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Impact of infrastructure and inflation on foreign direct investment inflow to Nigeria

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Abstract
The study investigated electricity supply and inflation rate on foreign direct investment inflow to Nigeria for the period of 1995-2021. the study made use of descriptive statistics test for coefficient, Anova, Collinearity test was also conducted to determine the effect of IV variables on DV, Electricity supply revealed to have been statistically significant at 1% level of significance with a p-value of .000, it was also observed that the rate of electricity supply has a significant negative impact on foreign direct inflow to Nigeria with a negative value of -270766561.002 it was revealed that inflation rate is not statistically significant at 1% level of significance with a p-value of .5916, it was also observed from the above analysis that inflation rate has a negative effect on foreign direct inflow to Nigeria with a negative value of -13246877.2 The study recommended that electricity power should be frequently supplied in order to stimulate FDI inflows which will in turn enhance economic growth in Nigeria and Government should put in favorable economic policies that will help boost the economy and reduce the rate of inflation in the nation to attract foreign direct investment inflow to Nigeria.

Keywords: foreign direct investment FDI, electricity ELECT, inflation INF

Introduction
Infrastructure is the bedrock upon which the economy's structure is constructed, very literally.
The phrase "public works infrastructure" was coined by a panel of the US National Research Council in 1987 to denote to functional modes such as roadways, airports, telephones, and water supply, as well as the overall systems that these parts make up. Inflows of foreign direct investment (FDI) are an important aspect of a country's economic development goals. FDI inflows to emerging economies have increased significantly throughout the period covered by this study (Xiao & Park, 2018) [26]. Advancement in technology, management skills, increased employment and production capacity, and money flows are all important benefits of FDI (Uddin, 019) [23].
Regardless of the multiple researches undertaken to investigate the link between economic growth and FDI, no conclusion has been reached on the issue, despite the fact that it is widely accepted that FDI boosts economic growth, some studies claim that institutions are not a key role players in increasing FDI inflows, while others claim that power availability is a key predictor of FDI inflow, only a few studies have looked at the influence of energy supply on FDI in Nigeria's quest for economic progress.
Economic uncertainty in the emerging economy, according to Erramilli, (2014) [17], may be a substantial constraint on FDI inflows. They discovered that any amount of volatility produces uncertainty, which distorts investors' perceptions of the country's prospective profitability. Furthermore, according to Ajayi (2016), "low" inflation is a sign of the host country's internal economic stability. On the other hand, "high" inflation indicated the government's unwillingness to fulfill its budget and the central bank's failure to implement proper monetary policy. Inflation, according to Ahn *et al*. (2018) [3], may be viewed as a barometer of a developing country's economic and political climate. The distinctions between "strong" and "mild" inflation, on the other hand, are not obvious. Several studies show that the inflation rate and FDI inflows are not linked. This research is driven by a desire to close this gap in knowledge and add to the existing literature FDI inflows are a substantial source of foreign finance for many developing nations, and hence provide vital means of achieving sustainable development goals and private sector growth.

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Furthermore, foreign direct investment is less volatile than foreign portfolio investment, FDI often aids in the transmission (spillover) of technology as well as the enhancement of labor and management capabilities. Increases in FDI inflows that are sustained are frequently indicative of a better investment climate. Although the majority of FDI flows are from high-income nations to other high-income countries, flows to poor countries are growing and are critical in supporting long-term development. Official development aid is now dwarfed by them, FDI flows between developing nations have also grown in recent years.

Despite several attempts and new policies to improve Nigeria's electricity status, the government continues to struggle to maintain a stable power supply without interruption, making life difficult for local manufacturers and business owners, and scaring away a large number of foreign direct investors. Nigeria is viewed as being behind other oil-producing countries in terms of energy supply and accessibility. As a result, the research aims to look at the entry of foreign direct investment into Nigeria.

When inflation is strong, it affects the local currency, putting foreign investors and businesses at danger of losing money. Inflation is more likely to have a major negative influence on currency value and the foreign exchange rate than a significant positive impact. A lower inflation rate does not ensure a higher exchange rate for a country. However, a very high rate of inflation is likely to have a negative influence on the country's exchange rate with other countries.

