IMPACT OF INSTITUTIONAL QUALITY ON FDI INFLOWS IN NIGERIA

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Abstract

This study examined the impact of institutional quality on FDI inflow in Nigeria using annual time series data for the period 1996 – 2019. Six different indicators were used to capture institutional qualities, these include control of corruption, government effectiveness, rule of law, regulatory quality, voice and accountability as well as political instability and absence of terrorism/ violence. Some selected macroeconomic variable such as real Gross Domestic Product (proxy for market size), Inflation rate (economic stability) and financial sector development were include in the model as control variables. Given that the selected variables were not integrated of the same order based on the results of the Augmented Dickey Fuller (ADF) unit root test, the bounds testing and the ARDL co-integration testing approach were adopted for the empirical analysis. The empirical result obtained revealed that institutional variables have significant impact on FDI inflow in Nigeria both in the short run and in the long run. A further examination of the result shows that the impact of some of the institutional variables such as control of corruption and Political stability and absence of terrorism/violence on FDI inflow were more statistically significant compared to the selected macroeconomic variables both in the short run and in the long run. It was therefore concluded on the basis of the empricial findings that the high level of corruption, increase in the activities of insurgences and violence in many parts of the country, poor electoral framework, poor freedom of the press, lack of independence of the civil service from political pressure and poor regulatory framework in the country are important factors inhibiting FDI inflows in Nigeria. Hence, to make the country more attractive for foreign investors the institutional framework in the country needs improvement.

Key words: Institutional quality, Foreign Direct Investment, bounds test, Macroeconomic variables, UNCTAD

JEL Classification: E02, F21, F41

I. Introduction:

Foreign Direct Investment (FDI) which is the type of investment made by multinational corporations to foreign countries has become in recent years the fastest growing channel of globalization. According to Phung (2017), the flow of FDI soared by 107% from US$220 billion in 1993 to US$1.7 trillion in 2015. Interestingly, about 54.7% of the

global foreign investment flow in 2014 went into developing countries, surpassing the amount of FDI inflows into the developed countries. This to the developing countries is a welcome development as the importance of FDI inflows into their economy cannot be overemphasized. FDI inflow helps to fill the gap between savings and required investment (Sabir & Khan, 2018). It is a major source of technological transfer from the advanced countries to the underdeveloped world, as well as an important stimulator of industrial productivity and job creation (Peres, Ameer & Xu, 2010).

Historically, the trend of FDI flows shows that the developed economies have been considered most favoured destination. Statistics from United Nations Conference on Trade and Development (UNCTAD) shows that in the 1970s over 71.6% of total world FDI flows went to the developed economies with only 28.4% finding their ways to developing countries. In the 1980s, 54.5% of FDI flows went to the advanced countries with 45.5% going to the less developed countries. However, in 2014, 54.7% of FDI flows found their ways to the developing countries. This is an evidence that the developing countries are beginning to compete favourably with advanced countries for FDI inflows.

The picture of FDI inflows into Africa continent in recent years was quit rosy. According to UNCTAD (2019), FDI inflow into Africa rose to US$46 billion in 2018 representing an increase of 11% compared to 2017, thereby defiling the global slum in FDI inflows. It is important to stress that though FDI inflow into Africa increased in recent years, the spread was not even. While the North and East Africa regions experienced increased in FDI inflow, West Africa region experienced a sharp decline. FDI inflow to North Africa increased by US$14 billion in 2019, representing an increase of 7% compared to 2018 (UNCTAD, 2019). East Africa was the fastest growing region in terms of FDI inflow in 2019. Ethiopia was the biggest beneficiary of FDI inflow into East Africa even though FDI inflow in 2019 decrease by US$3.3 billion compared to 2018. West Africa was not so fortunate compared the North and East Africa in terms of FDI inflow as there was a decline in FDI inflow by US$9.6 billion into the region in 2019. This represent a decline in FDI inflow by 15% compared to 2018. The Nigeria case was most pathetic as it experience a decline in FDI inflow by US$2 billion in 2019 representing a decrease of 43% compared to FDI inflow in 2018 (UNCTAD, 2019). In terms of overall ranking in Africa, South Africa received the highest amount of FDI inflow in 2019 with a total of US$3.1billion followed by Morocco with FDI inflow of US$1.0 billion. Togo was third in the rank with US$0.7 billion and Egypt with US$0.4 billion was ranked 4th. The fifth largest recipient of FDI inflow is Africa in 2019 is Cote d'Ivoire with US$0.4 billion (UNCTAD, 2020).

From the statistics on FDI inflow, South Africa clearly performed better compared to Nigeria in terms of attracting FDI. Coincidentally, South Africa is also ahead of Nigeria in terms of institutional quality. Statistics from all the institutional indicators in terms of percentile ranking among countries in 2019 was in favour of South Africa relative to Nigeria. In terms of rule of law, South Arica had a percentile rank of 50.96% compared to Nigeria with 18.75% in 2019 (World Governance Indicator, 2020). Similarly, South Africa had a percentile rank of 66.35% as against Nigeria's 13.46% in government effectiveness. In terms of political stability and absence of violence / terrorism, South Africa had a percentile rank of 40.00% as against Nigeria's score of 5.24%. In terms of voice and accountability in 2019, South Africa had a percentile rank of 69.46% compared to 34.98% rank of Nigeria. In control of corruption South Africa and Nigeria had a percentile rank of 59.62% and 12.98% respectively, While South Africa had 61.54% as

against Nigeria 17.79% in terms of regulatory quality in 2019 (World Governance Indicators, 2020). Given these statistics, could it be that South Africa was able to attract more FDI inflow relative to Nigeria because of their better institutional quality? This question has become more necessary as the same statistics shows that the top five recipients of FDI inflow in Africa have better institutional quality compared to Nigeria (see World Governance Indicators, 2020).

The recent upsurge of FDI inflow into developing countries and its uneven spread has intrigue many scholars interest in explaining the sources of attraction of FDI inflows in less developed countries. Theoretically, market size has been identified as the major determinant of FDI inflow between countries. On this basis, studies such as Ejemeyovwi and Osabuohien (2020), Al-Sadig (2009), Busse and Hefeker (2007) and Benassa-Quere, Coupet and Meyer (2007) found in their empirical studies that the key determinants of FDI inflow are steady macroeconomic variables, skilled labour force and substantial infrastructural facilities. These studies ignored the possible effect of institutional qualities. Other studies such as Omodero (2019), Nuguyen, Schinchns, Su and Chong (2018), Peres, Ameer and Xu (2018), Phung (2017) and Kurul and Yalta (2017) incorporated institutional quality in their investigations of determinants of FDI inflows. A closer look at the above studies shows that with the exception of Omodero (2019) which was based on Nigeria, other were a panel of countries. Omodero (2019) only employed one of the six institutional variables in his study. This study expand the existing literature by conducting a study specifically based on Nigeria using the six institutional variables.

The study is structured into five sections. Apart from section one which was the introduction, section two covers the review of relevant literature. The methodology adopted in the study was contained in section three while section four dealt with the empirical results and discussion of findings. The study ends in section five with concluding remarks.

II. Literature Review

There is a robust literature on the relationship between institutional quality and FDI inflow. However, the results from various empirical studies were mixed.

Nguyen, et al ((2018) conducted an investigation on the impact of institutional quality on inward FDI inflows in thirty three (33) emerging market economies for the period 2002 – 2015. The two system GMM estimator was employed and the empirical results shows that institutional quality help in moderating the effect of FDI inflow and trade openness on domestic credit of host countries.

Belgibayeva and Plekhanov (2015) studied the impact of corruption on FDI inflow in a sample of 230 countries employing a combination of Ordinary Least Square (OLS) estimator, between estimator, fixed and random effect estimator and negative binomial regression. The result revealed that control of corruption in the destination country improve FDI inflow from corruption cleaner countries but attract less FDI from countries with widespread corruption.

Peres et al (2018) examined the impact of institutional quality on FDI using a panel of developed and developing countries. In the study, control of corruption and rule of law were used to capture institutional quality. The specified models were estimated using the OLS estimator and the Instrumental Variable (IV) technique. The empirical result from

the study revealed that institutional quality has a positive and significant impact on FDI inflow in the developed countries. In the developing countries, the impact of institutional quality was not statistically significant. This according to them maybe due to the weak structure of institutions in the developing countries.

Phung (2017) examined the impact of institutional and political factors on FDI inflows using a sample of forty (40) developing countries for four different time periods. The pooled OLS and Arellano-Bond GMM estimation technique were employed. The empirical result from the study revealed that the impact of institutional variables on FDI inflows were not statistically significant. Political variables were found to exert a significant impact on FDI inflow in the selected countries. Similarly, macroeconomic variables were found to be important determinants of FDI inflow in developing countries.

Dogru (2012) assess the impact of institutional and macroeconomic variables on FDI inflows in fifty-four (54) upper-middle income developing countries using panel date regression for the period 1995 – 2011. The empirical result shows that institutional variables have significant impact on FDI inflow in the selected countries. The result further revealed that although the impact of institutional variables on FDI was statistically significant, their impacts were weaker compared to the macroeconomic variables.

Kurul and Yalta (2017) investigated the effect of institutional factors on FDI inflows using a panel of one hundred and thirteen (113) developing countries for the period 2002 – 2012. The system GMM estimator was employed and the result from the study revealed that not all the institutional variables significantly stimulate FDI inflows. The impact of control of corruption, government effectiveness and voice and accountability were found to be statistically significant, while political stability /absence of violence, regulatory quality and the rule of law were not significant determinants of FDI inflow in selected developing countries.

Sabir, Rafique and Abbas (2019) examined the impact of institutional quality on FDI inflow in developed and developing countries for the period 1996 – 2016 using a panel of one hundred and forty eight (148) countries. In the study, the countries were grouped into low income countries, lower middle income countries, upper middle income countries and high income countries. The system GMM estimator was employed and the result from the study revealed that institutional quality significantly influence FDI inflow in all the selected countries. However, from the coefficients of the institutional variables and their level of significance, institutional variables were more significant at influencing FDI inflows in the developed countries than in the developing countries.

Abdelkarim and Mariem (2015) investigated the impact of institutional quality on FDI inflows in Middle East and North Asian (MENA) region for the period 1984 – 2011. The panel data estimation techniques namely Ordinary Least Square (OLS), Fully – Modified Least Square (FMOLS), Dynamic Least Square (DOLS) and Seemingly Unrelated Regression (SUR) were employed. The results show that institutional quality has a positive and significant impact of FDI inflow in MENA countries.

