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RESEARCH ARTICLE

SECTORAL INFLOW OF FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN NIGERIA: A CO-INTEGRATION ANALYSIS

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ARTICLE INFO	ABSTRACT		
Article History: Received 18 th December, 2015 Received in revised form 25 th January, 2016	The paper examined the sectoral inflow of FDI and economic growth in Nigeria. The objective of the study is to determine the impact of FDI on economic growth in terms of selected sectors of the Nigerian economy because most other studies examined the aggregate impact of FDI on economic growth in Nigeria. A growth model was estimated via a multiple regression technique to establish the relationship between inflow of FDI to manufacturing sector telecompunction sector and economic growth (GDP). The variables were tested for stationarity		
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INTRODUCTION

The most strategic factor influencing economic growth in any country is investment. It is one of the key elements for increased productivity. A strong correlation between investment and economic growth has been revealed by both theoretical and empirical studies by development economists in both less developed and more developed economics of the world. With the knowledge of the required rates of income growth needed to overcome underdevelopment as well as an assumed Incremental Capital Output Ratio (ICOR), economist at regular interval can calculate the required investment ratio needed to achieve the target growth. The traditional model of economic growth assumes labour to be in unlimited supply, holding that the only constraint on output growth is capital accumulation. Consequently, the most strategic factor affecting investment is capital accumulation. Capital accumulation is made possible principally through savings. Economic agent (deficit spending unit) borrows the accumulated savings for investment purposes.

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In countries where there exists poor savings habit, what is evident is that, realized savings fall short of desired investment and hence there will be disequilibrium in the product market(IS schedule) which in turn slows down the rate of economic growth. There has been deficiency in the capital accumulation needed for increased level of investment in Less Developed Countries (LDC), Nigeria in particular. This is due to the fact that there exist, low level of savings which is caused by factors such as high level of poverty, weak financial system which cannot properly mobilized funds internally, low level of entrepreneurial spirit among local entrepreneurs, among others. Nigeria is a mono-product economy, excessively dependent on the oil sector. This has also been seen to be responsible for deficiency in investment capital in the country. Amadi (2002) opined, "With oil as the main source of foreign exchange, a one-product economy must be continuously deficient in investment capital. Oil is subject to the vagaries of international capitalism. Therefore, revenue from it must be subject to serious fluctuations". The above situation in the country has created savings and foreign exchange gap. This culminates to a wide gap between the actual domestic investment fund and the required investment for accelerating economic growth.

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So, foreign capital has been regarded as an alternative to bridge the gap. Consequently, for any country, like Nigeria, with this investment gap to achieve a desired rate of economic growth, FDI has to be given due consideration. This is because FDI provides funds from other parts of the world to bridge the investment gap.

Jenkin and Thomas (2002) assert that FDI is expected to contribute to economic growth not only by providing foreign capital but also by crowding in additional domestic investment. By promoting both forward and backward linkages with the domestic economy, additional employment is indirectly created and further economic activity stimulated. Similarly, Adegbite and Ayadi (2010) averred that FDI helps to fill the domestic revenue-generation gap in a developing economy, given that most developing countries' governments do not seem to be able to generate sufficient revenue to meet their expenditure needs. Other benefits are in the form of externalities and the adoption of foreign technology. Externalities here can be in the form of licensing, imitation, employee training and the introduction of new processes by the foreign firms. Given the Nigerian economy's resource base, the country's foreign investment policy should move towards attracting and encouraging more inflow of foreign capital. The need for foreign direct investment (FDI) is born out of the under developed nature of the country's economy that essentially hinders the pace of her economic development. Generally, policy strategies of the Nigerian government towards foreign investments are shaped by two principal objectives of the desire for economic independence and the demand for economic development.

An analysis of foreign capital inflow to the country so far have revealed that only a limited number of multinationals or their subsidiaries have made foreign direct investment in the country. For instance, the country has witnessed high inflow of FDI as a result of investment in the Global System of Mobil (GSM) telecommunication. The oil sector of the economy has also witnessed an increased level of FDI as evidenced by the increasing numbers and operations of oil Multinationals Corporation in the country. However, there have been a lot of controversies in the country over the effectiveness of foreign capital inflow (that is FDI) in stimulating the rate of economic growth in Nigeria. Therefore, a sustainable and regulated foreign capital inflow is needed to boost the productive and absorptive capacity of the economy in order to correct the existing macroeconomic ills.

