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POLITICS & INTERNATIONAL RELATIONS | RESEARCH ARTICLE

Empirical analysis of the effects of foreign direct investment inflows on Nigerian real economic growth: Implications for sustainable development goal-17

Babatunde A. Giwa¹, Emmanuel O. George², Henry Okodua¹ and Oluwasogo S. Adediran^{1*}

Abstract: Existing literature in modern macroeconomics is saturated with various studies on both the short and long run link between foreign direct investment (FDI) and economic growth in Nigeria, and other emerging market economies. However, there are areas of knowledge gap on the part of the effects of industrial linkage on FDI inflows to the Nigerian economy. As a result of this knowledge gap and growing concern for commitments to investment promotion and sustainable industrial development in the country, it is imperative at this time to assess the effects of FDI on Nigeria's real sector growth. Consequently, this study set out to empirically examine the effect of FDI inflows into Nigeria on real gross domestic product (RGDP) growth and how these external inflows can bring about achieving Goal-17.3 of mobilising additional financial resources for developing countries from multiple sources. The model constructed was estimated using the robust GMM estimation technique which took care of the problem of endogeneity and autocorrelation inherent in ordinary least square. The study found that labour quality has a positive and significant effect on RGDP in line with theory. Equally, it was noted that capital intensity displayed a significant negative effect on RGDP in Nigeria. This study therefore recommends that policy makers in Nigeria should incorporate into her broad policy, improvement in capital intensity as a bedrock to growing the economy through FDI spillover effects.

ABOUT THE AUTHOR

Babatunde A. Giwa, the lead author, is a PhD candidate and researcher in the Department of Economics and Development Studies, Covenant University, Ota; and has publications in reputable local and international Journals. This article is an extraction from his PhD work under the supervision of the two following co-authors. In the study, the area of focus is on commitments to investment promotion and sustainable industrial development, and enhancing the global partnership for sustainable development as indicated by Goal-17.3 of the SDGs. Consequently, this study is set out to empirically examine the effect of FDI inflows into Nigeria on RGDP growth.

PUBLIC INTEREST STATEMENT

Previous studies on modern macroeconomics are saturated with various studies on both the short- and long-run link between foreign direct investment (FDI) and economic growth in Nigeria, and other emerging market economies. However, there are areas of knowledge gap on the part of the effects of industrial linkage on FDI inflows to the Nigerian economy. As a result of this knowledge gap and growing concern for commitments to investment promotion and sustainable industrial development in the country. This study sets out to empirically examine the effect of FDI inflows into Nigeria on real gross domestic product (RGDP) growth and how these external inflows can bring about achieving Goal-17.3 of mobilising additional financial resources for developing countries from multiple sources.

Subjects: Development Studies; Economics and Development; Economics

Keywords: Foreign direct investment; Nigeria; linkages effect; real sector growth; Generalised Method of Moments; SDGs

1. Introduction

The recent significant increase in capital inflows across economies of the world can be traced to consistent rise in financial trades amongst countries. In addition, a fundamental factor underlining this experience has been the increased globalisation of investors seeking higher rates of return on investment per time and the opportunity to diversify risk globally (Giwa, George, & Okodua, 2019). As a result, many economies of the world have encouraged inflows of capital by removing restrictions that are not beneficial to capital inflows (Adediran, George, Alege, & Obasaju, 2019). These restrictions among others include: deregulating domestic financial market; reducing restrictions on foreign direct investment (FDI); improving their economic environment and prospects through the introduction of market oriented strategies, thereby moving away from era of financial depression. The attraction of foreign capital flows is a fundamental target of all stakeholders all over the globe, including less developed countries where lack of enough capital is a major constraint to their economic buoyancy and prosperity. The preference for FDI emanates from the numerous benefits it offers. An important one is that, FDI is considered less prone to crisis due to the fact that investors usually have a better investment arrangement and understand the economic dynamics of the host country. Hence, stakeholders in emerging and developing economies usually anticipate that FDI inflow will bring the much-needed capital, new technologies, marketing techniques and management skills (Adediran et al., 2019; Amoo, 2018; Borensztein, De Gregorio, & Lee, 1998; Giwa et al., 2019).

