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IMPACT OF FOREIGN DIRECT INVESTMENT ON INDUSTRIAL OUTPUT IN NIGERIA

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ABSTRACT

The study investigates the impact of foreign direct investment on industrial output in Nigeria from 1981 to 2018. Specifically, the study was carried out to specifically to ascertain the extent to which financial institutions and institutional quality aid FDI inflow in Nigeria and to evaluate the effect of FDI on domestic investment in Nigeria. To achieve these objectives, the study specified three different models with various independent variables. It employed the Augmented Dickey-Fuller (ADF) and Philips-Perron unit root tests, Engle-Granger two step approach and error correction mechanism which minimize the possibility of estimating spurious relations while at the same time, retaining long run information. Amongst other findings, the research findings revealed that foreign direct investment had an insignificant positive impact on industrial growth in Nigeria. Also, financial institutions (proxied by credit to private sector) had no significant impact on foreign direct investment in Nigeria. More so, institutional quality (proxied by corruption perception index) had an insignificant effect on foreign direct investment in Nigeria. Again, foreign direct investment had an insignificant negative impact on domestic investment (proxied by gross national private capital formation) in Nigeria. The study recommends, among other things, that the government should, through the Ministry of Trade and Investment enact and reform extant laws and policies that could boost the ease of doing business index for Nigeria. This could be done by reinvigorating investment attracting mechanisms in the less invested sectors of the economy such as the mining and quarrying sector.

Key words: Foreign direct investment, industrial output, financial institutions, institutional quality, domestic investment

1.0 Introduction

1.1 Background of the Study

The advent of globalization has brought to limelight, the interdependency of nations, and a scenario which promoted labour and capital mobility at the international scene. With capital mobility, investors engage in transfer of capital in the form of investment from home countries to foreign countries (foreign direct investment). From the late 1970s, centrally planned economies began to link their economies with the global market and opened up to Foreign Direct Investment (FDI) from market economies (Tian, 1996). The apparent correlation between FDI inflows and economic growth triggered off a fascinating discussion on how FDI affects developing economies. A central issue in the debate is whether and how FDI generates positive or negative technology spillovers to the domestic firms (Zhang, Li & Zhou, 2010; Li, Zhang & Lyles, 2013; Zhang & Li 2014).

In recent years, the micro model of productivity growth has become an area of extensive empirical research, and it has been shown that aggregate productivity statistics conceal complex dynamics of plant performance variations. It has been asserted that aggregate productivity of an industry can rise through several distinct processes: from productivity changes in all plants; from enhanced market shares among plants with comparatively elevated rates of productivity; or through the entry of plants with elevated rates of productivity and exits of plants with low rates of productivity. There is an extra aspect of heterogeneity in developing nations, which can be of great significance—that of foreign versus national property. It is well documented that the levels of productivity of foreign-owned plants are higher than those of domestic owners (Aswicahyono, Basri & Hill, 2000), less explored is whether foreign and domestic plants contribute differently to overall productivity growth.

Foreign Direct Investment (FDI) is essential to a country's economic growth and is a major source of funding for investment in capital. Furthermore, FDI can also promote the transfer of technology, knowledge and organizational capital between nations, thereby also stimulating productivity growth and national investment (Contessi & Weinberger, 2009; UNCTAD, 2015). Extant studies on spillovers of FDI technology have reached different results, suggesting that the impact of spillovers of FDI technology is likely to depend on a multitude of variables. Tian, Vai and Moxi (2016) stated that the difference between FDI as an insider and FDI as an outsider to individual national companies is one of the probable contingent variables. For example, FDI in Industry A is regarded by national companies in Industry A as an insider FDI, but by national companies in Industry B as an outsider FDI. Similarly, national companies at location X regard FDI as an insider FDI, but national companies at place Y are an outsider FDI. Inward FDI is boosting aggregate investment and financial activity level. It also has countless advantages including job creation, enhanced labor productivity, increased exports, worldwide market integration, and the growth and restructuring of companies (Walfure & Nurudeen, 2010; Moura, 2010).

As demonstrated by Saqib, Masnoon and Rafique (2013) and Osinubi and Amaghionyeodiwe (2010), FDI helps increase developing countries' financial growth and development through capital inflows. It also results in an influx of income through taxes to the state, contributes to the improvement of the host countries' equilibrium of payment situation and also helps to diversify the host economy's manufacturing base. Many policymakers and scholars argue that foreign direct investment (FDI) can have significant beneficial impacts on the growth of a host country (Aitke & Harrison, 1999). In relation to the direct capital funding it provides, FDI can be a source of precious technology and know-how while fostering connections with local companies that can assist boost the economy. Over the past decades, both advanced and developing nations have provided increasing incentives to attract foreign companies to their economies. Recently, it has started to question the unique merits of FDI and the incentives provided to overseas companies. The fact that the empirical evidence producing beneficial impacts for host nations for FDI is vague at both micro and macro levels is the driving force behind this discussion (Alfaro & Charlton, 2007).

In Nigeria, there has been a tremendous rise in foreign investment inflow over the years. Between 1980 and 1990, FDI inflows in Nigeria averaged over \$740 million, over \$2 billion between 1991 and 2000, over \$7 billion between 2001 and 2014 and over \$8 billion between 2017 and 2018 (CBN, 2018). The above substantial increase notwithstanding, there seem to be varying opinions on the effect of such increases on industrial productivity in Nigeria with some analysts claiming that such increases has not yielded expected effects. More specifically, as mentioned, several recent FDI studies like Okoli and Agu (2015) have investigated how national characteristics might affect host countries' capacity to benefit from FDI, the so-called absorptive capacities. These studies postulate that the size of spillovers from foreign firms depends on the domestic firms' ability to respond successfully to new

entrants, new technology and new competition. Again, Alfaro, Sebnem and Selin, (2009) argued that the importance of well-functioning financial institutions in promoting the positive impacts of FDI inflow on industrial productivity cannot be overemphasized. They showed that well-functioning financial markets guarantee capital is allocated to projects that produce the greatest yields and thus increase growth rates by reducing the expenses of undertaking operations. In addition, as McKinnon (1973) states, capital market growth is 'necessary and sufficient' to promote 'the implementation of best practices and teaching through doing.' Limited access to credit markets, in other words, restricts business development. If entrepreneurship enables for higher assimilation and implementation of best technological practices made accessible by FDI, then the lack of well-developed financial markets will limit potential positive externalities to FDI.

In a bid to boost FDI inflow into Nigeria and help stimulate its effects on industrial productivity, the Nigerian government has over the years implemented various policy options. The indigenization policy of 1972 started with "the Nigerian Enterprises Promotion Decree" (NEPD). The decree imposed several restrictions on FDI entry. Consequent upon this, some 22 company operations were reserved solely for Nigerians, including advertising, gaming, production of electronics, fundamental manufacturing, road transport, bus and taxi services, media and retail and personal services. Foreign investment was allowed up to 60% ownership and provided the suggested company had ₦200, 000 (\$300,000) or ₦500, 000 (\$760,000) share capital based on 1972 information. The second indigenization decree, the 1977 Nigerian Enterprises Promotion Decree, tightened FDI entry constraints in three respects: (a) by extending the list of operations solely reserved for Nigerian investors (e.g. bus services, travel agencies, wholesale of home products, film distribution, newspapers, radio and television and hairdressing); (b) by reducing allowed foreign party operations; These limitations started to relax in 1989. The NEPD was revised to abandon a single group of 40 company operations in which foreign involvement was totally banned unless the enterprise's value surpassed ₦20 million (\$2.7 million in 1989). Furthermore, foreign investors could only hold up to 40% in insurance, banking, petroleum manufacturing and mining (Anyanwu, 2011).

In 1995, the Nigerian Investment Promotion Commission Act unraveled years of checks and restrictions on foreign direct investment (FDI), opening up almost all industries to foreign investment, enabling 100% foreign ownership in all industries (except the oil industry, where FDI is restricted to joint ventures or manufacturing sharing) and establishing the Nigerian Investment Promotion Commission (NIPC) and its mandate to encourage and assist investment in Nigeria. The NIPC features a One-Stop Investment Center (OSIC) involving 27 government parastatals and organizations (but not all of them are physically present at the OSIC) to consolidate and streamline administrative processes for new companies and investments. Foreign investors in Nigeria receive substantially the same treatment as national investors; including tax incentives. Without powerful political and political assistance and unresolved investment and company difficulties in Nigeria, however, the NIPC's capacity to attract fresh investment was restricted (Babatunde, Oyeniran, David and Ibrahim, 2013). In contrast to previous development plans, National Economic Empowerment and Development Strategy (NEEDS) and the current Economic Recovery and Growth Plan (ERGP) made FDI attraction an explicit goal for the Government and paid particular attention to drawing investment from wealthy Nigerians abroad and from Africans in the Diaspora. Though most FDI is still destined for the oil industry, the steps being taken under the reform agenda are bearing fruit.

