Deterministic Factors of Foreign Direct Investment Inflows and Nigeria Economy

Nwaoha, William Chimee
School of Finance, Business and Communication Studies,
Federal Polytechnic Ohodo, Enugu State, Nigeria.
williamchimee@yahoo.com

Onwuka, Onwuka Okwara
Department of Accountancy,
Abia State University, Uturu, Nigeria.
onwukaonwuka955@yahoo.com

Akandu, Victor Chigozie
Department of General Studies,
Petroleum Training Institute,Effuru, Delta State, Nigeria.
Victorakandu1@gmail.com

Agboriane, Nyore Sophia
Department of General Studies,
Petroleum Training Institute, Effuru, Delta State, Nigeria.
sophyagboriane@gmail.com

Onuoha, Onyebuchi Gospel
Department of Public Administration,
School of Business Studies and Management Technology,
Federal Polytechnic of Oil and Gas, Bonny Island, Rivers State, Nigeria.
gospelonuoha8@gmail.com

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ABSTRACT
This study investigates the deterministic factors of Foreign Direct Investment (FDI) inflows to Nigeria economy during 1980 – 2019 using Error Correction Model (ECM). The data such as Real Gross Domestic Product (RGDP), Market Size, Availability of Natural Resources, Political Risk, Infrastructural Development, and Trade Openness were sourced from the statistical bulletin of the Central Bank of Nigeria (CBN). The result shows that Market size (at lags 2 and 3) and Trade-openness have positive but insignificant effect on RGDP in Nigeria while infrastructural developments are found to be positive and significant function of RGDP. The results also reveal that in the long-run, the available natural resources exert negative and significant impact on RGDP. In other words, inadequate natural resources reduce the inflow of FDI. Political risk exerts negative and insignificant effect on RGDP. Therefore, the researchers recommend that government should improve the infrastructural developments and maintain political stability so as to achieve a sustainable economy.

Keywords: *FDI; RGDP; CBN; Political Risk; Infrastructural Development*

INTRODUCTION

In making decisions on foreign investment, firms are influenced by a wide constellation of economic, political, geographic, social and cultural issues (Assanie and Singleton, 2002). It is important to note that while the list of factors is fairly long, not all determinants are equally important to every investor in every location at all times. It is also true that some determinants may be more important to a given investor at a given time than to another investor (Ajayi, 2006).

The determinants of Foreign Direct Investment (FDI) are legion. While it is difficult to determine the exact quantity and quality of FDI determinants that should be present in a location for it to attract a given level of inflows, it is nevertheless clear that a critical minimum of these determinants must be present before FDI inflows begin to occur (Ngowi, 2001).

However, in this paper some of the outstanding common factors determining foreign investment inflows in developing countries can be listed as follows: market size, available natural resources, political risk, infrastructural development and trade openness.

A number of studies such as that of Masayuki and Ivohasina (2005), Wafure and Nurudeen (2010), Raggazi (1993), Obadan (1982), Moore (1993), emphasized the importance of the size of the market and growth in attracting FDI. Ajayi (2006) maintained that market size and growth have proved to be the most prominent determinants of FDI, particularly for those FDI flows that are market seeking. In countries with large markets, the stock of FDI is expected to be large since market size is a measure of market demand in the country. This is particularly true when the host country allows the exploitation of economies of scale for import –substituting investment. For sub – Saharan Africa as a whole, Bhattacharya, Montiel, and Sharma (1996) identified GDP growth as a major factor. According to them, only three Sub Saharan African low – income countries are amongst the nine main recipients of FDI flows in recent years, and of these only Nigeria is close to being classified as a large market when judged by the UNCTAD's benchmark of $36bn GNP.

Political risk is very important to FDI. Several studies have found FDI in developing countries to be affected negatively by economic and political uncertainty. There is abundant evidence to show that there is negative relationship between FDI and political and economic stability. In a study on foreign owned firms in Africa, Sachs and Sievers (1998) concluded that the greatest concern is political and macroeconomic stability, while Lehman (1999) and Jaspersen, Aylward, and Knox (2000) found that countries that are less risky attract more FDI. Perception of risk in Africa countries is still very high and could hinder foreign direct investment.

The ranking of political risk among FDI determinants remains somewhat unclear where the host country possesses abundant natural resources, as is seen in politically unstable countries such as Nigeria and Angola, where high returns in the extractive industries seem to compensate for political instability (ODI,1997).