In attempt to achieving the above, successive government of this country has adopted different policy measures and incentives to stimulate Foreign Direct Investment inflow. In spite of these efforts the impact of Foreign Direct Investment on economic growth in general is still unimpressive and disappointing. Furthermore, with the high potentials of Nigeria; characterized by large market (large and virile population), natural resources endowment, arable agricultural land and cheap trained labour, to mention a few, available statistics unfortunately show that the country has not benefited much from foreign capital inflows. Therefore, objective of this study is to ascertain the sectorial impact of FDI on Economic growth in Nigeria. The selected sectors are manufacturing, telecommunication and oil sectors.

LITERATURE REVIEW

Conceptual Framework : Tadaro, (1999), defined FDI as investment by large multinational corporations with headquarters in the developed nations. Amadi (2002) sees FDI as a distinctive feature of multinational enterprises. According to him, FDI is not simply an international transfer of capital but rather, the extension of enterprise from its home country. According to the International Monetary Fund (1985), Foreign Direct Investment is an investment made to acquire a lasting interest in a foreign enterprise with the purpose of having effective voice in management. Dunning (1981) describe it as an investment made by an investor based in a country to acquire assets in another country with the intention to manage the assets. Nwillima (2008) describe foreign direct investment as investment made so as to acquire a lasting management interest (for instance 10% of voting stocks) and at least 10% of equity shares in an enterprise operating in another country other than that of the investor's country.

Foreign Direct investment can also be described as an investment made by an investor or enterprises in another enterprise or equivalent in voting power or other means of control in another country with the aim to manage the investment and maximize profit. This investment involves not only the transfer of fund but also the transfer of physical capital, technique of production, managerial and marketing expertise, product advertising and business practice with the aim to make profit. In recent years due to the rapid growth and changes in global investment patterns, the definition of Foreign Direct Investment have been broadened to include the acquisition of a lasting management interest in a company or enterprise outside the investor's home country. Meanwhile, economic growth according to Lipsey and Crystal (1995) is the positive trend in the nation's total output over long term. This implies a sustained increase in Gross Domestic Product (GDP) for a long time. According to Dolan and Tomblin (1980) economic growth is most frequently expressed in terms of increase in Gross Domestic Product (GDP), a measure of the economy's total output of goods and services. This GDP as a measure of economic growth, like any other economic quantities, must be expressed in real terms. That is, it must be adjusted for the effects of inflation so as for it to provide a meaningful measure of growth overtime.

Theoretical Literature

The Eclectic Theory: The eclectic theory, which forms the theoretical framework of this paper, is due to Dunning (1981). The eclectic theory of foreign direct investment, often referred to as the OLI Paradigm, attempts to integrate these explanations. The O,L, and I in the paradigm refer to the three groups of conditions that determine whether a firm, industry or company will be a source or a host of foreign direct investment. These groups have ownership advantages, location considerations and internalization gains. According to this theory, ownership advantages, location-specific advantage and internalization gains determine the inflow of foreign direct investment into a country. Location-specific advantage must derive from the macroeconomic environment as well as from the country endowments. These specific endowments include

national resources, markets, labour, government policies etc necessary for foreign involvement.

The Neoclassical Theory

The neoclassical economists argue that FDI influences economic growth by increasing the amount of capital per person. However, because of diminishing returns to capital, it does not influence long-run economic growth. Even though FDI is positively correlated with economic growth, host countries require minimum human capital, economic stability and liberalized markets in order to benefit from long-term FDI inflows. Growth in neoclassical theory is brought about by increases in the quantity of factors of production and in the efficiency of their allocation. In a simple world of two factors (labour and capital), it is often presumed that low-income countries have abundant labour but scarce capital. This situation arises owing to shortage of domestic savings in these countries, which places constraint on capital formation and hence growth. Even where domestic inputs in addition to labour are readily available and hence no problem of input supply, increased production may be limited by scarcity of imported inputs upon which production processes in lowincome countries are based. International capital flows (ICFs) readily become an important means of helping developing countries to overcome their capital shortage problems. One of the components of international capital flows is foreign private direct investment (FDI). Other components are Official flows from bilateral sources (e.g developed and OPEC countries), multilateral sources (such as the World Bank and its two affiliates, the international Development Association IDA, and the international finance corporation-IFC, on concessional and non-concessional terms and Commercial Bank loans (including export credits).