Furthermore, the Industrial output in other hand, represents a deliberate and sustained application and combination of suitable technology, management technologies and other resource to move an economy from the traditional low level of production to a more unformatted and efficient system of mass production of goods and services (Owui, 2019). Industrial financial therefore became one of the main focuses of the government based on potential benefits. In order to promote industrial financing, bank offers financial assistance to private enterprise which by virtue of their size make a significant contribution to the economic development of Nigeria. Although industrialization is a good thing, it need not, however, be confined to the encouragement and development of the long scale industrials if it by implication serves of investment which initially or during their gestation period need not necessarily be profitable (Udoh & Udejaja, 2011). Given the importance of high productivity in the industrial sector in boosting economic growth and the standards of living of the people, the sourcing of long-term finance through the FDI cannot but be of importance to researchers. Hence, this study therefore seeks to investigate the extent to which FDI inflows have affected industrial output in Nigeria.

1.2 Problem Statement

Due to the availability of natural resources, primarily crude oil, the FDI inflow into Nigeria was primarily in the primary sector. This has drawn into the nation big numbers of multinational oil companies. However, there was no important FDI inflow to the manufacturing sector. Policy instability and stakeholder corruption are factors that have lowered FDI inflows into Nigeria (Anyanwu, 2011). The slow pace of privatization of some parastatals (such as NEPA, NITEL, etc.) by the government and absence of transparency also restricted FDI's flow to the nation. The poor amount of fundamental infrastructure such as power supply and transportation infrastructure complicates this. For instance, in 1971, FDI inflows fell from 85.6 percent to 31.20 percent and 17.23 percent respectively in 1976 and 1984. In 1989, the value dropped by about 24.76% (Obida & Abu, 2010). Since then, the FDI inflow has not been encouraging, though on the rise. The literature consensus promotes the opinion that FDI increases development through local firms' gains in productivity and effectiveness. However, the empirical proof is not unanimous. The concept that national firms' productivity is favorably linked to the presence of foreign companies appears to be supported by available proof for developed countries. The findings are not so evident for developing nations, some discovering favorable spillovers (Blomstrom, 1986; Kokko, 1996; Blomstrom and Sjöholm, 1999) and others like Aitken, et al., (1997) reported limited proof. Still, others discover no proof of foreign firms' beneficial short-run spillover. Some of the factors are that Multinational Companies (MNCs) tend to be located in high-productivity sectors and could therefore force less productive companies to leave (Smarzynska, 2002). Cobham (2001) also postulates national corporate crowding and possible contraction in the complete size and/or jobs of the sector.

In addition, Wang (2009) argues that another possible reason for this is the use of complete FDI, rather than sector-by-sector FDI, to analyze FDI's impact-generating development. In 2003, the quantity of FDI inflows into Nigeria exceeded US\$ 2.96 billion, rising to US\$ 4.44 billion in 2004, again rising to US\$ 5.08 billion in 2009 (World Bank, 2012). Commercial bank credits to private sector has also witnessed a tremendous increase as it grew from 8.57 billion naira in 1981 to 33.55 billion naira in 1990, 530.37 billion naira in 2000, 10,157.02 billion naira in 2010 and 21,082.72 billion naira in 2016 (CBN Statistical Bulletin, 2016). Industrial contribution to GDP grew from 6.603 (billion naira) in 1981 to 6.379 (billion naira) in 1985, 8.531 (billion naira) in 1990, 7.985 (billion naira) in 1995, 8.808 (billion naira) in 2000, 11.674 (billion naira) in 2005, 12.033 (billion naira) in 2010, 13.319 (billion naira) in 2015 and 12.523 (billion naira) in 2018 (CBN Statistical Bulletin, 2018). The above evidenced growth in the industrial contribution to GDP in Nigeria has been described as not being commensurate to the expected outcome given the potentials that abound in the sector (Anyanwu, 2018).

The positive impact of FDI inflows in Nigeria notwithstanding, the important question still remains "Why has the evidence of FDI generating positive spillovers been elusive?" At the macro level, the existing literature find evidence not of an exogenous positive effect of FDI on economic growth, but of positive effects conditional on local conditions and policies, notably: the policy environment (Balasubramanayam, Salisu & Sapsford, 1996); human capital (Borensztein, De Gregorio and Lee, 1998); local financial markets (Alfaro, et al., 2004, 2006); sector characteristics (Alfaro & Charlton, 2007); sectorial composition (Aykut & Sayek, 2007); and market structure (Alfaro, et al., 2006). But are even these conditions enough? Can positive effects of FDI be induced by the right local conditions or, more generally, by the right economic environment? Through what mechanisms can FDI contribute to positive spillover effects? Has Foreign Direct Investment contributed significantly to industrial output? What have been the contributions of the financial institutions and institutional quality to the growth of the industrial sector? How has Foreign Direct Investment impacted on domestic investment? Many empirical studies have looked for the presence of externalities without trying to understand the mechanisms through which they might occur. Their focus has been on finding indirect evidence of externalities by looking for associations between, for example, increased presence of MNCs in a country or sector and productivity improvements in local firms or upstream sectors. Establishing the robustness of these findings and devising appropriate policy interventions to maximize FDI externalities necessitate investigation of these mechanisms and this is the base for this study.

1.2 Research Questions

The study would examine the following questions:

1. Has Foreign Direct Investment significantly helped in the industrial output in Nigeria?
2. How has financial institutions aided FDI inflow into Nigeria?
3. How has institutional quality aided FDI inflow into Nigeria?
4. What is the effect of foreign direct investment on domestic investment in Nigeria?

1.3 Objectives of the Study

The general objective of the study is to determine the impact of FDI on industrial output in Nigeria. Specifically, the study intends to:

1. Determine whether FDI has significantly impacted industrial output in Nigeria.
2. Ascertain the extent to which financial institutions aid FDI inflow in Nigeria.
3. Examine the extent to which institutional quality aid FDI inflow in Nigeria.
4. To evaluate the effect of FDI on domestic investment in Nigeria.

1.5 Research Hypotheses

The following hypotheses stated in null form guided this study;

H0₁: FDI has no significant effect on industrial output in Nigeria.

H0₂: Financial institutions have no significant effect on FDI inflow in Nigeria.

H0₃: Institutional quality has no significant effect on FDI inflow in Nigeria.

H0₄: FDI has not significantly aided growth of domestic investment in Nigeria.

1.6 Significance of the Study

In an attempt to alleviate balance of payment problems and stimulate economic growth, most developing nations including Nigeria, now recognize that an inflow of foreign investments may offer some special advantages in form of spillovers usually technological, managerial and marketing expertise, in addition to capital (Sjoholm, 1999). However, as foreign direct investment is made in order to regulate the company and share its earnings, the more dominant the percentage of such businesses in the industrial structure of a country, the higher the tendency to be worried about possible loss of autonomy in economic control. Thus, the approaches taken for foreign private investment in most developing countries include a mixture of investment incentives directed at promoting capital inflows as well as legislative measures directed at maximizing the country's net capital inflow advantages.

- (1) The results of this study would encourage policy makers to design and to follow pro-FDI policies in Nigeria.
- (2) The results would also provide strong evidence to policy-makers to work for better institutional quality for growth and development.
- (3) The study will suggest ways to improve financial institutions and public institutions contributions to FDI inflow in Nigeria in a bid to attracting more FDI for better the growth of Nigeria's industrial sector.
- (4) Through its findings, the study will suggest possible ways of improvement to the domestic financial market in a bid to increasing the credits to private sector in Nigeria.
- (5) For the industrial sector operatives, the study will through its findings provide practicable options for improvement in productivity. Finally, the study will also through its findings provide suggestions for further studies while serving as reference material for other researchers.

1.7 Scope of the Study

This research covered the area of foreign direct investment in Nigeria, paying special attention to the impact of foreign direct investment on industrial productivity in Nigeria. The study covered the period from 1981 to 2018. The choice of this period is consequent upon the fact that there existed oil price fluctuations during this period. This culminated to poor industrial growth and low global competitiveness index for Nigeria which necessitated series of policy adjustments aimed at attracting foreign investors into the country. The variables for the study are foreign direct investment, domestic investment, value of industrial output, and exchange rate amongst others.

2.0 LITERATURE REVIEW

2.1 Conceptual Literature

2.1.1 Foreign Direct Investment

The concept of foreign direct investment has been defined in many literature by many authors and in different ways. Foreign direct investment is seen as an investment made by an individual or a company (investor) in a country which is not the country of origin of the investor, in the form of either establishing business or acquiring business assets in the country. Foreign Direct Investments (FDI) describes overseas investment by private multinational corporations, according to Todaro and Smith (2003). Foreign direct investment, in other words, is multinational overseas

investment. This connection is essential in order to see obviously the conceptual connection between multinationals and foreign direct investment.