The study aims at investigating electricity on FDI inflow to Nigeria and also to determine the impact of inflation on FDI inflow to Nigeria.

Empirical review

He, Gao, and Wang (2012) [21] agreed in Shanghai that the granger causality relationship between real GDP and energy consumption, GDP and foreign direct investment is unidirectional, and that FDI reduces energy consumption and promotes energy efficiency in the short run by introducing improved technologies into the economy. During negative shocks, financial development has a considerable influence on economic growth. Ibrahim (2015) confirmed the cointegration of economic growth, renewable power consumption, and foreign direct investment in Egypt. The study found a direct correlation between economic development and foreign direct investment and renewable energy use.

Alege and Ogundipe (2014) [5] used the system generalized method of moments (SGMM) econometric methodology to investigate the rate at which Nigeria's national framework effects economic growth in their study. Institutional variables such as political stability and the lack of violence, according to the study, have an impact on FDI inflow. Investors want a tranquil and practical setting. As a result, when there is a lack of peace, investors will have a tough time establishing firms.

Alvarado and Ponce (2017) [6] Using panel data econometrics, evaluated the impact of FDI on economic development in 19 Latin American nations. The analysis discovered that FDI had no meaningful influence on economic growth in the aggregate. When the level of development achieved by the countries in the region was taken into account, a positive and statistically significant relationship between FDI and economic growth was found in high-income countries, but uneven and non-significant

results were found in upper-middle-income countries, while the effect in lower-middle-income countries was negative and statistically significant.

Matthew *et al*. (2018) [22] investigated the link between institutions and economic growth in Nigeria by examining the impact of human capital development, as well as the use of electricity power for optimal productivity, on growth. According to the study, human capital development has a negligible relationship with economic growth in Nigeria, however electricity consumption has a strong relationship with economic growth. They claimed that, while the institutional framework is beneficial in boosting FDI, international investors prefer to invest in a country with a steady supply of energy since the cost of generating power in developing nations is expensive. According to the findings, energy power supply is statistically significant in influencing how successful human capital development is in achieving Nigerian economic growth.

With the exception of Mozambique, the United Arab Emirates, Oman, India, Iceland, Panama, and Zambia, Yildirim (2020) [27] found that energy usage and carbon emissions are neutral to foreign direct investment (FDI) inflows at the aggregate level. According to the study, an increase or reduction in energy consumption as a result of foreign direct investment inflow does not imply an increase or decrease in pollution levels. Sbia, Shahbaz, and Hamdi (2017) [24] found that in the United Arab Emirates, foreign direct investment, trade openness, and large-scale commerce had a negative influence on energy consumption owing to the use of energy-saving technologies.

They also stated that foreign direct investment and energy consumption had a bi-causal connection. Shahbaz, Hoang, and Mahalik (2017) [25] found that a negative shock in financial development and energy consumption has a detrimental influence on FDI-driven economic growth in India.

Methodology

The study aims at examining the effect of electricity and inflation on foreign direct investment in Nigeria from 1995-2021.

The model specification gives a high-level summary of the key variables used in the study.

As a result, the model's baseline mode is described in its implicit form, as shown in equation (1)

$$FDI = f(CPI_t, ELECT_t) \qquad (1)$$

Given the implicit form of the model as given in equation (1), the nexus between the exogenous and endogenous variables may be anticipated to be in their linear forms as explicitly indicated in equation (2), resulting in:

$$FDI = \beta_0 + + \beta_1 CPI_t + \beta_2 ELECT_t + \mu_{it} \qquad (2)$$

From above; FDI means foreign direct investment, CPI means inflation rate and ELECT means electricity power. β_0 is the constant term, β_1 β_2, are the coefficients of the explanatory variables, t represent time, while ε represents the error term.

The researcher made use of SPSS 26 in carrying out a regression analysis to test for effect among variables using Anova and also collonearity test was carried out.

Results

Table 1: Variables Entered/ Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Electricity, Inflation rate[b]	.	Enter

a. Dependent Variable: Foreign Direct Investment
b. All requested variables entered.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.777[a]	.603	.569	1870419968.23150

a. Predictors: (Constant), Electricity, Inflation rate

The coefficient of determination (R^2) = 0.603 This shows that approximately 60% variation or changes in the FDI are explained by the joint variation or changes in electricity and inflation while 40% changes in FDI are explained by other variables not captured in the model.