Economic theory suggests that in free market economies capital will move from countries where it is abundant to countries where it is scarce. This pattern of movement will be informed by the returns on new investment opportunities, which are considered higher where capital is limited. The resultant capital relocation will boost investment in the recipient country and, as summers (2000) suggests, brings enormous social benefits. Underlying this theory is the premise that returns on capital decreases as more machinery is installed and new structures are built, although, in practice this is not always or even generally true.

Empirical Literature

A number of studies on the FDI - growth nexus both developed and developing countries exist in the literature. For instance, Lawrence and Mohammed (2014) investigated the nature of Foreign Direct Investment and its impact on sustainable economic growth in Nigeria. The study used co-integration and Error Correction Mechanism (ECM) to determine the relationship between FDI, its components and economic growth. The study found that continuous inflow of foreign direct investment in mining and quarrying, telecommunication, building and construction, trading and business and agricultural sectors have a robust impact on Nigeria's economics growth. Also, Fasanya (2012) studied the impact of foreign direct investment on economic growth in Nigeria for the period 1970-2010 making use of annual time series data through a neoclassical framework. The findings show that foreign direct investments have positive impact on economic growth in Nigeria and so does domestic investment. Cookey, Otto and Adeneye (2014) examined the effect of Foreign Direct Investment on economic growth in Nigeria between 1980 and 2012, using annual time series data obtained from secondary sources. The econometric techniques of Ordinary Least Squares (OLS) and Co-integration were used to analyze the data. The results of the analysis revealed that FDI inflow does not significantly impact on economic growth in Nigeria. Okon, Augustine and Chuku (2012) empirically investigate the relationship between foreign direct investment and economic growth in Nigeria between 1970 and 2008. The study reveals that there is endogeniety i.e., bi-directional relationship between FDI and economic growth in Nigeria and the Single and simultaneous equation systems shows that FDI and economic growth are jointly determined inNigeria and there is positive feedback from FDI to growth and from growth to FDI. Adoghor and Ewubare (2009) adopt co-integration and Error-Correction Model to examine causal and long run relationship between FDI and economic growth in Nigeria. The result suggests that FDI contributes to economic growth in Nigeria but the level of the contribution is insignificant contrary to our expectation.

Ray (2013) analyzed the causal relationship between Foreign Direct Investment (FDI) and economic growth in India for the period, 1990 to2011. The empirical analysis on basis of Ordinary Least Square Method suggests that there is positive relationship between foreign direct investment (FDI) and economic growth proxy by GDP. He asserted that for FDI to be a noteworthy provider to economic growth, India would do better by focusing on improving infrastructure, human resources, developing local entrepreneurship, creating a stable macroeconomic framework and conditions favourable for productive investments to augment the process of development. Louzi and Abadi (2011) examined FDI-led growth hypothesis in the case of Jordan. The study is based on time series data from 1990 to 2009. The econometric framework of cointegration and error correction mechanism was used to capture two way linkages between variables interest. The findings indicated that FDI inflows do not exert an independent influence on economic growth. However, domestic investment has a positive impact on economic growth.

Li and Liu (2005), used panel data of 84 countries to investigate the influence of FDI on economic growth. The study found a significant relationship between FDI and economic growth. Additionally, a stronger relationship was extracted when FDI is interacted with human capital. The reason being that stronger human capital poses better absorptive capacities due to the complementary nature of the FDI and human capital, most importantly for the developing countries. Jerome and Ogunkola (2004) noted that while the FDI regime in Nigeria was generally improving, some serious deficiencies remain. The deficiencies are mainly in the area of corporate environment (corporate law, bankruptcy, labour law, etc) and institutional uncertainty, as well as the rule of law. The establishment and the activities of the Economic and Financial Crimes Commission (EFCC), the Independent and Corrupt Practices Commission (ICPC), and the Nigerian Investment Promotion Commission (NIPC) are efforts to improving the corporate environment and upholding the rule of law.

