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The Impact of Foreign Direct Investment on the Utilisation of Natural Resources in Nigeria

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Abstract

The purpose of this article is to examine the impact of FDI on the utilization of natural resources in Nigeria. This article uses annual data from 1970 to 2015 and employs the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration, a testing procedure for level relationships developed by Pesaran and Shin (1999) and Pesaran et al. (2001). The ARDL cointegration approach examines the long-run relationship between FDI and natural resources on one hand and GDP on the other hand. The empirical results indicate that aggregate FDI has a positive and statistically significant impact on both natural resources and GDP in Nigeria. The 'OIL' variable presents a positive coefficient while GDP presents a negative estimated coefficient. From a policy point of view, countries such as Nigeria, endowed with natural resources, should pursue policies targeted at full deregulation (privatisation) of their natural resource sector to better utilise the abundance of their natural resources and attract additional FDI. Regarding GDP, there should be concerted efforts to boost the performance of the non-oil sector in Nigeria through more investments in the agricultural and industrial sectors which will make the growth of the economy spread across other sectors and, in turn, encourage national economic growth and development, reducing the possibility of the 'resource curse'. This is the first paper that employs ARDL in determining the impact of FDI on the utilization of natural resources in Nigeria.

Keywords: *FDI; Natural resources; GDP; Nigeria.*

Introduction

Over the past three decades, FDI has been subjected to considerable scrutiny in terms of its potential benefits (e.g. on employment, knowledge and technological spillovers) and impact on the economic growth of host countries (UNCTAD, 2016). It is reasonable to expect that the linkages between FDI and natural resources will be strong but it is less evident whether the impact of FDI on natural resources should be different for, for example, countries in different stages of development or whether inflows of FDI react differently with different types of natural resources. Large quantum of foreign direct investment (FDI) is seen to be attracted by developing countries through Multinational companies. For many decades, FDI has been considered to be a major source of capital accumulation and utilisation of resources, (especially in resource rich countries like Nigeria), which in turn leads to economic growth in a recipient economy; therefore, these countries ensure all appropriate policies are established and put in

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place to attract the right quantum of inward FDI via removing restrictions of foreign investment, enhancing domestic economic policies and regulations, promoting the financial sector development, and producing encouraging environments for foreign investment (UNCTAD, 2016).

While many studies show that there exists a positive effect of FDI on host country economic growth, the debate is still ongoing. Empirical studies conclude mixed results about the impact of FDI on economic growth. Studies like (Reganati et al. 2007; Havranek and Irsova 2011) conclude a positive effect of FDI on economic growth. Nigeria's economic growth level today, is as a result of the utilisation of natural resources in the country, by MNCs. However, other studies showed the inability to find any positive effect of FDI on economic growth (Borensztein et al. 1998). The relationship between FDI and economic growth has been explored from many aspects. Studies reveal that the relationship between FDI and the host country's economic growth is dependent on many other relevant factors and a change in these variables may bring about a substantial alteration in the relationship. Natural resource is considered one of the most important factors determining the role FDI plays in economic growth in the host country.

According to the United Nations Development Programme (UNDP, 2007), many African countries have the advantage of natural resources in abundance, resulting in resource-seeking investments and a large share of the inward flow to Africa was in the extractive industries, particular in petroleum, which has benefited from increasing large shares of FDI in recent years. The majority of inflows during 2005 were in the mining, and in particular oil and gas, and the service sector. More than one half of FDI in Africa during 2005 originated from Europe, followed by France, the Netherlands, the United Kingdom, and from South African and the United States (UNDP, 2007).

It should be noted that the exploration and production of oil results in foreign direct investment (FDI) inflows only when the activities are financed by foreign Multinational Companies (MNCs). In Sub-Saharan Africa (SSA), foreign firms dominate the oil industry. For example, in 2015, the share of oil production by foreign firms was 57% for SSA. This compares with a foreign share production of about 18% for Latin America, 11% for transition countries and 19% for all developing countries (UNCTAD, 2016). Also, the share of foreign production in the top four oil exporting countries in SSA is quite high: about 51% for Nigeria, 64% for Sudan, 74% for Angola, and 92% for Equatorial Guinea (UNCTAD, 2016). One reason for the dominance of MNCs in Africa's extractive industries is that mineral extraction is capital-intensive, requires sophisticated technology, has long gestation periods

and is also risky and the discovery of oil is not guaranteed after spending an extensive amount of resources on exploration. As a consequence, the increased exploration and production in the region has led to a substantial increase in extractive industry FDI, like in the case of Nigeria. Therefore, countries that are rich in natural resources, in particular oil, tend to utilise their natural resource as a result of exploration and production of oil through FDI. It is therefore important to understand the interaction between FDI and natural resources in host countries.

This paper makes major contributions to the FDI literature. There is a large amount of literature on the determinants of FDI to developing countries however, to the best of my knowledge, no paper has examined the impact of FDI on the utilization of natural resources in Nigeria.

