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# FDI, ECONOMIC FREEDOM AND ECONOMIC GROWTH OF NIGERIA

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### ABSTRACT

This paper investigates Foreign Direct Investment, Economic Freedom and Economic Growth of Nigeria between 1995 and 2018. Specifically, the data on: Foreign Direct Investment (FDI) inflows, Economic Freedom (Aggregate index) and the data on real gross domestic product (RGDP) were used during the analysis. Time-series data were tested for stationarity using the Augmented Dickey-Fuller Unit Root test method. Vector Autoregressive (VAR) estimation method was adopted to examine the effect of FDI, Economic Freedom on Economic growth. The interactive effect of FDI and Economic Freedom on Economic growth was determined using regression analysis while Granger Causality test method was adopted for determining the causality relationship among the variables. The result of the Vector Autoregressive (VAR) suggests that both FDI and Economic freedom do not have a significant effect on economic growth in Nigeria. The result of regression analysis shows that the joint coefficient of both FDI and EF is negative and not significant. The result of Granger Causality revealed that there is a uni-directional relationship between RGDP and FDI and between EF and FDI respectively. The research recommends that the federal government of Nigeria should adopt appropriate foreign trade strategies to enhance the impact of FDI on economic growth in Nigeria.

Keywords: Economic Freedom, Economic Growth, Foreign Direct Investment, Time Series, Unit Root, Uni-directional

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### INTRODUCTION

Developing economies, particularly Africa are always in deficit of investible funds, which makes preference for foreign investment and/or national savings to fill the gap (Ariyo, 1998). It has been observed through the past studies that countries with modern infrastructures such as good road, pipe borne water, stable electricity etc. has a higher tendency of pulling FDI inflow because this has been a pivotal role in motivating foreign investors coupled with excess cheap labor which include both skilled and unskilled which eventually attracts FDI, cost cutting and efficiency seeking among foreign investors (Pan-Long, 2014).

Economic Freedom, FDI and price intercalary elements of GDP in central, Japanese and Western European countries were studied by Sayari *et al.* (2018) and de Haan and Stum (2000) to determine long run association among these variables. Evidence showed slightly importance plus negative association between FDI and Economic freedom when random effect model was adopted at intervals. Considering the influential role FDI plays in trajectory of growth and economic modifications, emerging economies are now altering their trade policies, building favorable institutional frameworks to support the workability of the FDI arrangements (Ayanwale, 2007).

In producing European industries, FDI on productivity growth was analyzed by Ubeda and Perez-Hernandez (2017); (Becker *et al.* (1990) and Doucouliagos and Ulubasoglu (2006). A theoretical model was adopted to examine the non-linear relationship that exists between FDI inflow and improvement in domestic corporations' productivity. Several past studies have shown concerns on how FDI transforms into economic growth in Nigeria. One of the growing controversies is FDI direct impact on growth is argued to be conditional upon certain mediation link. While institutional framework plays a significant role, economic freedom has consistently been argued to play important major role on the other.

In Asia countries between 1980-2010, Chen and Zulkifli (2012) carried out a research to know the extent of relationship between FDI outflow and Economic growth. Using a VECM, it was observed that there was long relationship between Economic growth and FDI conjointly plus a long bi-directional association. Evidence also showed that at intervals in the short run, there was absence of Granger-Causality between FDI outflow and Economic growth. The growth analyst has given a verdict that there tends to be a rapid growth and attraction of more FDI among countries that have a soft spot for Economic freedom which invariably leads to Economic development. Ayal and Karras (1998).

#### STATEMENT OF THE PROBLEM

Evidence has shown that many studies have been done in the past on (FDI) impact on growth in an economy, as well as Freedom in economy impacting Economic Growth but, research paucity exist on likelihood for economic freedom to play a significant role on FDI impacting Economic Growth. With this background information, there is shifted attention to show how much of interaction exist between Economic freedom and FDI to achieve the desirable Economic growth.