Table 3: ANOVA [a]

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	122412348970906340000.000	2	61206174485453170000.000	17.495	.000[b]
	Residual	80464829723860090000.000	23	3498470857559134200.000		
	Total	202877178694766430000.000	25			

a. Dependent Variable: Foriegn Direct Investment
b. Predictors: (Constant), Electricity, Inflation rate

From the table above that the calculated p value showed that figure of 0.000 which is less than the 0.01 this shows that the critical p-value is significant at 99% confidence interval.

$FDI = \beta_0 + + \beta_1 CPIt + \beta_2 ELECTt$
$df_1 = 2$ K= 3
$df_{2=23}$ N=26
$df_{1=}$ K-1 =3 =3-1=2

$df_2 = $ N-K =26 -3 =23

The F calculated (17.495) is greater than the F tabulated (3.39) at 95% with a degree of freedom 2&3, the variable is significant at 5% the null hypothesis is therefore rejected and the alternate hypothesis is therefore accepted. The model is both adequate and significant at 5%

Table 4: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	11927632045.125	1582524544.461		7.537	.000
	Inflation rate	-13246877.304	24618011.409	-.079	-.538	.596
	Electricity	-270766561.002	54241989.984	-.737	-4.992	.000

Dependent Variable: Foreign Direct Investment

The t cal= 7.537which is greater than the t tab = 2.479 at 1% level of significance if the t cal which is greater than the t critical value 2.479 at 1% level of significance the null hypothesis should be rejected and the alternate hypothesis should be accepted since it is significant at 1% level of significance.

the table also revealed that the t cal for inflation is less than the t -critical 1.315 at 1% level of significance the decision made is therefore to eject the alternate hypothesis and accept the null hypothesis

Table 4: Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions		
				(Constant)	Inflation rate	Electricity
1	1	2.672	1.000	.01	.04	.01
	2	.304	2.967	.04	.82	.01
	3	.025	10.375	.96	.14	.98

Dependent Variable: Foreign Direct Investment

Collinearity statistics

tolerance value (0-1) if the tolerance value is greater to one there is no multicollinearity problem and from the above table inflation and electricity are both less than the tolerance value which indicates that variables used are free from multicollinearity problem.

Conclusion

The study investigated electricity supply and inflation rate on foreign direct inflow to Nigeria for the period of 1995-2021. the study engaged in a descriptive statistics to test for coefficient, Anova test was also carried out to get the p value of models in the regression, Collinearity test was also conducted to determine the effect of variables and to investigate if models are fit to explain if variation in one variables could result to a significant change in the

dependent variable in the model.

from the above it was revealed that inflation rate is not statistically significant at 1% level of significance with a p-value of .5916, it was also observed from the above analysis that inflation rate has a negative effect on foreign direct inflow to Nigeria with a negative value of -13246877.2 which means a change or increase inflation rate could reduce the rate of inflow of foreign direct investment and a reduction in the inflation rate will motivate the inflow of foreign direct investment in Nigeria.

Electricity supply revealed to have been statistically significant at 1% level of significance with a p-value of .000, it was also observed that the rate of electricity supply has a significant negative impact on foreign direct inflow to Nigeria with a negative value of -270766561.002 which indicates that an increase in electricity supply will also help in motivating foreign direct inflow while a decrease will also scare away prospective investors due to the importance of constant power supply to some manufacturing and service sectors.

Test for multi-collinearity among variables was also carried out and the result showed that there was no multi-colinearity among the variables. The coefficient of determination (R^2) = 0.603 which shows that approximately 60% variation or changes in the FDI are explained by the joint variation or changes in electricity and inflation while 40% changes in FDI are explained by other variables not captured in the model.

The study recommended that electricity power should be frequently supplied in order to stimulate FDI inflows which will in turn enhance economic growth in Nigeria.

Government should put in favorable economic policies that will help boost the economy and reduce the rate of inflation in the nation to attract foreign direct inflow to Nigeria

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