These overwhelming importance of FDI have made Nigerian government and that of other developing economies to give more attention to the potentials embedded in attracting high FDI in their economies. Hence, successive governments in Nigeria have been trying to attract high FDI to the country through various economic strategies. For instance, the introduction of Structural Adjustment Programme (SAP) in 1986 which had multifaceted liberalisation as its core objective culminated into attracting capital flows into Nigeria while at the same time enhancing its efficient allocation in the private sector (Central Bank of Nigeria, 2005). In addition, while it seems right to argue that FDI can convey greater knowledge spillovers to host economies. The capacity of a host country to take advantage and benefit from these externalities might be inhibited by its domestic economic conditions, which include undeveloped financial market and unregulated domestic industries. Also, to the extent that large proportion of FDI arrives through mergers and acquisitions, it is more beneficial for the host economy to also have a well-functioning stock market. This has the tendency to increase sources of finance available to firms and by extension play a major role in creating linkages between local and external investors.

Hence, an important issue of concern that has been largely neglected in recent empirical studies is whether domestic firms do benefit from their foreign counterparts or not. Response to this issue among others, is important in better understanding of the link between FDI and economic growth, and extends the frontier of knowledge in the subject matter. Although, there are existing evidences on the link between FDI and economic growth in Nigeria. There are still scarce empirical evidences on the relationship between industrial linkage effects and FDI flows to the country. This study is an attempt in this regard. Therefore, given the growing concern for commitments to investment promotion and sustainable industrial development, and enhancing the global partnership for sustainable development as indicated by Goal-17 of the SDGs, it is important to investigate the effects of FDI inflows on Nigeria's economic growth. Consequently, this study set out to empirically examine the effect of FDI inflows into Nigeria on RGDP (real gross domestic product) growth. Hence, this study is a major contribution to the development of finance-FDI nexus in Nigeria.

1.1. Theoretical review of foreign direct investment

1.1.1. Direct input theory

The study adopted the direct input theory as advanced by the neoclassical theorists, which link economic growth on aggregate production function. Here, economic output (Y) was related directly to primary inputs of capital (K) and labour (L). This is traceable to the popular seminar paper of Solow (1956), which formed the basis for several studies that have applied growth analysis procedure within the neoclassical model framework; this study adopted this same approach as consistent with the literature. Therefore, the role of investment is summarised in the two equations below.

$$Y = A * F(K, L) \quad (1)$$

$$\Delta K_t = I_t - \alpha K_{t-1} \quad (2)$$

Equation (1) describes an aggregate production function which shows the link between output (Y), capital (K), labour inputs (L) and technological progress (A), while Equation (2) is the capital accumulation equation. This expressed the link between investment in tangible assets (I) and capital stock (K).

The consistency of the above neoclassical model and its theoretical framework on capital accumulation and economic growth is relevant and applicable to this study. However, the main weakness noticed in this theory is that accumulation of capital is subject to diminishing return and therefore, without exogenous technical progress, steady growth could not be realised. But, in spite of its weakness, this study adopts the theory because it links accumulation of capital to output.

1.1.2. The new growth theory

According to this theory, a less developed country that ensures high savings (investment), which is accumulation of capital and keep on increasing the saving rate will largely achieve higher level of output. In the same light, Solow (1956) put the theory into proper application by proposing that the permanent growth rate of output per unit of input of labour is independent of the savings rate, which is investment and depends largely on the technological progress rate. Therefore, this growth theory focuses mainly on creation of technological knowledge and its being transmitted. This border on innovation, invention and creativity as the principal driver of economic growth in a nation. According to Lucas (1988) and Grossman and Helpman (1991), the model basically assumed constant returns to scale of inputs and the level of technological development.

In supporting the argument of Solow (1956) and other new growth theorists, Arrow (1962) opined that investment in tangible assets will naturally generate spillover as technology is a direct function of capital. This is further buttressed by Romer (1986) who advanced that technological progress is a function of the stock of research and development. He further argued in favour of an additional investment in knowledge to generate natural externalities. In other words, the creation of new knowledge by a firm is largely expected to have an important exogenous effect on the production output of their counterpart firms due to the fact that, knowledge cannot be perfectly kept secret or preserved for an unforeseeable future. This argument is related to the Nigeria case, where FDI boosts the capability of local investment and development in the country. Also, literature have affirmed the fact that foreign capital inflow is dependent on the research and development, and therefore when a country has better access to all factor inputs available in the more privileged economies, such economy will experience better productivity (Lucas, 1988). However, the new growth model in contrast to earlier neoclassical model explains technological progress as a form of investment spillover which arises from different sources. Hence, it can be further affirmed that FDI can contribute to both growth as a direct impact and domestic investment as an indirect impact. However, the impact depends largely on the size of the spillover.