Meanwhile, the focus of many past studies has been on states within economic regions. Sovbetov and Moussa (2017); and Hussain and Haque (2016) are examples of such studies. There have been scarce studies to focus on Nigeria only. Another important observed problem intensifying the interest in this current study is the mixed findings

of past extant studies which continually makes it difficult for policy formulation. For instance, Ogbonna *et al.* (2012) findings show that, FDI though; causes 13% variation in GDP yet remains insignificant.

Also, the years of research in the past extant studies used different timeframe. Ajide and Eregha (2015) information stops at 2015 but the current study ends in 2018 and it is peculiar to Nigeria. Based on these identified problems, the need to address the interaction among the variables becomes important.

#### **RESEARCH QUESTIONS**

- i. How does Economic Growth affect FDI and Economic Freedom?
- ii. How does the interactive effect of both FDI and Economic independence impact Economic Growth?
- iii. Among the variables, what causal relation exists?

#### **OBJECTIVES OF THE STUDY**

The overall aim basically studies connection between Nigeria's Foreign Direct Investment, Economic Freedom and Economic Growth (1995-2018). However, specific objectives are to:

- i. discover FDI and Economic independence effects on Nigeria's Economic Growth.
- ii. study interactive Economic influence of FDI and Economic independence on Nigeria's Economic Growth.
- iii. analyze causal relationship that exist among FDI, Economic Freedom and Nigeria Economic Growth.

#### **RESEARCH HYPOTHESES**

H<sub>01</sub>: Economic Freedom and FDI do not significantly affect Nigeria Economic Growth.

H<sub>02:</sub> FDI and Economic Freedom have no significant interactive effect on Economic Growth.

H<sub>03:</sub> There are no causal relationship among FDI, Economic Freedom and Nigeria Economic Growth.

#### SIGNIFICANCE OF THE STUDY

There is hope in contributing enormously to existing research work on mixed results from past related studies. More so, findings from the study can be useful for policy formulation. Government agencies, researchers and investors can as well find this type of study useful particularly as an eye-opener in describing how FDI and Economic Freedom can impact on Nigeria Economic Growth.

## MATERIALS AND METHODS

Data spanning from 1995 to 2018 i.e. time series was integrated. The data on: Foreign Direct Investment (FDI) inflows and Real Gross Domestic Product (RGDP) were sourced through CBN Statistical Bulletin. Economic Freedom (Aggregate index) data was sourced from Heritage Foundation (www.heritage.org/index/visualize). The variables adopted for measuring FDI and Economic Freedom effect on Nigeria's Economic Growth was adapted following Ajide and Eregha (2015). Economic Growth was proxy as Real Gross Domestic Product, FDI inflow and Economic Freedom (overall index) from 1995 – 2018.

An inferential statistical technique was adopted as method of analysis. Firstly, Augmented Dickey-Fuller Unit Root test method showed datasets integration order. Upon confirmation of the series to be order one integrated, this prompted the use of Johansen Juselius cointegration test method which was introduced by a Danish Statistician and Econometrician who is known for his contributions to the theory of cointegration. However, there was no cointegrating equation which prompted the need to use Vector Autoregressive (VAR) estimation method. This assisted to discover FDI and economic freedom effects on Nigeria economic growth i.e. first objective.

To show the interactive Economic influence of FDI and Economic independence i.e. second objective, regression analysis was adopted while Granger Causality test method was adopted for determining the causality relationship among the variables which is the third objective.

#### MODEL SPECIFICATION

Adopted model was from Ajide and Eregha (2015) and is moderated to suit the need of this current study. Simple endogenous growth model was considered which indicates that:

A denotes total factor productivity which comprises the export trade (ET);

K denotes human capital stock;

L denotes labour.

Considering the theoretical thinking of the Simple Endogenous Model and the Dunning's Eclectic Theory, it can be reasonably assumed that:

Equation 3.2 above assumes the theoretical linkage of FDI, Economic Freedom and Economic Growth in Nigeria. Thus, considering factors endowment plus available institutional framework for attracting FDIs, Nigeria has the tendency to achieve economic growth.