Argument in support of FDI

Obeta and Anyanwu, (2013), postulate that FDI would help Africa in achieving her MDG agenda of reducing poverty level in the continent to half in 2015 as it has been reported that 48% of the African populations live on less than one dollar a day as against the 4% for Eastern and Central Europe and the 2% for the Middle East according the UN Millennium and the NEPAD Declarations in Asiedu (2005). Development economists such as Barro (1991) as well as Barro and Sala-I-Martin (1992) have identified a strong association between investment and economic growth. Hence, increasing foreign private investment is an important channel for increasing aggregate investment in FDI host country. Deducing from that background, it is obvious that FDI could ultimately impact on economic indicators as briefly analyzed below:

- (i) Employment: The presence of FDI has generated employment opportunities for the host country. Multinationals like Shell, Agip, MTN etc have created job opportunities for residents of the host economy.
- (ii) Increased Revenue: FDI can lead to increased tax revenue. By taxing FDI investor's profits and participating financially in their local operations, the Nigerian government is thought to be able to mobilize public financial resources for development project.
- (iii) Technology Transfer: Specifically, foreign investment is important to a developing country like Nigeria because it facilitates the transfer of modern technology to us. More importantly, as a result of foreign investment, the technical and organizational knowledge and information available for the production of many goods are made available to many foreign controlled enterprises established in developing countries.
- (iv) Promotion of Exports: Trade is another contribution of FDI. The promotion of exports is an important contribution made by MNCs. Exports by MNCs' affiliates has been one of the fastest growing components for world trade in recent years. Today, production and export to the MNCs' home countries and other developed markets tend to pre-occupy MNCs resident in the host country rather than production for host country's consumption.
- (v) Linkages Contribution: Backward and forward linkages may arise when foreign affiliates engage in transactions with local suppliers and customers. Backward linkage is encouraged in the presence of "local content requirement" which means that foreign firms have to purchase a certain percentage of intermediate inputs in a host country instead of importing from suppliers abroad. It is also possible that technology spillovers occur through forward linkages.

Argument against FDI

TNCs can have a negative impact on the direct transfer of technology to the FOEs, in terms of reducing the spillover from FDI in the host country in several ways. Tadaro (1999)

summarized the argument against multinational corporations saying; "Even though multinational corporations (MNCs) provide capital, they may lower domestic savings and investment by stifling competition and failure to reinvest much of their profits..."By that act, the multinationals have only succeeded in inhibiting the expansion of indigenous firms. Gbosi (2003) opined that the initial impact of multinational investment is to improve the foreign exchange position of the recipient nations. The long-run impact, however, may be to reduce foreign exchange earnings on both current and capital accounts. Furthermore, Gbosi stated that multinationals in theory, contribute to public revenue in the form of corporate taxes. But in practices they can also diminish that revenue via enjoyment of liberal tax concession, investment allowances, disguised public subsidies and tariff protection that are often provided by host government.

Jhingan (2002) opined that MNCs charge higher prices for imported equipment than the competitive international price, pay relatively higher salaries to their employees. These attitudes cause inflation in the long-run, social inequality and discontent as well as unrest among the workers employed in indigenous industry. He went further to say that the MNCs set up their plants in big towns and cities in LDCs where infrastructural facilities are easily available. Thus, they accentuate sectoral inequalities and strengthen dualism in such countries. Finally, Marxist dependency theory doubt whether foreign investment can bring about industrialization because foreign investor see host economies as merely serving the interest of the home countries of the TNCs in supplying basic needs for their own companies. They are seen as imperialistic predators that specialize in exploring the entire globe for the sake of corporate few as well as creating a web of political and economic dependence among nations to the detriment of the weak host economies of the LDCs.