The paper is an attempt to investigate the impact of FDI on the utilization of natural resources in Nigeria. The paper tries to determine whether the impact of FDI on the utilization of natural resources in Nigeria, brings about economic growth and development to a certain level. The rest of this paper is organized as follows: Section 2 describes the literature review. Section 3 details the methodology. In Section 4 we present the empirical results and discussion, focusing on the results of the unit root tests and of the ARDL cointegration methodology. We conclude in Section 5.

A brief review of related empirical literature

In resource seeking FDI, the motivation of foreign investment lies in the investor seeking to obtain access to natural resources or production material.

According to Dunning (1976; 1981a; 1988; 1993; 1994; 1995; 2000), he developed three basic elements to explain FDI: ownership advantages, location advantages and internalisation advantages (hence the OLI acronym). Dunning argues that these elements answer questions related to the why, where and how of FDI (Galan and Gonzalez-Benito, 2001). The paradigm, offers a useful framework for Nigeria in attracting FDI flows. Seeing that Nigeria is a country rich in natural resources, this framework applies to the Nigerian situation. In terms of ownership (O), because Nigeria is rich in natural resources, foreign investors are motivated to bring in their technology and forms of skills to extract from the resource-rich country. With location (L), investors are attracted to Nigeria because of its richness in natural resources and this serves as a motive for them to invest. Internalisation (I) applies to Nigeria too as these foreign investors, who do not own oil wells come to Nigeria for investment, making use of Nigeria's

oil wells. The theoretical application therefore makes a stronger case for why Nigeria attracts FDI inflows.

Fu (2007) examined firm level data from 17 emerging economies for the period 2002-2005 in order to find out the impact of FDI inflow on the productivity and spillover effect on the host country firms. The study found a strong vertical spillover effect for both supplier and consumer firms in the domestic economy. Examining the data from 1970-1990 for a large group of OECD and non-OECD countries, Femi (2012) found that FDI inflow affected economic growth in the host country via technology and knowledge spillovers.

However, in a metadata analysis of the FDI spillover, Havranek and Irsova (2011) found that the spillover effect of FDI in local economic is smaller than projected by most of the papers. Examining the firm level data from Venezuela, De Mello (2007) doubts the spillover theory by finding that FDI inflow does have a positive but very small effect on the FDI receiving firm while a negative effect on the productivity of domestically owned firms.

The studies while exploring many aspects of the FDI-growth relationships, do not examine the possible role of the natural resource abundance in the host country on the FDI-growth relationship and on the potential productivity spillovers. Multinational firms invest beyond the national boarder and are attracted to different locations for many reasons. Natural recourse endowment is one of the many factors attracting FDI (Kekic 2005). Asiedu (2006) found for a set of African countries that besides other things natural resources attract FDI inflow.

However, the abundance of natural resources in a country also effects the type of FDI the country attracts. Analysing the role of natural resources in attracting FDI, Poelhekke and Van der Ploeg (2010) found out that natural resources attract higher resource FDI and crowds out the non-resource FDI. This effect of natural resource abundance on the sector wise composition of natural resource alter the FDI-growth relationship in the overall economy of the country. According to Asiedu (2006) “FDI does not have the positive spillovers of job creation and technology transfers because countries that are rich in resources generally channel FDI to the natural resource industries”.

While the abundance of natural resources attracts FDI into the country and change the composition of FDI inflow in favour of the resource sector, the size of the resource sector of an economy is generally associated with the slower growth of the economy. Natural resource rich countries fail to grow faster than the resource scarce countries (Sachs and Warner 1997).

The phenomenon is often referred to as the "resource curse". Many studies have attempted to explain the causes behind the resource curse. One of the main causes is that resource abundance lead to higher corruption in government. In a panel data analysis of natural resources, Ayanwale (2007) found out that natural resources led to increase in corruption level. De Rosa et.al (2012) concluded that the high degree of resource exports is associated with the worse government effectiveness and reduced level of competitiveness. Natural resource abundance attracts the FDI into resource sector and causes the resource sector to grow larger. The larger the size of the resource sector is, the larger the resource curse is expected to be and the economic growth of the country is expected to be slower.

The abundance of natural resources in the country is expected to attract larger proportion of the FDI inflow into the resource sector. The concentration of FDI in the resource sector expands the sector relative to the size of the economy. However, as explained by the phenomenon of resource curse, countries with the larger resource sector grow slower than countries with smaller resource sector. Therefore, it is logical to think that the expansion of the resource sector due to inflow of FDI would speed up the "slowing down" effect of the resource sector the overall economic growth of the country.

Natural resources

Nigeria's natural resources include oil and natural gas, tin, columbite, iron ore, coal, limestone, lead and zinc. Nigeria is a country rich in natural resources, consequently most industry activity revolves around these. Nigeria is Africa's leading crude oil producer and oil is the country's most important natural resource, generating up to 95 percent of Nigeria's revenues. The country is a member of OPEC. The continued increase in crude oil means continued growth in this sector (Jean-German, 2012).

The Federal government holds all mineral rights and is responsible for issuing exploration and development licenses. The Minerals and Mining Act, 2007, and the Petroleum Act of 1969 form the legal basis for exploration and production activity in the mineral sector (IMF, 2013). Table 1 below provides a list of natural resources obtainable in Nigeria.