The availability of good infrastructure is crucial for attracting FDI inflows in an economy. It is often stated that good infrastructure increases the productivity of investment and therefore stimulates FDI flows (Asiedu, 2002). A study by Wheeler and Mody (1992) found infrastructure to be very important and dominant for developing countries. In talking about infrastructure, it should be noted that this is not limited to roads alone, but includes telecommunications. Availability and efficiency of telephones, for example, is necessary to facilitate communication between the host and home countries. In addition to physical infrastructure, financial infrastructure is important for FDI inflow. A well – developed financial market is known from available evidence to enable a country tap the full benefits of FDI.

Trade openness of an economy is also known to foster the inflows of FDI. The more open an economy is, the more likely it is that it would follow appropriate trade and exchange rate regimes and the more it would attract FDI. One indicator of openness is the relative size of the export sector. Singh and Jun's (1995) study indicated that exports, particularly manufacturing exports, are significant determinant of FDI flows and their tests showed that there is strong evidence that exports precede FDI flows.
Excluding the introduction, the rests of this study includes empirical review; materials and method; result and discussion as well as conclusion.

EMPIRICAL REVIEW

Other researchers like Obadan (1982), Anyanwu (1998), Asiedu (2002), Chakrabarti (2001), Masayuki and Ivohasina (2005), Nwankwo (2006), Dinda (2009), Wafure and Nurudeen (2010), who studied determinant of FDI in Nigeria asserted that FDI is a positive and significant function of market size.

Investigating the determinants of FDI in Nigeria, Lousi (1998) using error correction specification, came out with the result that both political and economic factors constitute the major determinants of FDI in Nigeria. In contrary, Anyawu (1998) using cointegration technique, found political factors to be insignificant in the determination of FDI in Nigeria and that economic factors are the key determinants. In his finding, Ibrahim (2007) established that FDI is a negative and significant function of political factor.

According to Nwankwo (2006) FDI in Nigeria is mainly affected by political instability, macro-economic instability and the availability of natural resources. Anyanwu (1998) maintained that political factor is not a determinant of FDI but lent support to the efficacy of economic factors. Ibrahim (2007) on the other hand identified market size, real exchange rate and political factor as important determinants of FDI.

Dinda, (2009) and Nwaknwo (2006) noted that natural resource is one of the major determinants of FDI to host country. According to him (Dinda, 2009) FDI takes place when a country richly endowed with natural resources lack capital or technical skill needed to extract and / or sale to the world market. The Nigeria economy is endowed with untapped agro-natural resources, yet the economy is monocultural as it concentrates on the tapping of oil resources thereby creating

artificial scarcity of natural resources for agro-based industries. Even foreign investors see oil as the most viable venture and as such neglect the tapping of other resources. This lopsidedness in exploiting natural resources constitutes artificially inadequate natural resources to the country.

ODI (1999) observed that infrastructure covers many dimensions, ranging from roads, ports, railways and telecommunication systems to institutional development (e.g. accounting, legal services, etc.). Studies in China reveal the extent of transport facilities and the proximity to major ports as having a significant positive effect on the location of FDI within the country. According to it, poor infrastructure can be seen, however, as both an obstacle and an opportunity for foreign investment. For the majority of low-income countries, it is often cited as one of the major constraints.

Fuat and Ekrem (2002) in examining location related factors that influence FDI inflows into the Turkish economy discovered that the size of the host country's market, infrastructure (proxied by share of transportation, energy and communication expenditures in GDP) and the openness of the economy (as measured by the ratio of exports to imports) are positively related to FDI inflows. Anyanwu (1998) also maintained that domestic investment, openness and indigenization policy are very important determinants of FDI in Nigeria.

From the results of their regression analysis, Udeaja, Udoh, and Ebong (2008) showed that in five sectors considered in this study, past foreign investment flows could significantly stimulate current flows. This lends credence to the "agglomeration effect" thesis. According to them, the results obtained from this study supported the need for the Nigerian government to reverse the poor investment climate of the past in order to avert more severe consequences in the future. The current low FDI flows were reflection of the past investment environment.

MATERIALS AND METHOD

This study investigates the deterministic factors of FDI inflows to Nigeria economy during 1980 – 2019. The data were sourced from the statistical bulletin of the Central Bank of Nigeria (CBN). The Augumented Dickey Fuller (ADF) unit root test is used to verify whether the variables are difference stationary. We used the Johansen (1988) cointegration approach to determine the number of cointegration equations among the variables and then error correction model (ECM) was used to verify short run dynamics with long-run equilibrium.