METHODOLOGY

This study employs econometric model to examine the sectoral impact of FDI on economic growth in Nigeria. The primary model showing the relationship among gross domestic product (GDP), foreign direct investment in manufacturing sector (FDIM), foreign direct investment in telecommunication sector (FDIT) and foreign direct investment in oil sector (FDIO) is specified thus:

$$GDP=f (FDIM, FDIT, FDIO)$$

$$GDP = \alpha + \alpha FDIM + \alpha FDIT + \alpha FDIO + U (3.2)$$
(3.1)

Where; GDP is gross domestic product, FDIM is foreign direct investment in manufacturing sector, FDIT is foreign direct investment in telecommunication sector, FDIO is foreign direct investment in oil sector, α_0 is the constant term, α_1 , α_2 , and α_3 are the slope parameters, "t" is the time trend, and "U" is the random error term. On the apriori, it is expected that; $\alpha_{1>}$ 0, $\alpha_{2>}$ 0 and $\alpha_3 > 0$

Unit Root Test : This involves testing the order of integration of the individual series under consideration. The unit root test used in this paper is the Augmented Dickey-Fuller (ADF).

Table 1. Unit Root Test for Stationarity (ADF)

Variables	ADF Test		Critical Value		Order of integration		
		1%critical value	5% Critical value	10% critical value			
GDP	-6.954459	-3.724070	-2.986225	-2.632604	Order Two		
FDIM	-4.132873	-3.711457	-2.981038	-2.629906	Order One		
FDIT	-4.318606	-3.808546	-3.020686	-2.650413	Order Two		
FDIO	-4.606594	-3.711457	-2.981038	-2.629906	Order One		
Source: Researchers' Computation							
Table 2 Johansen Test for co.integration Results							

1 able 2. Jonansen 1 est for co-integration Results								
Eigen value	Trace Test	5% critical value	Prob. **	Hypothesis of CE(s)	•			
0.872482	94.60883	47.85613	0.0000	None *	Ì			
0.602610	45.18085	29.79707	0.0004	At most 1 *				
0.471445	23.03273	15.49471	0.0030	At most 2 *				
0.275366	7 730127	3 841466	0.0054	At most 3*				

Source: Researcher's Computation

Augmented Dickey-Fuller test relies on rejecting a null hypothesis of unit root (the series are non-stationary) in favor of the alternative hypotheses of stationarity. The tests are conducted with and without a deterministic trend (t) for each of the series. The general form of ADF is estimated by the following regression

$$\Delta^{\text{yt}} = \alpha^{0} + \alpha^{1} y^{\text{t-1}} + \Sigma^{\alpha \Delta y} + U^{\text{t}}$$
(3.3)

$$\Delta \mathbf{y}_{t} = \boldsymbol{\alpha}_{0} + \boldsymbol{\alpha}_{1} \mathbf{y}_{t-1} + \boldsymbol{\Sigma} \boldsymbol{\alpha}_{1}^{1} \Delta \mathbf{y}_{i} + \boldsymbol{\delta}_{t} + \mathbf{U}_{t}$$
(3.4)

Where: y is a time series, t is a linear time trend, Δ is the first difference operator, α_0 is a constant, n is the optimum number of lags in the independent variables and U is random error term

Co-integration Test

The basic argument of Johansen's procedure is that the rank of matrix of variables can be used to determine whether or not the two variables are co-integrated. A lack of co-integration suggests that such variables have no long-run relationship. Co-integration is conducted based on the test proposed by Johansen (1998). Johansen's methodology takes its starting point in the vector auto regression (VAR) of order P given by

$$y_{t} = \mu + \Delta_{1} y_{t-1} + \dots + \Delta P y_{t-p} + U_{t}$$
 (3.5)

Where:

 Y_t is an nx1 vector of variables that are integrated of order commonly denoted (1) and U is an nx1 vector of innovations. This VAR can be rewritten as

$$\Delta \mathbf{y}_{t} = \boldsymbol{\mu} + \boldsymbol{\eta}_{\mathbf{y}_{t-1}} + \boldsymbol{\Sigma} \boldsymbol{\tau}_{i} \Delta \mathbf{y}_{t-1} + \mathbf{U}_{t}$$
(3.6)