Table 1. A list of natural resources in Nigeria

States/Towns	Mineral resources

Rivers, Cross River, Akwa Ibom , Delta, Edo, Imo, Abia, Bayelsa	Oil and gas
Enugu	Coal
Ondo, Oyo, Cross River	Cocoa/Bitumen
Nkalagu, Ewekoro, Calabar	Cement
Agbaje, Ajaokuta, Aladja	Iron Ore
Asaba	Ignite
Jos	Tin
Abia, Ebonyi	Salt
Cross River, Delta, Edo	Rubber
Delta, Imo Cross River, Rivers, Kogi	Palm oil
Sapele, Port Harcourt	Ply wood
Igbeti	Marble
Abakaliki, Ogoja	Lead/Zinc
Sokoto, Ewekoro, Ukpilla, Abeokuta	Limestone
Sokoto, Ilesha	Gold

Source: Generated by the author (2018)

Recent Foreign investors in Nigeria

Historically, the largest beneficiary of FDI has been the oil and gas sector. Over the last few years, Nigeria has become the preferred destination for foreign direct investment in Africa, affecting the oil and gas sector. Nigeria is ranked 19 out of 54 African countries in the Quantum Global Africa Investment Index, largely reflecting the large size of the economy and population. It received US$4.4 billion in foreign direct investment (FDI) in 2016, becoming one of the largest beneficiaries of FDI in Africa (UNCTAD, 2017). Due to the high costs involved, a number of indigenous oil companies have relied on FDI to fund their acquisitions of these upstream assets, mostly through international equity inflows. Multinational energy corporations in Nigeria, such as Total, Chevron and ExxonMobil have been active in the oil and gas exploration and production, natural gas liquefaction and the marketing of petroleum products and related services and as a result, have been implementing a growing number of community outreach projects, primarily in the fields of health, training and education (Akinwalere *et al.* (2017).

One of Nigeria's top sources of Foreign Direct Investment (FDI), China invested $1.79 billion in the West African country last year. The

investments, which are non-financial direct investments, were mainly those of Chinese companies involved in petroleum, iron and steel, agricultural and manufacturing sectors, as well as free trade zone. The Chinese Government was committed to encouraging and supporting Chinese companies' investment in Nigeria, just as it continues supporting the country's efforts at attracting foreign investment (UNCTAD, 2017).

Attracted by this favourable investment climate and the high returns on investment that Nigeria offers, investors from Canada and the US were among those that visited the country in 2013 to further explore investment opportunities. The Canadian Minister of International Trade, Ed Fast, who led a trade delegation to Nigeria, stressed the need for the government to protect these growing investments in order to attract more FDI. He gave this advice at a meeting with top Nigerian government officials headed by the Minister of Trade and Investment, Olusegun Aganga, under the auspices of the Nigeria-Canada Bi-National Commission.

The current volume of trade between both countries was estimated at $2.7bn in 2011. This figure was expected to rise to $6bn by 2016, following commitments made at the meeting (Akinboade, 2014). Akinboade (2014) further reported that IMW Industries, one of the Canadian firms, entered into a partnership agreement with Dangote Industries Limited in 2010 to provide cheap and clean energy to meet the transportation needs of the company. As part of the deal, IMW Industries will manufacture the fueling equipment for a nationwide network of Compressed Natural Gas (CNG) that is expected to reduce cost of maintaining fuel for Dangote's fleet of trucks.

A Fortune 500 Company, General Electric's (GE) global CEO, Jeffrey Immelt, also toured Nigeria earlier in 2011. The visit was a follow-up to his trip to the country last year, during which he disclosed that GE would invest massively in the Nigerian economy over the next few years (African Business, 2012).

Experts from UNCTAD (UNCTAD, 2014) have suggested the steady inflow of FDI into Nigeria will accelerate the country's quest to rank among the top 20 economies in the world by the year 2020. They point out substantial improvement in power supply, as is currently being recorded, will help Nigeria move rapidly to the next level of development. It is also expected that the various power projects which General Electric (GE) intends to execute in partnership with local firms, will further boost output. This will have multiplier effect on virtually all sectors of the economy, as it will lead to lower production costs and more profitability for companies. Small and medium-scale enterprises (SMEs) in the country which have had to rely on alternative power will also be able to employ more hands and add value to the economy and, in turn, make it more attractive to foreign investors.

The American company¸ which operates in four main industries: energy, capital finance, technology infrastructure and consumer and industrial goods, signed a memorandum of understanding with the Nigerian government to invest about $1bn (N157bn) over the next five years in a firm located in Calabar, Cross River State to develop new power plants and a cyber-shop that would enhance the vocational skills of the people. According to Immelt, an initial commitment of $250m (N40bn) will be used to expand the company's manufacturing and servicing capabilities in the country (African Business, March, 2012).

Immelt expressed the confidence that the investment would make Nigeria a regional hub for manufacturing, service and innovation with an improved ability to support a broader range of product lines in power generation as well as oil and gas exploration and production. GE also signed an agreement with the government to overhaul the railways sector, which has been lying comatose over the years, and reached a deal with the Ministry of Health to build the capacity of its personnel as well as a commitment to provide state-of-the-art medical facilities.

