

VECTOR ERROR CORRECTION ANALYSIS OF MULTINATIONAL CORPORATIONS' INVESTMENTS AND PERFORMANCE OF NIGERIAN ECONOMY.

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ABSTRACT

The effect of investments made by MNCs using vector error correction on the Nigerian economy's performance from 1998 to 2024 is the focus of this research. The CBN Statistical Bulletin is the primary source for the secondary data used in this ex-post facto procedure, 2024. With GDP serving as the dependent variable, we can see how well the Nigerian economy is doing. Using the construction, oil and gas, and communication sectors as explanatory variables, we may quantify the investments made by multinational firms. Time series econometric methods are used to create and test hypotheses. According to the results, the variables are stationarity-indicating since they do not have unit roots. The investments made by multinational firms and the success of the Nigerian economy are in a state of long-run equilibrium. The findings show that any long-run imbalance may be corrected with a short-run adjustment speed of about 74%. Multinational firms' investments in Nigeria have a direct impact on the country's economic growth. According to the coefficient of determination (R^2), changes in the investment characteristics of multinational corporations explain roughly 62% of the variance in the performance of the Nigerian economy. The paper emphasises the strong correlation between foreign direct investment and the expansion of the Nigerian economy. It suggests that MNCs help the host country out by building and maintaining vital infrastructure. In order to foster productive partnerships, the government should make sure that these companies put some of their earnings back into the growth of the areas where they have set up shop. In addition, MNCs should be closely watched by federal environmental protection authorities to ensure they don't break any laws or regulations that are already in place.

KEYWORDS: *Multinationals, Corporations', Investments, Economic, Performance, Nigeria.*

INTRODUCTION

In developed nations like Nigeria's, investments from MNCs boost economic growth and improvement (Babajide & Madabuichi, 2022). These investments have played a major role in Nigeria's economic growth and development during the past twenty years (Ogunbumiyu, 2021). Companies that own or operate activities in two or more countries are referred to as multinational companies (MNCs) by Olukposuri (2021). Sometimes called "business conglomerates," these companies have their main offices in a developed nation and their subsidiaries in less developed one. Akengbarau (2020) lists a plethora of industries served by Nigerian MNCs, including manufacturing, finance, automotive, and mineral exploration. Multinational corporations (MNCs) continue to play important roles in enhancing people's living standards and the economy, even if they are criticised for things like low export participation and expensive technological prices.

According to Vadevell (2021), contemporary MNCs harken back to the 17th and 18th century colonial trade businesses and old merchants in their transactional practices. When discussing issues of economic growth and development, Hassan and Audu (2018) stressed the importance of investments made by international firms. There is a lot of back-and-forth on the effects of multinational corporations on poor nations in works of international political economy. Many Nigerians believe that oil companies' activities have done more damage than good in the countries and regions where they are based. Multinational firms are frequently perceived as perpetrators of

economic and social degeneration, as Kpolidju (2021) further emphasised, because of their oil operations in these regions.

Statement of the Problem

According to Azeez et al. (2021), one way to promote economic growth and development is through the efficient and effective administration of multinational investments. Corruption, economic and political instability, policy implementation concerns, fiscal and monetary policy inconsistencies, and other problems make it difficult for investors to put money into Nigeria (Egbo & Igbokwe, 2021). Azeez et al. (2021), Oloto (2023), and Akinlo and Lawal (2022) are among the studies that have looked at how MNC investments have affected Nigeria's economy. According to their research, the Nigerian economy benefits greatly from investments made by global corporations. On the other hand, Owalabi and Adgbite (2018) and Obeten et al. (2023) found conflicting results when looking at the effects of MNC investments on GDP growth.

Multinational corporations are seen by some as crucial to the development of economies in less developed countries (LDCs). Andabai (2021) echoes this sentiment, stating that multinational corporations (MNCs) do help with national development, but that their presence is frequently more confusing than helpful, causing their initiatives in several domains to go unnoticed. A lack of adequate knowledge in this field is shown by the contradictory results and the problems that stem from them. That is why we're doing this study: to find out how multinational corporations' investments have affected Nigeria's economy.