1.1.3. *Positive spillover theory of FDI*

Models of FDI and positive spillover emerged from seminar study of Hymer (1976) which proposed external differences across firms at both scientific and technological levels, as a source of technological spillovers and transfer. On the one hand, the study characterised FDI as an international extension of industrial organisation theory. While, on the other hand, Wang and Blomstrom (1992) show that technological transfer is positively and significantly linked to the efficiency of indigenous firms and their level of operating risks (i.e. turbulent political environment, bad macroeconomic condition and social threat). In the same vein, Blomstrom and Kokko (1998) posited that spillover occurs when the entry or presence of multinational firms contribute to the productivity efficiency of the local firms. This study highlights four basic channels of technological spillovers from multinational firms to the domestic firms of the host economy.

The channels include: (i) Learning by watching, which occurs when the indigenous firms improve its productivity capacity by imitating the technology used by the multinationals firms most especially in the face of competition (Jenkins, 1990; Wang & Blomstrom, 1992); (ii) Competition: Here if the presence of the multinational firms in the local economy induces competition among the local firms, in order to stay relevant, each of the local firms will be forced to adopt new technologies brought about by the multinational firm who is the leader in the industry (Kokko, 1996). The danger here is that the local firms might have to compete with multinational firms which could lead to their being priced out of the market; (iii) Labour mobility: FDI causes linkage through the technical know-how and skills that it brings into the host country, which is possible by way of labour training, managerial and organisational best practices dissemination. Movement of those trained from multinational firms to local firm automatically transfers the knowledge to the local firms (Fosfuri, Motta, & Ronde, 2001; Glass & Saggi, 2002); and (iv) Linkages: FDI-spillover through linkages has the tendency to occur in two ways, in the first instance multinational firms operating in the same industry can have productivity spillover on indigenous firm (horizontal spillover), also, multinational firms can have productivity spillover on indigenous firm in downstream and upstream industries (i.e., forward and backward) linkages.

1.2. *Review of empirical literature*

In the literature, FDI is regarded as the primary channel through which technology is transferred to many developing economies from their developed counterparts. The endogenous growth theory also explains that FDI has the tendency to increase growth of a host economy by generating technological diffusion from the already developed western world (Borensztein, De Gregorio & Lee, 1998). According to Crespo and Fontoura (2007), there are five main avenues through which technological diffusion can be linked to FDI flows. These avenues are as follows: competition, exportation, demonstration, mobility of labour and backward and forward linkages with domestic firms. Therefore, FDI does not only raise the skill level of the host country, but also help introduce modern technologies and reduce prices of goods.

In addition, various studies on the link between FDI and economic growth have shown mixed plausible results. For instance, Bitzer and Gorg (2009) and Woo (2009) demonstrate that FDI has positive effects on growth. However, other scholars such as Ang (2009), Aitken and Harrison (1999) and Haddad and Harrison (1993) find that FDI could have negative effect on productivity and economic growth of the local firms. In particular, Aitken and Harrison (1999) find that FDI may have negative effects on productivity of the local firms in the case that the local firms are not protected and the macroeconomic environment of the host country is weak. The study prefers a “market-stealing” hypothesis in its results. The hypothesis explains that in the event that FDI promote technology transfer, external investors may dominate the market share and produce at cheaper average costs, while local firms produce smaller output at higher costs, this experience exposes the local firms to unhealthy rivalry with their foreign counterparts. Therefore, the initial objectives of attracting FDI by the host economy may not be achieved.

In the same vein, some authors observe that a positive effect of FDI on growth is dependent on sector (see Malikane & Chitambara, 2017; Sjöholm, 2008), the level of substitution and

complementarity between FDI and local investment (De Mello, 1999) and economic condition of the domestic economy. For instance, Roy (2009) finds that the distance to the technology frontier is important in determining the capacity of the domestic economy to benefit from spillovers from FDI, while Alfaro, Kalemli-Ozcan, and Sayek (2009) show that economies with developed financial system could largely gain more from FDI through increase in productivity and economic growth. In addition, some studies provide insights into the dynamic differential effects of spillovers from FDI on productivity in terms of short and long run. At macro level, Senbenta (2008) examine the nexus between FDI and productivity growth in 22 sub-Saharan African (SSA) economies within the sample period of 1970 and 2000, using fixed effects and dynamic panel models. In increasing the frontier of knowledge, the study introduced some additional variables in the regression analysis. These variables are financial sector development, trade openness and share of agriculture in GDP. The results of the analysis show that the effect of FDI productivity is negative in the short run, but significant and positive in the long run.