Murthy and Deepshika (2019) examined the impact of institutional indicators on FDI flows in BRICS countries for the period 2002 – 2017 using robust regression method. The result from the study shows that different institutional variables play significant role at influencing FDI inflow in the individual countries. In Brazil political stability, voice

and accountability and control of corruption were significant institutional variables. In Russia, all the institutional variables except voice and accountability were significant. For India, all the institutional variables except political stability were significant determinants of FDI, while in China only rule of law was not statistically significant. In South Africa, only political stability and control of corruption were the significant determinants of FDI inflows.

Adegboye, Osabohien, Olokoyo, Matthew and Adediran (2020) employed the fixed and random effect regression model to examine the impact of institutional quality on FDI and economic development in Sub-Sahara Africa for the period 2000 – 2018. The result revealed that institutional quality are significant determinants of FDI inflow in Sub-Sahara Africa.

Siddica and Angkur (2017) examined the impact of institutional variables on FDI inflow in developed and developing countries. The study which was based on forty (40) countries covered the period 1990 – 2010 and employed the fixed and random effect estimation technique. The empirical results from the study shows that institutional quality significantly influence FDI inflow in the selected countries.

Omodero (2019) examined the effect of corruption on FDI inflow in Nigeria for the period 1996 – 2017 using the OLS estimation method. The findings from the study revealed that corruption has a positive and significant impact on FDI inflow in Nigeria. However, the result of the study appears spurious as the time series properties of the selected variables were not examined and as such, the variables may not stationary. Moreover, the Durbin Watson statistics of 1.126 suggest the presence of positive serial correlation.

Ntim and Emilia (2014) using the Vector Error Correction Modelling (VECM) technique examined the impact of institutional quality on FDI inflow in Nigeria for the period 1980 – 2011. The study captured institutional quality using the political stability / absence of violence index and corruption perception index. From the result, both measure of institutional quality were found to be significant determinants of FDI inflows in Nigeria.

III. Theoretical Framework and Model Specification

In explaining the role of institutional quality in attracting FDI into a country, this study relied on the OLI paradigm developed by Dunning (2002) and North's institutional theory (North, 1990). According to the OLI paradigm, the decision of a firm to invest abroad depends on three main augment, these are ownership advantage, locational advantage and internalization advantage. A foreign firm with relative competitive advantage compared to an indigenous firm in the recipient country in terms of technological innovation and capital base would have the incentive to invest abroad (O – Ownership). Also, foreign investors are attracted to countries that can provide them with locational advantage such tax incentive and good business environment (L – Locational advantage). Lastly, investors would compare the transaction cost of outsourcing with the cost of acquiring business and self-operating process. If the transaction cost of outsourcing to produce or distribute goods in foreign countries is greater than the cost of acquiring the business and self-operating production process, firms will have the incentive to internalize the intermediate process to lower the cost (I – Internalization advantage). From North's institutional theory, good institutional quality affect economic activities by reducing production and transaction cost as well as cost of

doing business which ultimately enhance profitability (North, 1990). Also, when institutions are weak, it consume much resources and time to enforce contract, making risk premium high thereby slowing down economic activities.

Therefore, institutional quality along with other macroeconomic factors constitute the broad concept of locational advantage. Theoretically, the quality of institutions in the host country affect profitability of a firm and hence influence the decision of foreign investors to invest in the economy.

On the basis of Dunning's OLI paradigm theory and North's institutional theory, the determinants of inward FDI can be expanded to include institutional quality. Therefore, combining it with the classical and neo-classical theories, inward FDI depends on the size of the market, stability of the macroeconomic environment and the quality of institution in the host country.

On the basis of the above theoretical foundation, the econometric model for this study is specified as

$$FDI_{it} = \beta_0 + \beta_i\, FDI_{it-1} + \alpha_i INS_{it} + \Phi_i Z_{it} + U_{it} \quad - \quad - \quad - \quad (1)$$

Where:

FDI_{it} = Foreign Direct Investment (FDI) inflow in country i at time t.

INS_{it} = Institutional quality in country i at time t.

Z_{it} = vector of control variables in country i at time t which include market size, Macroeconomic stability variables.

U_{it} = stochastic error term

Table 1: Data sources and measurement

Category of variables	Variable	Definition	Expected sign	Data sources
Dependent variable	FDI	Dependent variable measured by current market value of FDI inflow		CBN statistical bulletin
Macroeconomic variables	RGDP	Real Gross Domestic Product to capture market size	+	CBN Statistical Bulletin
	INF	Inflation rate proxy for economic stability measured by year on year inflation rate	-	CBN Statistical Bulletin
	FINDEV	Financial development to control for development of the financial sector measured by $\left(\frac{M_2}{GDP}\right)$	+	CBN Statistical Bulletin
Institutional variables	INSCOR	Control of corruption	+	WGI
	INSGOVE	Government effectiveness	+	WGI
	INSRULE	Rule of law	+	WGI
	INSREGQ	Regulatory quality	+	WGI
	INSVOICE	Voice and accountability	+	WGI
	INSPOLS	Political stability and absence of violence / terrorism	+	WGI

WGI = World Governance Indicator; All institutional variables have values ranging from -2.5(weak) to +2.5(strong)

The study employed the bound test and the ARDL co-integration testing approach to examine the short and long run relationship between institutional quality and FDI inflow in Nigeria. The ARDL testing procedure was preferred as it permit estimation of models with mixture of I(1) and I(0) variables, provided the dependent variable is I(1) and the regressors are not integrated of order higher than unity (Pesaran et al, 2001). Also, ARDL approach unlike other techniques which requires that all variables must have the same optimal lag, tolerate variables with different optimal lag (Do & Zhang, 2016).

IV. Empirical Analysis

i. Unit root test

The time series properties of the selected variables were tested using the Augmented Dickey Fuller (ADF) test based on 5% critical level. The results are presented in the table below:

Table 2: ADF unit root test

Variables	Values in levels		Values in first order difference		Order of integration
	ADF Critical Value at 5%	ADF computed	ADF Critical Value at 5%	ADF computed	
FDI	-2.9980	1.7740	-3.0048	-6.2681	I(1)
RGDP	-2.9980	-3.7719	-	-	I(0)
INF	-2.9980	-6.1963	-	-	I(0)
FINDEV	-2.9980	-2.3196	-3.0048	-4.3297	I(1)
INSCOR	-2.9980	-1.8976	-3.0521	-5.9296	I(1)
INSGOVE	-2.9980	-4.7913	-3.0403	-3.4435	I(1)
INSRULE	-2.9980	-1.0631	-3.0048	-5.3177	I(1)
INSREGQ	-2.9980	-2.3312	-3.0048	-6.4003	I(1)
INSVOICE	-3.0299	0.4670	-3.0123	-4.7963	I(1)
INSPOLS	-3.0123	-4.7962	-	-	I(0)

From the above tables, real GDP, inflation rate, government effectiveness and political stability / absence of terrorism were stationary in level. This shows that these variable were integrated of order zero {I(0)}. The other variables were not stationary in level, however, they became stationary after first order difference. Hence, these variables are integrated of order one {I(1)}. Since some of the variables were not stationary in level, it became necessary to conduct a co-integration test in order to ascertain if a long run relationship exist among the group of variables.

ii. Co-integration test

Giving that all the variables were not integrated of the same order, Johannsen co-integration test could not be applied. Hence, the study employed bounds testing approach in line with Pesaran, Shin and Smith (2001). The ARDL Bound co-integration tests were based on the following models:

$$\Delta FDI_t = C + \beta_1 FDI_{t-1} + \beta_2 RGDP_{t-1} + \beta_3 INF_{t-1} + \beta_4 FINDEV_{t-1} + \beta_5 INSCOR_{t-1} + \sum_{i=1}^{n} \alpha_{1i} \Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{2i} \Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta FINDEV_{t-i} + \sum_{i=0}^{n} \alpha_{5i} \Delta INSCOR_{t-i} + \varepsilon_t \quad (2)$$

$$\Delta FDI_t = C + \beta_1 FDI_{t-1} + \beta_2 RGDP_{t-1} + \beta_3 INF_{t-1} + \beta_4 FINDEV_{t-1} + \beta_5 INSCOR_{t-1} +$$

$$\sum_{i=1}^{n} \alpha_{1i}\Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{2i}\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\Delta FINDEV_{t-i} + \sum_{i=0}^{n} \alpha_{5i}\Delta INSGOVE_{t-i} + \varepsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (3)$$

$$\Delta FDI_t = C + \beta_1 FDI_{t-1} + \beta_2 RGDP_{t-1} + \beta_3 INF_{t-1} + \beta_4 FINDEV_{t-1} + \beta_5 INSCOR_{t-1} + \sum_{i=1}^{n} \alpha_{1i}\Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{2i}\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\Delta FINDEV_{t-i} + \sum_{i=0}^{n} \alpha_{5i}\Delta INSRULE_{t-i} + \varepsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (4)$$

$$\Delta FDI_t = C + \beta_1 FDI_{t-1} + \beta_2 RGDP_{t-1} + \beta_3 INF_{t-1} + \beta_4 FINDEV_{t-1} + \beta_5 INSCOR_{t-1} + \sum_{i=1}^{n} \alpha_{1i}\Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{2i}\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\Delta FINDEV_{t-i} + \sum_{i=0}^{n} \alpha_{5i}\Delta INSREGQ_{t-i} + \varepsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (5)$$

$$\Delta FDI_t = C + \beta_1 FDI_{t-1} + \beta_2 RGDP_{t-1} + \beta_3 INF_{t-1} + \beta_4 FINDEV_{t-1} + \beta_5 INSCOR_{t-1} + \sum_{i=1}^{n} \alpha_{1i}\Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{2i}\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\Delta FINDEV_{t-i} + \sum_{i=0}^{n} \alpha_{5i}\Delta INSVOICE_{t-i} + \varepsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (6)$$

$$\Delta FDI_t = C + \beta_1 FDI_{t-1} + \beta_2 RGDP_{t-1} + \beta_3 INF_{t-1} + \beta_4 FINDEV_{t-1} + \beta_5 INSCOR_{t-1} + \sum_{i=1}^{n} \alpha_{1i}\Delta FDI_{t-1} + \sum_{i=0}^{n} \alpha_{2i}\Delta RGDP_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta INF_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\Delta FINDEV_{t-i} + \sum_{i=0}^{n} \alpha_{5i}\Delta INSPOLS_{t-i} + \varepsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (7)$$

In order to test the hypothesis that a long run co-integration relationship exist among the variables, the hypothesis testing restriction was written as:

$$C(2) = C(3) = C(4) = C(5) = C(6) = 0$$

The result is presented below:

Table 3: Bounds test

Model	F- Statistics	Critical value	Lower Bound	Upper Bound
FDI = f(RGDP, INF, FINDEV, INSCOR)	7.5531	1% 5% 10%	4.768 3.354 2.752	6.670 4.774 3.994
FDI = f(RGDP, INF, FINDEV, INSGOVE)	7.4600	1% 5% 10%	4.768 3.354 2.752	6.670 4.774 3.994
FDI = f(RGDP, INF, FINDEV, INSRULE)	6.1967	1% 5% 10%	4.768 3.354 2.752	6.670 4.774 3.994
FDI = f(RGDP, INF, FINDEV, INSREGQ)	10.8349	1%	4.768	6.670

		5%	3.354	4.774
		10%	2.752	3.994
FDI = f(RGDP, INF, FINDEV, INSVOICE)	7.1087	1%	4.768	6.670
		5%	3.354	4.774
		10%	2.752	3.994
FDI = f(RGDP, INF, FINDEV, INSPOLS)	7.1768	1%	4.768	6.670
		5%	3.354	4.774
		10%	2.752	3.994

The above result shows the computed F-Statistics and well as the lower and upper bounds for the 1%, 5% and 10% critical values in the six models. From the result, the F-Statistics in the six models were greater than the upper bounds critical levels. This clearly shows that the group of variables are co-integrated in the six models.

iii. The Autoregressive Distributed lagged (ARDL) model estimation

The ARDL models estimated in the study were written as:

$$FDI_t = C + \sum_{i=1}^{a} \alpha_1 FDI_{t-1} + \sum_{i=0}^{b} \alpha_2 RGDP_{t-i} + \sum_{i=0}^{c} \alpha_3 INF_{t-i} + \sum_{i=0}^{d} \alpha_4 FINDEV_{t-i} + \sum_{i=0}^{e} \alpha_5 INSCOR_{t-i} + \varepsilon_t \quad (8)$$

$$FDI_t = C + \sum_{i=1}^{a} \beta_1 FDI_{t-1} + \sum_{i=0}^{b} \beta_2 RGDP_{t-i} + \sum_{i=0}^{c} \beta_3 INF_{t-i} + \sum_{i=0}^{d} \beta_4 FINDEV_{t-i} + \sum_{i=0}^{e} \beta_5 INSGOVE_{t-i} + \varepsilon_t \quad (9)$$

$$FDI_t = C + \sum_{i=1}^{a} \delta_1 FDI_{t-1} + \sum_{i=0}^{b} \delta_2 RGDP_{t-i} + \sum_{i=0}^{c} \delta_3 INF_{t-i} + \sum_{i=0}^{d} \delta_4 FINDEV_{t-i} + \sum_{i=0}^{e} \delta_5 INSRULE_{t-i} + \varepsilon_t \quad (10)$$

$$FDI_t = C + \sum_{i=1}^{a} \rho_1 FDI_{t-1} + \sum_{i=0}^{b} \rho_2 RGDP_{t-i} + \sum_{i=0}^{c} \rho_3 INF_{t-i} + \sum_{i=0}^{d} \rho_4 FINDEV_{t-i} + \sum_{i=0}^{e} \rho_5 INSREGQ_{t-i} + \varepsilon_t \quad (11)$$

$$FDI_t = C + \sum_{i=1}^{a} \pi_1 FDI_{t-1} + \sum_{i=0}^{b} \pi_2 RGDP_{t-i} + \sum_{i=0}^{c} \pi_3 INF_{t-i} + \sum_{i=0}^{d} \pi_4 FINDEV_{t-i} + \sum_{i=0}^{e} \pi_5 INSVOICE_{t-i} + \varepsilon_t \quad (12)$$

$$FDI_t = C + \sum_{i=1}^{a} \sigma_1 FDI_{t-1} + \sum_{i=0}^{b} \sigma_2 RGDP_{t-i} + \sum_{i=0}^{c} \sigma_3 INF_{t-i} + \sum_{i=0}^{d} \sigma_4 FINDEV_{t-i} + \sum_{i=0}^{e} \sigma_5 INSPOLS_{t-i} + \varepsilon_t \quad (13)$$

The above models were estimated using the least square technique and the selected lag structure of (1, 0, 1, 1, 0) was based on the Akaike information criteria (AIC) and Schwarz Bayesian criteria (SBC). The result is given in the table below:

Table 4: Long run OLS outputs

Variables	1	2	3	4	5	6
C	10.5824	-0.9867	3.0439	2.3549	-1.6849	-1..4827
	(2.5365)	(-0.5592)	(0.5406)	(0.9339)	(-0.6044)	(-0.6922)
FDI(-1)	0.0590	0.6658**	0.6754**	0.7801*	0.3093	0.3281
	(0.2455)	(2.3336)	(2.4785)	(2.9667)	(1.0515)	(1.1835)
RGDP	0.0002**	0.0002***	0.0002***	0.0002**	0.0002***	0.0012*
	(2.4358)	(2.0431)	(1.9781)	(2.3235)	(2.0225)	(9.2424)
INF	0.0077	-0.0256	0.0294	0.0214	-0.02975	-0.0282
	(0.0970)	(-0.2449)	(0.2461)	(0.2256)	(-0.2896)	(-0.2799)
INF(-1)	0.0057	-0.0308	-0.0154	-0.0121	-0.0378	-0.0249
	(0.1032)	(-0.4491)	(-0.2228)	(-0.1927)	(-0.5236)	(-0.7193)
FINDEV	0.0028***	0.0014*	0.0118*	0.0987**	-0.0032**	0.0031**
	(1.9387)	(5.0033)	(7.2836)	(2.3864)	(2.1546)	(2.0577)
FINDEV(-1)	0.0049*	0.0024	0.0030	-0.0023	-0.0024	-0.0021
	(3.1367)	(1.4622)	(1.6603)	(-1.5542)	(-1.4519)	(-1.1543)
INSCOR	9.7186*	-	-	-	-	-
	(2.9385)					
INSGOVE	-	0.1176*	-	-	-	-
		(3.0425)				
INSRULE	-	-	3.3957	-	-	-
			(0.7482)			
INSREGQ	-	-	-	3.9693***	-	-
				(1.9637)		
INSVOICE	-	-	-	-	-0.7533	-
					(-0.3317)	
INSPOLS	-	-	-	-	-	2.6979**
						(2.1234)
R^2	0.8374	0.7429	0.7658	0.7494	0.7456	0.7467
F-Statistics	11.0375	7.1183	8.2361	5.7496	6.2834	6.3193
	(0.0000)	(0.0015)	(0.0004)	(0.0018)	(0.0014)	(0.0013)

(*)(**)(***) significant at (1%) (5%) and (10%) respectively

From the above result, real GDP proxy for market size and financial sector development were statistically significant in all the models, while the impact of inflation was not statistically significant even at 10% level in all the models. For the institutional variables, control of corruption, government effectiveness, regulatory quality and political stability / absence of terrorism were significant determinants of FDI inflow. However, the impact of rule of law and voice / accountability on FDI inflow were not significantly different from zero.

iv. Diagnostic test on the OLS model

The above estimates were subjected to diagnostic test for reliability. The Breusch-Godfrey serial correlation L.M test was used to test for serial correlation while the Breusch-Pagan Godfrey test was adopted for heteroscedasticity test. The results are presented in table 5 and table 6 below:

Table 5: Breusch-Godfrey serial correlation L.M test

	1	2	3	4	5	6
F- Statistics	1.2651	1.5192	2.1540	0.6075	1.9439	1.9270
Prob. Chi Square	0.0687	0.1441	0.0929	0.3742	0.0708	0.0721

Table 6: Heteroscedasticity test: Breusch-Pagan Godfrey

	1	2	3	4	5	6
F- Statistics	2.2040	2.1581	2.6049	1.9559	3.0096	1.5513
Prob. Chi Square	0.1122	0.1119	0.5325	0.1397	0.0622	0.0986

From the above results, since the probability chi square is greater than 0.05 in all the six models, it shows that there is no serial correlation in the model. Also the distribution of the residuals are homoscedastic. Given the above, it was therefore possible to proceed to compute the long run elasticity of the variables.

v. Long run elasticity of variables

The long run elasticity of the variables are given in table 7 below:

Table 7: Long run elasticity of variables

Variables	1	2	3	4	5	6
Constant	11.2465* (2.5276)	-0.5923 (-0.5682)	1.8167 (0.5399)	1.3228 (0.9367)	-2.4395 (-0.6497)	-2.2068 (-0.7116)
RGDP	0.0002* (3.3269)	0.0001* (3.2975)	0.0001** (2.5065)	0.00011* (2.9939)	0.0003* (3.3232)	0.0003** (2.1404)
INF	0.0143 (0.1332)	-0.0339 (-0.4477)	0.0083 (0.0939)	0.0052 (0.0078)	-0.0978 (-0.5551)	-0.0791 (-0.4596)
FINDEV	7.4423* (3.9137)	0.0012* (2.6133)	0.0013* (2.7927)	0.0012* (3.0297)	10.1352** (2.3481)	0.0029** (2.2160)
INSCOR	10.3286* (3.0004)	-	-	-	-	-
INSGOVE	-	0.0706 (0.1330)	-	-	-	-
INSRULE	-	-	2.0267*** (1.8945)	-	-	-
INSREGQ	-	-	-	2.2298*** (1.7782)	-	-
INSVOICE	-	-	-	-	1.0907* (7.0543)	-
INSPOLS	-	-	-	-	-	2.0387* (4.3775)

(*)(**)(***) significant at(1%)(5%) and (10%) respectively

From the above result, the sign expectations were met for all the variables except inflation rate. Also, the impact of the individual variables were statistically significant for all the variables expect inflation rate. The impact of real GDP was highly significant in all the models. This was also the case for financial development. The impact of the institutional variables were statistically significant except for government effectiveness.

vi. The short run dynamic Model:

The short run dynamic model was examine using the error correction representation. The result is presented below:

Table 8: Error correction representation for selected ARDL model

Variables	1	2	3	4	5	6
C	10.5824	-0.9867	3.0439	2.3549	-1.6849	-1..4827
	(2.5365)	(-0.5592)	(0.5406)	(0.9339)	(-0.6044)	(-0.6922)
dRGDP	0.0002**	0.0002***	0.0002***	0.0002**	0.0002***	0.0012*
	(2.4358)	(2.0431)	(1.9781)	(2.3235)	(2.0225)	(9.2424)
dINF	0.0077	-0.0256	0.0294	0.0214	-0.02975	-0.0282
	(0.0970)	(-0.2449)	(0.2461)	(0.2256)	(-0.2896)	(-0.2799)
dFINDEV	0.0028***	0.0014*	0.0118*	0.0987**	-0.0032**	0.0031**
	(1.9387)	(5.0033)	(7.2836)	(2.3864)	(2.1546)	(2.0577)
dINSCOR	9.7186*	-	-	-	-	-
	(2.9385)					
dINSGOVE	-	0.1176*	-	-	-	-
		(3.0425)				
dINSRULE	-	-	3.3957	-	-	-
			(0.7482)			
dINSREGQ	-	-	-	3.9693***	-	-
				(1.9637)		
dINSVOICE	-	-	-	-	-0.7533	-
					(-0.3317)	
dINSPOLS	-	-	-	-	-	2.6979**
						(2.1234)
ECM_{t-1}	-0.9409*	-0.7359*	-0.7703*	-0.8808*	-0.6906**	0.6718**
	(-3.9123)	(-5.9387)	(-6.0492)	(-6.8606)	(-2.3479)	(-2.4233)
R^2	0.8374	0.7429	0.7658	0.7494	0.7456	0.7467
F-Statistics	11.0375	7.1183	8.2361	5.7496	6.2834	6.3193
	(0.0000)	(0.0015)	(0.0004)	(0.0018)	(0.0014)	(0.0013)