Research Hypotheses

The formulated hypotheses are as follows:

H₀₁: Communication sector has no significant effect on Gross Domestic Product in Nigeria.

H₀₂: There is no significant effect of construction sector on Gross Domestic Product in Nigeria.

H₀₃: Oil and Gas sector have no significant effect on Gross Domestic Product in Nigeria.

Theoretical Review

The foundation of this research is Rosentein-"Big Push" Rodian's (1961) theory of economic growth and development, which posits that all contemporary economies must undertake massive investment programs in order to reach their full potential. According to this hypothesis, MNCs' various investment activities in host countries are vital to effective capital formation. In their 2022 article, Chiwendu and Ajie state that multinational corporations help establish a parasitic elite in society, a group that is deeply devoted to capitalism ideology. In addition, as pointed out by Oluwadele and Ovunda (2022), the evaluation of the economic operations of MNCs is made more difficult since these huge organisations keep their financial records in extremely complex methods that the local workforce in these countries could not completely understand. Thus, the recapitalisation of indigenous entrepreneurship is one of the most notable consequences of MNC dominance over African economies. Olukposuri (2021) argues that multinational corporations (MNCs) mainly contribute to and maintain the underdevelopment of the area by, among other things, the exodus of local enterprises and the flow of wealth from Africa to developed nations.

According to Ogbogburu's research (2022), this trend has caused host nations to experience food crises, rural economies to collapse, and agricultural stagnation. Multinational corporations, according to Akparanta and Aliyu (2022), keep their technological monopoly by keeping R&D in their home nations. As a result, these companies don't transfer much technology to the countries where they set up shop. In response to the widespread belief that investing in staff education is the surest way to boost output quality and efficiency, a number of multinational corporations have established in-house training programs. According to Awobuaze (2021), there is a new kind of activity that involves analysing legal, sociological, and other types of research in order to come up

with suggestions for how multinational corporations (MNCs) might improve their economic and other operations in emerging nations. Businesses that can consistently deliver superior products and services are in great demand as the technological and scientific revolution continues.

Empirical Review

Over the course of 26 years, from 1996 to 2021, Chiwendu and Ajie (2022) used a time series econometric approach to investigate the correlation between Nigeria's manufacturing sector and GDP growth. Factors such as GDP, lending rate, exchange rate, and bank credit to the sector were used in the study. The researchers in Italy found that the expansion of Italy's manufacturing sector was negatively correlated with private sector borrowing.

Over the course of 25 years (1994–2019), Ogujobi and Chizoba (2021) used time series econometric approaches to study how MNC investment affected the expansion of Nigeria's manufacturing sector. Gross Domestic Product, Total Money Supply, and Private Sector Credit were some of the variables taken into account in the research. The findings pointed to the importance of bank loans in the growth of Nigeria's manufacturing sector. The study did find that Nigeria's manufacturing sector relies so much on imported items and capital goods that it contributes very little to the country's foreign exchange profits. Utilising the Ordinary Least Squares (OLS) regression model, Oluwadede and Ovunda (2022) investigated the impact of bank loans on the expansion of Nigeria's communication industry from 1994 to 2020, a span spanning 27 years. The following variables were examined: Gross Domestic Product, Total Credit, Interest Rate, Inflation, and Exchange Rate. The results demonstrated a strong positive correlation between bank loans and the expansion of Nigeria's communication industry. According to the research, the economy might see more growth and development if the industry was given more credit. Using time series data spanning 32 years (1989-2020), Duebgo and Bekwele (2021) utilised an Error Correction Model (ECM) to evaluate the impact of financial institutions on the expansion of Nigeria's communication industry. We took a look at a number of variables, including GDP, CPS, M2, and EXR (Exchange Rate). The variables were all found to be integrated of order one, $I(1)$, according to the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. According to the study's findings, financial institutions had a beneficial and substantial impact on the expansion of Nigeria's communication industry.