The American conglomerate restated its resolve to generate up to 10,000 MW of electricity to address the power needs of Nigeria. To this end, GE signed a joint development agreement with power developers that will generate a total of up to 1,500 megawatts (African Business, 2012).

South Africa is the third largest foreign investor in Africa following the UK. In recent years, South Africa has become prominent as an investor in telecommunications in the rest of Africa, including Tanzania, Cameroon, Nigeria, Rwanda, Swaziland, Mozambique, and Uganda. The rapid expansion of fast food outlets and supermarkets in Africa has been led by South African companies (African Development Report, 2003). Nigeria has been the largest recipient of FDI in Africa over the last decade, with announcements totalling almost $116 billion in 2003-11, representing about 9 percent of GDP. Eighty percent of that FDI has been in the oil and gas sector and it is believed that Nigeria's substantial oil reserves will continue to attract funds over the medium term (UNCTAD, 2014). It has also been projected (UNCTAD, 2014) that Nigerian FDI inflows will average $23 billion annually over the next five years and will in turn create 95,000 jobs. Greenfield FDI projects in Nigeria have grown at a compound rate of close to 20 percent since 2007. However, while more than 50 percent of the FDI capital invested since 2007 has been into capital intensive resource sectors (primarily oil), there had been "*particularly strong growth*" in investment into telecommunications, with the sector attracting 23.9 percent of FDI projects between 2007 and 2013 (EY Report, 2014, p.13).

Akinboade (2014) reports that greenfield FDI projects into Nigeria have grown at a compound rate of close to 20 percent since 2007, positioning it among the 10 countries with the highest growth rates in Africa. Nigeria has also attracted the most FDI capital and the second most FDI projects in Sub-Saharan Africa over that period, making it one of the star performers in a period in which FDI flows into the region have been fairly robust.

FDI allows a country to bring in technology and knowledge that are not readily available to domestic investors, and this way increases productivity growth throughout the country. With FDI, social benefits involved are job creation, improving human capital, broadening of the tax base, boosting economic activity, boosting exports, better integration into world markets, realization of comparative and competitive advantages, realization of scale and scope of economies etc (Akinwalere *et al.* (2017).

Data and Methodology

The data used for this research paper were annual time series data that were obtained from diverse sources. Data on FDI, Natural Resources, and GDP were obtained from the World Development Indicators (WDI) database of the World Bank, and from the International Financial Statistics (IFS) database of the IMF. The sample period is from 1970 to 2015. The sample period is dictated by the availability of data.

It is important to avoid running regressions with nonstationary time series, and that was why we followed the literature (e.g., Bahmani-Oskooee and Hajilee, 2013) and ensured that we tested for the stationarity of the variables. As a result of this, it was important that we apply the Ng and Perron (2001) unit root test.

Also, we had to employ the Autoregressive Distributed Lag (ARDL) cointegration approach (Pesaran and Shin, 1999; Pesaran *et al*., 2001) and the reason for this was to test and establish both the long- and short-run relationships between the variables. The major advantage of this cointegration method over other cointegration methods is that the ARDL approach is the most suitable for testing the long-run relationship among the variables when it is not known with certainty whether the regressors are purely I(0), purely I(I) or mutually cointegrated, as long as none of the regressors is integrated of I(2). Fousekis *et al.* (2016) stated a few advantages of the ARDL approach to cointegration testing. Among the advantages was that it is much more effective if used in small samples compared to alternative multivariate cointegration procedures and is more efficient than the standard Engle and Granger two step approach. To

illustrate, the ARDL (*p,q*) cointegration model with two time series y_t and x_t (t = 1, 2, …, T) has the following form:

$$\Delta y = \alpha_0 + \rho y_{t-1} + \theta x_{t-1} + \gamma z_t + \sum_{j=1}^{p-1} a_j \Delta y_{t-j} + \sum_{j=0}^{q-1} \pi_j \Delta x_{t-j} + e_t \quad (1)$$

where z_t is a vector of deterministic regressors, and e_t is a random disturbance term (an *iid* stochastic process).

Pesaran *et al*. (2001) show that the null of 'no cointegration', i.e., $H_0: \rho = \theta = 0$, against the alternative hypothesis $H_1: \rho \neq 0$ or $\theta \neq 0$, can be tested by employing a modified *F*-test. Alternatively, the *t-BDM* test proposed by Banerjee *et al.* (1998), which tests the null of no cointegration $\rho = 0$ against the alternative $\rho < 0$, can be employed. The two bounds involved in the test are namely the upper bound and a lower bound. If the estimated value of the modified F or t-BDM statistic exceeds the upper critical bound then the null is rejected (i.e., y_t and x_t are cointegrated), if it lies below the lower critical bound the null cannot be rejected (i.e., y_t and x_t are not cointegrated), and if it lies between the critical bounds the test is inconclusive.