(*)(**)(***) significant at (1%) (5%) and (10%) respectively

From the result above, the error correction mechanism (ecm) was properly signed in all the models. This is a clear indication that the models are dynamically stable and also a further confirmation that the variables are co-integrated in all the model. The result further reveled that market size captured by real GDP in the model and development of the financial sector were significant determinants of FDI inflow. The impact of Inflation rate was not statistically significant in all the models. Among the institutional variables, control of corruption, government effectiveness, regulatory quality and political stability / absence of terrorism were found to be significant determinants of FDI inflow. However, the impacts of rule of law and voice/ accountability on FDI inflow were not statistically different from zero.

vii. Discussion of findings

Empirical findings from this study shows that institutional quality significantly influence FDI inflow in Nigeria both in the short run and in the long run. Specifically, control of corruption has a strong positive impact on FDI inflow in Nigeria in the short run and in the long run. This implies that countries with good records of control of corruption will be an attractive destination for FDI inflow. This finding is in line with the empirical findings of Kurul and Yalta (2017) and Murthy and Deepshika (2019) but contrary to the findings of Peres et al (2018) and Phung (2017).

Government effectiveness was found to have a significant impact on FDI inflow in Nigeria only in the short run. In the long run, the impact of government effectiveness was not statistically significant. This implies that the quality of the civil service and the degree of its independence from political pressure, the quality of policy formulation and

implementation as well as the government commitment to such policy significantly influence the quantum of FDI inflow in Nigeria in the short run, however, the importance of this institutional factor may diminish in the long run. The long run findings is in line with the empirical result of Adegboye et al (2020) but contrary to the findings of Phung (2017).

The long run impact of the rule of law on FDI inflow was positive and statistically significant. This implies that obedience to the rule of law in the host country is an important determinant of FDI inflow in Nigeria. If there is confidence in the quality of contract enforcement, property right, police as well as independence of the court, there would be increase in FDI inflow into the country. This finding is in line with the empirical results of Siddica and Angkur (2017) but contrary to the findings of Murthy and Deepshika (2019), Kurul and Yalta (2017) and Peres et al (2018).

The impact of regulatory quality on FDI inflow was statistically significant with a positive sign both in the short run and in the long run. This shows that good regulatory framework in the host country is an important stimulus of FDI inflow in Nigeria. In other words, if there are improvements in the ability of the Nigerian government to formulate and implement sound policies and regulations that permit and promote private sector development, more FDI inflow would be encouraged in the long run. This findings is however contrary to the empirical findings of Murthy and Deepshika (2019) and Kurul and Yalta (2017).

The impact of voice and accountability on FDI inflow was not statistically significant in the short run but highly significant in the long run. This implies that if the Nigerian Government improve on the extent to which its citizens are able to participate in selecting their government at all levels as well as improvement in their freedom of expression, freedom of association and freedom of the press, there would be increase in FDI inflow into the country in the long run. This findings are in line with Kurul and Yalta (2017) and Adegboye et al (2020) but contrary to the finds of Murthy and Deepshika (2019) and Sabir et al (2019).

The impact of political stability and absence of terrorism on FDI inflow in Nigeria is highly significant both in the short run and in the long run. This implies that the devastating effects of insurgence and the high level of insecurity in the country is a major factor inhibiting FDI inflow in Nigeria. This findings is in line with the empirical results of Ntim and Emilia (2014), Murthy and Deepshika (2019), Sabir et al (2019) and Phung (2017) but contrary to Kurul and Yalta (2017) and Adegboye et al (2020).

The impact of market size on FDI inflow was significant and positive in Nigeria both in the short run and in the long run. This implies that the larger the Nigeria economy is, the more FDI inflows she would attract. This findings is in line with existing theoretical postulations. It is also in line with the empirical results of Ejemeyovwi and Osabuohien (2020), Peres et al (2018) and Sabir et al (2019) but contrary to the findings of Phung (2017).

Comparing the impact of institutional quality and macroeconomic variables on FDI inflows in Nigeria, the empirical result from this study revealed that some institutional variables such as control of corruption, voice and accountability and absence of terrorism / violence were more significant at attracting FDI inflows in Nigeria compared to the macroeconomic variables such as market size, inflation rate and financial sector

development. This findings is in line with the empirical results of Kurul and Yalta (2017) and Sabir et al (2019).

V. Conclusion

The study examined the impact of institutional quality on FDI inflow in Nigeria using the bounds test approach and the ARDL co-integration testing approach. The empirical results revealed that the quality of institutions in Nigeria is a significant determinant of FDI inflow in the country both in the short run and in the long run. The result from this study shows that with the current low quality of institutional framework in the country, Nigeria will continue to lag behind in attracting high quality FDI inflow. From the result, high level of corruption, increase in the activities of insurgences and violence in many parts of the country, poor electoral framework, poor freedom of the press, lack of independence of the civil service from political pressure and poor regulatory framework in the country are important factors inhibiting FDI inflows in Nigeria.

On the basis of these findings, if the goal of Nigeria is to attract FDI to fill the saving – investment gap resulting from the deficiency of domestics savings, improvement in the institutional framework of the country along with deliberate government policy to improving the macroeconomic environment is the viable option.

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THE IMPACT OF SELECTED MACROECONOMIC VARIABLES ON UNEMPLOYMENT RATE IN NIGERIA

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Abstract

This study examined the impact of selected macroeconomic variables which are government expenditure, inflation rate, exchange rate and real gross domestic product (RGDP) on unemployment rate in Nigeria for the period 1981 to 2019 with data from Central Bank of Nigeria (CBN) Statistical bulletin (2020) and World Bank Report (2020). In order to achieve the objectives of this study, the study employs the Autoregressive Distributive Lag (ARDL) bounds testing approach to co-integration analysis popularised by Pesaran et. al (2001) to establish the long run relationship between the relevant time series data. It revealed that government expenditure and inflation rates have negative relationship with unemployment rate while exchange rate and real gross domestic product have positive relationship. The policy import of the study is that government expenditure is very imperative and this should be increased substantially to reduce unemployment rate. Policy makers should formulate policies that will reduce exchange rate adequately.

Keywords: Unemployment, openness, exchange rate, government expenditure
JEL Classification: B22, C87, E24

1. Introduction

The success, survival and progress of a nation is not only measured by the large size of its Gross Domestic Product but by the socio-economic variables that affect the life of an average citizen of the country. The rate of unemployment in Nigeria which hit 21% in 2014 before the review of methodology by the Nigerian Bureau of Statistics (NBS) reducing the hitherto rate drastically to 6.4% within the same period has as of December 2017 climbed back to 18.8% and going by the old methodology, the rate at 2017 was 35% (NBS, Labour Force Report 2017). Unemployment in Nigeria is a key problem both from economic and social viewpoints. It contributes to low purchasing power which dovetails into less consumption and in turn to lower production and economic growth. Unemployment also has social consequences as it increases the rate of crime in the society. Nigeria's case, is that of a situation whereby, there is a decade of strong real GDP of 6.5% economic growth, and in the same period, unemployment rate continues to rise annually from 11.9% in 2005 to 19.7% in 2009, and over 38% in 2020 (NBS, 2020)

However, salient macroeconomic variables could be traced to have significant impacts on the high rate of unemployment in Nigeria. These include the inflation rate, exchange rate, interest rate and Government expenditure. Overtime, economists have tried to establish the relationship between inflation and unemployment. These two variables are linked together economically. The relationships that exist between them are inversely correlated. When unemployment is high, inflation is low and otherwise (Umaru & Zubairu, 2012). The macroeconomic variables that enter any unemployment model are predicated by the combination of economic theory and the peculiarity of the economy the modeller is interested in. Early in the literature, Okun (1962) documented that

economic growth and unemployment have negative relationship. The relationship between economic growth, unemployment and inflation based on traditional macro model is derived by the combination of Okun's law and Philips curve. Perman and Tavera (2007) noted that such relationship is a significant indicator of interdependence of output and labour movement in the long run to capture the effect of higher unemployment. Research, both empirical and theoretical has opined the supposed relationship that should exist among some salient macroeconomic variables. Edwards and Levy Yeyati (2003) found indications that countries with more flexible exchange rate grow faster than those without. Faster economic growth is extensively associated with real exchange rate depreciation (Hausmann, Pritchett & Rodrik, 2005). However, in the Nigerian context, it could be seen that even during the reduced exchange rate as witnessed between 2010 to 2014 with average of N152 to a dollar, unemployment rate during this period was still a record high of 32% when compared with the present remodeled figures of 14.8% in 2019 even with rates of N360 to a dollar. While many people have questioned the reasonableness of these figures, it is important to subject them to econometric tests and define the relationship and the causatives in the Nigerian context.

Moreso, when unemployment is high, inflation is low and otherwise (Umaru & Zubairu, 2012). This however has also not played out well in the Nigerian context as even in the face of high inflation, unemployment rate is equally on the high side and the trend does not really conform to the theoretical concept of the short run Phillips curve. It is also evident empirically that government expenditure can enhance the level of employment while leading to a reduction in unemployment in any countries (Holden and Sparrman, 2013; Faramarzi, Avazalipour, Khaleghi and Hakimipour, 2014). Nevertheless, the effect of increase in government expenditure with a view to reducing level of unemployment has not been in tandem with empirical literature and the normal Apriori expectation.

An obvious gap observed in previous literature has been that while most works take just one or at most two of the macroeconomic variables to measure their effects on unemployment in Nigeria, such works as by Jelilov, Obasa, & Isik (2016), others decisively consider the macroeconomic variables in the context of foreign countries, for example Dogan (2010) who investigated the macroeconomic variables in the contest of Turkey, Faramarzi, Avazalipour, Khaleghi and Hakimipour (2014) investigated on Iran etc. It is however in the context of above discordance that this research work tends to holistically aggregate these macroeconomic variables namely Exchange rate, Inflation rate, Government expenditure and Real Gross Domestic Product with a view to considering their effects on unemployment rate in Nigeria. The work shall examine the validity of previous related research positions using current realities and also test the viability of established literature using the Nigerian peculiar case.