Foreign Direct Investment includes external resources including knowledge and capital in technology, managerial and advertising. All of these have a significant effect on the productive capacity of the host nation, and the achievement of public measures to stimulate the productive base of the economy mainly depends on its ability to regulate appropriate amounts of FDI comprising managerial, capital, and technological resources to boost current manufacturing capacity (Omankhanlen, 2011). A multinational or transnational company is usually recognized as a company engaged in foreign direct investment in more than one nation. In scholarly and company circles, the above definition is usually recognized, including information collection agencies such as the Organization for Economic Co-operation and Development (OECD), the United Nations Center for Transnational Corporations (UNCTC) and many domestic governments (Otto, 2004).

2.1.2 Industrial Output

Industrial output involves extensive technology based development of the productive system of an economy. Industrial output, therefore, represents a deliberate and sustained application and combination of suitable technology management techniques and other resources to move an economy from the traditional low level of production to move automated and efficient system of mass production of goods and services. Industrial output has become the main focus of economic development because of its potential benefits. Industrial sector tends to proper economic problems constraining the growth of the sector and the strategies and policy reforms needed to accelerate the pace of industrial sector. It is usually argued by development economists that industrial sector development is prerequisite capable of transforming an underdeveloped economy into a developed one. This is because industrialization is believed to be a catalyst capable of propelling a structural transformation and diversification of an economy. Over the years, successive governments in Nigeria have instituted various policies and programmes aimed at industrializing the Nigerian economy. However, despite these drivers of industrialization, the efforts have seemed not to be yielding fruitful results as the share of industrial sector in total output remained unimpressive (Udoh & Udejaja, 2011). The poor performance of industrial sector as evidenced in the dismal performance of the manufacturing subsector has been attributed to so many factors, including capacity underutilization, poor and decaying infrastructures, low level of technology, low investment (Ndako, 2010). For the purpose of this study, FDI shall be conceptualized to mean overseas investments by private multinational corporations according to Todaro and Smith (2003) while industrial output will mean the monetary value of the total annual national output of industries in a country.

2.2 Theoretical Literature Review

2.2.1 FDI Theories

(1) Krugman's Theory

On further theoretical arguments why developing nations may not benefit from FDI; Krugman claims that transferring control from national to international companies may not always benefit the host nations due to the adverse selection issue. In a crisis scenario conducted under "Fire Sale," FDI may transfer ownership of companies from domestic to less effective overseas companies. This issue is especially crucial for developing nations, including sub-Saharan African nations, where state-owned companies are sold to foreign companies as part of privatization merely because foreign companies have more resources available than national ones. FDI can also "crowd out" national companies through unfair competition, as Salz, Agosin and Mayer have pointed out. There is also concern that many foreign-owned companies' enclave nature and their minimal connection to the remainder of the economy may decrease the potential spillover contribution to the domestic economy. In addition, the potential subsequent outflow of the subsidiary income of overseas firms to their parent businesses could also cause the balance of payments to deteriorate. Foreign corporations are also asserted to tend to create inappropriate products that are tailored to meet the rich part of customers in the host country, thereby reducing inequality and participating in transfer prices.

(2) The Theory of Exchange Rates and Imperfect Capital Markets

This theory analyzes the interplay between the exchange rate and the FDI. The foreign exchange risk was initially evaluated from the international trade view. The impact of uncertainty as an FDI factor was evaluated by Cushman (1985). In the only empirical analysis done so far (Denisia, 2010), Cushman demonstrates that an investor's real exchange rate increase stimulates FDI, while an appreciation of foreign currency reduces FDI inflows into a receiving

nation. Cushman concludes that the appreciation of the dollar has led to a decline in the United States FDI to 25%. Simultaneous foreign direct investment between countries with different currencies cannot, however, be explained by currency risk theory. Such investments are being made in distinct moments, the maintainers claim, but there are enough instances that contradict these allegations.

(1) Tobin's "Q" theory of Investment

The "Q" theory was an investment behavior theory created in 1969 by James Tobin, an American economist. The theory refers to the market value of a company's issued shares to the price of replacing the asset of the firm. In other words, Tobin's Q was created as a proportion between the market value of the same physical asset and its replacement value. This theory further asserts that the main drivers of investment are government spending, interest rate and credit to the private sector. Yarbrough and Yarbrough (2002) address latest financial geography theoretical models that try to explain FDI's spatial location. They suppose that a Trans National Corporation (TNC)'s decision on which province to find investment depends on a number of host province features influencing the company's revenue or expenses such as endowment factor, market size, per capita earnings, qualified labor, and public infrastructure accessibility, among others. Aiello, Lona and Leonida (2009) asserted that other things being equal; a change in spending on infrastructure affects the company's expense of changing its present capital stock to the target level. They claim that this is a sensible hypothesis, since the cost of adjustment depends not only on the inner features of the firm, but also on external variables such as public infrastructure provision.

2.2.2 Growth Theories

(1) Solow Type Growth Theory

The role of foreign direct investment (FDI) in stimulating economic growth is one of the controversial issues in the development literature. In the standard Solow type growth model, FDI enables host countries to achieve investment that exceeds their own domestic saving and enhances capital formation. According to this theory, the potential beneficial impact of FDI on output growth is confined to the short run. In the long run, given the diminishing marginal returns to physical capital, the recipient economy could converge to the steady state growth rate as if FDI had never taken place leaving no permanent impact on the growth of the economy (De Mello, 1999).

(2) Endogenous Growth Theories

On the other side, endogenous growth models (e.g. Romer, 1986; Lucas, 1988; and Barro and Sala-i-Martin, 1995) that emphasize the significance of improving technology, effectiveness, and productivity indicate that FDI can positively affect the rate of growth to the extent that it produces increased output through externalities and spillovers of manufacturing. Romer involves the technical spillovers connected to industrialization in his Endogenous Growth Theory. This model therefore reflects not only endogenous growth, but is also strongly connected to developing nations. In addition, in Romer's model, only the technological spillovers are regarded ignoring the savings determinants and the general equilibrium issues. The manufacturing procedures are obtained at the level of a company or sector according to this model. Each company works separately in perfect competition. This model coincides with perfect competition in this manner, and thus far this model is close to the Solow model's assumptions. But Romer deviates from Solow by assuming that capital inventory in economy (K) strongly affect production level at industrial level. This scenario creates rising industry-level yields. Romer involves the knowledge level in the capital stock of the company. The information portion of the capital stock is fundamentally a public good (as shown in the Solow model with A). This knowledge or information quickly shifts in the form of a jump to the other firms. Therefore, by investing, this model intends to encourage learning. The investment in teaching or understanding therefore determines economic growth in the Romer model.

(3) The Mankiw-Romer theory

The Mankiw-Romer theory of economic growth marked an important contribution to the debate on the nature of economic growth: in particular it was argued that the observed empirical shortcomings of the neoclassical Solow growth model - in particular, largely underestimate the differences in incomes between advanced and developing countries unless capital is assumed to have a far larger impact on output than its income share implies - were due to omission of human capital. Effectively, the Mankiw-Romer model argued that the traditional Cobb-Douglas formulation should be extended to include human capital H, as well as physical capital, K. this would imply an underlying aggregate production function of the form:

$$Y_{ct} = K_{ct}^{\alpha} H_{ct}^{\beta} (A_{ct} L_{ct})^{1-\alpha-\beta}, \text{-----(2.1)}$$

Where Y is total income, L is the labour supply and A is a technology parameter, with L growing at an annual rate n and A growing at rate g . Of course, if all countries have the same savings and depreciation rates, technical and factor share parameters and population growth rates, then in equilibrium their incomes would be equal and cost of acquiring human capital would be equal. However, once we allow, as MR model did, for exogenous country-specific variations in parameters, then this is no longer the case, and the issue of human capital measurement becomes important.

(4) Neoclassical Theory

According to neoclassical theory, FDI influences income growth by increasing the amount of capital per person. It stimulates long-term growth through factors such as R&D and human resources. MNCs can accelerate the growth of fresh intermediate product varieties, increase product quality, promote global R&D cooperation and introduce fresh types of human resources by transferring technology to their subsidiaries and technological spillovers to non-affiliated companies in the host industry (Ikiara, 2003). Bajona and Kehoe (2006) addressed explanations of multinational manufacturing within the framework of Heckscher-Ohlin based on neoclassical theories of capital movement and trade. However, on the grounds that they were based on the premise of the presence of ideal factor and goods exchanges, they criticize these theories and were therefore unable to provide an adequate explanation of the nature and pattern of FDI. These theories assumed that FDI would not take place in the lack of market imperfections. Nevertheless, they claim that there must be different benefits to locating in a specific host nation due to the existence of hazards in investing overseas.