The F_{PSS} statistics follow an asymptotic distribution and, therefore, Pesaran *et al*. (2001) developed suitable critical values (bounds) based on 500 and 1000 observations (as a result of Monte Carlo replications). However, Narayan (2005) argued that the above critical values are inappropriate for small samples such as those typically used in applications in macroeconomics. Accordingly, Narayan (2005) developed critical values for the F_{PSS} bounds test for sample sizes between 30 to 80 observations.

If cointegration is confirmed, the long-run model can be produced from the reduced form solution of Equation (1) when the first-differenced variables are jointly equal to zero. In its general form the ARDL(*p*,*q*) model is:

$$y_t = \beta_0 + \sum_{i=1}^{p} \beta_{1,i} y_{t-i} + \sum_{i=0}^{q} \beta_{2,i} x_{t-i} + \varepsilon_t \quad (2)$$

Using nonlinear functions of the estimated parameters from Equation (2), we can then obtain the long-run parameters:

$$a_0 = \frac{\beta_0}{1-\sum_{i=1}^{p}\beta_{1,i}} \text{ and } a_1 = \frac{\sum_{i=0}^{q}\beta_{2,i}}{1-\sum_{i=1}^{p}\beta_{1,i}} \quad (3)$$

where, a_0 is the constant term and a_1 is the long-run slope coefficient.

At the final step, we can obtain the short-run dynamic coefficients for the respective optimal ARDL(*p*,*q*) by estimating the ARDL-ECM:

$$\Delta y_t = \delta_0 + \sum_{i=1}^{p}\delta_{1,i}\Delta y_{t-i} + \sum_{i=0}^{q}\delta_{2,i}\Delta x_{t-i} + \gamma EC_{t-1} + e_t \quad (4)$$

where γEC_{t-1} is the error correction term with γ showing the speed of correction after an exogenous shock to the dependent variable y_t.

Another aspect of the Model Selection test looked at was the application of the Schwarz information criterion (SIC) rather than the Akaike information criterion (AIC). The Schwarz information criterion (SIC) is better used for forecasting since it has been empirically tested and found to be able to predict future values of the time series (Koehler and Murphree, 1988). Therefore, the choice of the optimal ARDL specification is based on the Schwarz Information Criterion (SIC), which is asymptotically consistent for the lag length and is favoured by Pesaran and Shin (1999), starting with maximum lag length of four given the small sample size.

Empirical results and discussion

Table 2. Variables employed and their definitions

Variable	Definition
FDI	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP.
OIL	Oil rents are the difference between the value of crude oil production at world prices and total costs of production.
GDP	GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of

	fabricated assets or for depletion and degradation of natural resources. Data are in constant local currency.

Source: World Developments Indicators (http://data.worldbank.org/data-catalog/world-development-indicators) and International Financial Statistics (http://data.imf.org/?sk=5DABAFF2-C5AD-4D27-A175-1253419C02D1) databases.

Unit root tests results

The ARDL cointegration methodology (Pesaran *et al*., 2001) employed in this study, allows for the inclusion of both *I*(0) and *I*(1) regressors in a long-run relationship and does not require all the regressors to be integrated of the same order. However, according to Pesaran *et al*. (2001) the possible presence of*I*(2) variables will turn the estimated F_{PSS} statistic invalid and, therefore, pretesting for the order of integration of the series remains essential.

Table 3 presents the Ng and Perron (2001) unit root tests results on the level and first differences of the variables employed. The values of the MZ_a^{GLS}, MZ_t^{GLS}, MSB^{GLS} and MP_T^{GLS} statistics results suggest that the foreign direct investment (FDI) is integrated of order zero (*I*(0)), i.e. they are stationary in levels, while the variables of oil rents (OIL) and GDP (GDP) are all integrated of order one, i.e.,*I*(1). Given the results below, the ARDL cointegration methodology is the only linear cointegration methodology that can be applied to this specific dataset (within a time series framework) which includes a mixture of stationary and first difference stationary variables.

Table 3. Ng-Perron (2001) unit root

Variables	MZa C	MZt C	MSB C	MPT C	K	MZa C/T	MZt C/T	MSB C/T	MPT C/T	K
FDI	-15.5559 ***	-2.77062 ***	0.17811**	1.64384***	0	-16.6203*	-2.8318*	0.17039*	5.78713*	0
GDP	-2.21681	-0.97073	0.43790	10.4220	2	-4.63959	-1.5215	0.32795	19.6299	2
OIL	-3.14594	-1.20648	0.38350	7.71768	2	-12.1877	-2.3360	0.19167	8.17762	0
ΔFDI	-20.5099 ***	-3.19783 ***	0.15592***	1.21041***	0	-19.4358**	-3.1167**	0.16036**	4.69216**	0
ΔGDP	-4.90592	-1.56511*	0.31902	4.99653	2	-18.9528**	-3.0668**	0.16181**	4.87836**	0
ΔOIL	-50.9889 ***	-5.03528 ***	0.09875***	0.51553***	1	-62.3972 ***	-5.5847***	0.08950***	1.46402***	1
	MZa C	**MZt C**	**MSB C**	**MPT C**	**MZa C/T**	**MZt C/T**	**MSB C/T**	**MPT C/T**		
1%	-13.80	-2.58	0.174	1.78	-23.80	-3.42	0.143	4.03		
5%	-8.10	-1.98	0.233	3.17	-17.30	-2.91	0.168	5.48		
10%	-5.70	-1.62	0.275	4.45	-14.20	-2.62	0.185	6.67		