The broad objective of this study is to examine the nexus between selected macroeconomic variables and the level of unemployment in Nigeria. These variables to be considered are inflation rate, exchange rate, government expenditure and real gross domestic products. This study will be very useful to the various government authorities in the country, policy makers, academia and the general public. The findings will help the various government authorities to know the implications of an undesirable trend in each of the macroeconomic variables on the job creation drive of all the various tiers of government. The work will tend to identify trade-off if any, between any selected variable and the unemployment drive. Furthermore, this research shall avail the relevant

authorities the opportunity to forecast future trends given the level of government expenditure, inflation rate, exchange rate and real gross domestic product.

This study is organised such that it commenced with the introduction, and subsequently followed by review of literature, methodology, results and discussion of findings and then the conclusion and policy recommendations This research shall stress the need for the government to put some variables under desirable conditions if the expected success would be recorded in the time of employment creation. This study will contribute to knowledge by specifically identifying the unique nature of the Nigerian economic realities even in the face of seemingly contradictions with relevant literature.

2. Literature Review

2.1 Theoretical Literature

Keynesian theory of unemployment

This theory has its origins in the publication ´The General Theory of Unemployment, Interest and Money´ of John Maynard Keynes' (Keynes, 1936).few decades ago, this theory was divided in several branches. One of them, the New-Keynesianism, started developing complex models to explain new conceptions in unemployment till nowadays. In what concerns us, original Keynesians and New-Keynesianism declare: "employment is what determines the real wage, not the other way around like classical model predicts". Consequently, real wage cannot be considered as a mechanism to adjust employment anymore. Employment depends on the quantity of output (total income or production) that firms produce under the assumption prices are completely fixed. Moreover, the production of firms is given by the respective demand. As a result, the aggregate demand for goods sets up the income at a certain price, what finally leads to a new employment level. It is so because firms will hire new workers according to their specific production needs. Real wage is only determined by the wage equation when firms have already employed all the workers. This theory also implies the aggregate demand is the mechanism whereby employment can be changed. This new conception forces us to revisit some other points. The new mind set urges to focus on the monetary and fiscal policies as vehicles for changing the aggregate demand, and in the second instance, employment. By and large, this is a very important remark because permits new macroeconomic indicators such as interest rate to find a place in the models of the theory of employment. Precisely, the real interest rate has a negative relationship with production because the higher the interest rate is, the more expensive the loans are which implies less inversion engaged by firms and less consumption by individuals. It affects at the end the level of output. This theory finally says "the interest rate affects the level of production and in the second instance labor demand". In other words, the relevance of monetary policies in the fixation of the labor demand is now a fact.

2.2 Empirical Literature

A number of studies focused on the relationship between government expenditure and level of employment as well as unemployment rate in developed and developing countries. Some of these studies were reviewed herein. Aziz and Leruth (1997) investigated effect of changes in the composition of government expenditure between consumption and investment goods on both the long run efficiency and short run fluctuations of an economy even when government expenditure is assumed to be unproductive. The study was based on quantitative research methodology. The study revealed that quantitative estimates related to the U.S. economy showed that the effects

of changing the composition of government spending through government purchases can have efficiency effects as well as affect short run volatility of macroeconomic variables such as output and employment. The gap in this study is that it is not related to Nigeria, and it did not consider the relationship between government expenditure and the level of employment in Nigeria.

Dayıoğlu and Aydın (2020) examined the relations between economic growth, unemployment, inflation and current account balance using data from 2000Q1 − 2020Q4 in Turkey and observed that there is an inverse relationship between growth and unemployment, especially during crisis periods. Iloabuchi (2019) examined the impact of unemployment on the economic growth in Nigeria using data from 1999 to 2017 using Granger Causality test. The study observed a unidirectional relationship between uneployment and economic growth in Nigeria. The study recommended provision of development drives in other economic sector and that this is capable of attracting employment in the economy in general. Osigwe and Ahamba (2016) analysed the relationship between macroeconomic conditions and unemployment in Nigeria. They considered such variables such as Inflation Rate, Real Gross Domestic Product, Money Supply, Exchange Rate, Lending Rate, Government Expenditure, and Openness of the economy. They observed a positive relationship between government expenditure, gross domestic products, exchange rate and unemployment rate covering period (1981 and 2015). Bhattarai (2016) examined the relationship between inflation and unemployment in 35OECD countries using a panel VAR model to analyse the quarterly data used from 1990:1 to 2014:4. He submitted that the Phillip's curve is still significant in 28 out 35 OECD countries and the coefficients of Okun curve for growth on unemployment were significant only in 13 of these countries. He concluded that as the natural rate of unemployment results from the balance between job creation and destruction processes, reductions in unemployment rates require complementing macro stimulations by microeconomic structural and institutional reforms.

Studies from Al Amarat (2016) discussed on the significant relationship of foreign direct investments towards unemployment rate in Jordan. Besides, factors that leading foreign direct investments to be constrained have been studied in his research as well. Based on his findings, low levels of foreign direct investments may affect the legislation which encourages foreign investments in Jordan. Through the results, he suggested government to allocate more resources on the department of services and infrastructure so that they can create more informative investment opportunities to the Jordanian. Despite of the great increment on investment and growth rates, employment rate in Jordan does not seem to have much effect.

This study seeks to fill gaps observed in the various studies reviewed. One of these gaps include non-inclusion of a very important macroeconomic variables affecting unemployment which is government expenditure. This study included this variable. Studies such as the ones by Sadiku, Ibraimi & Sadiku (2015) and Onwanchukwu (2015) among others ended their scopes in early 2010, whereas, this study terminated at 2019. This study also introduced a unique Auto regressive distributed lag method which is capable of evaluating series with various degrees of co-integration.

3. Methodology

3.1 Theoretical framework and model specification

This study focuses on the impact of selected macroeconomic variables namely Government Expenditure, Exchange Rate, Real Gross Domestic Product and Inflation Rate on the level of unemployment in Nigeria. The study tests Okun's law in the Nigerian context considering the effect of growth in output (using Government Expenditure and the Real Gross Domestic Product as proxy) as well as other macroeconomic variables. Related works to this study were those carried out by Osigwe and Ahambab (2016) as well as Cascio, 2001; Bankole and Fatai, 2013 among others.

However, this study extended the research scope and adopted several diagnostic tests of model adequacy with a view to checking the goodness of fit of the model and measures the error process of the selected determinants of unemployment in Nigeria.
The framework adopted in this work provides an extension of the Okun's Law and Phillip's curve. The Okun's Law framework $UE_t - UE_{t-1} = -\beta(g_{yt} - \bar{g}_{y(t-1)})$ (1)

Whereas UE_t represents the rate of unemployment in year t, UE_{t-1} represents the rate of unemployment in year $t-1$, And g_{yt} represents growth rate of output from year $t-1$ to year t, Phillip's Curve Framework w = g(u); (2) PC = wg(u) (3)

3.2 Model specification

The study adapted the model used by Osigwe and Ahamba (2016) in which they considered such variables such as Inflation Rate, Real Gross Domestic Product, Money Supply, exchange Rate, Lending Rate, Government Expenditure, Openness of the economy. The model so formed was, UE = f(UEt-1, INF, RGDP, M2, EXR, LR, GEX, OPEN). (4)
This study shall however utilise the variables, namely, Inflation rate, Exchange rate, Government Expenditure, Real Gross Domestic Products. The reasons for the choice of these variables are their sensitivity to economic growth and due to their depth in economic literature especially the Okun's Law and Phillip's Curve.

The model is specified as: $UE_t = f(GE_t, INFR_t, RGDP_t, EXR_t)$ …. (5)
Where,
UE = unemployment rate, INFLR =Inflation Rate, RGDP = Real Gross Domestic Product,
GE = Government Expenditure, EXR= Exchange Rate,
Expressing equation (2) explicitly, we have $UE_t = f(GE_t, INFR_t, RGDP_t, EXR_t)$ (6)
In equation form: $UE_t = \alpha + \emptyset lnGE_t + \gamma INFL_t + \mu lnRGDP_t + \pi EXR_t + U_t$ (7)
$\alpha < 0$, $\emptyset < 0$, $\gamma < 0$, $\mu < 0$, $\pi > 0$ α is a constant parameter Ut is the white noise error-term.
The following ARDL model will be estimated in order to test the co-integration relationship between the variables: inflation rate, exchange rate, government expenditure, real gross domestic product and unemployment rate

$$\Delta(UE)_t = \alpha_0 + \sum_{i=0}^{p} \phi_i \Delta \ln(GE)_{t-i} + \sum_{i=0}^{p} \gamma_i \Delta(INFLR)_{t-i} + \sum_{i=0}^{p} \mu_i \Delta \ln(RGDP)_{t-i} + \sum_{i=0}^{p} \varphi_i \Delta(EXR)_{t-i}$$
$$+ \delta_1 (UE)_{t-1} + \delta_2 \ln GE_{t-1} + \delta_3 (INFLR)_{t-1} + \delta_4 \ln(RGDP)_{t-1} + \delta_5 (EXR)_{t-1} + \vartheta ECM_{t-1} + \bigcup_t \quad --(8)$$

Where δi is the long run multipliers, α_0 is the intercept and $\cup_t$ are white noise errors. The first step in the ARDL bounds testing approach is to estimate equation (6) by Ordinary Least Squares (OLS) in order to test for the existence of a long run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables, that is: H_0: δ1= δ2= δ3= δ4 = δ5= 0 against the alternative H_1: $\delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq 0$

This study utilizes historical and quantitative data. It employs annual time series data spanning the period 1981 to 2019. Sources of the data include Central Bank of Nigeria Statistical Bulletins and National Bureau of Statistics Abstract. The study adopts the bounds testing co-integration procedure to estimate the long run and short run relationships and dynamic interaction among the variables of interest. Pesaran et. al (2001) proposed an Autoregressive Distributed Lag (ARDL) bounds testing approach to investigating the existence of co-integration relationship among variables. The study in a bid to solve the problem of spurious regression, it becomes important that the time series properties of the data used in the estimation of the model be ascertained. It becomes necessary to test for stationarity using Basic Unit Root Test.

4. Results and Discussion of Findings

4.1 Unit Root Test

This study conducted a test of order of integration for each variable using Augmented Dickey-Fuller (ADF). This becomes necessary as put by Granger and Newbold (1974), and Granger (1986) that if time series variables are non-stationary, all findings with these time series will be at variance with the conventional theory of regression with stationary series. That is, coefficients of regression derived from such non-stationary variables will be spurious and deceptive. The results of the unit root test are presented below.

