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Fdi and economic growth in Nigeria

Hammed Yinka Sabuur[1], Okunoye A Ismaila[2*]
[1] Department of Economics, Obafemi Awolowo University, Osun State, Nigeria
[2] Department of Economics, University of Ibadan, Ibadan, Nigeria

Abstract
This study examines the impact of foreign direct investment on economic growth overtimes in the Nigerian economy. The study considers annual times series data from 1981 to 2018 using ordinary least square method. The results from the estimation reveals that foreign direct investment has been very instrumental and significant to the growth process of the economy overtimes. The contribution of foreign direct investment to growth is further improved when interacted with the level of human capital in the country. Also, the study found that the contribution of foreign direct investment to growth has exhibited increasing return to growth for the Nigerian economy. We however recommend that efforts should be made to improve the level of human capital while necessary steps should be taken to entice foreign investors into the country.

Keywords: fdi, economic growth, human capital, Nigeria, ols

Introduction

Background to the Study

There is an increasing reliance of developing countries on private capital flows as a source of funding despite the consensus on the impact of foreign direct investment and remittances on economic growth which has remained elusive on policy debate (Agbola, 2013) [16]. However, the fact still remains that the flow of capital into any developing country will play a greater role in easing the businesses both at various sectors of the economy. As such, the growing importance of FDI as a form of external finance to developing countries reflects not only the fact that firms increasingly find benefits in expanding their production internationally but also that host developing countries see potential advantages in FDI over other forms of investments like foreign portfolio investment, in their economies (Jugurnath *et al*., 2016) [22]. Between 2005 and 2007, Nigeria recorded a total of $5.32 million as an average of foreign direct investment inflow into the country which represents 14.3% of total gross fixed capital formation in those periods. Right after the financial crisis of 2008, the figure has been on decrease and in 2015, the FDI inflows was $3.06 million with an increase of 45.2% in 2016. In the year 2017, the inflow was $3.5 million and fell drastically by approximately 43% in 2018 which make up only 3.8% of total gross fixed capital formation. This reduction was attributed by Kamara (2013) [42], to the effort of developed countries right after the global economic crisis of 2008 to tighten the budget which has led to a levelling off and in some cases a decline in development aid and lending from these countries. In comparison with the total FDI inflows into West Africa and Africa in total, the share of Nigeria's FDI inflows was respectively 25.2% and 6% for the average of 4 years running from 2015 to 2018 (WIR, 2019). Also, as clarified by Ongo Nkoa, 2014 [31], FDI helps in the provision of capital directly needed by the host country and which is necessary to increase investment and competition in the industrial sectors while still improving the productivity of local firms through the adoption of more effective technologies and/or investing in human and physical capital. Thus, the importance of FDI ranges from serving as source of physical and human capital, creation of job and provision of access to foreign markets and impacting local businesses in terms of technology and efficiency. These immense benefits of FDI have made Nigerian government to give more attention to the potentials embedded in attracting high FDI to the country through several strategies. For instance, Structural Adjustment Programme (SAP) introduction in 1986, among other interventions, attracted capital flows into Nigeria while at the same time improving its efficient allocation in the private sector (Central bank of Nigeria 2005). In addition, it is argued that FDI conveys greater knowledge spill overs to host economy and the capacity of a host economy to take advantage and benefit from these capital inflows might raise the question of has there been increasing or decreasing return of FDI- led growth overtime. Many of developing countries, however, have realized the significance of foreign direct investment and many have equally offered seductive tax incentives and subsidies to attract foreign capital. The idea in this is that FDI contributes to economic growth by stimulating capital accumulation and/or through positive externalities in the form of knowledge and productivity spill overs to local firms (Herzer, 2010) [18]. According to OECD report (2002) [29], countries with higher level of per capita income, better educated workers, higher degree of openness and well-developed financial system seem to benefit significantly from FDI. There are various channels through which FDI can bring about growth in an economy. The exogenous theory viewed, as mention by Mahembe and Odhiambo, 2014 [25], that the important growth effect of FDI on host country ranges from capital accumulation, introduction of new goods and foreign technology while the endogenous theory believes that FDI enhances the stock of knowledge in the host country by the transfer of skill. As put by OECD, FDI is a potential source of

