria and the considered economic growth indicators, namely: the real Gross Domestic Product (GDP), Unemployment Rate, and Inflation Rate, and further examined the causal relationship (in the short-run and/or long-run) between the FDI inflows and the economic growth.

The remaining parts of this study are well-ordered as follows. Section 2 presents a brief depiction of empirical literatures, Section 3 discusses the adopted research methodologies. The data analysis and results are presented and discussed in Section 4 while the last Section presents the paper conclusion and policy recommendations.

EMPIRICAL LITERATURE

It is apparent that several studies have examined the nexus between FDI and economic development in the country. Awe (2013) investigated the influence of FDI on Nigeria economic growth. Awe's study specifically examined the impact of FDI on the country's economic growth between the period 1976 and 2006. Awe utilized data extracted from the Central Bank of Nigeria statistical bulletin and financial reports. Data extracted were analyzed via 2-Stage Least Square (SLS) approach. Awe (2013) established an undesirable link in the country's economy proxy by the FDI and GDP. Subsequently, Asiedu (2006) explored the determining factor of FDI in Africa. Asiedu deduced that inflation and the effective legal system support FDI however corruption and the political instability in the continent has had an overall negative effect on profitability. While investigating the performance, rise and prospect of FDI in Africa, Asiedu found that the region needs to pay more attention to the improvement of relationships between the existing investors. The study further recommended the region to offer incentives to the investors, as some features on the continent (such as corruption) were a disincentive to the inflow of MNCs' investments in Africa.

Similar to Awe (2013), Ayanwale (2007) utilized an augmented growth model using OLS and two-SLS methods to empirically examine the association between non-extractive FDI and economic growth in Nigeria. The results suggested that the determining factors of FDI in the country were market size, infrastructure development and stable macroeconomic policy. Contrarily openness to trade and human capital availability were not significant factors when inducing MNC-FDI. Also, the study found FDI in Nigeria contributed to economic growth, although the overall developmental effects were not significant. In addition, Dinda (2009) employed cointegration techniques to examine the relationship between FDI and resource flow-time, it also adopted a Vector Error Correction model (VECM) with or without exogenous factor to find the long-run relation of the variables. Dinda (2009) revealed that the market-size

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proxy by the GDP was not significant during the period regardless of its importance as part of the main determinants of FDI inflow in most countries. The study further found that the bulk of FDI inflow into the country were mostly resources such as oil and gas, and agriculture, while natural resources, inflation and exchange rate were found significant.

Moreover, Akiri *et al.* (2016) presented an empirical study of FDI and economic growth in Nigeria. They extracted data from the CBN annual reports from 1981 to 2014. The study utilized VECM analysis technique, while the results established a significant helpful influence (i.e. positive) of FDI on Nigeria's economic growth. Similarly, Emmanuel (2016) studied the impact of FDI on Nigeria economy growth using data spanning from 1981 to 2015. Emmanuel aimed to explore the association between economic growth and inflow of FDI by the use of data extracted from CBN annual reports. The empirical results from the adopted multiple regression estimation methods revealed a statistically significant causal relationship. In the same year, Omotola and Olubumi (2016) examined the role of FDI in Nigeria's pursuit for economic growth and development. Their major objective was to investigate the FDI impact in supporting production vis-à-vis labor efficiency as well as their productivity. They utilized data primarily sourced from 120 staff of six MNCs in the country, which were analyzed using a descriptive method. They inferred a positive impact from FDI on the labor efficiency and productivity promotion.

More recently, in line with the timeframe of this study (i.e. 2015-2022), Chamberlin and Okon (2017) inspected determining FDI factors in Nigeria adopting the Error Correction approach i.e. the ECM. Empirical evidence from the study analysis showed that security, exchange rate and market size as FDI primary determinants. Also, Tuileh and Osadaru (2017) investigated association amongst the external borrowing, the oil exports, FDI and economic growth in Nigeria from 2010 to 2015. Data were extracted from the CBN statistical bulletin and investigated using the multiple regression approach. The study's empirical findings inferred that the external borrowing and FDI have negatively impacted GDP. In the same vein, Moledu and Odawna (2017) examined the FDI influence on the country's economic growth. The study data were extracted from the CBN statistical bulletin then analyzed using multiple regression techniques. The study's results inferred that the FDI had a negative influence on the economic growth of the country. On the other hand, the degree to which economic growth in emerging countries were swayed or affected by the FDI inflows from MNCs was the center focus of Diafor and Ermafla (2017). They utilized data that were extracted from World Bank reports on developing nations between the period 2000 and 2016. The study result using the OLS methodology signposted a positive inter-relationship amidst the growth of economy and FDI in the considered emerging nations. Subsequently, Deulo (2017) investigated the FDI impact on the countries' growth of developing. The study was an empirical research which centered on the technology and knowledge transfer influence by means of the FDI. The empirical results revealed that the benefits of the FDI impact rest on the recipient countries' business climate and openness of the markets.

Moreover, Okolie and Lambo (2018) explored the FDI impact on the Nigerian economy. Their utilized data were collected from the annual bulletin of NBS. They as well adopted the OLS methodology. The study findings concluded an undesirable impact of foreign investment on the country's economic growth. Subsequently, Sokang (2018) presented a research paper assessing the FDI impact on Cambodia's economic growth. The study collected data between the periods 2006 to 2016, extracted from reports of the World Bank. The study adopted

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correlation analysis and multiple regression analysis approaches. The analysis results signposted an encouraging (i.e. positive) association between FDI and the country's economic growth. Also, Anetor (2019) carried out an examination of effects of economic growth of the capital inflow from privates using data extracted from NBS reports. The data was analyzed using the structural Vector Autoregression (sVAR) approach. The results of the sVAR model revealed that shocks from FDI and portfolio investment inflows had a significant positive and direct association with Nigeria's economic growth. It is therefore evident that on different and incoherent time occasions FDI had negatively and positively impacted the economic growth of Nigeria.