2.3 Empirical Literature Review

Previous studies on Foreign Direct Investment (FDI) and economic growth in Nigeria and other countries have provided divergent conclusions on the role FDI play on the economic growth of a nation. This is owing to the variations in economic systems adopted by these countries. Tian, *et al.*, (2016) separates industrial outsider spillovers of FDI technology from industrial insider spillovers of FDI technology on the one side, and national outsider spillovers of FDI technology from national insider spillovers on the other. The research creates hypotheses and tests them against the National Industrial Enterprise Survey firm-level information collected by the Chinese National Statistics Bureau. The article finds that FDI as both an industrial insider and a regional insider tends to generate beneficial spillovers of technology, while FDI as both an industrial outsider and a regional outsider tends to generate adverse spillovers of technology. FDI situated in the developed coastal region tends to adversely impact the productivity of national companies situated in the interior region, regardless of whether or not national companies are situated in the same sector as the FDI. Adeyeye (2016) looked at the impact of foreign direct investment on Nigeria's economic growth. The research covered the 1981-2015 periods. Multiple regression method was used in the research and econometric software from Gretl 1.9.8 was used for assessment. The findings showed a favorable and substantial impact on gross domestic product from foreign direct investment. Exchange rate was also discovered to have a beneficial but not significant impact on gross national product. Thus, the research found that foreign direct investment has a beneficial impact on Nigeria's economic growth as compared to some authors and other stakeholders' conclusions and conviction that foreign direct investment has an adverse impact on economic growth. Similarly, Ezeanyej and Onwuteaka (2016) showed that the Nigerian manufacturing sector is not sensitive to exchange rate fluctuations.

Ezeanyej and Ifeako (2019) examined the impact of foreign portfolio investment on economic growth in Nigeria from 1986 to 2017. The motivation for this study is driven by the new attention being given to the drive for foreign capital especially in developing economies in an attempt to stimulate economic growth. The study employed Augmented Dickey-Fuller (ADF) test, the Johansen cointegration technique and the Error Correction Mechanism (ECM) in the analysis and the paper revealed that foreign portfolio investments have positive significant impact on economic growth in Nigeria. In the same vein, Agu, Ogu and Ezeanyej (2019) exchange rate and FPI are positive which implies that any change in the variables will change the stock market returns in Nigeria. The interest rate has negative and as well no significant influence on the stock market return. The results show that there is no long run relationship between foreign portfolio investment and stock market returns in Nigeria.

Mouna, Mondher and Simplic (2016) examined the connection between Foreign Direct Investment (FDI) and per capita Gross Domestic Product (GDP) for the period 1985-2009 in the Middle East and North Africa (MENA) countries. The empirical evidence is based on a generalized method of moments that is endogeneity-robust. Results indicated that the Gulf Cooperation Council (GCC) countries' impact of FDI on per capita income is positive but

negative in non-GCC nations. Results also showed that, unlike the GCC countries, the economic openness policy in the non-GCC nations has lowered the growth advantages of FDI. This finding is clarified by the reality that most of the non-GCC nations involved in the monetary reform process have bad institutional performance. In 2016, Fauzel, Seetanah and Sannasee also conducted a survey to tackle the significant issue of whether foreign direct investment in the manufacturing sector enhances the sector's productivity in Mauritius using information from the 1980-2010 time series. Using a Dynamic Vector Error Correction Model, catering for dynamic endogeneity and causality, the findings indicated that FDI in the manufacturing sector has actually contributed to overall productivity factor as well as long-term labor productivity. Analyzing the outcomes of the short run, the research discovered that FDI continues to affect productivity in the manufacturing sector, but the effect is very low. This outcome was primarily explained by the huge relocation to inexpensive labor destinations of foreign companies from Mauritius. The findings also verified the existence of bi-causality and feedback effects in the relationship between FDI and productivity. It also demonstrated that FDI has a positive relationship with the rate of national investment, which also suggests the existence of "crowding in" impact.

Ezeanyej and Ifebi (2016) examined the impact of FDI on sector performance in the Nigerian economy with particular regard to the telecommunications sector. It focused on the role played in the growth of Nigeria's telecommunications industry by Foreign Direct Investment (FDI). The econometric technique of the Ordinary Least Square (OLS) was used to examine the regression model indicated to examine the role that Foreign Direct Investment played in the Nigerian Telecommunications Sector's results. The empirical analysis findings showed that Foreign Direct Investment has made a significant contribution to the Telecommunications Sector's performance in terms of its contribution to Nigeria's Gross Domestic Product. Agrawal (2015) also evaluated the connection between foreign direct investment and economic growth in the five BRICS countries from 1989 to 2012, namely Brazil, Russia, India, China and South Africa. Analysis of cointegration and causality was implemented. The findings show that, at the panel level, foreign direct investment and economic growth are co-integrated, suggesting the existence of a long-term balance connection between them. Causality test results show that there is long-term causality in these markets, ranging from foreign direct investment to economic growth.

Melnyk, Kubatko and Pysarenko (2014) looked at the effect of foreign direct investment on post-communism transition economies' financial development. The research analyzed the impact of FDI on economic growth using neoclassical growth theory. They discovered a significant impact of FDI on host countries' financial development. The research found that FDI can be a source of precious technology and know-how in relation to the direct capital financing it provides, while fostering linkages with local companies that can assist to boost an economy. Industrialized and developing countries have provided incentives based on these arguments to encourage foreign direct investment in their economies. Castillo, Salem and Moreno (2014) also examined whether foreign direct investment (FDI) spillovers contribute to productivity growth in Chilean manufacturing companies using company-level panel data. The research used a VAR methodology to consistently assess the effect of investment climate factors, such as FDI, on productivity. To this end, a stochastic frontier method (SFA) was used to analyze the spillover effects from FDI. Growth in productivity was decomposed using a generalized output-oriented index from Malmquist. The findings demonstrated favorable spillovers of FDI to productivity.

The empirical relationship between Foreign Direct Investment and economic growth in Nigeria was explored by Solomon and Eka (2013). The research covered a period from 1981-2009 using statistical bulletin annual information from Nigeria's Central Bank. To determine the connection between FDI and economic growth in Nigeria, the Ordinary Least Squares technique was used. The outcome of the OLS methods stated that for the period under study, FDI had a beneficial but negligible effect on Nigerian financial development. This is in line with Obwona (2001) who noted in his research on FDI's determinants and their effect on development in Uganda that macroeconomic policy, political stability, and policy consistency are significant parameters that determine FDI's flow to Uganda and that FDI had a positive but insignificant effect on development. Some FDI and development studies in Nigeria have also been conducted with differing outcomes and submissions. In the same vein, Nwankwo, *et al.*, (2013) explored the impact of globalization on Nigeria's foreign direct investment— because the globe has become a worldwide town. The methodology employed is solely descriptive and narrative and secondary to the information used. Foreign direct investment (FDI) was discovered to have enhanced jobs, technology transfer, encouraged local businesses, etc. in Nigeria. But there are some obstacles to the complete realization of foreign direct investment advantages.

2.4 Limitation of Previous Studies

Previous studies have focused exclusively on the determinants of inward FDI. Adeyeye (2016), Mouna, et al., (2016), Solomon and Eka (2013), Saqib, *et al.*, (2013) have focused on examining just the effects of FDI on economic growth in many of the countries of study. Given this, these studies, through their findings have only revealed that FDI has effect on economic growth. But evidence from some of the reviewed growth theories showed that the growth of an economy attracts an influx of foreign direct investment as foreign investors are always in search for a better market for their investments. Conversely, many of these growth theories maintained that foreign direct investment is one of the major drivers of economic growth, a finding that was also revealed by some of the reviewed empirical literature. Again, most of the reviewed works for Nigeria studied FDI inflow and the economic growth of Nigeria without disaggregating the components of the economy.

From the aforementioned mismatch, this study therefore seeks to fill the research gap of non-disaggregation of the components of an economy and overlook of the role of financial institutions and institutional quality in attracting FDI in Nigeria as identified in previous studies and add to existing literature by investigating how FDI affects a major component of the economy -the industrial sector growth in Nigeria while at the same time ascertain the role played by the financial institutions and institutional quality in the attraction of FDI in Nigeria.

3.0 METHODOLOGY

3.1 Theoretical Framework

The Mankiw-Romer theory of economic growth marked an important contribution to the debate on the nature of economic growth: in particular it was argued that the observed empirical shortcomings of the neoclassical Solow growth model - in particular, largely underestimate the differences in incomes between advanced and developing countries unless capital is assumed to have a far larger impact on output than its income share implies - were due to omission of human capital (Alfaro, 2007). Effectively, the Mankiw-Romer model argued that the traditional Cobb-Douglas formulation should be extended to include human capital, H , as well as physical capital, K . This would imply an underlying aggregate production function of the form:

$$Y_{ct} = K_{ct}^{\alpha} H_{ct}^{\beta} (A_{ct} L_{ct})^{1-\alpha-\beta} \quad \text{-----(3.1)}$$

Where Y is total income, L is the labour supply and A is a technology parameter, with L growing at an annual rate n and A growing at rate g . Of course, if all countries have the same savings and depreciation rates, technical and factor share parameters and population growth rates, then in equilibrium their incomes would be equal and cost of acquiring human capital would be equal (Bajona, 2006). However, once we allow, as Mankiw-Romer model did, for exogenous country-specific variations in parameters, then this is no longer the case, and the issue of human capital measurement becomes important.