sustainable growth and development given its spill-over effect, human capital formation and development, integration of host economy into global economy and creation of more competitive business environment and enhancement of business enterprise. FDI will definitely help to stimulate growth by augmenting domestic investment (Herzer *et al*., 2008) [17] and by increasing labour productivity through the introduction of new technology (De Jagar, 2004) [14]. The effect of FDI on growth often depends on the sector through which it enters the economy (Alfaro *et al*., 2003) [5]. Most studies find a positive effect of FDI on growth in developing countries (Yao, 2006; Alquacil *et al*., 2010; Huong & Hoang, 2019; Ezeanyeji & Maureen, 2019) [35, 19, 15] but credit this effect on host country factors (Hassaini & Kabuga, 2016; Yimer, 2017; Hanafy & Marktanner, 2018) [20, 1, 34]. This suggests therefore that FDI by itself does not necessarily lead to growth and that growth from FDI is facilitated by host country. Some authors (Borenztein *et al*. 1995; Agbola, 2013; Azam & Ahmed, 2015) [16, 28] also conclude that FDI has a greater effect on growth only when the host country has a high absorptive capacity in the form of developed human capital. This argument falls in line with the predictions of the endogenous growth theory that investment in human capital contributes significantly to growth. However, it cannot be said that there is a consensus in the literature about this effect as there exist some other studies that found negative relationship between FDI and growth (Akinlo, 2004; Adeolu, 2007; Okonkwo *et al*., 2015; Trang *et al*., 2019) [3, 30, 37] and this therefore raises an issue that there is room for further exploration. The literature on the nexus between FDI and economic growth, however, has been focusing on one of the following: taking FDI as a determinant of GDP where FDI is modelled as one of the explanatory variables; taking GDP as a determinant of FDI in which case the GDP is captured as an explanatory variable; looking for various channel through which FDI bring about growth and; looking for causal relationship between FDI and economic growth. There have been numerous empirical literatures on each one of them (Akinlo, 2004; Asugwa & Manasseh, 2014; Awolusi, 2012 [3, 8, 9] with varying or differed results and not to the exclusion of sectoral analysis (Anwar, 2008; Inekwe, 2013; Asogwa & Manasseh, 2014) [33, 21, 8]. However, we recognized the importance of examining the growth effect of FDI overtime on the economy of Nigeria. In this case, the study will examine the FDI-Growth nexus in Nigeria whether (through FDI inflows) there has been increasing or decreasing return to the growth or otherwise. Studies on this, in the context of Nigeria have been very scarce and contributing to the literature in this regard is very much necessary.

First, it will give information about the contribution of FDI to growth process which will inform the direction with which any policy measure can be put. Second, it will update the pre-existing knowledge, expose the sustainability of FDI in the country and show how effective are the past policy in the growth process via this channel.

This study is different from previous studies in number of Years considered and additional interacting variables Such as incremental FDI and FDI-Human capital. The remainder of this paper will be structure in the following order: Literature review; Trend analysis, theoretical framework and methodology; Results from findings and conclusion.

Literature Review

The literature on the impact of FDI on growth has not reached conclusion. Some of these studies found FDI to be significant in its effect on growth while some did not. Also, some studies have looked into the area of examining various channels through which FDI influences growth and some have also looked into the causal effect between FDI and growth, all these with varying outcomes. The work of Anwar (2008) [33] examined the impact of foreign investment and human capital on manufacturing sector in Singapore using annual data between 1980 and 2005. The vector error correction model (VECM) result found that foreign direct investment and human capital play important role in Singapore manufacturing sector growth. The result further shows that adjustment to long run equilibrium takes place at a fairly fast rate. In the same vein, Akinlo (2004) [3] investigated the impact of foreign direct investment (FDI) on economic growth in Nigeria. The methodology was error correction model (ECM) for annual data series from 1970 to 2001. The result found that FDI into extractive sector is not growth enhancing as much as FDI into manufacturing sector. In addition, the result shows that both labour force and human capital have significant positive effect on growth. In another country specific study, Yao (2006) [35] examined the effect of exports and foreign direct investment (FDI) on economic performance using a large data set encompassing 28 Chinese provinces for a period of 1978 to 2000. The result from a bond's dynamic panel estimates show that both exports and FDI have strong and positive effect on economic growth. The results of the finding also show that the policies of export promotion and adoption of world technology and business practices are very instrumental to the economic transition and development of the country. Similarly, the study by Adeolu (2007) investigated the relationship between non-extractive FDI and economic growth in Nigeria and examined the determinant of FDI into the Nigerian economy. The methodology was OLS and 2SLS with annual data spanning from 1970 to 2002. The result suggests that the determinants of FDI in Nigeria are market size, infrastructure development and stable macroeconomic policy.

According to the same finding, openness to trade and available human capital are not. It was also found that FDI in Nigeria contributed positively to economic growth and FDI in communication sector has more potential to grow the economy than FDI in oil sector.

However, the result found FDI in manufacturing sector to be negative in its effect on the economy reflecting poor business environment in the country. Kottaridi *et al*. (2010) [24] found out the impact of foreign direct investment (FDI) and economic growth nexus by applying non-parametric method and taking into account non-linear effects of initial income and human capital on economic growth. Their study, which uses annual data between 1970 and 2004, explores FDI effects on growth in much greater details than previous studies for 25 OECD and 20 non-OECD countries.