Furthermore, Trang *et al.* (2019) studied the relationship between FDI inflows and developing nations' economic growths both in the short-run and long-run. The utilized data were extracted from the World Bank reports on emerging countries (2000 to 2014). The study utilized an improved OLS and VECM approaches to investigate the influence of FDI both in short-run and long-run. The analysis outcomes showed that FDI fuels growing in the long-run with adverse effects on the economy growth in the short-run. In the same vein, Onemah and Tajn (2019) assessed the role of FDI inflows in the economy of Nigeria. They focused on a fact-finding study that reviewed appropriate literature. The indications from the reviewed studies submitted that the influence of FDI inflow in the country rests on suitable trading strategies and the country's operational environment.

Recently, Oyegoke *et al.* (2021) investigated the effect of the FDI inflow on Nigeria's economic growth between 1970 and 2019. They aimed to ascertain the FDI-inflow's effects on the country as well as the investors. The utilized data were extracted from the statistical bulletin of the World Bank. The analysis results of the adopted regression analysis approach suggested a positive impact of FDI inflow on the country's economic growth. Also, Sani and Oyedokun (2022) studied the FDI impact on Nigeria's economic growth between the periods 2010 to 2021. The study aimed to examine the FDI effects vis-à-vis some macro-economic variables. The results indicated that while domestic investment, export and exchange rate had significant impact on GDP, FDI, external debt and inflation rate depicted a negative significant impact on the GDP. Similarly, recent studies have shown FDI inflows to positively and negatively influence the economic growth of Nigeria.

It is evident several studies have explored the impact of FDI on the economic growth in Nigeria. Despite the growing empirical studies on the relationship between FDI and Nigeria economy growth, there is no empirical study that categorically assessed the impact of FDI inflow in Nigeria vis-à-vis the influence of the country's macroeconomic variables namely real GDP, Unemployment Rate, and Inflation Rate with specific reference to last administration years (2015-2019). There is a huge gap and deficiency of studies on the internally existing relationship between real GDP, inflation rate, unemployment rate as well as foreign direct investment, to drive the economic growth of the nation. Thus, this research paper seeks to fill this lacuna in the literature.

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DATA AND METHODOLOGY

Data

This research paper utilized secondary sourced data. The data consisted of time series variables which include the MNCs FDI inflows, real GDP, Inflation Rate and Unemployment Rate of Nigeria. The data are quarterly time series and cover the periods of 2015 to 2022. Variables such as MNCs FDI inflows, real GDP and Inflation rate were extracted from Central Bank of Nigeria (CBN) Statistical Annual Bulletin while Unemployment rate variable was sourced from National Bureau of Statistics (NBS) Labor Force Report 2022. The analyses were carried out using Excel and EViews analysis packages.

Methodology

Autoregressive Distributed Lagged (ARDL) Model

The Autoregressive Distributed Lag (ARDL) was adopted in this paper to assess the likelihood of short-run or long-run cointegration among the time series variables. ARDL approach is a standard ordinary least square (OLS) regression model, which incorporates both lags of output and input variables as its regressors (Erdoğdu and Çiçek 2017). The elementary form of ARDL(p, q) equation is given as;

$$Y_t = \beta_0 + \beta_1 Y_{t-1} + \cdots + \beta_p Y_{t-p} + \alpha_0 X_t + \alpha_1 X_{t-1} + \cdots + \alpha_q X_{t-q} + \varepsilon_t$$

$$Y_t = \beta_0 + \sum_{i=1}^{p} \beta_i Y_{t-i} + \sum_{i=0}^{q} \alpha_i X_{t-i} + \varepsilon_t$$

Where ε_t is an error term, the output variable is a function of itself, the present and other exogenous variables lags' values; *p* lags are used for dependent variables while *q* lags are for exogenous variables. Consequently, the bounds testing procedure developed by Pesaran *et al.* (2001) was employed to test the hypothesis of no long-run cointegration among the time series variables. The approach necessitates the following equation estimation in order to derive the nexus between real GDP (RGDP) and the independent variables; MNCs' FDI inflows (FDI), Inflation rate (INF) and Unemployment rate (UNEM) as a conditional autoregressive distributed lag (ARDL):

$$\Delta RGDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta RGDP_{t-i} + \sum_{i=1}^{q_1} \alpha_{2i} \Delta FDI_{t-i} + \sum_{i=1}^{q_2} \alpha_{3i} \Delta INF_{t-i} + \sum_{i=1}^{q_3} \alpha_{4i} \Delta UNEM_{t-i} + \beta_1 RGDP_{t-1} + \beta_2 FDI_{t-1} + \beta_3 INF_{t-1} + \beta_4 UNEM_{t-1} + \varepsilon_t$$

Where Δ is the first difference operator p, q_1, q_2, q_3 and q_4 are the lag lengths. The null hypothesis in the long-run is H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ indicating no long-run relationship. The estimated F-statistic is then compared with the critical values. So that when the F-Statistic is below the lower bound indicates no cointegration. When the F-statistic is above the upper bound, it indicates long-run relationship (cointegration). Equally, when it lies between both critical values, it indicates indecisiveness. Therefore, when a long-run relationship is recognized among time series variables (cointegration presence), then the long-run models are estimated using either Vector Error Correction Term (VECM) for more than one long-run model while for any recognized short-run relationship ARDL model is employed.