Notes: Δ *denotes the first-difference operator while* k *denotes the optimal lag length and it has been chosen based on the Schwarz Information Criterion starting with max 4 lags. The critical values are from Ng and Perron (2001). ***, ** and * denote the rejection of the null of a unit root at the 1%, 5% and 10% significance level, respectively.*

ARDL cointegration results

Having confirmed the order of integration of the variables, we proceed to cointegration analysis. Table 4 presents the estimated values of the statistics along with the 95% and 99% lower and upper critical bounds taken from Pesaran et al. (2001). Given the small sample of this study we also report the critical bounds taken from Narayan (2005). According to the results, the estimated is 5.437 and since it is greater than the 99% upper bound we conclude in favour of the rejection of the null hypothesis of no cointegration.

Table 4. F- Bounds Test for cointegration

ARDL model: FDI, OIL, GDP

Test statistic	Value	Significance	I (0)	I (1)
F statistic	5.437253	10%	2.63	3.35
K	2	5%	3.1	3.87
Asymptotic	1000	2.5%	3.55	4.38
		1%	4.13	5

Notes: F_{PSS} *denotes the Pesaran et al. (2001)* F *statistic testing the joint null hypothesis of no cointegration* $H_0 : \rho = \theta = 0$. *The critical values correspond to* $k = 6$ *and were obtained from Pesaran et al. (2001) and Narayan (2005).* [a] *denotes rejection of the null hypothesis of no cointegration at the 1% significance level.*

Table 5 presents the estimates of the diagnostics test results for heteroscedasticity, autocorrelation, and normality. In particular, the results from the Breusch (1978) and Godfrey (1978a) serial correlation LM test and the Breusch and Pagan (1979) and Godfrey (1978b) homoscedasticity test suggest that the selected ARDL model does not present statistical significant evidence of autocorrelation or heteroscedasticity. In addition, the Bai and Ng (2005) normality test for time series observations suggests that the residuals are normally distributed.

Table 5. Statistics and Diagnostics

HET	**SC**	**NORM**
0.8182 [0.7851]	0.47062 [0.7903]	3.4888 [0.1059]

The White heteroskedasticity-consistent Standard Errors are used. SC denotes the Breusch- and Godfrey serial correlation LM test, HET denotes

the Breusch, Pagan and Godfrey homoscedasticity LM test, $NORM$ denotes the Bai and Ng (2005) normality test for time series observations.

Moreover, Figures 1 and 2 below display the resulting plots of the cumulative sum (CUSUM) and cumulative sum of squares tests (CUSUMSQ) (Brown *et al*., 1975) for the selected ARDL model. Reassuringly, there is no statistical evidence of parameter instability.

Since cointegration is confirmed, the next and final step is to estimate the long-run cointegrating relationship and also the ARDL Error Correction Model in order to make inferences also for the short-run horizon. Table 6 presents the estimates of both the long-run relationship (Panel A) and of the ARDL-ECM (Panel B). In the long-run relationship (Equation 5 below) we notice that the oil rents, and the GDP are statistically significant at the 5 and 1% significance level.

FDI = 20.06 - 0.06 GDP + 0.06 OIL (5)
(1.20) (0.07) (0.04)