The GMM result did not confirm the non-linear effect of human capital in the presence of FDI inflows but suggest that FDI inflows are growth enhancing in middle-income countries while there exist a two-regime FDI effect for high-income countries. As a way of further analysing the impact of FDI on growth, the work

of Ekwe and Inyiama (2014) empirically determines the extent to which foreign capital flows have impacted on the growth performance of the Nigerian economy from 1982 to 2002. The OLS result found that foreign capital inflows had a positive and significant effect on economic growth. This result further gives an indication that foreign capital inflows exerted considerable influence as a key fiscal policy instrument of economic growth over the stated period. In the same finding, the result for capital outflows gives similar outcome as in the case of capital inflow. Also, study by Akanyo and Ajie (2015) [2] evaluated the impact of capital flows on the level of economic growth in Nigeria using annual data spanning between 1981 and 2012. The OLS result shows that net capital flow significantly and positively influences the level of economic growth in Nigeria. As further shown by the result, a net increase in capital flows, especially of FDI, by 1 percent would increase the level of economic growth by 3 percent in Nigeria, while a 1 percent increase in foreign inflows, holding outflows constant, would lead to 40 percent increase in the level of economic growth. In another finding, Okonkwo *et al*. (2015) [30] investigated the role of FDI in influencing export and growth of Nigeria economy from the period of 1990 to 2012. Their OLS result shows that export assumes a positive sign in its effect on growth and that export FDI has led to increase in export in Nigerian economy. Nkwoma (2013) [21] examined the links between Nigeria economic growth, employment and foreign direct investment in the manufacturing and servicing sectors between 1990 and 2009 using vector error correction model. The results show that FDI in the servicing sector has a positive relationship with economic growth while that of manufacturing sector is negative, though its relationship with employment is positive. The study of Asogwa and Manasseh (2014) [8] has earlier investigated the impact of FDI on economic growth using quarterly data from 1980 Q1 to 2009 Q4. The study used both OLS and granger causality and the result shows that FDI into manufacturing and telecommunication sector has positive impact on the economic growth in Nigeria while FDI into agricultural sector was found to have negative impact on the growth. The granger causality test shows that FDI into agricultural sector, manufacturing and telecommunication sectors have a unidirectional relationship with economic growth in Nigeria. The finding further shows that institutional framework has positive and significant influence on the inflow of FDI whereas that of political instability and real exchange rate was found to be significant but negative. The work of Alguacil *et al*. (2010) which was centred on developing countries conducted an examination of separate effect of foreign capital inflows and local condition on economic performance and the role of local capacities on the FDI-growth nexus. The study uses Generalised Method of Moment (GMM) with annual data from 1976 to 2005 for 26 developing countries from Latin America to Asia. The result shows that FDI has a positive and significant effect on the economic growth. The result further makes it clear that, regardless of the level of development, institutional and macroeconomic framework appear to be an important factor in the explanation of growth. In another similar study, Herzer (2010) [18] examines the effect of FDI on economic growth for 44 developing countries over a period of 1970 and 2005. The result from the heterogeneous panel integration technique shows that FDI has, on average, a negative effect on growth in developing countries but that there are large cross-country differences in the growth effects of FDI. The result further shows that cross-country differences in per capita income, human capital, openness and financial market development cannot clearly explain the cross-country differences in the growth effect of FDI. However, the growth effect of FDI are positively related to freedom from government intervention and freedom from business regulation but negatively related to FDI volatility and natural resource dependence. Related studies with respect to Africa are very much in existence. Ongo nkoa (2014) [31] estimated the impact of foreign direct investment on economic growth in CEMAC countries (i.e Cameroon, Congo, Gabon, Equatorial Guinea, Central Africa Republic and Chad) over the period of 1980 to 2010. The result from double least square and generalised method of moment shows that FDI affect growth in all CEMAC countries with the exception of Congo. Also, the work of Dike (2018) [12] examined the presence of long-run positive relationship between foreign agricultural investment and economic growth in SSA countries (Nigeria, South Africa, Sudan and Tanzania). The study explored vector error correction model with annual time series data spanning from 1995 to 2016. The result shows that there is a positive link between foreign agricultural investment and economic growth in the long-run. In another similar study, Kamara (2013) [42] investigated the channel through which FDI contributes to growth in SSA countries. His scope covers data from 1981 to 2010 with 44 out of 48 SSA countries. The result from dynamic panel growth method shows that improved institutional and financial development do enhance the effect of FDI on growth. The study finds the impact of human capital and infrastructure to be negative in explaining the relationship between FDI and growth in the SSA region. In a more theoretical work, Mahembe and Odhiambo (2014) [25] reviewed various literatures on the relationship between FDI and economic growth in a stylised fashion. The outcome of their findings shows that FDI affects growth through two broad channels. According to them, FDI can encourage the adoption of new technologies in the production process through technological spill-over and it also helps in stimulating knowledge transfer, both in term of labour training and skill acquisitions and also by introducing alternative management practices and better organisational arrangements.