The recent development in the FDI-growth nexus has shifted more research focus to the important issue on the existence of spillover effects from external to domestically owned firms in the form of increased productivity; these are regarded as technological spillovers (Aitken & Harrison, 1999; Kokko, 1996). Various studies in this direction examine the extent to which the presence of technologically advanced external affiliate can increase productivity of domestic firms and stimulate economic growth of the host economy. Hence, there are several studies which argue that spillovers benefit the productivity of domestic firms in an economic. However, much attention has not been paid to the assessment of the conditions under which spillovers might be negative, non-existent or large; this remains an unobserved gap area in the nexus between FDI and economic growth. For instance, Kalemli-Ozcan, Alfaro, Sayek, and Chanda (2002) examined the various links among FDI, financial markets, and economic growth. The study explores whether countries with better financial systems could benefit more efficiently from FDI. Using cross-country dataset within the sample period from 1975 to 1995, the study argue that although FDI alone plays an ambiguous role in contributing to economic growth, however, countries with developed financial markets gain more significantly from FDI.

In summary, studies assessing the effects of FDI on growth of productivity in Nigeria are still scanty. And in particular, empirical examinations of the industrial linkage effects of FDI flows to the Nigerian economy is still an issue open to debate in a developing economy like Nigeria, that is aspiring to achieve all the 17 United Nations Sustainable Development Goals by 2030. This study is a contribution to knowledge in that aspect.

1.3. Sources of data

Data for the various variables used in the study are sourced from Nigeria Statistical Bulletin (2017) as well as the World Development Indicator (2017) published by the World Bank.

1.4. Model specification of the effects of sectorial FDI inflows on real sector growth in Nigeria

In modelling the effects of sectorial FDI inflows on the real sector growth in Nigeria, we adapt the modified form of Caves (1974) productivity model as applied by Kohpaiboon (2006). We follow the common approach in the literature which puts labour productivity of local firms functionally as:

$$Q = F(K, L) \tag{1}$$

where Q = quantity produced; K = capital stock input; L = labour input.

We therefore introduced the foreign presence into Equation (2) in the form of the share of employment by all multinational companies (MNC) in the economy following Kohpaiboon (2006), who purported that the level of technology is influenced by the presence of foreign firms

$$GDP = f(K, L, F) \tag{2}$$

where F = foreign presence of MNC.

Since our focus is to discuss the sectoral effects of FDI spillover on sectoral industrial output, we rewrite Equation (2) as

$$\text{GDP} = F(K/L, Ls/Lu, \text{FDI}) \quad (3)$$

We convert the implicit Equation (3) into explicit form as:

$$\text{GDP} = \alpha_1 K/L + \alpha_2 Ls/Lu + \alpha_3 \text{FDI} + \epsilon_t \quad (4)$$

where: ϵ_t = the error term.

Note that the FDI is interchange sector by sector in the equation.

1.5. Estimation techniques

The study employs the annual time series data for Nigeria from 1981 to 2017, which is analysed by using Generalised Method of Moments (GMM). This method is adopted because it takes care of the problem of endogeneity and autocorrelation inherent in OLS. Although this approach has been majorly used on panel data, but recent studies by Akinlo and Aremo (2013) and Kaasschieter (2014) had proven that this approach can be modified for time series analysis.

2. Results

In achieving the primary objective of this study, the study adopted the GMM estimation techniques which had been proved to be a robust approach to estimate the effect of FDI inflows on real sector growth in Nigeria. The result of the GMM estimate is presented in Table 1.

From Table 1, the study observed that the R^2 is 0.989299 which imply that 98% of the total variation in the RGDP were jointly explained by the explanatory variables. These explanatory variables are the lag of RGDP, labour quality, capital intensity, FDI and the lag value of FDI. The adjusted R^2 of 0.967389 shows that the model has high goodness of fit as the explanatory power of this model is approximately 97% of the total variation. The validity of the instrument in the estimation was justified by the prob. J. Statistics of 0.508978 which was tending towards 1. Also, the standard error of almost all the variables which lies between 0 and 1 indicated that the coefficients of the estimate were reliable. The Durbin Watson estimate which is around 2 indicates that there was no presence of autocorrelation in the variable of interest.