In mathematical terms, model 3.2 can be expressed as thus;

$RGDP = \beta_0 + \beta_1 FDI + \beta_2 EF + e$	3.3
Where:	

 $\beta_0$  denotes the intercept i.e. the constant term,

 $\beta_1$ , and  $\beta_2$  denote the model parameters, and

FDI denotes total Foreign Direct Investment inflows (in billions)

EF denotes Economic Freedom,

When converted to econometrics and logarithm, then equation 3.3 becomes;

$$InRGDP = \beta_0 + \beta_1 InFDI + \beta_2 InEF + e.....3.4$$

Meaning;

In denotes the natural logarithm,

e denotes error Term or the residual

Equation 3.4 can now be specified in time series form as;

 $In(RGDP)_t = \beta_0 + \beta_1 InFDI_t + \beta_2 InEF_t + e_t \dots 3.5$ Where;

t represents the number of years.

#### **A PRIORI EXPECTATION**

Based on the economic theory, expectancy of positive relationship which is direct is envisaged between FDI, economic freedom and real GDP. More FDI and economic freedom generate an increment in real GDP based on assumption. (i.e.  $\beta_1, \beta_2 > 0$ ). As for the intercept (constant term), the sign effect can be positive or negative. (i.e.  $\beta_0 > \text{or} < 0$ ).

#### **RESULTS AND DISCUSSION**

The results of the inferential statistics were discussed in a bid to give knowledge and give clearer thought on the research objectives. Different Econometrics models were adopted to show the significant level of the data in the study.

#### UNIT ROOT TEST

Unit root result test is presented below. It indicates that all the series (i.e. Real GDP, FDI inflow and EF) were not stationary at level hence, thus containing unit root. But the series was stationary when differenced at first order, which implies I (1) series. See (table I) below

#### **Table I: Unit Root Test Result**

	ADF	Critical Value @ 5%	Prob.	Remarks
InRGDP				
Level	-1.2698	-3.0049	0.6245	
1 <sup>st</sup> Difference	-5.1925	-3.0125	0.0005	I(1)
FDI inflow				
Level	-3.1411	-3.0299	0.0403	
1 <sup>st</sup> Difference	-4.1996	-3.0049	0.0038	I(1)
EF				
Level	-1.7874	-2.9981	0.3769	
1 <sup>st</sup> Difference	-5.0227	-3.0049	0.0006	I(1)

*Source:* Researcher's Computation from estimates ran on Eviews10

#### **COINTEGRATION TEST**

Since the series have been confirmed to be I (1) series, it shows that there is likelihood for the series to have long-run relationship. Therefore, to confirm this, cointegration test was run using Johansen Juselius test method. The result is presented through table (II) below. The cointegration test result reveals is no cointegrating equation among the series which prompted estimating Vector Autoregressive models from the series.

#### **Table II: Cointegration Test Result**

Sample (adjusted): 1994 2018

Included observations: 23 after adjustments

Trend assumption: Linear deterministic trend

Series: EF FDI LNRGDP

Lags interval (in first differences): 1 to 1

<b>Unrestricted Cointegration</b>	<b>Rank Tes</b>	t (Trace)
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Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.398668	23.71202	29.79707	0.2129
At most 1	0.154717	6.927978	15.49471	0.5860
At most 2	0.040991	1.381194	3.841466	0.2399

Trace test indicates no cointegration at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.398668	16.78405	21.13162	0.1824
At most 1	0.154717	5.546784	14.26460	0.6718
At most 2	0.040991	1.381194	3.841466	0.2399

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Max-eigenvalue test indicates no cointegration at the  $0.05 \ \mbox{level}$ 

 $\ast$  denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Source: Researcher's Computation from estimates ran on Eviews10

#### VECTOR AUTOREGRESSIVE MODEL TEST

Because no cointegrating equation exists between the series, the next estimation technique adopted was vector autoregressive (VAR) model. The optimal length of lag for the test thus, calculated through presented criteria on table (III) below. The optimal length of lag needed for the VAR model test given by criteria, taking into account Akaike Information criterion (AIC) and Schwarz Criterion will be 1 year which is hereby adopted for the testing.