In justifying this claim, Jugurnath *et al*. (2016) [22] empirically investigated the impact of foreign direct investment (FDI) on the economic growth for a panel of 32 SSA countries for the period of 2008 and 2014. Evidence from dynamic panel regression technique suggests that FDI has a positive and significant impact on economic growth. The study further includes 2009 Euro zone crisis and despite its negative impact on growth, the result did not change. It was also observed that contribution of FDI was relatively higher than domestic investment. Trang *et al*. (2019) [37] also provides additional and quantitative evidence on the impact of foreign direct investment on economic growth both in the short and long runs for 30 developing countries in the lower middle-income group. The data for the study was annual time series from 2000 to 2014 and the methodology was vector error correction model with fully modified OLS. The results show that FDI helps in stimulating economic growth in the long-run but having a negative impact in the short run. Their finding further posits that money supply, human capital, total domestic investment and domestic credit for the private sector are growth driven in the long run. Fasanya (2012) analysed the impact of foreign direct investment on the economic growth in Nigeria for

the period of 1970 to 2010. The ECM results show that FDI has positive impact on economic growth in Nigeria and so does domestic investment. Also, the work of Uwubamwen and Omoruyi (2018) [40] examined the relationship and effect of capital flows, financial deepening, infrastructure and financial development on economic development in Nigeria. The data was annual time series from 1980 to 2010 and the methodology was OLS. The findings of the study revealed that capital inflow was significant in determining economic development in Nigeria. However, trade openness was significant but had a negative sign. The further review of literature on the impact of FDI on growth suggests that FDI effect is both time- and region-specific. For instance, the work of Tran and Hoang (2019) [19] examined the impact of FDI, domestic investment, human resource and rate of trained workers on growth in Vietnam. The study makes use of annual data from 2012 to 2015 using panel regression method of fixed effect model. The estimated result indicates that FDI, domestic investment and human resource have positive effect on the level of gross product while rate of trained worker has not affected economic growth during the time period. However, Hanafy and Marktanner (2018) [34] in their study, earlier in the previous year, had investigated the effect of aggregate and sectoral foreign direct investment on Egypt's economic growth from the period of 1992 to 2007. The study used GMM and made effort to distinguish between FDI in the manufacturing, agricultural and service sectors of the economy. The results from the estimation show that neither aggregate nor sectoral FDI has unconditional effect on economic growth. The result also rejects human capital as a channel of absorptive capacity and reveals and interesting effect of FDI in the service sector on economic growth in its interaction with domestic private investment. In their analysis also, service FDI promotes economic growth only if the host government has a minimum threshold of DPI to absorb foreign knowledge and technology.

Theoretical Framework and Methodology

This chapter describes the Theoretical framework and methodology adopted for the current study. It will also present the model and econometric techniques, the data source, definition and measurement of variables.

Classical Growth Theory

Theories that explain the growth process of economy are numerous, but the choice of its applicability to any research study will depend on the composition of variables therein. Some of these theories include endogenous and exogenous growth model. Under endogenous theory, it is believed that the variables that bring about growth are determined in the model while exogenous model holds that such variables are determined outside the framework of the model. In that wise, this study will adopt a framework that highlight the relationship between capital flows, human capital and growth. However, another theory which is the classical theory was not developed into a growth theory but the underlying consistency is such that one may conclude that the classical were also interested in the state of the economy of their time. One logical extension of the Classical ideas is the neoclassical growth model.

An alternative theoretical perspective on growth process is the well-known Harrod-Domar growth model, which is more grounded in Keynesian thought. According to Harrod-Domar growth model, investment is the key to growth. Chenery and Strout introduced foreign sector on the ground that savings from foreign countries in form of capital flow to domestic economy can be utilized by developing countries to supplement the domestic savings and the foreign exchange. Specifically, in estimating the growth effect of FDI and human capital investment, the study will adopt the augmented solow growth model which was developed by Mankiw *et al*. (1992) [27]. In this model, there is an inclusion of human capital which promotes growth and productivity of labour. Following theoretical postulations, review of extant literature, similar studies and taking into consideration the variables of interest (Foreign Direct Investment, Human Capital Investment and Growth), and control variables, the study empirical model is expressed by adopting a standard growth equation.