Where:

$$\Sigma A_{i-1}$$
 and $\tau_i = -\Sigma Aj$ (3.7)

To determine the number of co-integration vectors, Johansen (1988) suggested two statistic test, the first one is the trace test (_trace). It tests the null hypothesis that the number of distinct co-integrating vector is less than or equal to q against a general unrestricted alternatives q = r. The test calculated as follows:

$$\lambda \text{trace } (\mathbf{r}) = \sum^{-T} \Sigma \ln^{(1-\lambda t)}$$
(3.8)

Where: T is the number of usable observations, and the $\lambda 1$,s are the estimated eigenvalue from the matrix.

RESULTS AND DISCUSSION

The unit root test reported in table 1 above shows that the time series could not attain stationarity at ordinary level. This can be seen by comparing the observed values (in absolute terms) of the ADF test statistics with the critical values (also in absolute terms) of the test statistics at 1%, 5% and 10% level of significance. Therefore, the null hypothesis that all variables are not stationary is accepted. Therefore, the variables were differenced to attain stationarity and two time series (FDIM and FDIO) were stationary at first difference (ADF test statistic was greater than their theoretical values at order one). Also, the remaining two time series (GDP and FDIT) were stationary at second difference (ADF test statistic was greater than their theoretical values at order two). Meaning that two variables were integrated of order one and the remaining two were integrated of order two. Having confirmed the stationarity of the variables, there is the need to examine the presence or absence of co-integration among the variables. When a cointegration relationship is present, it means that the variables: GDP, FDIM, FDIT and FDIO share a common trend and longrun equilibrium as suggested theoretically. If otherwise, there is no long run relationship among the variables. The Johansen cointegration analysis in table 2 above shows that there are four co- integrating equations at 5% level of significance. This is strong evidence from the unit root test conducted; where we observed that while two variables were stationary at first difference the remaining two were stationary at second difference. Thus, the alternative hypothesis that there is a long run relationship between gross domestic product (GDP), foreign direct investment in manufacturing sector (FDIM), foreign direct investment in telecommunication sector (FDIT) and foreign direct investment in oil sector (FDIO) was accepted.

SUMMARY AND RECOMMENDATIONS

The paper examined the sectoral impact of FDI on economic growth in Nigeria for the period of 1986 to 2013. The objective of the study lies in the separation of the impact of FDI on economic growth in terms of sectors of the Nigerian economy because most others studies examine the aggregate impact of inflow of FDI on economic growth in Nigeria. From the literature reviewed, we discovered that most countries strive to attract the inflow of Foreign Direct investment (FDI) due to the

fact that the FDI has the potential to improve the growth and development of the economy. Nigeria in quest for growth and development joined the rest of the world in seeking the inflow of FDI as it helps the domestic resources of the economy to enhanced economic growth. An augmented growth model was estimated via the Ordinary Least Square (OLS) techniques to establish the relationship between inflow of FDI to manufacturing sector, telecommunication sector, oil sector and economic growth (GDP). The variables were tested for stationarity and co-integration analysis was also carried out using the Johansen co-integration technique. The study found that components of FDI have a long run relationship with economic growth in Nigeria. Thus, the alternative hypothesis that there is a long run relationship between gross domestic product (GDP) and sectoral inflow of FDI was accepted. Meaning that continuous inflow of foreign direct in manufacturing, telecommunication and oil sectors has the tendency to induced Nigeria economic growth. Based on the aforementioned findings from the study, the following recommendations were made: Since foreign direct investments in manufacturing, telecommunication, and oil sectors have the potentials to induce economic growth in Nigeria, there is therefore the need to properly channel and integrate them into the mainstream of the economy. Also, there is the need for continuity and consistency in government policies directed specifically towards improving the business environment to attract foreign investors which will in turn impact positively on economic growth. One way to improve the business environment is by conscious provision of necessary infrastructure facilities such as good electricity, which will lower the cost of doing business in Nigeria.

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