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Variance Decomposition Approach

In conclusion, the study employed the variance decomposition approach (VDA) in order to assess the degree of the influence of each of the explanatory variables i.e. MNCs FDI inflow, inflation rate and unemployment rate, in the short-run and long-run. This approach was employed to support the interpretation of the VECM after it has been fitted. The VDA shows the degree of projected error variance for a series (i.e. real GDP in this case) accounted for by innovations from the explanatory variables over dissimilar time-horizons (i.e. Period 1 to 10). That is, it determines the degree of the forecast error variance for each of the variables that can be explained by exogenous shocks. For the VECM(p) form is given as:

$$y_t = v + A_1 y_{t-1} + \cdots + A_p y_{t-p} + u_t$$

This can be improved to $Y_t = V + Ay_{t-1} + U_t$

where y_t, v and U are k-facet column vectors, A is kp by kp a dimensional-matrix and Y, V and U are kp dimensional-column vectors. The mean squared error (MSE) of the h-step prediction of variable j is

$$MSE\left[y_{j,t}(h)\right] = \sum_{i=0}^{h-1} \sum_{k=1}^{K} \left(e_j' \Theta_i \epsilon_k\right)^2 = \left(\sum_{i=0}^{h-1} \Phi_i \sum_u \Phi_i'\right)_{jj}$$

where e_j is jth-column of I_k and the subscript $\{\backslash displaystyle\ jj\}jj$ denotes the element of the matrix, $\Theta_i = \Phi_i P$; $\{\backslash displaystyle\ P\}P$ here is a lesser triangular matrix determined by a Cholesky decomposition of $\sum u$ such that $\sum u = P'P$; with $\sum u$ being the covariance-matrix of the errors u_t and $\Phi_i = JA^iJ'$; where $J = [I_k, 0 \ldots 0]$ so that J is a k by kp dimensional-matrix. Thus, the degree of forecast error variance of variable j explained by exogenous shocks to variable k is given by:

$$w_{jk,h};\ w_{jk,h} = \sum_{i=0}^{h-1} \left(e_j' \Theta_i \epsilon_k\right)^2 / MSE\left[y_{j,t}(h)\right]$$

Estimation Procedure

Prior to estimation of ARDL, VECM and VDA, the paper determined the presence of a monotonic tendency in a sequential series of the variables using the Mann-Kendall test (Mann 1945 and Kendall 1955). Afterwards, the series were tested for cointegration presence by deployment of the Johansen (1991) method. Subsequently, the Granger causality test was used to statistically test and determine the hypothesis of whether one time series is useful in forecasting another, as proposed in Granger (1969). Lastly, to deploy the ARDL, VECM and VDA the order of integration (i.e. stationarity level) of the series were predetermined using the Augmented Dickey–Fuller (ADF) test.

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RESULTS AND DISCUSSION

Table 1 shows the summary statistics of the considered four (4) variables. As observed for the periods (i.e. Ex-President Buhari's administration) under study, the average recorded MNCs FDI inflows (FDI) and real GDP (RGDP) stood at US$248.49million and US$23.36billion respectively. The FDI inflow into the country was found to range between US$77.97billion and US$715.86billion to yield a total accumulation of US$7951.71billion over the study period. Also, the country's real GDP within the period was found to range between US$20.87billion and US$28.09billion to yield a total accumulation of US$747.63billion. Additionally, Table 1 reveals the average records of inflation and unemployment rates for the period to be 13.53% and 23.01% respectively. These observed inflation and unemployment rates for the period, suggest poor and unfavorable economic management as the results further show that the country coped to survive with an inflation rate ranging between 8.12% and 18.36% as well as an unemployment rate ranging between 7.54% and 37.70%. This is economically troublesome and nurtures concerns on how the country intends to survive and increase her economic growth with double digits inflation and unemployment rate.

Table 1: Summary Statistics of the Variables

	FDI	RGDP	INF	UNEM
Average	248.49	23363.30	13.53	23.01
Median	216.21	23173.45	13.25	26.40
Maximum	715.86	28088.58	18.36	37.70
Minimum	77.97	20872.49	8.12	7.54
Std. Dev.	139.28	1878.89	3.10	8.68
Sum	7951.71	747625.6	-	-
Observations	32	32	32	32

Note: *MFDI and RGDP are in US$ Million*

Trend Analysis of FDI Inflow, real GDP, Inflation Rate and Unemployment Rate in Nigeria

Fig. 1, Fig. 2, Fig. 3 and Fig. 4 distinctly present the time series plots as well as trend tests of real GDP, FDI inflow, inflation rate and unemployment rate in Nigeria between the Buhari's regimes (2015-2022). Firstly, the trends of the time series plots were tested for any significant trend increase or decrease using the Mann-Kendall method. As observed in the figures, the trend tests' results reveal that p-values less than 0.05 significant level signified the null hypothesis rejection (i.e. no significant monotonic increasing or decreasing trend) for all the series in favor of the alternative hypothesis (i.e. significant monotonic increasing or decreasing trend). According to this result, all the time series plots are composed of significant trend fluctuations (i.e. monotonic increasing or decreasing). Precisely, the trend tests' results established a significant increasing trend for the real GDP, inflation rate and unemployment rate while a significant decreasing trend was confirmed for the FDI inflows in Nigeria (see Fig. 1 to Fig. 4).