Augmented Solow Growth Model

In the original Solow growth model, the rates of savings, population growth and technological progress are taken as exogenous, with two inputs, namely, capital and labour. Assuming a Cobb-Douglas production function, the production at time t is given by

$$Y_t = K_t^{\alpha}(A_t L_t)^{1-\alpha} \; where \; 0 < \alpha < 1 \qquad 3.1$$

This notation is standard; Y is output, K is capital, L is labour and A is the level of technology. L and A are assumed to grow exogenously. In this model, the central prediction is concerned on the impact of saving and population growth on real income. However, Mankiw *et al*., (1992) [27] modified this model by adding human capital such that the total savings from output Y is now invested and shared between physical and human capital. The modified model is as follows:

$$Y_t = K_t^{\alpha} H_t^{\beta} (A_t L_t)^{1-\alpha-\beta} \qquad 3.2$$

Where H is the stock of human capital and all other variables are as defined before. The belief, concerning this model, is that human capital investment plays much role in the growth process of the economy.

Estimated Equation

Quite a number of studies on FDI-growth nexus have found reverse causality between FDI and Economic growth. As a way of addressing these issues of reverse causality, we will estimate this model using OLS and Generalized Method of Moment (GMM) to control for presence of unobserved country-specific effects and simultaneity bias caused by the potential endogeneity of the explanatory variables. This method does not only account for potential endogeneity inherent in the economic model, but also make the model to be robust and overcome the problems of omitted variables and measurement errors and also allow for heterogeneity of the long-run parameters (Agbola, 2013) [16].

Thus, in line with the foregoing discussion and in achieving our objective, we specify a macroeconomic growth model for the Nigeria economy as follows:

$$RGDP = \vartheta_0 + \vartheta_1 FDI_i + \vartheta_2 FDI_i^{z} + \vartheta_3 HC + \vartheta_4 (FDI * HC)_i^{z} + \vartheta_i CONTROL + \varepsilon_t \qquad 3.3$$

$$RGDP = \vartheta_0 + \vartheta_1 FDI_i + \vartheta_2 FDI_i^2 + \vartheta_3 HC + \vartheta_4 (FDI * HC)_i^2 + \vartheta_5 GEXP + \vartheta_6 CPI + \vartheta_7 INV + \vartheta_8 POP + \vartheta_9 HCON + \varepsilon_t \quad 3.4$$

Where RGDP is annual real growth rate of GDP per capita, FDI is net FDI inflows as a share of GDP (this is used by most of the studies conducted on the subject and it allows us to take into account the relative size of the country's economy), HC is human capital and CONTROL is other control variables for the determinants of economic growth such as: GEXP is government expenditure, CPI is consumer price index, INV is gross fixed capital formation, POP is population annual growth rate and HCON is household consumption. The parameter ϑ_0 is a constant term while ϑ_1 to ϑ_9 are the parameters to be estimated. The idea with equation 3.3 and 3.4 to find out how significant is the FDI-growth nexus, is it an increasing, decreasing or diminishing return and how sustainable is the relationship.

Data and stylized facts

The study makes use of secondary data. Data used in this study sourced from various data bank which will include Central bank of Nigeria statistical bulletin, Nigeria Bureau of Statistics (NBS), World Development Indicator (WDI), the Pennwalt Data bank, etc. The study used an annual time series data and cover 38 periods from 1981 to 2018. Although, the choice of the period is largely rest on the availability of the data for the variable of interest, the period is adjudged to be adequate in investigating major happening in the country as far as FDI inflows is concerned and the different economic policies of both military and democratic government.

Measurement of Variables

Table 1: Description and Measurement of Variables

S/N	Variable	Description	Sources
1	FDI	FDI inflows as a share of GDP	WDI
2	HC	Human capital	PSW
3	RGDP	Real GDP	CBN
4	RGDPPC	Real GDP Per Capita	CBN
5	CPI	Consumer Price index	CBN
6	GEXP	Government expenditure	CBN
7	INV	Investment	CBN
8	POP	Population growth	WDI
9	HCON	Household consumption expenditure per capita	CBN

Source: Authors Compilation

To achieved the stated objectives of the study, annual time series data of the variables were used and in order for the impact of FDI on economic growth to be sustainable, we checked the time series statistics of the included variables. The data were tested for unit root by using Augmented Dickey-Fuller (ADF) and Philip-Perron test.

The result, presented in table 4, reveal that seven of the variables are stationary at level while two variables are de-trend with constant before stationary.