Figure 1. Cumulative sum (CUSUM) test on the selected ARDL model

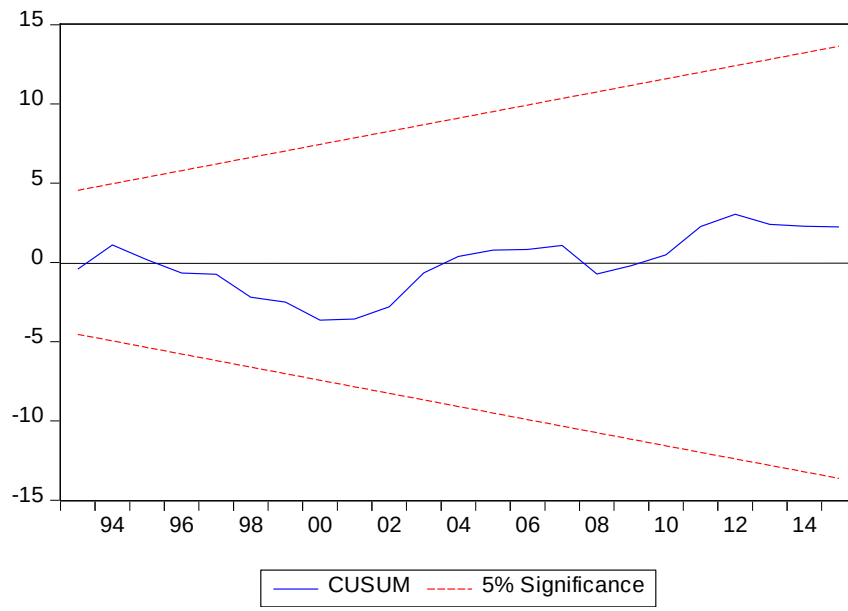


Figure 2. Cumulative sum of squares (CUSUMSQ) test on the selected ARDL model

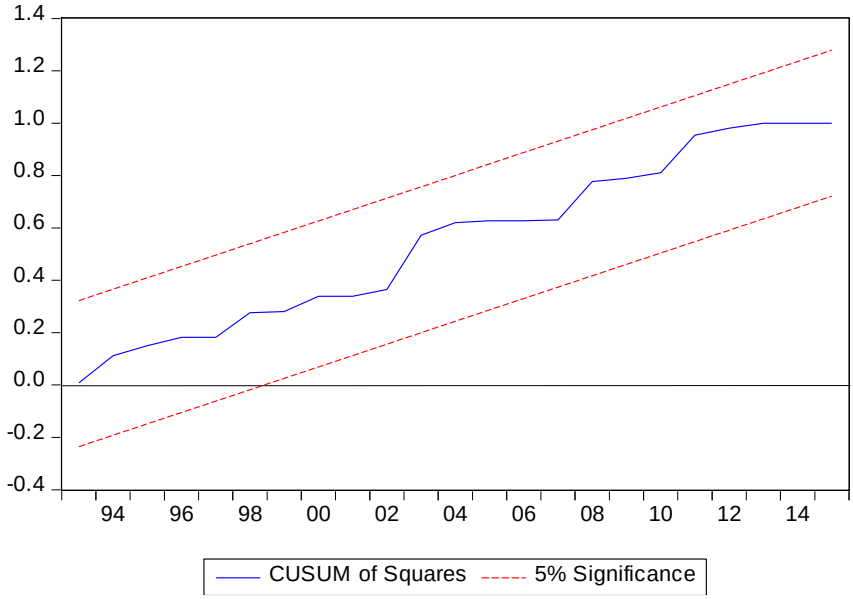


Table 6. The estimates of the long-run relationship and of the Error Correction Model

Panel A: Long-run relationship

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*p-value*
Constant	20.0664	1.2066	3.0555	0.0956
GDP	-0.0654**	0.0707	-2.5008	0.0391
OIL	0.0696**	0.0474	2.6221	0.0557

Panel B: Error Correction Model

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*p-value*
ΔGDP	-0.0480**	0.0823	-2.1656	0.0345
ΔOIL	0.1361**	0.0530	2.5534	0.0417
ECT	-0.5280	0.0841	-3.8975	0.0000

Notes: *** and ** denote significance at the 1% and 5% significance level, respectively.

The positive coefficient of oil rents (0.0696) is justified by Akinboade (2014). According to Akinboade (2014), who used Nigeria as a case study too, FDI is highly elastic with respect to natural resources. His results too show that FDI flows to Nigeria are co-integrated with natural resources. Thus, natural resources are the crucial factor where FDI flows are concerned. Ayanwale (2007) who also used Nigeria as a case study, confirmed that countries with an abundance of natural resources would receive more FDI. Akenbor and Oghoghomeh (2014) confirmed with their

results that natural resource endowments (especially oil) are utilized by FDI coming into Nigeria. Hence, once again, our finding supports *a priori* expectations and some previous results in relevant literature. Natural resources can positively impact on economic growth and encourage foreign investment, if resources are utilised well, especially where industrialisation is low. Nigeria's natural resources are potential sources of national wealth, and with the encouragement of FDI, such income could be used for infrastructure development, human capital development and health, all of which can support increased output levels within the country. Also, Nigeria's natural resources have facilitated the participation of foreign investors and if effectively managed can help diversify an economy into other productive sectors, thereby creating an enabling environment for economic growth and development.

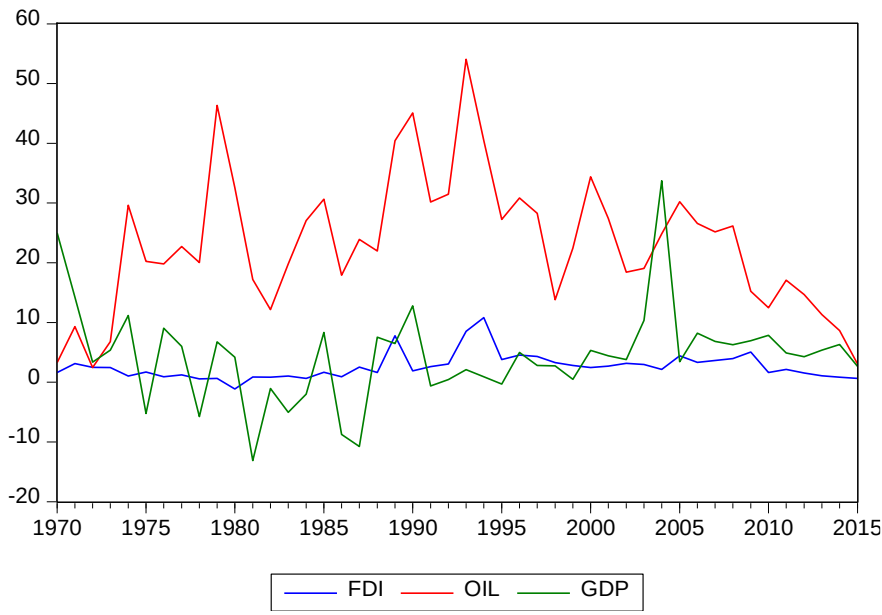
The empirical analysis of the Nigerian data shows that Nigeria's GDP (-0.0654) does not have a positive correlation with FDI, as a negative coefficient was obtained. This is an indication that the country's GDP is not improved by the utilisation of natural resources by FDI as investors are more concerned about exploiting the natural resources of the country. This may be partly explained by the fact that whatever profits are made from such oil-based foreign investments, they are mostly repatriated abroad. This, therefore, tends to impede the economic growth of the country, bringing about a negative relationship with FDI.