#### **Table III: Optimal Lag Length**

Endogenous variables: LNRGDP FDI EF Exogenous variables: C Sample: 1995 2018 Included observations: 24

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-141.9431	NA	2.310818	9.351165	9.489938	9.396402
1	-44.03769	170.5449*	0.007492*	3.615335*	4.170426*	3.796281*
2	-39.63264	6.820710	0.010275	3.911784	4.883194	4.228439
3	-39.01572	0.835835	0.018512	4.452627	5.840357	4.904992
4	-35.11499	4.529881	0.028249	4.781612	6.585661	5.369687

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level); FPE: Final Prediction Error

AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion Source: Researcher's Computation from estimates ran on Eviews10

Vector Autoregressive Model result estimates (table IV below)

#### **Table IV: Vector Autoregressive Model Result**

Sample (adjusted): 1994 2018

Included observations: 23 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	LNRGDP	FDI	EF
DLNRGDP(-1)	0.892790	-0.006901	0.034936
	(0.09921) [ 8.99898]	(0.04038) [-0.17090]	(0.04200) [ 0.83189]
DFDI(-1)	-0.099348	0.950221	0.391573
	(0.24744)	(0.10071)	(0.10474)
	[-0.40150]	[ 9.43556]	[ 3.73840]
DEF(-1)	0.186968	0.000420	0.682694
	(0.21162)	(0.08613)	(0.08958)
	[ 0.88352]	[ 0.00488]	[7.62125]
С	0.069578	0.369684	0.623813
	(0.48054)	(0.19558)	(0.20342)
	[ 0.14479]	[ 1.89024]	[ 3.06670]
R-squared	0.883314	0.975856	0.986002
Adj. R-squared	0.871645	0.973441	0.984603
Sum sq. resids	16.51864	2.736113	2.959884
S.E. equation	0.742039	0.302000	0.314106
F-statistic	75.70005	404.1791	704.4119
Log likelihood	-35.97210	-5.406931	-6.743331
Akaike AIC	2.351300	0.553349	0.631961
Schwarz SC	2.530872	0.732921	0.811532
Mean dependent	6.696837	3.339264	6.168320
S.D. dependent	2.071194	1.853123	2.531365
Determinant resid cov	ariance (dof adj.)	0.004744	
Determinant resid covariance		0.003259	

Log likelihood	-47.38296
Akaike information criterion	3.493115
Schwarz criterion	4.031831

Source: Researcher's Computation from estimates ran on Eviews10

#### **INTERPRETING THE VAR RESULT**

From the VAR estimates output, it would be deduced that the RGDP VAR model is fit at  $R^2 = 88.3\%$ , Foreign Direct Investment Inflow (FDI) VAR model is fit at  $R^2 = 97.5\%$ , and Economic Freedom (EF) model is fit at  $R^2 = 98.6\%$ . EF VAR model's F-statistics is more robust than others with RGDP being the least.

To determine which model to choose, we make reference to model specification mentioned earlier.

$$lnRGPP_{t-1} = 0.069578 - 0.099348FDI_{t-1} + 0.186968EF_{t-1}$$

By reading from the model selected, it would be noticed that the sign of the slope coefficients of FDI is not in conformity with *a priori* expectation but the 1-period lag of EF is in conformity.

The FDI not being in conformity with a priori expectation might possible be as a result of Investors square measure attracted by high expected returns on their investment, conjointly as a causative, favorable term of trade and dealing condition, internal institutional structures cannot also be underestimated. All these are not absolutely in place in Nigeria. The government of Federal Republic of Nigeria should be woke up and certify that the social infrastructures square measure created conjointly as political stability and this might spur the foreign investors to possess interest in finance in Nigeria Economy which might have a multiplier factor result on the economy at intervals in the long run. The Economic freedom as pictured from the model is in conformity with a priori expectation; this shows that there are square measure policies in place that commit to open the economy for foreign investors. Government of Nigeria ought to certify that there is effectiveness to harness this goal so as that there will be a positive response and urge for finance at intervals in the economy by foreign investors.

Any 1% change (rise) in value of 1-period lag of FDI will bring about 0.099348% short-run elasticity effect (fall) on RDGP at time *t*. However, any 1unit change (rise) in a 1-period lag of EF will bring about 0.186968 unit short-run inelasticity effect (rise) on RGDP at time *t*.