Mankiw and Romer's finding of a cross country relationship between savings rate, school enrollment and income levels is highly ambiguous. Their interpretation that it is consistent with augmented Solow model depends on the implausible assumption that educational productivity is vastly higher in advanced countries than poor ones. On the alternative assumption of constant educational productivity, their model is very close to AK type but with rising educational cost producing a degree of conditional convergence (Arisoy, 2012). The implications of the Solow model are the impact of savings rate (s) and population growth rates (n) on steady state income levels. The M-R model finds that the impact of these variables is as predicted and that more than half of the cross-country variation in income per capita can be explained by these two variations alone. But the magnitudes of the impact of these variables come out too large. Therefore they extended the basic Solow model to include human capital and find reasonable size coefficients for s and n , and in addition, can explain 80% of the cross-country variation in income per capita.

That FDI is positively correlated with economic growth is situated in growth theory that emphasizes the role of improved technology, efficiency and productivity in promoting growth. The potential contribution of FDI to growth depends strictly on the circumstances in recipient countries. Certain host country conditions are necessary to facilitate the spillover effects.

The analysis of the effect of foreign direct investment on industrial sector productivity in this study is based on the augmented production function in which capital stock, labour and other endogenous factors jointly determine the level of productivity. One of these endogenous factors is Foreign Direct Investment. Foreign Direct Investment is regarded as an endogenous factor because it is attracted largely by the high rate of return on investment in developing

countries (Ghose, 2004) and the liberalization policy of these countries (Dauda, 2007). Therefore, adopting the Mankiw-Romer endogenous growth theory, the model that would be estimated in this study is stated in section 3.2 below.

3.2 Model Specification

From the specific objectives of the model and given the propositions of the Mankiw-Romer theory of economic growth, the model is specified as follows:

Model 1

Given the first objective of the study and using industrial output as a proxy for industrial productivity, and also adopting the Mankiw-Romer theory, the functional form of the model is specified thus:

$$\text{INDO} = F(\text{FDI}, \text{EXR}, \text{TRO}, \text{GNPCF}) \dots \dots \dots (3.2)$$

The mathematical form of the model is specified as:

$$\text{INDO} = \alpha + \beta_1 \text{FDI}_t + \beta_2 \text{EXR}_t + \beta_3 \text{TRO}_t + \beta_4 \text{GNPCF}_t \dots \dots \dots (3.3)$$

The econometric form of the model is specified as:

$$\text{LnINDO} = \alpha + \beta_1 \text{LnFDI}_t + \beta_2 \text{EXR}_t + \beta_3 \text{TRO}_t + \beta_4 \text{LnGNPCF}_t + \mu_t \dots \dots \dots (3.4)$$

Where:

INDO = Industrial output

FDI = Foreign Direct Investment.

EXR = Exchange rate.

TRO = Trade Openness.

GNPCF = Gross National Private Capital Formation.

α = Intercept.

$\beta_1, \beta_2, \beta_3$, and β_4 are the coefficients.

μ = error term (representing other variables that affects industrial productivity but are not explicitly specified in the model)

T = Time factor

A priori expectation: $\beta_1 > 0$; $\beta_2 < 0$; $\beta_3 > 0$ and $\beta_4 > 0$, judging by the literature support, we expected that the estimation parameters will turn up with signs or size conforming to economic theory.

Model 2

As mentioned in the background of the study, several recent FDI studies like Okoli and Agu, (2015) have investigated how national characteristics might affect host countries' capacity to benefit from FDI, the so-called absorptive capacities. These studies postulate that the size of spillovers from foreign firms depends on the domestic firms' ability to respond successfully to new entrants, new technology and new competition. Furthermore, as McKinnon (1973) states, the development of capital markets is 'necessary and sufficient' to foster the 'adoption of best-practice technologies and learning by doing'. In other words, limited access to credit markets restricts entrepreneurial development. If entrepreneurship allows greater assimilation and adoption of best technological practices made available by FDI, then the absence of well-developed financial markets limits the potential positive FDI externalities. Again, Alfaro, Sebnem and Selin, (2009) argued that the importance of well-functioning financial institutions and institutional quality in promoting the positive impacts of FDI inflow on industrial productivity cannot be overemphasized.

Hence, given the second and third objective of the study and using credit to private sector as a proxy for financial institutions, and corruption perception index as a proxy for institutional quality, the functional form of the model is specified as:

$$\text{FDI} = F(\text{CPS}, \text{CPI}, \text{GNPCF}, \text{INTR}) \dots \dots \dots (3.5)$$

The mathematical form of the model is specified as:

$$\text{FDI} = \alpha + \beta_1 \text{CPS}_t + \beta_2 \text{CPI}_t + \beta_3 \text{GNPCF}_t + \beta_4 \text{INTR}_t \dots \dots \dots (3.6)$$

The econometric form of the model is specified thus:

$$\text{LnFDI} = \alpha + \beta_1 \text{LnCPS}_t + \beta_2 \text{CPI}_t + \beta_3 \text{LnGNPCF}_t + \beta_4 \text{INTR}_t + \mu_t \dots \dots \dots (3.7)$$

Where:

FDI = Foreign Direct Investment.

CPS = Credit to private sector (a proxy for financial institutions)

CPI = Corruption Perception Index (a proxy for institutional quality)

GNPCF = Gross National Private Capital Formation.

INTR = Interest rate.

α = Intercept.

$\beta_1, \beta_2, \beta_3$ and β_4 are the coefficients.

μ = error term (representing other variables that affects industrial productivity but are not explicitly specified in the model)

T = Time factor

A priori expectation, it is expected that $\beta_1 > 0$; $\beta_2 < 0$; $\beta_3 > 0$; and $\beta_4 < 0$, judging by the literature support, we expected that the estimation parameters will turn up with signs or size conforming to economic theory.

Model 3

The model three adopted the propositions of James Tobins' "Q" theory of investment. Tobin's Q was created as a proportion between the market value of the same physical asset and its replacement value. This theory further asserts that the main drivers of investment are government spending, interest rate and credit to the private sector and given the fourth objective of the study, the functional form of the model is specified thus:

$$DI = F(FDI, CEXP, INTR, CPS) \dots \dots \dots (3.8)$$

The mathematical form of the model is specified as:

$$DI = \alpha + \beta_1 FDI_t + \beta_2 CEXP_t + \beta_3 INTR_t + \beta_4 CPS_t \dots \dots \dots (3.9)$$

The econometric form of the model is specified thus:

$$\ln DI = \alpha + \beta_1 \ln FDI_t + \beta_2 \ln CEXP_t + \beta_3 \ln INTR_t + \beta_4 \ln CPS_t + \mu_t \dots \dots (3.10)$$

Where:

DI = Domestic Investment (to be proxied with Gross national private capital formation).

FDI = Foreign Direct Investment.

CEXP = Capital Expenditure.

INTR = Interest rate.

CPS = Credit to Private Sector.

α = Intercept.

$\beta_1, \beta_2, \beta_3$, and β_4 are the coefficients.

μ = error term (representing other variables that affects industrial productivity but are not explicitly specified in the model)

T = Time factor

A priori expectation: $\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 < 0$; and $\beta_4 > 0$, judging by the literature support, we expected that the estimation parameters will turn up with signs or size conforming to economic theory.

3.3 Justification of the Model

The above specified models are justified given the propositions of the Mankiw-Romer theory, the theory of exchange rate and imperfect capital markets by Cushman (1985), James Tobin's "Q" theory of investment and the predictions of Okoli and Agu (2015), Alfaro, Sebnem and Selin, (2009) and Fauzel, Seetanah and Sannasee (2016) in their separate studies on FDI and other economic growth indicators. While the Mankiw-Romer theory stated that physical capital and savings rate are important factors that explain cross country income variations and as such these variables promote the economic growth of a country, the theory of exchange rate and imperfect capital markets by Cushman (1985) revealed that the prevailing exchange rate in a home country goes a long way in determining the rate of FDI inflow in such a country, James Tobin's "Q" theory of investment argued that government expenditure, interest rate and credit to private sector are the major drivers of investment and this justifies the inclusion of these variables in the models.

3.4 Method of Analysis

The unit root test was carried out to investigate the time series property of the model. The stationarity of the variables was tested to ensure that these variables maintain short-run dynamics and stability. This test was conducted using the Philips-Perron test for unit root. However, it is important to note that if there exists an evidence of structural breaks in the series, this test for unit root collapses and the Papell and Lumsdaine test for unit root in the presence of structural breaks was adopted in testing for unit root in the series.