The data sourced from the CBN statistical bulletin include market size proxied by the real GDP growth, available natural resources were represented by the value of exported oil, trade openness proxied by the ratio of export to import, infrastructure proxied by the government expenditure on transport and communication and political risk proxied by dummy variable.

The independent variables include market size, available natural resources, political risk, infrastructural development and trade openness while dependent variable is Real Gross Domestic Product.

The model for the study is specified as:
RGDP= f(Mktsize, ANR, Polrisk, InfDev, Topenness) …….(1)

Thus, the functional form of the model is stated below:
RGDP = f(Mktsize, ANR, Polrisk, InfDev, Topenness) + μ_t …….(2)

Hence, the mathematical form of the model is thus:
RGDP = $\alpha_0 + \alpha_1$Mktsize + α_2ANR + α_3Polrisk + α_4InfDev + α_5Topenness + μ_t …….(3)

Where:

RGDP = Real Gross Domestic Product
Mktsize = Market Size
ANR = Availability of Natural Resources
Polrisk = Political Risk
InfDev = Infrastructural Development
Topenness = Trade Openness
α_0 = Constant
α_1 ,α_2 ,α_3 ,α_4 and α_5= parameters to be estimated.
μ_t = stochastic term

Hence, the expectations of the parameters are α_1 ,α_2 , α_4 and $\alpha_5 > 0$ and $\alpha_3 < 0$
The re-specification of the model so as to include an error correction term (ECT) is thus:
$\Delta RGDP = \alpha_0 + \alpha_1 \Delta Mktsize_{t-1} + \alpha_2 \Delta ANR_{t-1} + \alpha_3 \Delta Polrisk_{t-1} + \alpha_4 \Delta InfDev_{t-1} + \alpha_5 \Delta Topenness_{t-1} + \alpha_6 ECT_{t-1} + \mu_t$.....(4)
Where ECT = Error Correction Term.

RESULTS AND DISCUSSION

The results of the various tests are presented below:

Table 1. Augmented Dickey-Fuller (ADF) Unit Root Test

Variables	ADF Test Statistic	5% critical value	Order of integration
RGDP	-4.126792	-2.4422	1(1)
Mktsize	-3.906769	-2.4422	1(1)
ANR	-3.222888	-2.4422	1(1)
Polrisk	-4.301163	-2.4422	1(1)
InfDev	-2.989423	-2.4422	1(1)
Topenness	-6.205653	-2.4422	1(1)

Source: Researchers' Computation, 2023.

The result of the ADF test as presented in table 1 above, shows that the variables are integrated of order one, lag one, 1(1), all at 5% level of significance. That is, they are integrated of the same order. In other words, they are found to be stationary at first difference. Thus, the model follows integrating process. Therefore, this conclusion is informed because the ADF test statistic for difference one (1) is more negative than the critical values at 5% level of significance.

Table 2.Cointegration Test
Date: 05/04/23 Time: 21:50
Sample: 1980 2019
Included observations: 39
Test assumption:
No deterministic trend in the data
Series: RGDP Mktsize ANR Polrisk InfDev Topeness
Lags interval: No lags

Variables	Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
RGDP	0.832648	249.5060	175.77	187.31	None **
Mktsize	0.179826	14.74587	24.31	29.75	At most 1 **
ANR	0.803048	179.7873	141.20	152.32	At most 2 *
Polrisk	0.096323	7.014545	12.53	16.31	At most 3
InfDev	0.305506	28.96416	39.89	45.58	At most 4
Topeness	0.075569	3.064489	3.84	6.51	At most 5

x(xx) denotes rejection of the hypothesis at 5% (1%) significance level
L.R. test indicates 2 cointegrating equation(s) at 5% significance level
Source: Researchers' Computation, 2023.

The result in table 2 above indicates the presence of 2 co-integrating equations at 5% level of significance for the RGDP model and therefore confirms the existence of long-run equilibrium relationship between RGDP and its explanatory variables (Mktsize, ANR, Polrisk, InfDev, Topenness). The conclusion is based on the values of the Likelihood ratio against values of 5% Critical value.