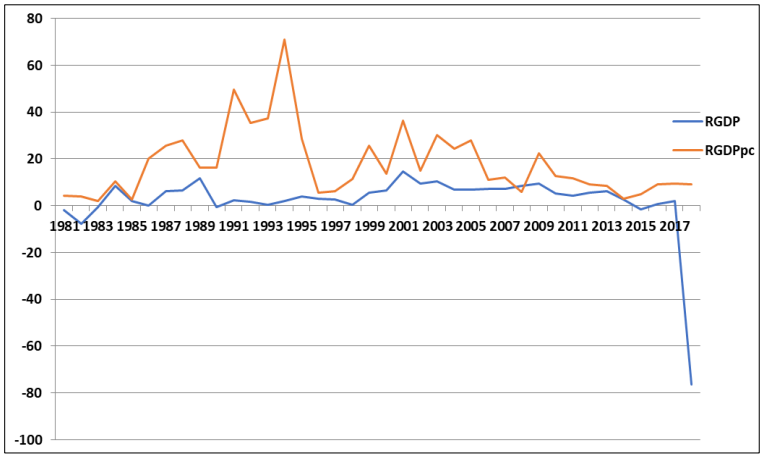

Fig 1: Relationship between RGDP and RGDPC

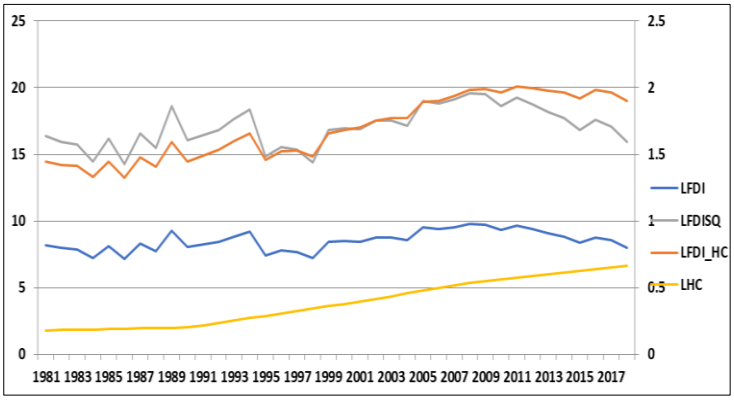

Fig 2: Relationship among FDI, FDI^2, HC and the Interactive FDI-HC

From figure 1 and 2, it is evident that real GDP (RGDP) and real GDP per capita (RGDPPC) are not correlated. It shows that there is negative real GDP at the start of 1981 and by 2017 to 2018 and there is no growth in 1986, 1990, 1998 and2015. And, there is an indication of increasing real GDP per capita in the period of 1985 – 1996, 1996 – 2014 and peak in 1994.

During the peak period of real GDP per capita, there is a corresponding increase in FDISQ and interactive FDI-Human capital while there is an average decrease in real GDP. During the democratic dispensation, there is a growing increase in the FDI inflow but a marginal increase in real GDP and real GDP per capita but a gradual increase in human capital and FDI. Hence, it indicates that increase in size and growth of FDISQ and FDI-HC have a corresponding effect on real GDP per capita than on real GDP of the economy

and it is identified that FDI – human capital interactive has an increased growth rate than the doubled-FDI after the democratic dispensation of the country in 1999. Even though there is decreasing investment rate and decreasing inflation rate but increasing household consumption rate and increasing government expenditure.

From table 2, it is indicative from the descriptive statistics that there is low deviation in the FDI, Human capital and doubled FDI but high deviation in real GDP per capita, real GDP, inflation rate, household consumption and investment respectively.

This is an indication that there is large gap between the potential and the actual rate value of the main determinant of FDI, FDI and economic growth indicators which signifies the structural deficiency and low capacity utilization of the economy to make judicious use of FDI inflows in the economy.