### DECISION

The result shows that both FDI and Economic Freedom do not significantly affect Nigeria Economic Growth hence, the null hypothesis  $(H_{01})$  would be accepted while we will reject the alternate hypothesis.

#### **DIAGNOSTIC TESTS**

Two types of diagnostic tests were run on the VAR estimates reported above. These include the VAR Residual Normality Tests and the AR Roots (both the Graph and Table). VAR Residual Normality test result (Table V) while the AR Roots were presented (Table VI) and Figure IV below)

#### Table V: VAR Residual Normality Test

Orthogonalization: Cholesky (Lutkepohl)

Null Hypothesis: residuals are multivariate normal

Sample: 1995 2018

Included observations: 24

Component	Skewness	Chi-sq	Df	Prob.
1 2 3	4.939643 2.702338 1.864387	138.2671 41.38158 19.69700	1 1 1	0.1560 0.3120 0.1132
Joint		199.3456	3	0.2243
Component	Kurtosis	Chi-sq	Df	Prob.
1 2 3	27.56395 11.91192 8.121288	854.7990 112.5150 37.15575	1 1 1 2	0.3601 0.2500 0.1736
Component	Jarque-Bera	Df	Prob.	0.1141
1 2 3	993.0660 153.8966 56.85274	2 2 2	0.2611 0.1094 0.0831	
Joint	1203.815	6	0.2254	

Source: Researcher's Computation from estimates ran on Eviews10

The residual normality test result (Table V above), the sequence from which the Jarque-Bera statistics results were calculated shows skewness and kurtosis. From the result of the skewness of the series, the probability value of 0.2243 indicates that the series were well skewed. More so, the Kurtosis result also showed that the series were not flattened. The Joint Jarque-Bera statistics finally confirmed that the series are all normally distributed.

#### Table VI: Autoregressive (AR) Roots Table

Endogenous variables: LNRGDP FDI EF

Exogenous variables: C

Lag specification: 11

Root	Modulus
0.938724 - 0.030117i	0.939207
0.938724 + 0.030117i	0.939207
0.648257	0.648257

No root lies outside the unit circle.

VAR satisfies the stability condition.

Source: Researcher's Computation from estimates ran on Eviews10





**Figure I:** AR Roots Graph Source: Researcher's Computation from VAR estimates ran on Eviews10

The AR Roots result presented above describe the inverse roots of the characteristics AR polynomial. For an estimated VAR to be said to be stable, roots modulus must be less than one and be in the confinement of the unit circle. Drawing from the AR Roots test result, from (Table VI), it can be deduced that all the roots have their Modulus lesser than one and also, in confinement of the unit circle on Figure (I) hence, the VAR model estimated in Table (IV) above is stable and is suitable for policy making.

#### **REGRESSION ANALYSIS**

Since the series have been confirmed to be order one i.e. I (1), the regression analysis result is shown (table VII) below. It depicts how the Economic growth is affected by the interactive effect of both FDI and Economic Freedom. The joint coefficient of both FDI and EF are negative -0.015156. Also, the probability value of 0.4563 shows that it is not significant. As such, we will accept null hypothesis ( $H_{02}$ ) while reject the alternate hypothesis.

The negative sign from the statistical method reveals poor mediation linkage between Nigeria's FDI and Economic Freedom respectively. As asserted in the eclectic paradigm theory in social science i.e. OLI-Model. John H. Dunning (1979) postulates that there are three advantages to get pleasure from by partaking in Foreign Direct

Investment. These include; Ownership Advantage, Location Advantage, Internalization Advantage.

Having a strong affinity and assurance that the strategies that have been productive in sustaining the core competence value of the organization will be viable in cross-border markets will spur firms to invest in foreign markets. In the context of Nigeria Economy, the aforementioned factors are still wobbling and as a result, there is high impediment towards growth process. The factors require utmost priority and well-structured strategies by the Nigeria government to strengthen positive link between FDI influx and Economic freedom at intervals in the country.