The study further examined the effect of each of the explanatory variables on the growth of the Nigerian economy. The positive coefficient of the labour quality of 0.941716 and probability of 0.000 implies that the labour quality has significant positive effect on the RGDP. This suggests that a percentage increase in the labour quality led to 0.94% increase in the RGDP in Nigeria between 1980 and 2017. This is a reflection of the impact of the absorptive capacity of the FDI inflows into Nigeria through the quality of labour in Nigeria. This therefore suggests an area to be given high consideration in policy shift agenda of the government. In other words, government needs to give more incentives and embark on policies that will improve further the quality of workers so as to be able to maximise the benefits of FDI inflows into Nigeria. Also, capital intensity was found to have insignificant negative effect on the RGDP as demonstrated in its negative coefficient of 33.34848 and probability of 0.7756 which is higher than 5%. This shows that 1% increase in capital intensity led to a 33.35% decline in the RGDP. This alarming trend might be traceable to capital under-utilisation issue being experienced in the country.

In the same vein, the FDI inflow was discovered to have insignificant negative effect on the RGDP as demonstrated in the negative coefficient of 0.034455 and probability of 0.1607. This shows that a percentage increase in FDI inflows into Nigeria led to 0.03% decrease in the RGDP. This negative result might have arisen from the low linkages of this kind of inflows on capital intensity which

Table 1. Estimated results of the effect of FDI inflows on RGDP growth in Nigeria (1981–2017)

Variables	GMM		
	Coefficient	Standard error	Probability
C (CONSTANT)	0.339124	0.984241	0.7330
LRGDP(-1)	0.941716	0.122753	0.0000
KPERLU	0.776206	0.195921	0.0005
KPERL	-33.34848	115.8786	0.7756
LTFDI	-0.034455	0.023912	0.1607
LTFDI(-1)	0.047753	0.018328	0.0145
R ²	0.989299		
ADJUSTED R ²	0.987389		
DURBIN WATSON	2.260012		
J-STATISTICS	3.299712		
PROB. J-STATISTICS	0.508978		
NO OF OBSERVATION	10		
SCHWARZ CRITERIA	-		
MEAN DEP. VAR.	12.22124		
S.D. DEP. VARIABLE	0.524947		
SSR	0.97309		

Source: Authors' Computation using dataset from World Bank (2017).

overshadows the positive linkage arising from labour quality in the country. This is should be an issue of concern for government policy maker in their quest for policy shift that will grow the Nigerian economy. Also, the lag values of both RGDP and FDI were found to have significant positive effect on the RGDP in Nigeria between 1981 and 2017 as demonstrated in their positive coefficients and the probabilities which are below 5%. For instance, the coefficient of 0.941716 of the lag value of RGDP with its probability of 0.0000 indicates significant positive effect of the LRGDP with RGDP. Equally, the coefficient of 0.047753 and probability of 0.0145 which is below 5% implies that there is significant positive effect of the lag of FDI on RGDP.

2.1. Discussion

Among the prominent findings from this study is that the labour quality has a positive and significant effect on RGDP in line with the theory. This was also in consonance with the findings of Ruane and Uğur (2000) on the spillover effect of FDI on labour productivity in Irish manufacturing industry, where it was expressly stated that if there are positive productivity spillover from MNC to local companies, labour quality should have a significant and positive effect on the labour productivity. We can therefore infer from the result of this study that FDI has a positive spillover effect on Nigerian productivity since the labour quality reveals a positive and significant effect on the RGDP in Nigeria. The conclusion drawn from this study is also in line with the findings of earlier study by Gorg and Greenaway (2002), which shows significant positive spillover from FDI at plant level across a range of countries.

Equally, the study noted that the capital intensity displayed a negative but significant effect on the RGDP in Nigeria contrary to the theory that specified that if there is positive productivity spillover from MNC to local companies, capital intensity should have a significant and positive effect on the labour productivity. It is imperative to say that this research finding on Nigeria is not in agreement with the findings of Ruane and Uğur (2000) in Ireland which showed a positive impact and good linkage. However, it is in agreement with the findings of Gorg and Greenaway (2002) which shows either negative or no significant spillover from FDI at plant level across a range of countries.

2.2. Conclusion and recommendation

The study identified that the estimate of the two variables as channels of linking FDI benefits to the local economy produce contrary results. While the labour quality reveals a significant positive effect on RGDP and subsequently provides positive linkages of FDI on the economy, Capital intensity shows insignificant negative effects on the RGDP. This shows that there are no good linkages between FDI and the capital intensity to affect the local economy positively. The study therefore draws a conclusion that all stakeholders should intensify more efforts in ensuring that the attracted capital inflows are appropriately directed to the most productive sectors of the economy. Through this, capital intensity will be a good channel of passing the benefit of FDI to Nigerian domestic economy. The authors also advocate for policy implementation that could allow for maximum capacity utilisation of external resources to grow and sustain the economy in the long run. This will culminate in achieving SDG-17.3 of mobilising additional financial resources for developing countries from multiple sources.

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