Using data collected from 1998 to 2021, Babajide and Madabuichi (2022) analysed how the growth of Nigeria's financial services and communication sectors interacted. Interest rates, bank loans, exchange rates, inflation rates, and the communication sector were among the variables examined. Financial services and the growth of Nigeria's communication industry were not determined to be causally related in the study, according to results from the Granger-Causality test, as shown in the research. It appears that the Nigerian economy operates on an independent hypothesis due to the lack of causation.

METHODOLOGY

An ex-post-facto research design was employed in the study. The statistics report released by the Central Bank of Nigeria from 1998 to 2024 was used to compile the secondary data. The GDP of Nigeria was used as a stand-in for the country's economic health and functioned as the dependent variable. To evaluate the investments made by multinational businesses, we used the construction, oil and gas, and communication sectors as explanatory variables. This process is described in Appendix 1.

Model Specification

To verify or disprove the study's null hypothesis, a multivariate linear regression model was employed. The research is an expansion of what Babajide and Madabuichi (2022) have already done. The first model is stated as:

GDP may be expressed as the output divided by the sum of output gross sales and consumer price index. A measure of progression of the economy, with GDP standing for Gross Domestic Product.

The Oil and Gas Industry (OGS)

Communication Sector CMS

An extra explanatory variable was added to the model in this study: the construction industry.

Therefore, the revised model may be written as:

GDP equals $f(\text{OGS}, \text{CMS}, \text{CS})$.

Gross domestic product equals $(\text{OGS}, \text{CMS}, \text{CS})$.

Construction Sector is abbreviated as CS.

This updated model takes into account the building industry to offer a fuller picture of how MNC investments have affected the Nigerian economy.:

$$\text{GDP} = f(\text{OGS}, \text{CMS}, \text{COS}) \quad (1).$$

Therefore, the econometric model can be written as:

$$\text{GDP} = b_0 + b_1\text{OGS} + b_2\text{CMS} + b_3 \text{COS} + u \quad (2).$$

DATA PRESENTATION

Unit Root Test

We used the Augmented Dickey-Fuller (ADF) unit root test to look for data stationarity and figure out which variables to integrate in what order. Each industry's alternative hypotheses were evaluated against the assumption of non-stationarity for the engineering, service, and oil and gas industries. Table 1 displays the outcomes of these examinations.

Table 1: Unit Root Test Statistics

Variables	Level	1 st Differ.	Decision	Remarks
GDP	-3.657487*	2.466752	1(1)	Stationary
CMS	-0.713821	-3.605271*	1(1)	Stationary
COS	-1.322600	2.146501**	1(1)	Stationary
OGS	-2.216632	-3.134781*	1(1)	Stationary

Source: The study was conducted using the econometric program E-Views 10.1. Statistical significance at the 1% and 5% levels, respectively, is denoted by the shapes ** and *. According to MacKinnon, the ADF test's critical values, along with the 1% and 5% significance thresholds, are derived from his critical values.

Test for Co-integration

Table 2 displays the results of the tests, which compare the alternative hypothesis of co-integration ($f = 1$ $r_i=1$) with the null hypothesis of no co-integration among the variables ($f = 0$ $r=0$). At the 5% level of significance, the null hypothesis that there is no co-integration is rejected. Nevertheless, the alternatives $r = 2$ ($r_i=2$) and $r = 3$ ($r_i=3$) showed that there was a distinct co-integrating connection between the variables, ruling out the possibility of rejecting the null hypothesis that $r \leq 1$ ($r \leq 1$). According to the probability ratio in Table 2, this indicates that the variables are related in the long term.