Again, Engle and Granger (1987) suggest a cointegration test, which consists of estimating the cointegration regression by OLS, obtaining the residual \hat{u}_t and applying unit root test for \hat{u}_t . To test an equilibrium assertion, they propose testing the null that \hat{u}_t has a unit root against the alternative that it has a root less than unity. Since \hat{u}_t are themselves estimates, new critical values need to be tabulated. Thus one has to use the corrected MacKinnon critical values. We have the equation $u_t = y - \alpha \cdot x$, where \hat{u}_t follows an autoregressive process,

$$\hat{u}_t = \rho \cdot \hat{u}_{t-1} + \varepsilon_t$$

with $\hat{\varepsilon}_t \sim \text{i.i.d.}(0, \sigma^2)$.

One could assume three possibilities, that ρ is smaller, equal or higher than one:

If $|\hat{\rho}| > 1$: $y_t \sim I(1)$ and $x_t \sim I(1)$ then $u_t \sim I(2)$,

If $|\hat{\rho}| = 1$: $y_t \sim I(1)$ and $x_t \sim I(1)$ then $u_t \sim I(1)$,

If $|\hat{\rho}| < 1$: $y_t \sim I(1)$ and $x_t \sim I(1)$ then $u_t \sim I(0)$.

Only if $|\hat{\rho}| < 1$, a cointegration relationship exists. If one wants to derive more information about the dynamic behaviour of the variables, he will have to apply an Error-Correction model. Engle and Wei (1983) demonstrated that if a set of cointegrated variables exist, they can be regarded as being generated by an Error-Correction model, which is called the Granger Representation Theorem.

Since neither static nor dynamic models can on its own define the true nature of economic time series, there is the need to combine both the static and dynamic forms of the respective models above in order to account for both short run and long run dynamics of the model. This will also help ascertain the level of the disequilibrium in the previous period that was corrected in the present period. The Akaike Information Criterion (AIC) was employed to ascertain the maximum lag length. The structure of the Error Correction Model (ECM) is as specified below:

$$\Delta Y_t = \alpha \varepsilon_{t-1} + \delta \Delta X_t + \varepsilon_t \quad \text{-----(3.11)}$$

Where α and δ shows the short run dynamics while the long run dynamics is embedded in ε_{t-1}

Finally, Granger test was carried out to ascertain the existence or otherwise, of bi-directional causality between FDI and domestic investment in Nigeria. The Granger test for causality was applied.

4.0 PRESENTATION AND ANALYSIS OF RESULTS

4.1 Unit Root Test

The analytical techniques discussed in the previous chapter were applied to the models of the study and the results are presented in this section. Since empirical analysis based on time series data would be biased if the underlying data are nonstationary, the unit root test is therefore necessary to check for the stationarity of the variables. As earlier noted, the test used for observing the stationarity of the time series data used for analysis in this study is the ADF and Phillips-Perron unit root tests. The results are summarized in table 4.1 below:

Table 4.1 Summary of ADF and Phillips-Perron Unit Root Test Results for Respective Models

ADF Unit Root Test						
Model(s)	Variables	ADF-Statistic	Critical Value			Remarks
			1%	5%	10%	
MODEL I	LNINDO	-4.939731	-4.252879	-3.548490	-3.207094	1(1)
	LNFDI	-9.975666	-4.252879	-3.548490	-3.207094	1(1)
	EXR	-4.454510	-4.262735	-3.552973	-3.209642	1(1)
	TRO	-5.523179	-4.252879	-3.548490	-3.207094	1(1)

	LNGNPCF	-5.018379	-4.252879	-3.548490	-3.207094	1(1)
	Residual Series	-5.259587	-4.243644	-3.544284	-3.204699	1(0)
MODEL II	LNFDI	-9.975666	-4.252879	-3.548490	-3.207094	1(1)
	LNCPS	-4.055807	-4.252879	-3.548490	-3.207094	1(1)
	CPI	-10.12064	-4.252879	-3.548490	-3.207094	1(1)
	LNGNPCF	-5.018379	-4.252879	-3.548490	-3.207094	1(1)
	INTR	-9.910565	-4.252879	-3.548490	-3.207094	1(1)
	Residual Series	-5.300229	-4.243644	-3.544284	-3.204699	1(0)
MODEL III	LNFDI	-9.975666	-4.252879	-3.548490	-3.207094	1(1)
	LNCEXP	-6.058691	-4.252879	-3.548490	-3.207094	1(1)
	INTR	-9.910565	-4.252879	-3.548490	-3.207094	1(1)
	LNCPS	-4.055807	-4.252879	-3.548490	-3.207094	1(1)
	Residual Series	-4.416486	-4.252879	-3.548490	-3.207094	1(0)
Phillips-Perron Test Statistics						
Model I	LnINDO	-6.180450	-3.639407	-2.951125	-2.614300	1(1)
	LnFDI	-6.446493	-3.639407	-2.951125	-2.614300	1(1)
	EXR	-6.723011	-3.639407	-2.951125	-2.614300	1(1)
	TRO	-8.353515	-3.639407	-2.951125	-2.614300	1(1)
	LnGNPCF	-4.364152	-3.639407	-2.951125	-2.614300	1(1)
	Residual Series	-5.700422	-3.639407	-2.951125	-2.614300	1(1)
Model II	LNFDI	-6.446493	-3.639407	-2.951125	-2.614300	1(1)
	CPS	-5.670450	-3.639407	-2.951125	-2.614300	1(1)
	CPI	-5.180455	-3.639407	-2.951125	-2.614300	1(1)
	LnGNPCF	-4.364152	-3.639407	-2.951125	-2.614300	1(1)
	INTR	-9.402858	-3.639407	-2.951125	-2.614300	1(1)
	Residual Series	8.409004	-3.639407	-2.951125	-2.614300	1(1)
Model III	LNDI	-6.081309	-3.639407	-2.951125	-2.614300	1(1)
	LNFDI	-6.446493	-3.639407	-2.951125	-2.614300	1(1)
	LNCEXP	-7.565040	-3.639407	-2.951125	-2.614300	1(1)
	CPS	-5.670450	-3.639407	-2.951125	-2.614300	1(1)
	Residual Series	-6.247502	-3.639407	-2.951125	-2.614300	1(1)

Source: Researcher's Compilation (2020) using Eview 9

The unit root test of augmented Dickey–Fuller (Dickey & Fuller, 1981) and Phillips-Perron test unit root test are carried out to ensure the stationarity of the variable of interest. As seen in table 4.1, all the variables were stationary at first difference, 1(1) in the respective models. The ECM for the three models was stationary in level. This provides a strong criterion for the cointegration analysis.

4.2 Engle Granger Co-integration Test

The Engle-Granger method first constructs residuals (errors) based on the static regression. The residuals are tested for the presence of unit roots using ADF or a similar test. If the time series is cointegrated, then the residuals will be practically stationary. A major issue with the Engle-Granger method is that choice of the dependent variable may lead to different conclusions (Armstrong, 2001), an issue corrected by more recent tests such as Phillips-Ouliaris and Johansen's. The co-integration test for the variables using Tau-statistics is presented in table 4.2 below.

Table 4.2 Engle Granger Co-integration Test

Model(s)	Dependent	Tau-statistic	Prob.*	Z-statistic	Prob.*
Model I	LnINDO	-2.634632	0.7747	-13.37699	0.6924
	LnFDI	-4.975789	0.0376	-29.74690	0.0300
	EXR	-2.746360	0.7300	-12.70515	0.7328
	TRO	-4.752181	0.0575	-27.50999	0.0563
	LnGNPCF	-4.082946	0.1782	-15.95504	0.5283
Model II	LnFDI	-5.501823	0.0129	-33.87239	0.0078
	CPS	-1.047485	0.9962	-3.542878	0.9963
	CPI	-4.857843	0.0472	-29.11581	0.0361
	LnGNPCF	-3.655275	0.3208	-14.75569	0.6054
	INTR	-3.934228	0.2216	-21.51338	0.2220
Model III	LNDI	-2.596330	0.6424	-12.03614	0.6061
	LnFDI	-5.412021	0.0067	826.0656	0.9999
	LNCEXP	-3.736497	0.1712	-25.67380	0.0387
	CPS	-0.699044	0.9951	-1.991534	0.9957

*MacKinnon (1996) p-values.

Warning: p-values may not be accurate for fewer than 36 observations

Source: Researcher's Compilation (2020) using Eview 9

The co-integration results were based on the Engle Granger using Tau-Statistics. The probability values are derived from the MacKinnon response surface simulation results. The output results provide the Engle-Granger tau-statistic (t -statistic) and normalized autocorrelation coefficients (which we term the z -statistic). As to the tests themselves, the Engle-Granger tau-statistic (t -statistic) and normalized autocorrelation coefficient (which we term the z -statistic) both reject the null hypothesis of no cointegration (unit root in the residuals) at the 5% level. In addition, the tau-statistic rejects at a 1% significance level. On balance, the evidence clearly suggests that the variables are cointegrated in the models respectively. This implies that the existences of co – integration suggest that there is a long – run relationship between the variables under consideration. In other words, the existence of co-integration among the variables justified the use of error correction model in this study.