Table 1: Unit Root Test (Group)

UNIT ROOT TEST RESULTS TABLE (ADF)						
Null Hypothesis: the variable has a unit root						
	At Level					
		UE	LNRGDP	LNGE	INFR	EXCH
With Constant	t-Statistic	1.1288	-0.4275	-4.9201	-3.0774	0.7533
	Prob.	0.9971	0.8939	0.0003	0.0369	0.9917
		n0	n0	***	**	n0
	At First Difference					
		d(UE)	d(LNRGDP)	d(LNGE)	d(INFR)	d(EXCH)
With Constant	t-Statistic	-5.572	-3.2714	-1.2321	-3.021	-7.8047
	Prob.	0	0.0236	0.649	0.0439	0
		***	**	n0	**	***

Source: Author Regression Output. (Unit Root all test)

From Table 4.1, Time series of Unemployment Rate, Real Gross Domestic Product and Exchange Rate are stationary at first difference as can be seen in their probabilities, indicating that the variables are integrated of order one i.e. I (I). However, Inflation Rate and Government expenditure are stationary at level as evidenced in column 1 and conclude that the variables are integrated at level i.e. I (0). The Unit test show that there is a mixture of I(I) and I(0) of the accompanying regressors, hence the Auto Regressive Distributive Lag (ARDL) testing could be proceeded.

4.2 Lag Length Criteria

The test results of the different lag selection methods are reported in the table 4.2. After meticulous examination of the different lag lengths by estimating the VAR at each lag length and diagnosing the whiteness of resulting residuals, two lag length, as recommended by sequential modified LR test statistic, was chosen.

Table 2: Lag Order Selection Criteria

Lag Order Selection Criteria
Included observations: 34

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-440.1448	NA	162054.7	26.18499	26.40945	26.26154
1	-271.6323	277.5500	35.60051	17.74308	19.08987*	18.20237
2	-236.3794	47.69515*	21.56614*	17.13996*	19.60908	17.98200*

* indicates lag order selected by the criterion
Source: Author Regression Output.

4.3 Bounds Test for Co-Integration

The next step after determining the order of integration of the variable was to apply a bound F-test in order to establish a long-run relationship among the variables. The results of the bounds test for co-integration alongside with critical values are reported in Table 4.3 below. The Computed F-Statistic from bound test is 4.861937. This value exceeds the lower and upper bounds critical value of 2.86 and 4.01 at the 5% significance level respectively. This implies that the alternate hypothesis of the existence of a unique co-integration (long run) relationship between unemployment and government expenditure, inflation, exchange rate and Real GDP. This means that the null hypothesis of no co-integration is rejected.

Table 3: ARDL Bound Test for Co-integration Analysis

Test statistic	**Computed F-statistic**	**lag**	**Significance level**	**Bound Critical values**	
				Lower Bounds I(0)	Upper Bounds I(1)
				2.45 2.86 3.25	3.52 4.01 4.49

Source: Author Regression Output.

In as much as the Unit root test shows that the variables are stationary at first order difference 1(1) as well as at level 1(0), we therefore test for co-integration among these variables by employing the Engle and Granger two steps method. The ECM shall enable the deviation of both short run and long run properties of the model which other estimation techniques lacked except lags are enforced into them. Iganiga and Unemhihn

(2011) declared that co-integration established by the stationarity of the residual that is generated from running a statistic regression at level of the regressors (independent variables) on the regressed (dependent variables). There arose the need to subject the residuals generated from their long run statistic regression to Augmented Dickey-Fuller test to see if they are stationary.

4.4 Long Run Statistic Regression of Unemployment

The results of the estimated long run coefficients using the ARDL approach is presented in the table 4.5 below

Table 4: Long Run Statistics

Variables	Coefficient	Std error	T- statistics	Pro-value
C	-77.60884	32.18974	-2.410980	0.0225
UE(-1)	0.235473	0.170804	1.378611	0.1786
EXR	0.079884	0.015740	5.075081	0.0000
INFLR	-0.013862	0.021678	-0.639431	0.5276
LNGE	-2.276716	0.686239	-3.317672	0.0025
LNRGDP	9.154912	3.590221	2.549958	0.0163

Source: Authors Regression output.

From table 4 above, it could be observed that the government expenditure, Inflation rate and exchange rate met their expected sign while Real Gross Domestic Product is not consistent with the theoretical expectation. Government Expenditure (LNGE) has an inverse and significant impact on the Unemployment rate in the country. One percent increase in Government Expenditure will lead to 2.227 percent decrease in unemployment rate. This simply connote that every part of Real Gross Domestic income spent as Expenditure into the country has the impetus of reducing unemployment rate in the country. This result is also consistent with the apriori expectation and contradicts the result obtained by Osigwe and Ahamba (2016).

Inflation rate reveals a negative relationship with unemployment rate. This is consistent with apriori expectations and agrees with literature as depicted by the Philips' curve (Dogan, 2012). The coefficient for inflation rate is -0.013862, meaning that a one percent increase in inflation rate will surely reduce unemployment rate by 1.3%. The coefficient is however not significant, this explains clearly the reason that had made the country to have the presence of high inflation and also high unemployment rate, because the variable is not really significant in its drive at reducing unemployment rate. Exchange rate reveals a positive relationship with unemployment rate. A one percent increase in exchange rate of major foreign currency will surely increase unemployment rate by 7.9%. The variable is also significant at 5% level. This result agrees with Osigwe and Ahamba (2016). The Real Gross Domestic Product has a direct and significant relationship with unemployment. Specifically, a one percent increase in RGDP will lead to a 9.154 increase in unemployment in Nigeria.

4.5 Short Run Parsimonious Estimation.

Given the fact that the variables of the model are co-integrated, the next step is the estimation of the short-run dynamics in order to capture the speed of adjustment to equilibrium in the case of any shock to any of the independent variables. Based on the

general to the specific framework, an over parameterized error correction model of unemployment equation was estimated. As such the parsimonious equations where obtained. The result obtained from the parsimonious estimation of the equations is present as follows.

Table 5: Error Correction Estimate for Selected ARDL Model

VARIABLE	COEFFICIENT	STD. ERROR	T-STATISTIC	PROB.
D(INFLR)	0.004233	0.027071	0.156367	0.8771
D(LNGE)	-4.985791	1.875637	-2.658185	0.0138
D(EXR)	0.070838	0.020153	3.515061	0.0018
ECM01(-1)	-0.856569	0.205248	-4.173337	0.0003

Source: Author Regression Output.

The empirical evidence from table 4.6 reveals that Government Expenditure D(LNGE) has indirect and significant impact on unemployment rate in Nigeria. The variable is significant at 5% level of significance. This result is consistent with the apriori expectation. This finding is consistent with the long run result earlier reported. It depicts that a mere 0.01 percent increase in Government expenditure will reduce unemployment rate in the country by 4.9%. The part of government revenue expended on the country surely creates one form of employment or the other.

The results also reveal that just as the long run relationship, in the short run, a positive and significant relationship exists between exchange rate and unemployment rate in the country. This result agrees with Osigwe and Ahamba (2016). In the short run, a 1% increase in the exchange rate in Nigeria will increase unemployment rate by 7.1%. This is rather true, in the very sense that a persistent increase in the rate of change of these currencies that such a country as Nigeria depend upon will surely make imported raw materials expensive even for finished products in the case of retailers and wholesalers very expensive and will soon throw many out of business. For inflation rate, the result agrees with apriori as it depicts a negative relationship with unemployment rate. It agrees with the result of Dogan (2010). It reveals that a 1% increase in the rate of inflation will reduce unemployment rate by 0.4%. This result in itself tends to an insignificant level, as confirmed by the result. The result of the parsimonious model shows that the two-year period lag of the value of inflation rate is negatively related to the contemporaneous rate of unemployment. The coefficient of INFLR (-2) is -0.016873indicatingthat 1 percent point increase in this variable leads to 1.6percent increase in the current rate of unemployment. It is also clear that the three-year period lag also results in a significant coefficient. This indicates that it is the persistence of the inflation rate that yields the purported reduction in the rate of unemployment.

The empirical results indicate a positive relationship between the Real GDP and the level of unemployment. This does not agree with apriori. Specifically, a 0.01% increase in RGDP at the generates about 9.34% increase in unemployment. This result is insignificant at this level. However, at the second lag of the series, it reveals the expected apriori sign also reveals significant result. This result lends credence to the empirical findings of Dogan (2012) but contradicts Zawojska (2010). The coefficient of the error correction term which measures the speed of adjustment of UE towards long-run

equilibrium is well-behaved as it is negatively signed and significant at 5% level. This implies that the rate at which variation of UE at time t, adjusts to the single long-run co-integrating relationship is different from zero. Specifically, the coefficient of the ECM revealed that the speed with which UE adjusts the regressors is about 85% in the short run.

4.6 Stability Test

Stability test is performed using Cumulative Sum (CUSUM) and Cumulative Sum of Square (CUSUM Q) of residual of the ARDL model as shown in figure 1 and 2. As shown in figures 1 and 2, both plots lies within the critical boundaries, this implies that the long run coefficients of the unemployment function is stable.

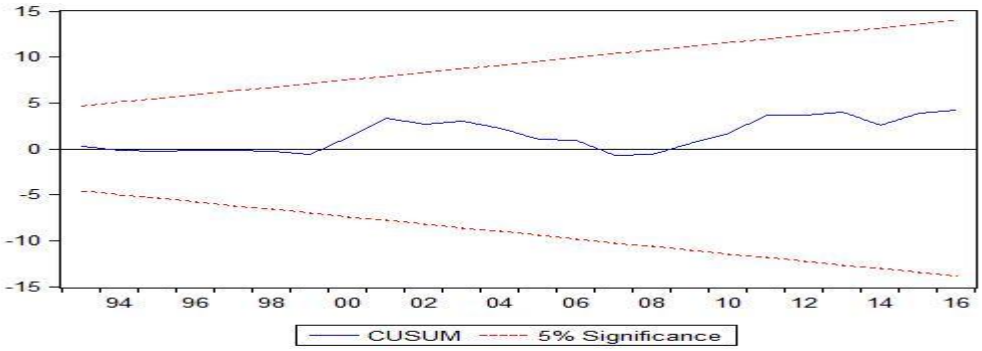

Fig. 1: Plot of Cumulative Sum of Recursive Residual

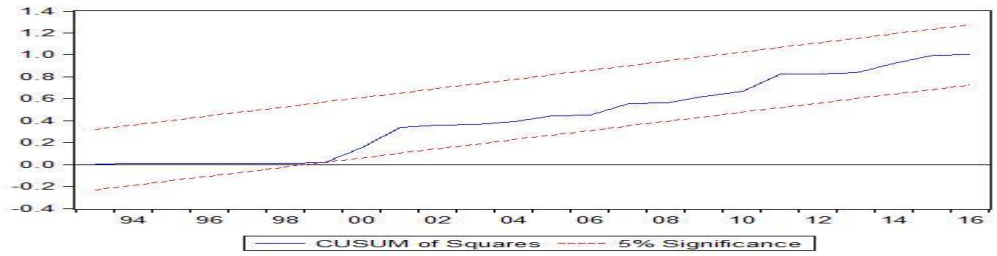

Fig.2: Plot of Cumulative Sum of Square of Recursive Residual Results

5. Conclusion and Policy Recommendations

The findings from this study show that government expenditure is very effective in the reduction of unemployment rate, where as it takes an average of 2 years for current real gross domestic product to effect a reduction in unemployment rate. It can also be concluded from the study that the unending increase in exchange rate in Nigeria is a catalyst that has led to increase in unemployment rate

Based on the results, the study made recommendations, Firstly, Government expenditure should be increased sufficiently to effect substantial reduction in unemployment rate. This is due to the indirect relationship observed in the results of the study. Secondly, Exchange rate should be reduced in order to stimulate reduction in unemployment rate in Nigeria, especially as the result showed a direct relationship between exchange rate and unemployment rate, Thirdly Inflation rate should be kept at tolerable level (single digit) to stimulate increase in unemployment rate and hence a reduction in unemployment rate.