#### Table VII: Regression Analysis Test Result

Dependent Variable: D(LOGRGDP)

Method: Least Squares

Sample (adjusted): 1996 2018

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C D(LOGFDI_EF)	0.056640 -0.015156	0.007521 0.019930	7.531110 -0.760453	0.0000 0.4563
R-squared Adjusted R-squared S.E. of regression Sum squared resid Log likelihood F-statistic Prob(F-statistic)	0.029537 -0.021540 0.034165 0.022178 42.16074 0.578289 0.456318	Mean dep S.D. depe Akaike in Schwarz c Hannan-Q Durbin-W	endent var ndent var fo criterion criterion Duinn criter. fatson stat	0.057393 0.033803 -3.824833 -3.725354 -3.803243 0.674032

Source: Researcher's Computation from estimates ran on Eviews10

#### CAUSAL RELATIONSHIP TEST

The result of Granger causality (Table VIII below) revealed that FDI does not granger cause LOGRGDP, we accept the null hypothesis with probability value 0.2962. But, LOGRGDP granger causes FDI, the null hypothesis is rejected as indicated by probability value 0.0985 (p < 0.10). This indicates one-way causation flowing from LOGRGDP to FDI. Therefore, the alternate hypothesis is accepted meaning a uni-directional relationship exists between LOGRGDP and FDI.

EF does not granger cause LOGRGDP, we accept null hypothesis with probability value 0.4156. Also, LOGRGDP does not granger cause EF, we accept null hypothesis with probability value 0.1399. This shows a bidirectional causality.

EF granger causes FDI, the null hypothesis is rejected as indicated by probability 0.0574 (p <0.10). But, FDI does not granger cause EF, we accept null hypothesis with probability value 0.7372. This shows a uni-directional relationship between EF and FDI.

Hence, we will accept the null hypothesis H<sub>03</sub> while we reject the alternate hypothesis.

As pictured from the causative relationship check, we will thus opine that the future value of Economic growth is

dependent on the present value of FDI. Likewise, Economic Freedom future value is dependent on present value of FDI. This implies that the Federal government of Nigeria ought to take a massive step in guaranteeing there is correct connections among the variables adopted for this study so as that there will be a seamless process.

#### Table VIII: Granger Causality Test Result

Pairwise Granger Causality Tests Sample: 1995 2018 Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause LOGRGDP	21	1.15727	0.2962
LOGRGDP does not Granger Cause FDI		3.03584	0.0985
EF does not Granger Cause LOGRGDP	21	0.69433	0.4156
LOGRGDP does not Granger Cause EF		2.38518	0.1399
EF does not Granger Cause FDI	21	4.11967	0.0574
FDI does not Granger Cause EF		0.11610	0.7372

Source: Researcher's Computation from estimates ran on Eviews10

# CONCLUSION

The study examined Foreign Direct Investment, Economic Freedom and Economic Growth of Nigeria. It therefore concludes that, FDI and Economic Freedom do not significantly affect Nigeria Economic Growth; also, FDI and Economic Freedom interactive effect is not significant on Nigeria economic growth. It was concluded that there exists causality between RGDP and FDI and between EF and FDI respectively.

Findings against each of the research objectives showed that;

- Economic Freedom and FDI do not significantly affect Nigeria Economic Growth
- FDI and Economic Freedom have no significant interactive effect on Economic Growth. However, there was a uni-directional relationship between RGDP and FDI and between EF and FDI respectively.

# RECOMMENDATIONS

The following are recommended as a result of research findings:

- i. Appropriate foreign trade strategies that will enhance FDI impact on economic growth in Nigeria should be adopted by the federal government.
- ii. Policies for enhancing economic freedom should be put in place by the government as this has a way of impacting on economic growth of Nigeria.

- iii. Government should develop and maintain infrastructural facilities (like electricity, storage facilities, roads and water) so as to reduce the operational costs being run by foreign investors as this will enhance productivity and encourage other potential investors.
- iv. Government policies should be reviewed at intervals and be flexible as this will aid foreign investment in Nigeria.

# **CONFLICT OF INTEREST**

None

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