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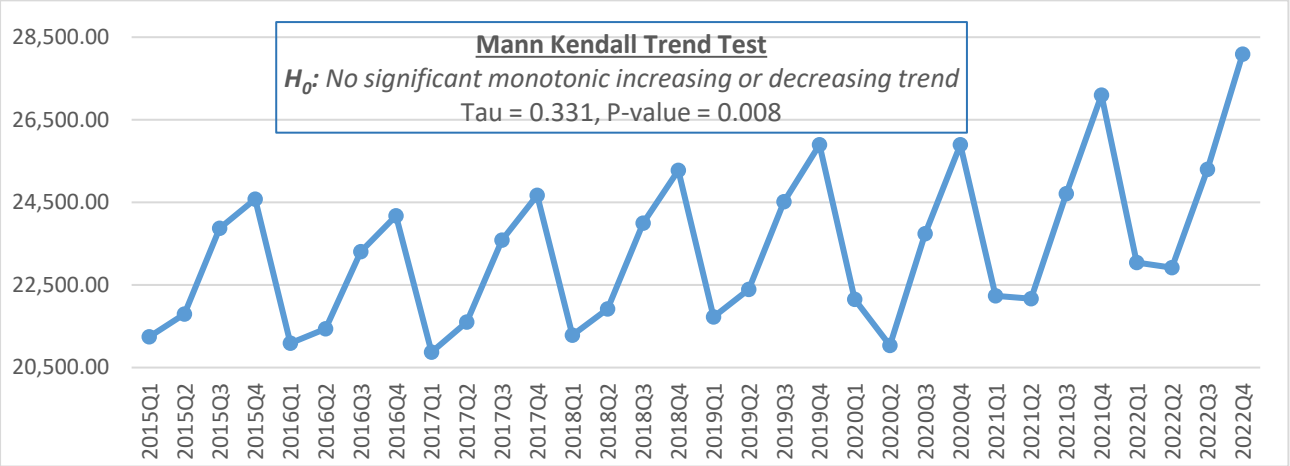

Fig. 1: Time Series Plot of the Nigeria Real GDP (US$Million)

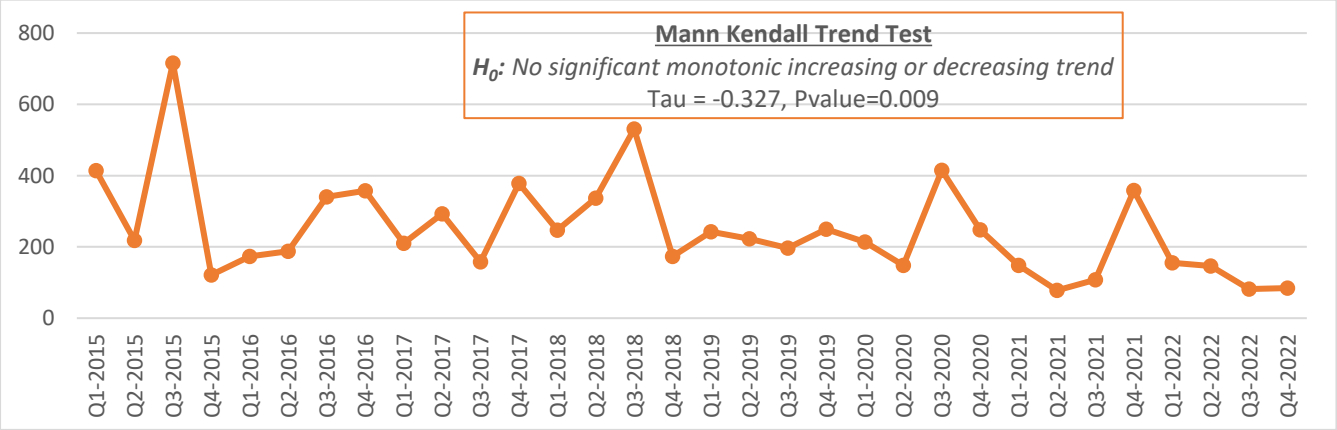

Fig. 2: Time Series Plot of the MNCs FDI inflow in Nigeria (US$Million)

Furthermore, according to Fig. 1, the real GDP was observed to be relatively and significantly increasing between the 1st quarter of 2015 and 4th quarter of 2015. It dropped shortly from US$24.58billion to US$21.09billion in 1st quarter of 2016, this can be ascribed to low oil revenues and shortage of hard currency as the country glided into recession. The RGDP increased progressively between 2nd quarter 2016 and 4th quarter 2016. Similar to 1st quarter 2016, the RGDP dropped abruptly to a lowest record of US$20.87billion in 1st quarter 2017 which Agusto (2018) attributed this to the insubstantial economic recovery from recession. Thereafter, the RGDP relatively increased (yet inconsistent) between 2nd quarter 2017 and 1st quarter 2020, however dropped suddenly to US$21.04billion in 2nd quarter 2020 as a result of the ripple-effect of the Covid-19. Afterwards, RGDP was observed to be rationally but inconsistently increasing.

Moreover, according to Fig. 2, the FDI inflow into the country declined in 2nd quarter 2015 which is probably as a result of the general elections and inauguration activities of the former President Buhari's administration. Then, the FDI inflow rose steeply to the highest record of US$715.86million in 3rd quarter 2015, however it rigorously declined in 4th quarter 2015 as the country slid into recession. Afterwards, the FDI inflow into the country which largely from MNC relatively declined all through the remaining periods i.e. 1st quarter 2016 to 4th quarter

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2022. Thus, this signifies that the country was unattractive and unfavorable to foreign investors between the years 2016 to 2022.