Table 3. Pasimonious Results of RGDP Model
Dependent Variable: FDI
Method: Least Squares
Date: 05/04/23 Time: 03:59
Sample(adjusted): 1984 2017
Included observations: 33 after adjusting endpoints

Variable	Coefficient	Std.Error	t-Statistic	Prob.
D(RGDP(-1))	0.296320	0.143896	2.059261	0.0945
D(RGDP (-2))	-0.226938	0.074074	-3.063668	0.0280
D(RGDP (-3))	0.004569	0.019050	0.239847	0.8200
Mktsize	-0.344603	0.138970	-2.479702	0.0559
D(Mktsize (-1))	-0.093086	0.187154	-0.497378	0.6400
D(Mktsize(-2))	0.131304	0.192196	0.683176	0.5249
D(Mktsize(-3))	0.338488	0.192223	1.760917	0.1386
ANR	-0.162506	0.020795	-7.814496	0.0006
D(ANR (-1))	-0.026584	0.053647	-0.495525	0.6412
D(ANR (-3))	0.153564	0.107142	1.433274	0.2112

D(Polrisk(-1))	-15860.36	36101.45	-0.439328	0.6788
InfDev	22.63286	5.530829	4.092128	0.0094
D(InfDev (-1))	-52.64116	4.191806	-12.55811	0.0001
D(InfDev (-2))	-22.92932	4.486815	-5.110376	0.0037
Topeness	17741.70	11044.37	1.606402	0.1691
D(Topeness (-1))	28083.45	22906.31	1.226014	0.2748
D(Topeness (-2))	23229.15	15871.11	1.463612	0.2032
ECT(-1)	-0.178755	0.124271	1.438431	0.2098
C	1307.420	60823.57	0.021495	0.9837

R-squared	0.999146	Mean dependent var	29062.83
Adjusted R-squared	0.994535	S.D. dependent var	313208.5
S.E. of regression	23154.24	Akaike info criterion	22.74764
Sum squared resid	2.68E+09	Schwarz criterion	24.01741
Log likelihood	-347.3361	F-statistic	216.6813
Durbin-Watson stat	2.388730	Prob(F-statistic)	0.000005

Source: Researchers' Computation, 2023.

The result in table 3 above shows that Market size (at lags 2 and 3) has a positive but insignificant effect on RGDP. This contradicts the findings of many researchers such as Obadan (1982) Ragazi (1993), Ajayi (2006) and Wafure and Nurudean (2010) who found that market size is of significant effect. The result of our analysis however, corroborates with the findings of Dinda (2009) who contends that the assertion, that the market size is a major determining factor for FDI during the study period.

The results also reveal that in the long-run, the available natural resources exert negative and significant impact on RGDP. In other words, inadequate natural resources reduce the inflow of FDI. This result corroborates with the findings of Asiedu (2002, 2006) and Dinda (2009) on the effect of natural resources but contrary to the results of Nunnenkamp and Spatz (2003) and Saltz (1992).

Political risk exerts negative and insignificant effect on RGDP. That political risk is negative but not significant in influencing the flow of FDI supports the report of ODI (1997) that in the political unstable countries such as Nigeria and Angola, high returns in the extractive industries seem to compensate for political instability.

Our results also revealed that infrastructural development are found to be positive and significant function of RGDP. These results are consistent with the findings of Dinda (2009), Asiedu (2002) and Wheeler and Mody (1992).

The results further shown that trade-openness has a positive but insignificant effect on RGDP in Nigeria. This contradicts the findings of many researchers such as Obadan (1982) Ragazi (1993), Ajayi (2006) and Wafure and Nurudean (2010).

The parsimonious result in table 3 above further shows that the model has a good-fit as the coefficient of determination (R-squared) is 99.9% with no autocorrelation as suggested by Durbin-Watson (D.W) statistic. Hence, the overall regression is also highly significant. The error

correction model (ECM) coefficient is negatively signed and significant. This implies that about 17.9% deviation from the long-run equilibrium relationship between RGDP and its determinants are corrected every one year. There is therefore empirical evidence that there exist a long-run relationship between RGDP and explanatory variables (Mktsize, ANR, Polrisk, InfDev, Topenness).

CONCLUSION

This study investigates the deterministic factors of FDI inflows to Nigeria economy during 1980 – 2019 using ECM. Analysis from the estimation suggests that all the variables were stationary at first difference, thus, there exist a long-run relationship between RGDP and its explanatory variables (Mktsize, ANR, Polrisk, InfDev, Topenness). The result shows that Market size (at lags 2 and 3) and Trade-openness have positive but insignificant effect on RGDP in Nigeria while infrastructural developments are found to be positive and significant function of RGDP. These conform to a priori expectations. The results also reveal that in the long-run, the available natural resources exert negative and significant impact on RGDP. This does not conform to a priori expectation. In other words, inadequate natural resources reduce the inflow of FDI. Political risk exerts negative and insignificant effect on RGDP and this conform to a priori expectation. Therefore, the researchers recommend that government should improve the infrastructural developments and maintain political stability so as to achieve a sustainable economy.

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