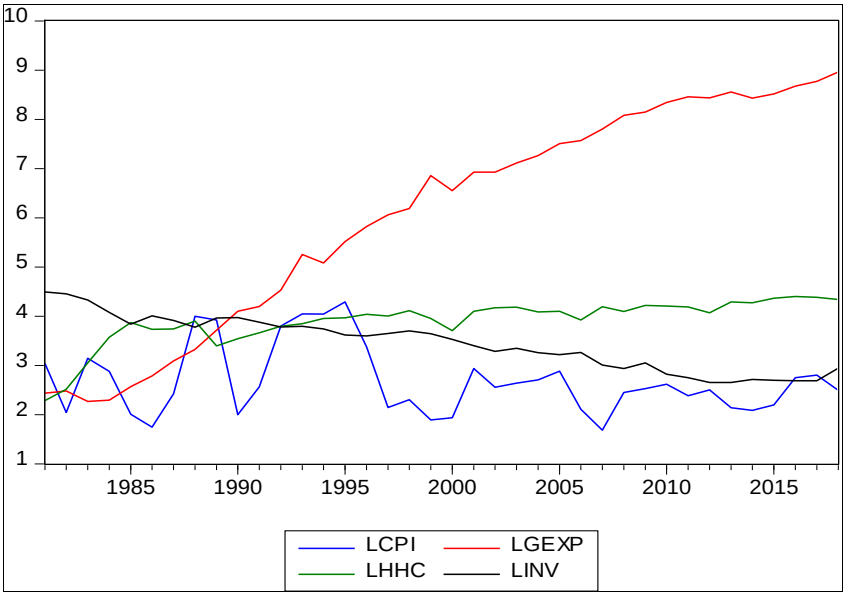

Fig 3: Relationship among determinants of FDI

Table 2: Descriptive Statistics

Independent Variable – RGDPPC					
Variables	**Observation**	**Mean**	**Std Deviation**	**Maximum**	**Minimum**
RGDPPC	38	17.78	14.59	70.96	1.86
FDI	38	8.52	0.74	9.78	7.14
FDIsq	38	17.04	1.48	19.57	14.29
HC	38	1.49	0.25	1.94	1.19
FDI_HC	38	5.57	1.27	7.46	3.76
HHC	38	53.51	17.49	81.53	9.83
INV	38	36.22	19.57	89.38	14.16
GEXP	38	6.04	2.25	8.96	2.26
CPI	38	19.35	17.24	72.83	5.38
Independent Variable – RGDP					
Variables	Observation	Mean	Std Deviation	Maximum	Minimum
RGDP	38	2.1608	13.7967	14.6040	-76.4540
FDI	38	8.5244	0.7438	9.7875	7.1452
FDIsq	38	17.0489	1.4877	19.5751	14.2904
HC	38	1.4934	0.2562	1.9400	1.1963
FDI_HC	38	5.5723	1.2788	7.4600	3.7600
HHC	38	53.5104	17.4968	81.5352	9.8341
INV	38	36.2204	19.5723	89.3861	14.1687
GEXP	38	6.0419	2.2586	8.9636	2.2659
CPI	38	19.3504	17.2436	72.8355	5.3880

Table 3: Diagnostic Test

[IV – RGDPPC]	**F-Statistic [Probability]**	**[IV – RGDP]**	**F-Statistic [Probability]**
Serial Correlation Test Breusch-Godfrey	2.414 [0.1085]	Serial Correlation Test Breusch-Godfrey	0.500 [0.6115]
Breusch-Godfrey Heteroskedasticity Test	0.7787 [0.6245]	Breusch-Godfrey Heteroskedasticity Test	2.3554 [0.0436]
Heteroskedasticity Test ARCH	0.6781 [0.4158]	Heteroskedasticity Test ARCH	9.1678 [0.0046]
Normality Test	-[0.0162]	Normality Test	[0.0000]
Ramsey Reset Test	5.9299 [0.0215]	Ramsey Reset Test	140.98 [0.0000]

Source: Authors' computation 2020

Results and Discussions

Our result of the impact of FDI on economic growth is grouped into two using two measures of economic growth, real GDP per capita and real GDP with the aim to ascertain the impact of sustainability of FDI on the economic growth. Since it is a known fact that for FDI inflows to improve an economy, its attraction to the economy should be crucial and indications to improving and