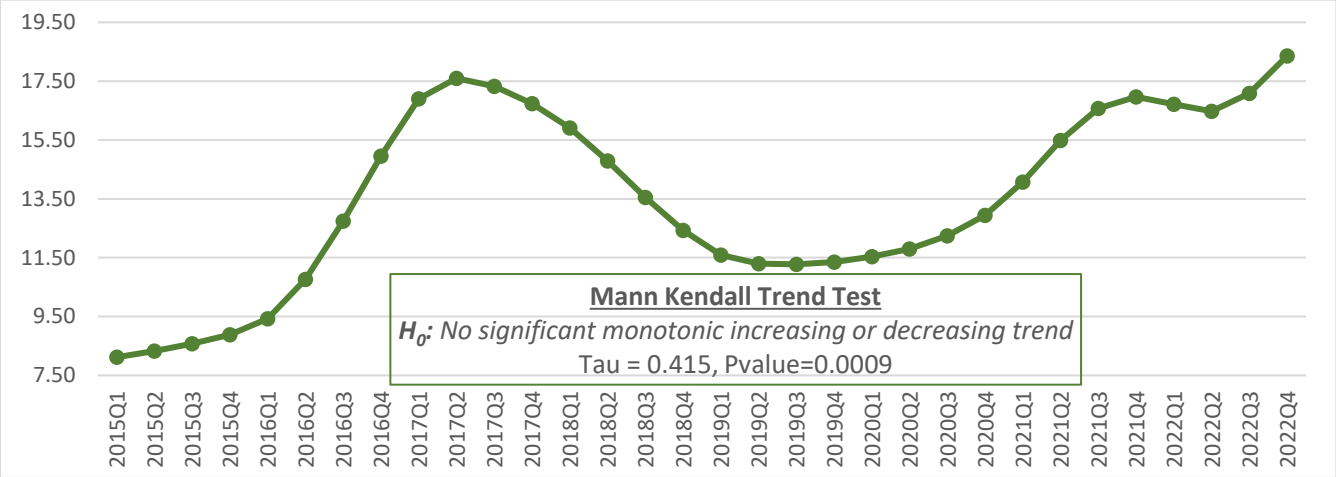

Fig. 3: Time Series Plot of the Inflation Rate in Nigeria (Percentage)

Additionally, as observed in Fig. 3, the inflation rate increased gradually and significantly between the periods of 1st quarter 2015 and 2nd quarter 2017, which was as a result of the ripple effect of rise in petrol pump price, shortage of foreign exchange and recession. The inflation rate declined steadily over the period of 3rd quarter 2017 to 4th quarter 2019. Afterwards, it was observed to rise progressively for the rest of the periods i.e. 1st quarter 2020 to 4th quarter 2022. Explicitly, the inflation rate rose to 18.36% in 4th quarter 2022. Lastly as observed in Fig. 4, the unemployment rate increased significantly and gradually over the periods i.e. 1st quarter 2015 to 4th quarter 2022.

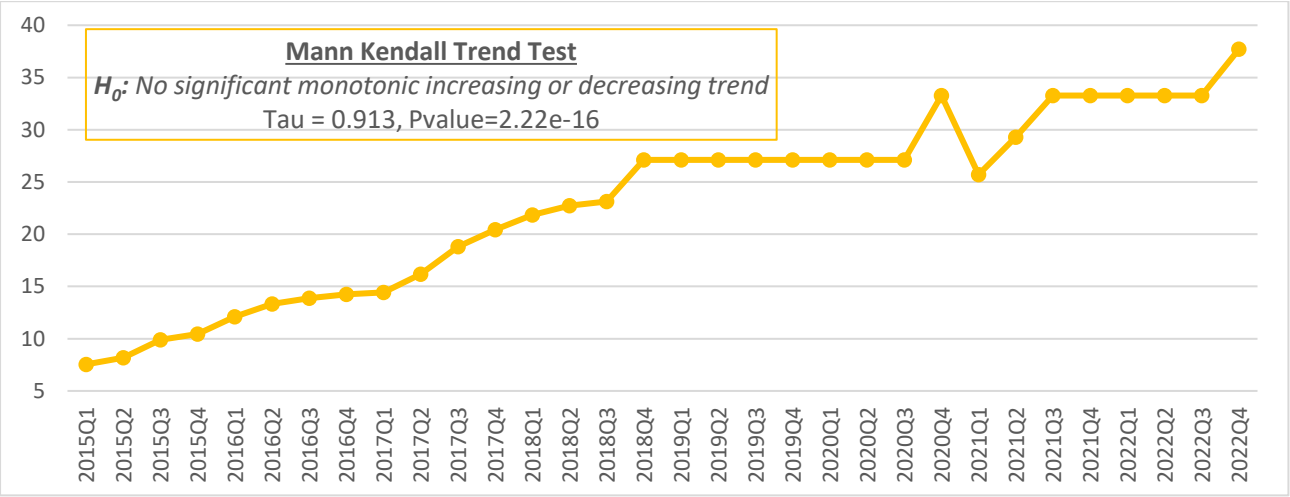

Fig. 4: Time Series Plot of the Unemployment Rate in Nigeria (Percentage)

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Assessment of the Cointegration between the FDI Inflows and the Economic

Growth of Nigeria

The Johansen cointegration econometric method was first employed to assess the level of cointegration between the variables, Table 2 presents the results. According to Table 2, the highlighted null hypothesis i.e. none, at most 1, at most 2 and at most 3 variables did significantly co-integrate, can be rejected in favor of cointegration for all the series. Thus, the results assert that the time series variables co-move (presence of cointegration). There is thus the presence of economic relationships among the variables which implies any of the variables has the power to influence (either positive or negative) another variable(s).

Table 2: Johansen Cointegration Test

Series: RGDP FDI INF UNEM
Lags interval (in first differences): 1 to 4

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.930626	168.4159	63.87610	0.0000
At most 1 *	0.801495	96.37341	42.91525	0.0000
At most 2 *	0.683422	52.71602	25.87211	0.0000
At most 3 *	0.551685	21.66100	12.51798	0.0012

Source: *EViews Outputs*

Consequent to the established cointegration among the variables, it is therefore vital to recognize and identify the pairs of variables that significantly cointegrate, hence Table 3 presents the pairwise causality test results. According to the pairwise Granger Causality test results, as observed the FDI inflow was found to significantly granger cause (i.e. cause economic changes in) the RGDP (since p-value 0.012<0.05) and inflation rate (since p-value 0.088<0.1). Also, the RGDP was found to significantly cause economic changes in the FDI (since p-value 0.011<0.05). In addition, according to the results, the unemployment rate (UNEM) was found to significantly cause changes in the real GDP (since p-value 0.000<0.05), the FDI (since p-value 0.073<0.1) and inflation rate (since p-value 0.078<0.1). The results infer thus: the FDI inflow and RGDP significantly exhibit two-dimensional cointegration (i.e. both variables influencing each other); the FDI inflow significantly influence the inflation rate; and also the unemployment rate significantly caused change in the RGDP, FDI inflow and inflation rate. Thus, from the aforementioned FDI inflow significantly cointegrated with the country RGDP, inflation rate and unemployment rate.