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ACCESS TO CREDIT AND ECONOMIC PERFORMANCE OF SUB-SAHARAN AFRICAN COUNTRIES

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Abstract

Some researchers have suggested that access to finance can increase productive activities, raise income levels and generally improve the standard of living of the people especially the economically active poor and low-income earners in the society. This study attempts to empirically ascertain this relationship as it relates to sub-Saharan Africa using panel data collected from thirty countries over the period 1997 to 2019. The study began with checking the stability conditions of the variables in the model through panel unit roots tests so that data estimation would produce reliable results. The results of the tests confirm that all the variables are stationary at the order I(1). The outcomes of panel co-integration tests suggest the existence of long-run relationships among the series. Using the Granger causality test and the Fixed and Random effects regression techniques, the results indicated a bi-directional causal and positive and significant relationship between access to credit and economic growth in sub-Saharan Africa. The study recommends that sub-Saharan African countries should formulate and implement appropriate policies that will increase the level of development of the financial sector and create the enabling environment for the establishment of more financial institutions and bank branches, in addition to implementing agricultural credit guarantee and rural banking schemes aimed at attracting more credits to the agricultural sector and generally bringing financial services closer to the people.

Keywords: Access to credit, Economic growth, Finance, Panel data analysis, Sub-Saharan Africa

JEL Classification: C33, G21, G32, O11, O16, O55

1. Introduction

How to move the large number of Africans living in poverty to good and abundant life has been the major focus of development economists for decades. In terms of economic development, Africa, and in particular, sub-Saharan Africa lags behind other regions of the world. For instance, while there was a reduction in the rate of poverty in other regions of the world such as East Asia and the Pacific, and South Asia between 1990 and 2015, the number of individuals living in extreme poverty increased from close to 278 million in 1990 to 413 million in 2015 in sub-Saharan Africa. The World Bank reports that 27 out of the 28 poorest countries in the world are located in sub-Saharan Africa, with all having poverty rates above 30 percent (World Bank, 2018). Poverty arises from a vicious cycle of low income, low savings, low consumption capacity, low

investment and production, and low employment opportunities and has become endemic in most parts of sub-Saharan Africa. Englama and Bamidele (1997) see poverty as a condition where a person is unable to meet his/her basic needs of food, shelter, and clothing, lacks a job, basic skills, life-enhancing properties, and self-esteem, in addition to having limited access to economic and social infrastructure such as stable electricity, pipe-borne water, good road network, and affordable health and educational facilities.

Sub-Saharan Africa has recorded some economic growth pattern over the past few decades but the growth seem to have benefited only the minority elites in the society as poverty and income inequality has been on the increase (Tita & Aziakpono, 2017). Despite the strong growth in some of the economies, the region still lags behind other regions of the world in terms of the development of the financial sector. The only exceptions are Mauritius and South Africa (IMF, 2007; World Bank, 2019). As a result, in terms of access to finance for households and enterprises, sub-Saharan Africa remains the lowest compared to the rest of the world. The provision of credit to economically active individuals and small scale enterprises in the sub-region is seen as one of the major issues to be addressed if the rate of extreme poverty in the region and the developing world, in general, is to be substantially reduced (Mlachila, Montfort/European Investment Bank (EIB), Luxembourg, 2013). The subject of access to finance has posed a serious concern to central bankers, development bodies, and policymakers all over Africa and the less developed world in general (Aterido, Beck & Iacovone, 2016). According to the International Finance Corporation (IFC), not more than a quarter of adults in sub-Saharan Africa have access to financial services which includes avenues to save money and access to credit. As a result of the lack of access to these services, a majority of individuals in the sub-region are unable to make productive investments in their households and businesses (IFC, 2013). The major factors responsible for the limited access to credit include long-distance to financial institutions, cumbersome and rigid lending procedures, high-interest rates, lack of acceptable collateral securities, the unattractiveness of small farmers and enterprises to orthodox financial institutions, and the cost of delivering small loans to sparsely located borrowers.

The role of finance in propelling economic growth has long been established in the economics literature. The early works of Schumpeter (1934), Patrick (1966), Mckinnon (1973), Shaw (1973), King and Levine (1993), Beck, Levine and Loayza (2000), Khan and Senhadji (2003), Beck, Demirguc-Kunt and Levine (2004), and Sanusi and Salleh (2007) have established the positive link between access to finance and economic growth. Similarly, more recent works and studies by Ehigiamusoe (2008), Sanusi (2012), Todaro and Smith (2011), and Alrabadi and Kharabsheh (2016), amongst others confirm this view (Ogbebor, 2014). Nevertheless, a few dissenting voices on the popularly acclaimed positive relationship between finance and economic growth exist (An, Zou, & Kargbo, 2020; Demetriades & James, 2011).

It seems obvious therefore that access to credit is an important means to pursue growth opportunities, hence addressing the issues of access to finance must be a prime part of the development agenda of sub-Saharan Africa (International Finance Corporation, 2011). In particular, enabling access to finance for micro, small, and medium enterprises (MSMEs) and the agricultural sector is necessary to boost growth in Africa. MSMEs contribute over 80 percent of production output and employment opportunities in most African countries. They are widely believed to drive economic growth, job creation, and

innovation, and progress in the agricultural sector (Bikpo, 2014; Ncanywa & Mabusela, 2019).

Table 1 and Figure 1 give an insight into the state of access to credit (measured by the ratio of domestic credit to the private sector to GDP) in sub-Saharan Africa compared to other regions, some advanced countries, and the world. The rate of access to credit is only comparable to the Arab World and South Asia but since 2015, the rate of access to credit in the Arab world and South Asia has overtaken that of sub-Saharan Africa. The rate of access to credit in sub-Saharan Africa is very low compared with the European Union, North America, United Kingdom, United States, and the World average. In 2019, while access to credit in sub-Saharan Africa was a mere 42.07 percent, the rate was 47.30 percent in South Asia, 85.79 percent in the European Union, 190.75 percent in North America and the United States, 133.60 percent in the United Kingdom, and an average of 132.02 percent in the World. In some sub-Saharan African countries like the Democratic Republic of Congo and the Gambia, access to credit was as low as 6.17 percent and 7.24 percent in 2019. The only exceptions in sub-Saharan Africa however are Mauritius and South Africa which have achieved substantial development of their financial sectors. The rate of access to credit in the two countries in 2019 was 80.23 and 139.29 percent respectively.

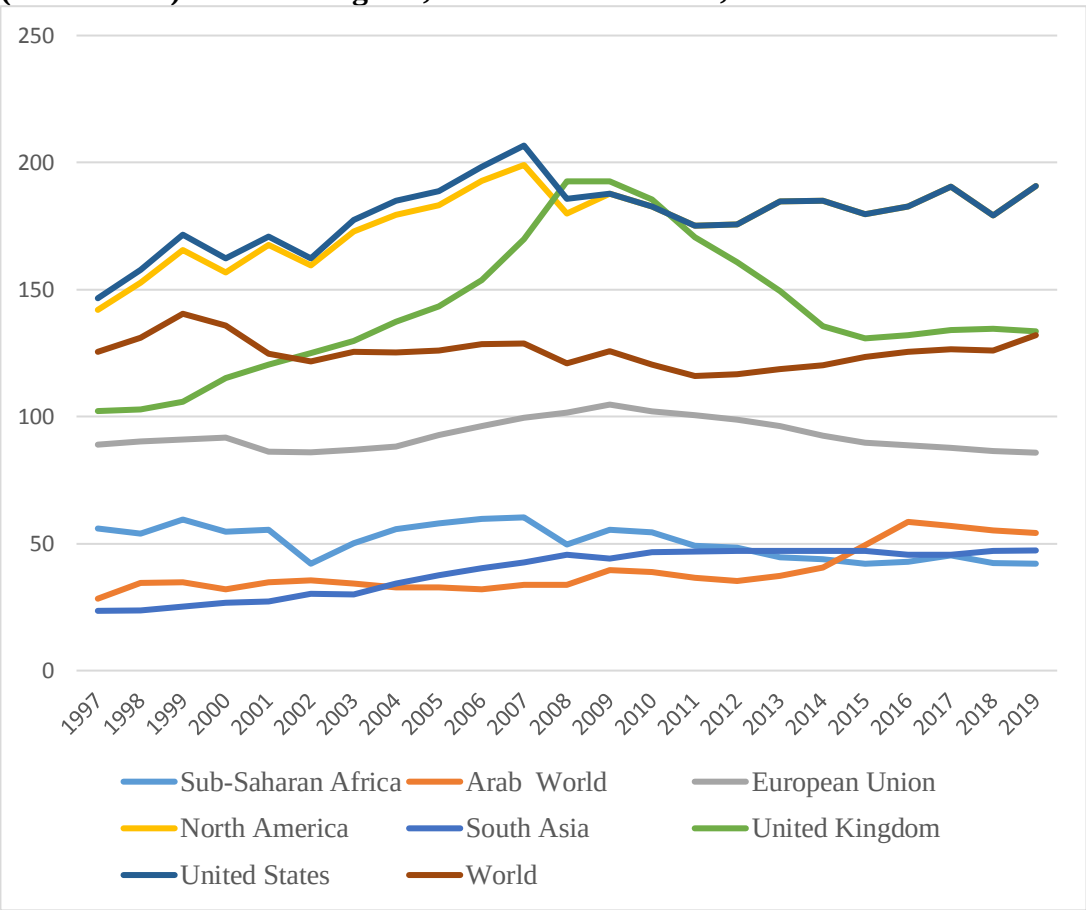
Table 1: Ratio of Domestic Credit to the Private Sector to GDP (DCPS/GDP) for some Regions, Advanced Countries, and the World