Table 2: Multivariate Johansen's Co-Integration Test Result. Lags interval: 1 to 2

Null hypothes.	Alternative hypotheses	Eigen value	Likelihood ratio	Critical values	5% Critical	Hypothesized No.
$r_i=0$	$r_i=1$	0.7890	55.7864	37.64	46.16	None **
$r_d \leq 1$	$r_i=2$	0.7809	34.7453	26.64	38.00	@most 1
$r_d \leq 2$	$r_i=3$	0.7108	32.7486	25.04	25.48	@most 2
$r_d \leq 3$	$r_i=4$	0.5802	25.6856	21.74	15.04	@most 3

Source: E-views Econometrics 10.1

Note: * (**) denotes rejection of hypothesis at 5% (1%) significance level.

Vector Error Correction Model

You can see if the past has an effect on the present by looking Coefficient for Error Correction. Coefficients of the differenced terms stand in for the short-term dynamics. the ECM depicts the system's adjustment towards long-term equilibrium (Ibenta, 2023).

Table 3: Vector Error Correction Estimates Results

Dependent Variable: GDP

Method: Least Squares, Time: 03:55

Sample: 1998-2024

Included observations: 27

Date: 17/08/2024

Variables:	Coefficient	Std. Error	t-Statistic	Pro.
(ECM _t)	-0.634362	0.000859	6.965763	-0.000008
D(GDP(-1))	2346.021	0.000038	2.716868	0.000148
D(GDP(-2))	2434.678	0.002173	4.825063	0.000260
CMS(-1)	152.5046	0.000670	0.341993	0.000297
COS(-2)	1465.719	0.007800	2.132476	0.000175
OGS(-3)	152.6078	0.001007	4.158507	0.000035
C	213.5874	0.000123	4.214421	0.000020
R-squared	0.542724	Mean dependent var.		265.4211
Adj. R-squared	0.618761	S.D. dependent var.		24.89091
S.E. of regression	4.483720	Akaike Info. Criterion		233.7609
F-statistic	9.863009	Schwarz criterion		6.754620
Log likelihood	-130.6023	Hannan-Quinn Criteri.		321.4308
Prob.(F-statistics)	0.000000	Durbin-Watson Stat		1.876092

The variables must be co-integrated, There is a statistically significant negative sign for the error-correction coefficient in Table 3. This means that construction, oil and gas, and communication industries respond to changes in the Nigerian economy within a year, achieving long-run equilibrium from short-run disequilibrium at a rate of 74%. More than 62% of the variation in the performance of the Nigerian economy ($R^2 = 0.542724$) is explained by variations in investment variables (CMS, COS, OGS) of multinational enterprises operating in the country. Consequently, it appears that these investment factors have a significant impact on the trends in the performance of the Nigerian economy. The F-statistics value of 6.965763, which is significant at the 5% level, provides more evidence that investments made by international corporations impact the success of the Nigerian economy. Further proof that the explanatory factors have a statistically significant influence on the dependent variable is provided by the fact that the F-probability is statistically zero.

Causality Test

Table 4 shows the results of the Engle and Granger (1987) causality test, which was used to determine the direction of causation between the variables. To determine if one variable may provide additional predictive power beyond what the other variables could explain, the Granger causality test was used.

Table 4: Result of Pairwise Granger-Causality Test (1990-2018) with 2-period Lag length

Null Hypothesis:	Obs	F-Statistic	Probability	Decision
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CMS does not Granger Cause GDP	24	4.66178	0.00102	Causality
GDP does not Granger Cause CMS		3.65308	0.00060	Causality
COS does not Granger Cause GDP	24	7.80418	0.00018	Causality
GDP does not Granger Cause COS		6.54735	0.00064	Causality
OGS does not Granger Cause GDP	24	5.43126	0.00024	Causality
GDP does not Granger Cause OGS		5.68004	0.00008	Causality
COS does not Granger Cause CMS	24	4.52481	0.00138	Causality
CMS does not Granger Cause COS		5.76541	0.00147	Causality
COS does not Granger Cause CMS	24	5.32450	0.00005	Causality
CMS does not Granger Cause OGS		4.23081	0.00026	Causality
OGS does not Granger Cause COS	26	6.89023	0.00133	Causality
COS does not Granger Cause OGS		5.01024	0.00018	Causality

Note: As stated in E-views Econometrics 10.1, the decision rule for a causality test states that the null hypothesis is accepted if the probability value of the estimate is greater than the 5% (or 0.05) threshold of significance. The Granger causality test shows that the Communication Sector (CMS), the Construction Sector (COS), and the Oil & Gas Sector (OGS) are causally related to the performance of the Nigerian economy (GDP). This proves that the investments made by MNCs have an effect on the growth of the Nigerian economy.