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Table 3: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause RGDP	30	5.26391	0.0124**
RGDP does not Granger Cause FDI		5.46918	0.0107**
INF does not Granger Cause RGDP	30	1.33312	0.2818
RGDP does not Granger Cause INF		0.27575	0.7613
UNEM does not Granger Cause RGDP	30	11.6205	0.0003**
RGDP does not Granger Cause UNEM		2.16821	0.1354
INF does not Granger Cause FDI	30	0.49945	0.6128
FDI does not Granger Cause INF		2.68473	0.0879*
UNEM does not Granger Cause FDI	30	2.91765	0.0726*
FDI does not Granger Cause UNEM		0.71900	0.4970
UNEM does not Granger Cause INF	30	2.83322	0.0778*
INF does not Granger Cause UNEM		1.24150	0.3062

Note: ** and ** denote significant at 10% and 5% respectively*

Cointegration Model Estimation of FDI Inflows Impact on the Country's Economic Growth

Prior to the estimation of the cointegration model of the relationship between the FDI inflow and the economic growth variables (RGDP, INF and UNEM) of the country, the study examined the stationarity level of the series in order to determine the integration order (stationarity level) of each of the variables. Table 4 presents the results of the test of stationarity using the Augmented Dickey Fuller (ADF) method. According to the results, all the series except the RGDP were found stationary at level ($I = 0$). Only, the RGDP established stationarity at integration order one. Therefore, this implies that cointegration models such as ARDL model and VECM are suitable to capture the economic relationship between the

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variables since the achieved stationarity levels of the variables are at both ($I = 0$) and first difference ($I = 1$).

Table 4: Augmented Dickey Fuller Test

Variables	$\hat{k}$	Integration Order (I)	P-Value
FDI	0	0	0.0000
RGDP	2	1	0.0000
INF	3	0	0.0462
UNEM	0	0	0.0491

Subsequently, the nature of cointegration model for the economic relationship between FDI inflow, RGDP, inflation rate and unemployment rate were assessed, Table 5 presents the results. The results show that the null hypothesis of no significant long-run relationship cannot be accepted for dependent variables FDI inflow, real GDP and inflation rate. This implies that when FDI inflow, RGDP or inflation rate is a dependent variable, they significantly demonstrate long-run association with their respective corresponding exogenous variables. Thus, based on the study targeted variable the results imply FDI inflow significantly has a long-run economic relationship with the RGDP, inflation rate and unemployment rate.

Table 5: Short-run and Long-run Relationship Assessment (Bound Test)

S/N	Output Variable	Model Selection	F-Statistic	Long-run Relationship	Decision
1	RGDP	ARDL(4, 4, 1, 2)	4.4916*	Yes	Estimate ECM (long-run model)
2	FDI	ARDL(4, 2, 3, 3)	7.7226*	Yes	Estimate ECM (long-run model)
3	INF	ARDL(4, 4, 0, 1)	4.1749*	Yes	Estimate ECM (long-run model)
4	UNEM	ARDL(3, 1, 0, 0)	1.1354	No	Estimate ARDL (short-run model)

Note: *H_0:- No significant long relationship between the variables*

** indicates significant at 5% level (i.e. F-Stat >3.23 or 4.35 critical value)*

Furthermore, the rest of this section discourses the long-run relationship between FDI inflow, RGDP, inflation rate and unemployment rate. From the result, FDI inflow, RGDP and inflation rate as dependent variable return to significantly exhibit long-run relationship (see Table 5), the study therefore considered the Vector Error Correction Model (VECM) in order to estimate the long run relationship impact of their respective exogenous variable at same time.

Table 6 presents the long-run cointegrating model of the considered variables using the RGDP as output variable. The results confirm a significant long-run relationship between output variable RGDP and the input variables; FDI inflow, inflation rate and unemployment rate. According to the results, the long-run cointegration between the FDI inflow, inflation rate and unemployment rate are revealed to have significant negative impacts on the RGDP. According to the results, a unit increase in the FDI inflow, inflation rate and unemployment caused a contraction of 30.3, 427.8 and 87.7 units respectively in the RGDP. The long-run cointegrating model is stated as follows:

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$$ECT_{t-1} = RGDP_{t-1} + 30.3049MFDI_{t-1} + 427.8231INF_{t-1} + 87.6529UNEM_{t-1} - 38421.23 \quad \textbf{4.1}$$

Therefore, presenting the RGDP as output variable in equation (4.1), we have;

$$RGDP_{t-1} = 38421.23 - 30.3049MFDI_{t-1} - 427.8231INF_{t-1} - 87.6529UNEM_{t-1} \quad \textbf{4.2}$$

Table 6: Long-run Cointegrating Model

		Estimates
Dependent	**RGDP(-1)**	1.000000
FDI(-1)		30.30489
		(4.78893)
		[6.32811]*
INF(-1)		427.8231
		(98.5189)
		[4.34255]*
UNEM(-1)		87.65287
		(39.8877)
		[2.19749]*
C		-38421.23

Note: Standard errors in ( ) & t-statistics in [ ]; * denotes significant at 5% (i.e. t-stat>1.95)

Prior to the discourse on VECM granger causality analysis results of the short-run and long-run cointegration, the model 4.2 residuals were diagnosed in order to ensure the adequacy of the model's specification. Table 7 and 8 present the model Residual Serial Correlation Lagrange Multiplier (LM) test and Normality test respectively. As shown in Table 7, all the computed residual serial LM tests for the lags returned statistically not significant at 5% level, which indicate that the model's residuals are serially not correlated. Also, as observed in Table 8 the joint p-values for Skewness and Kurtosis tests returned to be statistically insignificant at conventional significance level (0.05), which also indicate that the model's residuals are normally distributed. Thus, the model is adequately specified and aptly estimated.