Their aim is to extract resources from the resource-rich Nigeria. Oregwu and Onuoha (2013) argued that, based on their findings, the negative sign of the Nigeria's GDP was because it had no direct correlation with the level of utilized resources by FDI to the domestic economy. According to them, this is an indication that economic growth in Nigeria is not brought about by expansion in the overall investment of FDI but determined by the oil sector which is not sufficient to bring the needed economic growth and development in Nigeria.

Also, the findings by Nurudeen, Wafure and Auta (2007), suggest that Nigeria's GDP has a significant negative effect on FDI. They argued that government has failed to employ policies to further open up other sectors of the economy in a manner conducive to facilitate economic growth and development. The inability of the government to increase its investment in other sectors of the economy, in the development of the nation's infrastructure (power supply, roads, telecommunication, etc.) has drastically reduced development in the country. Otepola (2002) further explained that the failure of the government to encourage production activity via production incentives and/or subsidies in sectors other than oil has led to a reduction in the economy's GDP. Therefore, a negative and

significant coefficient, as reflected in our findings, could be explained on the basis of the fact that this FDI going into Nigeria is predominantly resource (oil) seeking FDI, solely for the utilization of Nigeria's natural resources. Given that much of it is purely aimed at exploiting such natural resources and that much of the profits are repatriated abroad it maybe plausible that a negative relationship between utilised natural resources by FDI and Nigeria's GDP could emerge. This anomaly lies at the very heart of the "resource curse" argument which suggests that natural resources can actually create more damage than benefits if they are not governed to the advantage of host economies. This in turn brings about a massive reduction in the growth and development of the economy. Figure 3 is a graphical representation of levels of FDI, GDP and OIL in Nigeria. The evolution of FDI, GDP and OIL over time is plotted below.

Figure 3. Graphical representation of FDI, GDP and OIL



Conclusion

Dunning (1993) emphasised that the first motive for FDI is resource or asset seeking. The reason for this type of FDI is the unavailability of resources (e. g. raw materials or low cost labour), or high costs in the home country. In this case firms become further rivals in the potential and existing markets, and then decide to go abroad, particularly if exportation is the purpose of investment, because the reduction of their costs is a very

important factor. Moreover, the motives for this type of FDI are to increase the firm's profit and to elevate its competitive level in the market served or in the market it wants to serve (Dunning, 1993). This kind of FDI is attracted to countries with rich natural resources. Sometimes the purpose of this type of FDI is to take advantage of resources in a specific area and, FDI in this case is location-based. Other previous studies like Asiedu (2006) investigated the influence of natural resources in directing FDI flows to the region. The results suggest that countries in Africa that are endowed with natural resources will attract more FDI. According to Asiedu (2006), the common perception among many observers is that FDI in African countries is largely driven by their natural resources. Natural resources availability has a positive influence on FDI inflows. Therefore, natural resources are confirmed to be the crucial factor that attract FDI flows to Nigeria because these results have confirmed that countries with an abundance of natural resources would attract more FDI.

The variable representing 'oil' exhibits a positive relationship with FDI, an indication that FDI flows to Nigeria can be explained by resource-seeking FDI irrespective of any specific trade relation. Trading partners have a strong influence on Nigeria's natural resources utilisation. Their basic target is to extract resources from the resource-rich Nigeria and repatriate as much profit as possible. The findings will help to formulate appropriate policies for resource-rich poor-countries, policies that will ensure improvement of the economy of the country, due to resources being utilised by FDI.

The negative coefficient of the GDP variable indicates that FDI going into Nigeria is predominantly resource (oil) seeking FDI. Given that much of it is purely aimed at exploiting such natural resources and that much of the profits are repatriated abroad, we see a negative relationship between utilised resources by FDI and Nigeria's GDP emerging, making GDP have a negative coefficient.

The present Nigeria is an economy on the verge of economic growth and development and still plagued by the 'resource curse', which is the bane of Nigeria's present crisis. But the government is still making efforts to ensure the right quantum of FDI is attracted into the country. The findings from this study are very relevant and valid under the current government and has provided a blueprint for policy makers to establish appropriate policies to ensure diversification of the economy to ensure growth and development across other sectors and ensure resources are fairly and equitably distributed to avoid sectarian violence and ethnic conflicts. These recommendations stem from my findings and are relevant in ensuring a better business environment for investment in Nigeria.

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