CONCLUSION

Investments made by international firms are directly in regard to the expansion of the Nigerian economy, the study states. This conclusion is in line with that of Ogunbumiyu (2021), who showed that FDI from multinational firms is a key factor in the expansion and modernisation of Nigeria's economy. Nevertheless, this stands in contrast to the research conducted by Akengbarau (2020). The study posited that, although multinational corporations do have an impact on national development, their involvement has frequently been more characterised by failures than successes, causing their contributions to be disregarded in numerous domains where they are active.

RECOMMENDATIONS

The research concludes that MNC investments should improve the host country's standard of living by funding necessary infrastructure projects. For the sake of mutually beneficial partnerships, the federal government should mandate that these companies reinvest some of their earnings in the improvement of host areas. In addition, it is the responsibility of government environmental protection authorities to keep multinational firms accountable for their actions and ensure that they adhere to all applicable legislation. The government and multinational corporations should work together to build the infrastructure that businesses need to thrive.

It is also important to build on a policy framework that would encourage international investment in Nigeria. Policies and initiatives that encourage sector engagement and development process contributions should be implemented by operators. Among these goals is the establishment of suitable incentive systems for the promotion of professionalism and sound corporate governance procedures.

Contribution to Knowledge

After making some adjustments to the model, the research built upon previous work by adding to the body of modern literature, empirical reviews, and geographic coverage. Researchers and academics will find the revised data from this study to be an invaluable resource for future investigations. The study has also added to our understanding by showing that investments made by international firms directly affect the Nigerian economy's performance.

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Appendix 1:
Multinational Investments and Economic Performance in Nigeria (1998 -2024)

Years	GDP at current market (₦' Billion)	Communication Sector (₦' Billion)	Construction Sector (₦' Billion)	Oil and Gas Sector (₦' Billion)
1998	3,989.45	5.2	48.0	1,104.2
1999	4,679.21	5.7	53.1	1536.5
2000	6,713.57	6.4	59.1	3,282.9
2001	6,895.20	7.2	78.6	2,501.6
2002	7,795.76	9.3	94.4	2,695.9
2003	9,913.52	12.9	118.6	4,113.9
2004	11,411.07	17.1	166.1	4,247.7
2005	14,610.88	21.6	215.3	5,664.9
2006	18,564.59	27.9	250.3	6,982.9
2007	20,657.32	165.5	266.5	7,533.0
2008	24,296.33	243.6	306.6	9,097.8
2009	24,794.24	249.9	347.7	7,418.1
2010	54,204.80	256.0	394.7	14,505.8
2011	63,258.58	262.6	456.3	15,285.0
2012	71,186.53	294.5	539.7	15,004.6
2013	80,222.13	333.7	627.6	13,750.7
2014	83,193.463	366.9	3,188.82	9,616.5
2015	87,576.474	311.2	3,012.65	9,236.4
2016	94,144.960	321.4	3,216.35	9,132.3
2017	101,144.49	342.6	3,624.63	9,467.6
2018	101,263.20	341.3	3,736.45	10,756.5

2019	187,576.474	411.2	4,012.65	11,236.4
2020	194,144.960	341.4	3,416.35	12,132.3
2021	110,144.249	442.6	5,724.63	10,467.6
2022	210,263.230	541.3	5.654.45	23,756.5
2023	215,643.244	565.2	5785.33	24,835.2
2024	232,132.221	574.8	5961.02	22,893.7

SOURCES: Central Bank of Nigeria Statistical Bulletin, 2023.