Table 7: VEC Residual Serial Correlation LM Test

Lags	LM-Stat	Prob.
1	19.54771	0.2413
2	6.410754	0.9830
3	8.724434	0.9243
4	15.93698	0.4574
5	16.73176	0.4032
6	14.34873	0.5728
7	7.189114	0.9694

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8	17.86590	0.3318
9	11.32709	0.7889
10	20.87607	0.1833
11	18.36817	0.3028
12	12.52601	0.7070

H_0: No serial correlation at lag order h of the VEC residuals

Table 8: VEC Residual Normality Test

Component	**Skewness**	**Chi-sq**	**df**	**Prob.**
1	0.173546	0.140551	1	0.7077
2	0.364739	0.620828	1	0.4307
3	-0.920196	3.951551	1	0.0468
4	-0.095384	0.042458	1	0.8367
Joint		4.755388	4	0.3133
Component	**Kurtosis**	**Chi-sq**	**df**	**Prob.**
1	2.772796	0.060225	1	0.8061
2	2.390173	0.433871	1	0.5101
3	4.193644	1.662251	1	0.1973
4	3.154786	0.027952	1	0.8672
Joint		2.184299	4	0.7019

H_0: Residuals are multivariate normal

Moreover, Table 9 presents the summary of VECM granger causality analysis results. The path of granger causality was divided into short run and long run causality. The results depict that the FDI inflow significantly and negatively influenced the RGDP both in the short-run and long-run. Similarly, the RGDP was found to significantly and negatively influence the FDI inflow both in short-run and long-run. Hence, it can be inferred that bidirectional causality exists between FDI inflow and RGDP. Also, the unemployment rate was to significantly and negatively influence the RGDP in both short-run and long-run while the RGDP significantly negatively influenced the unemployment rate only in the short-run. Similarly, we can also conclude that bidirectional causality exists between unemployment rate and RGDP.

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Table 9: Summary of VECM Granger Causality Analysis of Short-run and Long-run Cointegration

Dependent Variable	Short Run					Long Run
	C	DLGDP(-3)	DFDI(-2)	DINF(-1)	DUNEM(-1)	ECT(-1)
DRGDP	140.1034 (224.970) [0.62276]	-1.098235 (0.09743) [-11.2721]*	-5.744519 (1.86583) [-3.07880]*	-326.7818 (426.599) [-0.76602]	-4.07430 (0.0916) [-11.20638]*	-0.2519 (0.1029) [2.4494]*
DFDI	-6.316069 (40.0704) [-0.15762]	-0.003245 (0.0735) [-2.18702]*	0.660839 (0.33233) [1.98850]*	-60.59521 (75.9834) [-0.79748]	19.41173 (12.4131) [1.56382]	-0.0569 (0.0183) [-3.1032]*
DINF	0.070749 (0.13034) [0.54282]	1.75E-05 (5.6E-05) [0.30993]	0.000677 (0.00108) [0.62589]	1.925889 (0.24715) [7.79244]*	0.003131 (0.04038) [0.07756]	-6.12E-05 (6.0E-05) [-1.0267]
DUNEM	1.625187 (0.78743) [2.06392]*	-0.000696 (0.00034) [-2.04056]*	-0.013092 (0.00653) [-2.00467]*	-0.880192 (1.49316) [-0.58948]	-0.816935 (0.24393) [-3.34905]*	0.0004 (0.0004) [1.2375]

Note: ( ) Standard errors, [ ] t-statistics and * denotes significant at 5%

Furthermore, Table 9 reveals that the FDI inflow significantly and negatively influenced the unemployment rate only in the short-run. As a result, we conclude that a unidirectional causality exists between FDI inflow and unemployment. Lastly, the results depict that RGDP and FDI inflow significantly and negatively influenced themselves both in the short-run and long-run, while inflation rate and unemployment rate only significantly influenced themselves in the short-run. Thus, among other findings it can be deduced that FDI inflow between the periods 2015 and 2022 significantly and negatively influenced the RGDP of Nigeria both in short-run and long-run. Conversely, the FDI inflow was found to significantly and negatively influence the country's unemployment rate only in the short-run.

Table 10: Forecast Variance Decomposition of the Real GDP

Period	S.E.	RGDP	FDI	INF	UNEM
1	573.6923	100.0000	0.000000	0.000000	0.000000
2	611.7966	95.56992	0.919503	0.085258	3.425324
3	637.9386	88.69949	4.441357	0.257228	6.601923
4	691.1783	76.19342	12.80000	3.049580	7.956994
5	929.2742	84.59478	8.256733	2.428437	4.720052
6	938.7500	83.75468	8.202120	3.348050	4.695146
7	946.1514	82.60854	8.657940	3.887419	4.846100

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8	955.7310	80.99297	9.858625	4.284668	4.863739
9	1149.722	84.86560	7.042300	4.554508	3.537590
10	1158.692	84.59899	6.943191	4.836437	3.621379

Consequently, the forecast variance decomposition of the RGDP was examined using the Variance Decomposition Approach (VDA); an enhanced method of Granger Causality. The analysis shows the degree of forecast error variance for the RGDP series explained by innovations from the FDI inflow, inflation rate and unemployment rate over different time-horizons. As presented in Table 10, the period 1 to 4 designates the short run periods while periods 5-10, connote long run periods. According to the forecast variance decomposition of RGDP, the FDI inflow accounted for magnitude as high as 12.80% of the total variation in RGDP within the short-run periods (1-4). The magnitude of the FDI is depicted to decline incoherently down the long-run periods (i.e. 5-10). As observed in the long-run period (10), the magnitude of FDI inflow specifies to drop as low as 6.94% of the total variation in RGDP.