4.3 Lag Length Selection

Since the short run and long run relationships cannot individually, explain the exact behavior and nature of relationships between variables, it is therefore necessary to combine both the short run and long run components in order to ascertain the speed of adjustment and the level of disequilibrium/discrepancies in the previous period that were actually corrected in the present period. This therefore necessitates the error correction model. Again, to determine the maximum lag length so as to enable a parsimonious regression result, the optimal lag selection criteria was adopted and lag 1 was adopted as the maximum lag for the three models using the Akaike Information criteria as evidenced in the table below:

Table 4.3: Optimal Lag Length Selection Criteria for the Respective Models

Model I	Lag	LogL	LR	FPE	AIC	SC	HQ
	0	-889.2687	NA	4.28e+16	52.60404	52.82851	52.68059
	1	-732.9348	257.4912*	2.17e+13*	44.87852*	46.22530*	45.33781
	2	-717.1344	21.37695	4.13e+13	45.41967	47.88878	46.26171
Model II	Lag	LogL	LR	FPE	AIC	SC	HQ
	0	-286.1411	NA	18.85251	17.12595	17.35041	17.20250
	1	-133.8149	250.8902*	0.010732*	9.636169*	10.98296*	10.09546
	2	-115.1710	25.22406	0.017270	10.01006	12.47917	10.85210
Model III	Lag	LogL	LR	FPE	AIC	SC	HQ
	0	-214.8175	NA	0.283978	12.93044	13.15491	13.00699
	1	-55.34028	262.6684*	0.000106*	5.020016*	6.366805*	5.479310*
	2	-38.65403	22.57551	0.000192	5.509061	7.978173	6.351099

Source: Researcher's Compilation (2020) using Eview 9

Where * indicates lag order selected by the criterion

As evidenced in tables 4.3, above, all the selection criteria selected the lag order of 1 for the respective models. This therefore necessitates the adoption of lag 1 as the maximum lag length for the ECM analysis.

4.4 Regression Results

4.4.1 Discussion of Results based on Research Question One

Has foreign direct investment significantly helped in the industrial output in Nigeria?

Table 4.4: Short-run Summary of the Regression Result for Model 1: Dependent Variable- D(LNINDO)

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	0.022058	0.010594	2.082179	0.0463*
D(LNFDI)	0.019369	0.015367	1.260425	0.2176
D(EXR)	-0.000519	0.000323	-1.609099	0.1184
D(TRO)	-0.051609	0.545410	-2.102745	0.0443*
D(LNGNPCF)	0.113332	0.032256	3.513478	0.0015*
ECM(-1)	-0.582376	0.152848	-3.810175	0.0007*
$R^2 = 0.527281$ $F \text{ stat} = 46.69436$ $R^2 \text{ Adj} = 0.445777$ $F \text{ proby} = 0.00037$ Durbin-Watson stat: 1.629896				

Source: Researcher's compilation using Eview 9(2020)

From table 4.4 above, the estimated coefficients of 0.019369 for foreign direct investment (LnFDI) showed that 1% change in foreign direct investment will subsequently increase industrial output in Nigeria by about 1%. More so, foreign direct investment has significant positive impact on industrial output in Nigeria. In addition, the estimated coefficients of -0.000519 for exchange rate (EXR) showed that 1% change in exchange rate will negatively affect industrial output in Nigeria, though an infinitesimal effect of about 0.05%. Furthermore, exchange rate has insignificantly negative impact on industrial output in Nigeria. Similarly, the coefficients of -0.011609 for trade openness shows a negative relationship between trade openness and industrial output in Nigeria. This indicates that 1% change in trade openness will decrease industrial output by about 1%. More so, trade openness (TRO) has negative but significant impact on industrial output in Nigeria. The coefficient of 0.113332 for gross national private capital formation shows that a percentage change in gross national private capital formation will increase industrial output by about 11%. However, gross national private capital formation has significantly positive impact on industrial output in Nigeria. Also, the significantly negative coefficient for the ECM showed that in the previous period, the long run component of the ECM model (i.e., ϵ_{t-1}) had a value that was > 0 which goes to mean that the value of the regressand in the previous period was above its equilibrium value, hence, the ECM short run component (i.e., α) needed to take a negative value to restore the value of the regressand back to equilibrium in the long run. Therefore, from the result, the coefficient value of -0.582376 for the ECM shows that about 58% of the disequilibrium/discrepancies in the previous period were corrected in the present period. This therefore shows a high speed of adjustment to long run equilibrium. The R-squared measures the overall goodness of fit of the entire regression. The value of the R-squared was 0.527281. This indicates that the independent variables accounts for about 52% of the total variations in the dependent variable. The value of the F-statistics was 46.69436 with P-values of 0.000375. Hence, we reject the null hypothesis and accept the alternative hypothesis that our independent variables are simultaneously significant and the overall regression model is statistically significant and as such, the regression is very robust with a high predictive power. The value of Durbin Watson is 1.629896 in the model. By implication, there is evidence of positive serial correlation among the explanatory variables.

4.4.2 Discussion of Results based on Research Question Two and Three

How has financial institutions aided FDI inflow into Nigeria? And how has institutional quality aided FDI inflow into Nigeria?

Table 4.5: Short-run Summary of the Regression Result for Model 2: Dependent Variable- D(LNFDI)

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	0.015239	0.179356	0.084964	0.9329
D(LNCPS)	0.147066	1.525495	1.407455	0.1699
D(CPI)	-0.007360	0.028673	-0.256681	0.7992
D(LNGNPCF)	-0.099891	0.300594	-0.332312	0.7420
D(INTR)	0.059515	0.024301	2.449035	0.0206*
ECM(-1)	0.697312	1.525058	2.424374	0.0218*
$R^2 = 0.430567$ $F \text{ stat} = 42.64044$ $R^2 \text{ Adj} = 0.415147$ $F \text{ proby} = 0.002036$				

Source: Researcher's compilation (2020) using Eview 9

From tables 4.5 above, the estimated coefficients of 0.147066 for credit to private sector proxy for financial institutions (LnCPS) shows that 1% change in credit to private sector will subsequently increase foreign direct investment in Nigeria by about 14%. More so, credit to private sector has insignificant positive impact on foreign direct investment in Nigeria. In addition, the estimated coefficients of -0.007360 for corruption perception index proxy for institutional quality (CPI) shows that 1% change in corruption perception index will negatively affect foreign direct investment in Nigeria, though an infinitesimal effect of about 0.7%. More so, corruption perception index has insignificant negative impact on foreign direct investment in Nigeria. Similarly, the coefficients of -0.099891 for gross national private capital formation (LnGNPCF) shows a negative relationship between gross national private capital formation and foreign direct investment in Nigeria. This indicates that 1% change in gross national private capital formation will decrease foreign direct investment by about 9%. More so, gross national private capital formation has insignificant negative impact on foreign direct investment. The coefficient of 0.059515

for interest rate (INTR) shows that 1% change in interest rate will increase foreign direct investment by about 5%. More so, interest rate has significant positive impact on foreign direct investment in Nigeria. Also, the positive and insignificant coefficient of ECM shows that in the previous period, the long run component of the ECM model (i.e., ε_{t-1}) had a value that was < 0 which goes to mean that the value of the regressand in the previous period was below its equilibrium value, hence, the ECM short run component (i.e., α) needed to take a positive value to drag the value of the regressand to equilibrium in the long run. Therefore, from the result, the coefficient value of 0.697312 for the ECM shows that about 69% of the disequilibrium/discrepancies in the previous period (short run) were corrected in the present period (long run). This therefore shows a high speed of adjustment to long run equilibrium.

The values of the R-squared were 0.430567. This indicates that the independent variables accounts for about 33% of the total variations in the dependent variable. The value of the F-statistics was 42.64044 with P-value of 0.002036. Hence, we reject the null hypothesis and accept the alternative hypothesis that our independent variables are simultaneously significant and the overall regression model is statistically significant and as such, the regression is very robust with a high predictive power. This result is reliable as the Durbin-Watson statistic value of 2.770710 which confirm that there is no evidence of a first order serial autocorrelation (AR(1)). By rule of thumb, if the DW statistics is approximately equal to 2, it is evidence against the existence of a first order serial correlation.

4.4.3 Discussion of Results based on Research Question Four

What is the effect of foreign direct investment on domestic investment in Nigeria?