sustaining present growth in the economy. An understanding to determine how sustainable FDI inflow impact on the economic growth over times is the focus of this study. We use the OLS regression to estimate the model of FDI and interactive FDI and Human capital to determine the relationship between FDI and growth as well as its sustainability. The results obtained from the regression are presented in table 5. From the real GDP per capita measure, the result shows that 54% of the real GDP per capita model is explained by the explanatory variables and for the real GDP measure, 42% of the real GDP model is explained by the explanatory variables. It is identified in the result that there is positive relationship between FDI, FDI_HC (interaction of FDI with Human capital) and real GDP per capita while there is negative relationship between FDISQ (an indication of increasing returns to growth), human capital and real GDP per capita. The other result shows that there is positive relationship between FDI_HC, FDISQ and real GDP while negative relationship exists between FDI, human capital and real GDP. The result further indicates that interaction of FDI-human capital has higher impact of 10.83% and 52.83% on real GDP per capita and real GDP respectively. However, human capital has negative impact on the growth of the economy using the two measures. The negative relationship between GDP growth, GDP per capita growth and human capital is not expected and it is an indication that human capital development seeking FDI is tend to be shifted to those sectors or segment of the economy that are abundant of skilled and disciplined labour force with an improvement factor of FDI. This submission is largely in agreement with Otepola (2002) which states that Nigeria is reported with low level of existing human capital. Thus, human capital in the country may not necessarily induce FDI for growth of the economy. The result also reveals the relationship between the inflation coefficient and the real GDP per capita as positive and with real GDP as negative indicating that the development with the macro economy is such that it encourages FDI inflows due to more money in circulation. This implies that the various policy initiatives aimed at encouraging investors is tending towards increasing the volume of money in circulation while the income distribution is not evenly distributed to achieve growth in the economy. The positive relationship between real GDP per capita, real GDP and household consumption expenditure suggests that if FDI inflows increase it will boost the consumption of household and encourages more FDI inflows for sustainability. The total government expenditure has a positive relationship with the real GDP and real GDP per capita. This suggests the size of the government variable is an indication that the nature of government size encourages the FDI inflows in terms of infrastructure provisions and enabling environment for investment to strive. The rate of investment has a positive relation with real GDP per capita and negative relationship with real GDP, with significant coefficient. It shows the nature of investment rate will boost FDI inflows, with corresponding government expenditure, and this will also bring about increase in household consumption. This signifies increasing rate of FDI inflows in the economy. The submission from this result is that there is increasing return to GDP per capita growth and GDP growth through FDI interaction with human capital while there is increasing return to GDP per capita and decreasing return to GDP growth through FDI. This stance is more pronounced and significant than GDP growth and GDP per capita growth through FDI and Human capital as it is a distinctive variable. This result claims that GDP per capita growth and GDP growth is largely explained by the explanatory variables. It is deduced that human capital and interactive FDI-human capital have significant relationship with GDP growth while household consumption and inflation have significant relationship with GDP per capita growth. From the discussion of results, it has shown that FDI can have increasing return to GDP growth if human capital and interactive FDI-human capital (or endogenous human capital) can be improved and FDI can have increasing return to GDP per capita growth if household consumption source can be improved and inflation rate is maintained at a single digit. Meanwhile FDI sustainability can be achieved if the endogenous human capital can be up skilled and enhanced for increasing productivity, income growth and as well positioned a single-digit inflation rate.

Table 4: Unit root Test

Variable	ADF Level	ADF 1st Difference	PP level	PPP 1st Difference	Decision
RGDP	0.8978	0.1208	0.9278	0.1208	I(1)
RGDPPC	0.0144	0.0000	0.0162	0.0000	I(0)
FDI	0.1689	0.0000	0.1943	0.0000	I(0)
CPI	0.0566	0.0000	0.0743	0.0000	I(0)
INV	0.0182	0.0000	0.0182	0.0000	I(0)
HHC	0.1521	0.0000	0.1465	0.0000	I(0)
GEXP	1.0000	0.8489	1.0000	0.0022	I(0)
FDI^2 (FDISQ)	0.1732	0.0000	0.1579	0.0000	I(0)
HC	0.6709	0.4189	0.9997	0.4189	I(1)
FDI*HC	0.1521	0.0000	0.1465	0.0000	I(0)

Source: Authors' computation 2020

Table 5: OLS Regression result

Variable: [IV – RGDPPC]	Coefficient [Standard Error]	Variable: [IV – RGDP]	Coefficient [Standard Error]
FDI	0.0024 [0.0058]	FDI	-0.0066 [0.0061]
FDISQ	-1.37 [1.84]	FDISQ	1.65 [1.94]
HC	-125.64 [111.09]	HC	-265.57** [117.01]
FDI_HC	10.83 [28.28]	FDI_HC	52.83* [29.78]
HHC	0.694* [0.40]	HHC	0.12 [0.42]
INV	0.289 [0.41]	INV	-0.38 [0.43]
LGEXP	4.872 [3.25]	LGEXP	0.96 [3.42]
CPI	0.242* [0.13]	CPI	-0.083 [0.13]
C	56.59 [47.08]	C	140.45*** [49.59]
	R-squared = 0.54		*R-squared = 0.42*
	Adj. R-squared = 0.41		*Adj. R-squared = 0.26*
	F-Statistic = 4.21		*F-Statistic = 2.68*
	Prob (F-Statistic) = 0.0019		*Prob (F-Statistic) = 0.024*

*,** and *** indicate significance at 10%, 5% and 1% and figures in parentheses are the standard error.
Source: Authors' computation 2020

Conclusion and Recommendation

This paper examines the impact of FDI to the Nigerian economic growth using annual time series from 1981 to 2018. Our estimated results indicate that apart from significant contribution of FDI to growth, there has been increasing return to growth coming from the inflow of FDI into the economy. Also, the contribution of human capital to GDP growth via the flow of FDI is highly significant. The result further indicates that both

household consumption and government expenditure have greater impact on the Nigerian economy. Our suggestion however is that government should promote policies that will help in improving human capital in the country which we believe will further intensify the contribution of FDI toward economic growth. Since FDI inflow has been very instrumental and significant to the growth process of the economy over times, government should take necessary steps to entice various investors into the country. Further researches in this area can consider cross country study and/or can take cognizance of other components of capital flows into the economy.

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