DISCUSSION OF FINDINGS

This paper found a significant increasing trend in the time series plots of RGDP; the inflation rate and unemployment rate however established a significant decreasing trend in FDI inflows of Nigeria. Explicitly, the observed reasonably and inconsistently increasing trend in RGDP over the period signposts an erratic economic growth in the nation. However, the economic growth became more troublesome when the inflation rate and unemployment rate were significantly and progressively increasing and FDI inflows significantly declining over the period. Thus, it is imperative to assess the magnitude of impact of these variables particularly the FDI inflows on the inconsistent increasing RGDP. Moreover, empirical findings from the Johansen cointegration results significantly affirmed the presence of cointegration (i.e. variables co-moving) between the variables. It explicitly showed that at most 3 out of the 4 variables did significantly co-integrate with one another. More specifically, among other findings the Granger Causality results established the MNCs FDI inflows to significantly granger-cause (impact) the country's RGDP and vice versa, the unemployment rate to significantly granger-cause the RGDP and the FDI inflow, as well as FDI inflows to significantly granger-cause inflation rate. This invariably implies that the observed inconsistent economic growth is significant as a result of shocks from the reduced FDI inflows of the country as well as its ripple effects from the inflation and unemployment rate. The result is identical with the studies like Sani and Oyedokun (2022), Oyegoke *et al.* (2021), and Kadii and Egbu (2020) that revealed FDI as a significant factor for Nigeria's economic growth.

Furthermore, following the established causal relationship between the FDI inflows and the GDP (economy growth) as well as the inflation rate and unemployment rate, the empirical findings from the ARDL analysis significantly established a long-run causal relationship between FDI inflows and RGDP (the economy growth). Explicitly, the VECM results found the FDI to significantly negatively impact the RGDP both in the short-run and long-run. As well as, the GDP was found to significantly negatively impact the FDI inflow both in short-run and long-run. Resulting in bidirectional negative causality between the FDI inflow and the economic growth. It is therefore inferred that the FDI inflows significantly negatively influenced the economic growth of the nation both in short and long terms. This finding is

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similar to studies like Moledu and Odawna (2017), Okolie and Lambo (2018) and Trang *et al.* (2019). They found FDI to negatively impact the economic growth of Nigeria too.

As a final point, findings from the forecast variance decomposition of the RGDP revealed the FDI to account for, as high as, 12.8% of the real GDP total variation within the short-run periods of 1st to 4th periods. However, the results showed that it incoherently dropped on the long-run between 5th to 10th periods. Specifically, the VDA results found the FDI to account for, as high as, 6.94% of the real GDP total variation in the long-run periods precisely 10th quarter. Lucidly, this finding infers further declining in the FDI inflows which are majorly from MNCs and projects the economy of the country (Nigeria) to be poor and unattractive for the MNCs to invest. It therefore calls for urgent attention from the government and policy makers to address the rising inflation rate as well as developing and implementing appropriate economic policies that will make the country more attractive for foreign investors such as the MNCs.

CONCLUSION AND POLICY RECOMMENDATIONS

Following the aforementioned empirical findings, the paper concludes that MNCs investments in the country are significantly dropping following the significant declining trend of the series over time. Similarly, the observed significant and inconsistent increasing trend of the RGDP as well as increasing trend of inflation and unemployment rates over the period signified unstable economic growth. Furthermore, based on the findings that the FDI inflows significantly granger-caused the RGDP and vice versa, the unemployment rate significantly granger-caused the real GDP and the FDI inflow, as well as MNCs FDI inflows significantly granger-caused inflation rate. Thus, this study concludes that the MNCs FDI inflows significantly impact the economic growth of the country. Lucidly, the observed significance and inconsistency of the economy growth can be associated with the shocks from the FDI inflows of the country as well as its ripple effects from the inflation and unemployment rate.

Moreover, based on the empirical findings from the ARDL analysis, the study concludes that a long-run causal relationship significantly exists between FDI inflows and RGDP. More specifically, the study concludes a bidirectional negative causality relationship between the FDI inflow and the economic growth. As a result, the FDI was found to significantly negatively impact the real GDP both in the short-run and long-run and vice versa. Thus, both the FDI inflow and RGDP significantly and negatively impact each other both in short-run and long-run. And following the forecast variance decomposition analysis, the paper concludes further declining in the FDI inflows from MNCs as well as projects the economy of the country (Nigeria) to be worse and unattractive for the MNCs to invest in long-run. Nonetheless, leaning on the study finding and extensive background information, the paper therefore concludes that FDI in Nigeria have been poor and not been encouraging over the years, as a result of some major domestic flaws in the country such as high inflation and unemployment rate as well as insecurity and poor infrastructure that reflect on the nominal growth of the country. Also, though not considered in this study, the fear of future liability to be borne in form of higher taxes, huge debts could seem to deter the inflow of MNCs investment in the country.

Nevertheless, the policy recommendations of the aforementioned empirical findings provide that current administration of President Bola Ahmed Tinubu should therefore direct more

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investment into agricultural production, build road networks as well as improve transportation system in order to ensure significant drop in inflation in order to boost the productive capacity of MNCs investors, so that more direct foreign investors can come into the country. Also, the government needs to address the insecurity issue in the country with sincerity and efficiently because no investment locally or foreign direct investment can flourish in environments tense with insecurity.

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