Table 4.6: Short-run Summary of the Regression Result for Model 3: Dependent Variable- D(LNGNPCF)

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	0.095908	0.109010	0.879806	0.3862
D(LNFDI)	-0.042091	0.113964	-0.369336	0.7146
D(LNCEXP)	-0.097994	0.198786	-0.492960	0.6258
D(INTR)	0.001137	0.016435	0.069178	0.9453
D(LNCPS)	-0.317722	0.991699	-2.320381	0.0310
ECM(-1)	-0.109899	1.045574	-0.105109	0.9170
R ² = 0.490949				
F stat= 21.79069				
R ² Adj= 0.480949				
F proby=0.008279				

Source: Researcher's compilation (2020) using Eview 9

From tables 4.6 above, the estimated coefficients of -0.042091 for foreign direct investment (LnFDI) shows that 1% change in foreign direct investment will subsequently decrease domestic investment in Nigeria by about 4%. However, foreign direct investment has insignificant negative impact on domestic investment in Nigeria. In addition, the estimated coefficients of -0.097994 for capital expenditure (LnCEXP) shows that 1% change in capital expenditure index will negatively affect domestic investment in Nigeria, to the tone of about 0.9%. However, capital expenditure has insignificant negative impact on domestic investment in Nigeria. Similarly, the coefficients of 0.001137 for interest rate (INTR) show that while interest rate exerts positive influence on domestic investment in the short run, the effect is negative in the long run. This indicates that a percentage change in interest rate will increase domestic investment by about 0.1%. More so, interest rate has insignificant positive impact on domestic investment in Nigeria. The coefficient of -0.317722 for credit to private sector (LnCPS) show that 1% change in credit to private sector will decrease domestic investment by about 31%. However, credit to private sector has significant negative impact on domestic investment in Nigeria. The negative and insignificant coefficient of ECM shows that in the previous period, the long run component of the ECM model (i.e., ε_{t-1}) had a value that was > 0 which goes to mean that the value of the regressand in the previous period was above its equilibrium value, hence, the ECM short run component (i.e., α) needed to take a negative value to restore the value of the regressand to equilibrium in the long run. Therefore, from the result, the coefficient value of -0.109899 for the ECM shows that only about 10% of the disequilibrium/discrepancies in the previous period were corrected in the present period. This therefore shows a low speed of adjustment to long run equilibrium.

The value of the R-squared was 0.490949. This indicates that the independent variables accounts for about 29% of the total variations in the dependent variable. The value of the F-statistic is 21.79069 with P-value of 0.008279. Hence,

we reject the null hypothesis and accept the alternative hypothesis that our independent variables are simultaneously significant and the overall regression model is statistically significant and as such, the regression is very robust with a high predictive power. The value of Durbin Watson is 1.176059 in the model. By implication, there is evidence of positive serial correlation among the explanatory variables.

4.5 Discussion of Findings

As evidenced from the findings from model 1 regarding the first objective of the study, foreign direct investment was observed to exert an insignificant impact on industrial output in Nigeria. Such result can be explained by the fact that at the early stages of development of a nation (which represents the short run period in this case) which is accompanied by developing industrial sector characterised by infant industries, the influx of foreign direct investment has the tendency of limiting the performance of these infant industries since the Multinationals who bring in these investment will occupy a greater share of the market thereby limiting the market share of the infant industries and further decline in industrial output. This was the case in the Pre-indigenization policy era in Nigeria which led to the introduction of the indigenization and export promotion policies. The long run period in this case represents the period when these policies took the center stage that led to the erstwhile infant industries improving on their absorptive capacity which further increased the insider and outsider foreign direct investment leading to positive spillovers from such foreign direct investment..

From the findings on the second and third objectives of the study, it was revealed that credit to private sector; a proxy for financial institutions accounted for about 14% and 16% of the total positive changes in foreign direct investment in the short and long run periods respectively while corruption perception index; a proxy for institutional quality accounted for about 0.7% and 0.2% of the total negative changes in foreign direct investment in the short and long run periods respectively. On the part of credit to private sector, its positive effect on foreign direct investment both in the early stage of development stage (short run) and the latter stage (long run) is consequent upon the fact that when loans and advances are made available to the industrial sector which is characterised mostly by the private sector, there is a tendency that these loans will enhance the productive capacity of the firms in the sector thereby leading to an increase in their absorptive capacities and a further increase in the insider foreign direct investment which invariably increases the total foreign direct investment in the country. This was evidenced in Nigeria during the periods of the post-introduction of the aforementioned policies and the aftermath of the 2005 bank consolidation policy of the Central bank of Nigeria which led to an increase in commercial banks' liquidity thereby making funds available for onward disbursement to the private sector. On the part of the corruption perception index, the negative effect on foreign direct investment is implied given that an increasing corruption perception index can negatively affect the ease of doing business index thereby leading to a decline in foreign direct investment in the home country. This was evidenced in the recent exit of two giant international banks: Hongkong and Shanghai Banking Corporation (HSBC) and Union Banking Corporation (UBC) owing to the decline in ease of doing business index which was an offshoot of the increasing corruption perception index in Nigeria.

From the findings on the fourth objective, foreign direct investment was observed to exert a negative, though insignificant effect on domestic investment (proxied by gross national private capital formation). This finding is consequent upon the fact that, increases in foreign direct investment has the tendency of limiting the performance of the domestic firms owing to the infant nature of these firms. The positive impact of the aforementioned policies notwithstanding, most domestic firms in Nigeria are still performing below their capacity thereby limiting their operating capital, a situation which does not allow them to invest in capital formation leading to decline in domestic investment.

5.0 SUMMARY, POLICY RECOMMENDATIONS AND CONCLUSION

5.1 Summary

This study was undertaken to empirically evaluate foreign direct investment and industrial productivity in Nigeria from 1981 to 2018. This study was specifically carried out to determine whether FDI has significantly influenced industrial output in Nigeria; ascertain the extent to which financial institutions and institutional quality aid FDI inflow in Nigeria and to evaluate the effect of FDI on domestic investment in Nigeria. In order to achieve these objectives of the study, three econometric models were specified. The significance of the study on the government, policy makers and other researchers was also revealed. The data used for the research was a secondary data obtained from central bank of Nigeria Statistical Bulletin (2018) and World Bank Data bank (World Development Index, 2018).

The major findings of this study are summarized and discussed below:

1. From the short and long run regression results for model 1, foreign direct investment had an insignificant positive impact on industrial growth in Nigeria.
2. From the regression results for model 2, financial institutions (proxied by credit to private sector) had no significant impact on foreign direct investment in Nigeria.
3. More so, institutional quality (proxied by corruption perception index) had an insignificant effect on foreign direct investment in Nigeria.
4. Again, from the regression results for model 3, foreign direct investment had an insignificant negative impact on domestic investment (proxied by gross national private capital formation) in Nigeria.

5.2 Policy Recommendations

Given the findings of the study, the policy recommendations are made below:

1. Since foreign direct investment had an insignificant impact on industrial growth in Nigeria, it is therefore recommended that in order to attract more foreign direct investment into the country, the government should through the ministry of industry, trade and investment enact and reform extant laws and policies that could boost the ease of doing business index for Nigeria. This could be done by reinvigorating investment attracting mechanisms in the less invested sectors of the economy such as the mining and quarrying sector. Such mechanisms as tax holidays and tax cuts could help attract foreign investors to tap the untapped natural and mineral resources that abound in this sector. This can therefore help in boosting the macro foreign direct investment of the economy and invariably, industrial productivity.
2. Given that financial institutions (proxied by credit to private sector) had no significant impact on foreign direct investment Nigeria, the study therefore recommends that proper funding of specialized financial institutions in the country should be enhanced. Financial institutions such as the Bank of Industry, Bank of Agriculture, Development Bank of Nigeria and other similar financial institutions which serve as the main source of funding for the industrial sector should be made to function better through proper funding, reduced interest rate and ease of accessibility of these funds. Efforts should also be made to reduce the increasing corruption perception index of the country through proper accountability in public and private institutions and re-enforcement of the anti-graft agencies for proper discharge of their duties.
3. Since it was observed that foreign direct investment had an insignificant negative impact on domestic investment (proxied by gross national private capital formation) in Nigeria, the study recommends that efforts should be made to improve the absorptive capacities of the domestic firms to enable them withstand the shocks from the “Flying Geese multinationals” in order that such shocks may not affect their operating capital which would lead to a decline in domestic investment by these domestic firms. To do this, favorable operating environment should be created by both the public and private sectors for industries, especially infant industries to thrive. Also, public-private partnerships should also be encouraged given the fact that such “agglomeration effects” help to cushion the supposed negative effects of increasing foreign direct investment on domestic investment.

5.3 Conclusion

Increasing foreign direct investment helps in boosting the productivity of the industrial sector in Nigeria. Financial institutions also act as catalysts for industrial productivity in Nigeria while corruption perception index act as a deterrent to industrial productivity in Nigeria. Foreign direct investment acts as a deterrent to domestic investment in Nigeria owing to the poor absorptive capacities of the domestic firms. However, it is evident that foreign direct investment is a catalyst to industrial productivity in Nigeria.

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