Year	Sub-Saharan Africa	Arab World	European Union	North America	South Asia	United Kingdom	United States	World
1997	55.96	28.31	89.01	141.99	23.52	102.17	146.57	125.41
1998	53.87	34.57	90.11	152.74	23.72	102.74	157.80	131.00
1999	59.48	34.72	90.91	165.45	25.16	105.80	171.62	140.47
2000	54.62	32.02	91.72	156.63	26.72	115.24	162.29	135.94
2001	55.34	34.77	86.08	167.65	27.19	120.49	170.85	124.62
2002	42.07	35.56	85.83	159.44	30.17	124.95	162.29	121.70
2003	50.04	34.19	86.89	172.76	30.03	129.73	177.37	125.49
2004	55.77	32.82	88.17	179.52	34.22	137.39	184.85	125.30
2005	58.00	32.65	92.69	183.18	37.48	143.37	188.67	125.99
2006	59.72	31.93	96.37	192.75	40.41	153.79	198.29	128.55
2007	60.32	33.78	99.62	199.04	42.54	169.79	206.67	128.79
2008	49.67	33.71	101.64	179.99	45.52	192.59	185.84	120.93
2009	55.43	39.50	104.72	187.85	44.10	192.59	187.82	125.66
2010	54.48	38.79	102.12	182.61	46.54	185.35	182.61	120.54
2011	49.17	36.41	100.49	175.11	46.84	170.65	175.11	115.98
2012	48.28	35.20	98.83	175.67	47.05	160.88	175.67	116.70
2013	44.60	37.28	96.17	184.66	47.19	149.48	184.66	118.73
2014	43.81	40.68	92.40	184.89	47.06	135.55	184.89	120.26
2015	42.06	49.48	89.73	179.72	47.07	130.83	179.72	123.54
2016	42.76	58.54	88.81	182.60	45.52	132.09	182.60	125.59
2017	45.39	56.83	87.66	190.47	45.70	133.96	190.47	126.52
2018	42.45	55.12*	86.38	179.24	47.06	134.47	179.24	125.98
2019	42.07	54.27*	85.79	190.75	47.30	133.60	190.75	132.02

Source: World Development Indicators, 2021

* Estimates based on trend

Figure 1: Plot of Ratio of Domestic Credit to the Private Sector to GDP (DCPS/GDP) for some Regions, Advanced Countries, and the World.



Source: World Development Indicators, 2021

Therefore, given the fact that sub-Saharan Africa lag behind other regions of the world (World Bank, 2019), and the need to ensure long-run economic growth reforms and development of the financial sector, particularly the access to credits by individuals, farmers, and enterprises, the objective of this paper is to examine the relationship between access to credit and economic growth in the sub-region. This is more so as there is a lack of consensus as to the relationship and direction of causality between finance and economic growth in the literature. In this study, the phrases, access to credit and access to finance are used interchangeably to mean the ability of individuals and enterprises to get credits or funds to meet their individual, household needs, and/or the needs of their businesses. The remaining part of the paper is divided into the following sections: Section 2 discusses some relevant empirical works, Section 3 contains the methodology of the study, and Section 4 deals with the results and discussion of findings, while Section 5 provides the conclusion and policy recommendations.

2. Literature Review

In this section, some empirical studies relating to the access to credit and economic growth nexus are presented. Ncanywa and Mabusela (2019) investigated the influence of financial development in five sub-Saharan African countries of Botswana, Ghana, Kenya, Nigeria, and South Africa during the period 1980 to 2014. The study adopted the panel data analysis methodology and the Auto Regressive Distributed Lag (ARDL) regression estimation tool. The regression results indicated that bank credit to the private

sector has a long-run positive influence on economic growth in the countries studied. The study recommended that concerted efforts must be put in place to ensure an effective and developed financial system in sub-Saharan Africa and all countries of the world, in general.

Bandura and Dzingirai (2019) examined the relationship between financial development and economic growth with regard to the quality of institutions in 27 sub-Saharan African countries. They used a five-year averaged dataset covering the period 1982-2016. The model adopted for the study was the general linear model following the works by Law (2018) and Brambor, et al (2006) while data estimation was done with the System GMM estimation method. The findings of the study indicated the existence of a U-shaped positive relationship between financial development and economic growth in the region. The study further found that the link between financial development and growth is significant and positive when well-developed institutions are in place, portraying a complementary association between institutions and financial development on economic growth.

Inoue and Hamori (2016) studied the effects of access to finance on economic growth in sub-Saharan Africa by estimating panel data for the period 2004 to 2012 from 37 countries in sub-Saharan Africa. The results of the study indicate that access to finance has a significant and robust impact on economic growth in the region. The authors recommended that sub-Saharan African countries should support their financial institutions in order to increase the flow of financial services to economic agents in their various countries.

Biscaye, Clark, Harris, Anderson, and Gugerty (2015) reviewed the impact of access to financial services on outcomes such as production, income and wealth, consumption and food security, and the ability to cope with shock by small farmers and rural individuals and their households in sub-Saharan Africa. The study used four major types of financial services namely credit, savings, insurance, and mobile money and digital products. The authors identified and reviewed the findings of 424 research works on the four thematic areas in sub-Saharan Africa. They coded the 424 results for methodology, type of financial product, and type of impacts reported. The results of the study indicated mixed results. In terms of credit products, the study found that in most of the 19 studies reviewed, there was evidence of positive impact on at least one of the study outcomes but three outcomes found no significant impact. Nevertheless, a few of the studies found consistently significant and positive effects on all the outcomes measured in the study.

Ajakaiye and Tarp (2012) summarised three studies by Harris, Murinde, and Anderson, et al on the role of finance in the economic growth and development process of Africa. The authors analysed the existing literature on the subject to arrive at their findings. While Harris and Murinde opine that the financial sector in an economy could positively propel economic growth, Anderson, et al was skeptical about the positive link between finance and economic growth by bringing out the ambiguities in the consensus on the finance-growth nexus.

Some studies disagree with the widely held view in the literature that access to credit has a significant positive relationship with economic growth. One of such studies is by Demetriades and James (2011). The study analysed the link between finance and growth in 18 countries in sub-Saharan Africa using annual data covering the period 1975-2006. The findings of the study indicate that there is no link between bank credit and economic

growth and that banking system development in the countries flows from economic growth.

Similarly, An, Zou, and Kargbo (2020) examined the impact of the development of the financial sector on economic growth in sub-Saharan Africa. The study adopted the static and dynamic panel data model using annual data for the period 1985-2015 from 30 sub-Saharan African countries. One of the findings was that credit supply exerted a significant and negative impact on middle-income countries and in all the 30 countries in sub-Saharan Africa used in the study.

In summary, a review of some empirical literature reveals that while a majority of studies indicate positive causal relationships between access to credit and economic growth in sub-Saharan Africa, a few studies indicate the contrary. There is also no common ground on the direction of causality in the finance-growth relationship. While some authors find a bi-directional link between access to credit and economic growth, others indicate a unidirectional relationship while a few think that economic growth propels access to credit and not the other way round. Consequently, this paper will attempt to clarify the relationship between the variables especially as it relates to sub-Saharan Africa, and add to the existing literature on the subject.

3.0 Methodology

In this section, the model specification, methods of data analysis, and data used in the study are presented.

3.1 Model Specification

The model used in the study to examine the relationship between access to credit and economic performance of sub-Saharan Africa is hinged on the conventional neo-classical growth model first formulated by Robert Solow and Trevor Swan in 1956. The neo-classical production function shows how an economy can achieve growth using a combination of three main factors of capital, labour, and technology. The production function is specified as:

$$Y = AF (K, L)$$

Where Y is the dependent variable which is an economy's output represented by Gross Domestic Product per Capita (GDPPC) and which stands for economic growth/performance.

K denotes capital

L stands for labour and

A represents the level of technology

As a result of the relationship between technology and labour, the production function can be written as:

$$Y = F (K, AL)$$

Capital in the model is represented by the ratio of gross fixed capital formation to GDP (GFCF/GDP). Technology is proxied by the human capital development index (HCI) which is expected to improve the skills of labour for optimal performance in the workplace, while Labour is represented by the level of employment (EMP). The model is expanded to include the ratio of foreign direct investment to GDP (FDI/GDP) as one of the control variables. The FDI/GDP variable has been established in the economics literature as an important explanatory variable for economic growth, especially in

developing countries. Foreign direct investment has over the decades become a notable source of finance for sub-Saharan African countries where domestic capital is often inadequate to fund the level of investment required to ensure economic growth and development. Access to credit is represented by the ratio of domestic credit to the private sector to GDP (DCPS/GDP). The DCPS/GDP is a good measure of the claims of financial institutions and other lenders in influencing growth in the economy through the private sector (Honohan & Beck, 2007). As a result, the functional relationship specified for the model with access to credit represented by domestic credit to the private sector (DCPS/GDP) as the main explanatory variable is expressed as:

$$GDPPC = f(\frac{DCPS}{GDP}, \frac{FDI}{GDP}, HCI, EMP, \frac{GFCF}{GDP}) \quad (1)$$

The econometric form of model (1) takes a dynamic panel regression form which assumes cross-sectional heterogeneity (cross-section effect) and period heterogeneity (time effect), and the inclusion of a one-period lagged variable of the dependent variable as an explanatory variable. In specifying the panel regression model, cross-sections (sub-Saharan African countries) and year dummies (1997-2019) are included. This will ensure that biases due to heterogeneity in the data set are minimized. The variables are logged to smoothen the data and reduce the effects of outliers in the model. The dynamic panel multiple regression model with an error term (ε_t) is specified in econometric form as;

$$LGDPPC = \beta 0 + \beta 1L\left(\frac{DCPS}{GDP}\right)it + \beta 2L\left(\frac{FDI}{GDP}\right)it + \beta 3LHCIit + \beta 4LEMPit + \beta 5L\left(\frac{GFCF}{GDP}\right)it + \alpha i + \epsilon it \quad (2)$$

The βs are parameters, α_i is the unobserved country effect, ε_{it} denotes the disturbances; i and t denote cross-section and time indicators, respectively.

Where:

$GDPPC_t$	= current Gross Domestic Product Per Capita (representing economic performance)
$DCPS/GDP_t$	= current ratio of Domestic Credit to the Private Sector to GDP (representing access to credit)
FDI/GDP_t	= current ratio of Foreign Direct Investment to GDP
HCI_t	= current level of Human Capital Development Index (based on years of schooling and returns to education)
EMP_t	= current Employment level (measured as number of persons engaged in millions)
$GFCF/GDP_t$	= current ratio of Gross Fixed Capital Formation to GDP
α_i	= unobserved individual (country specific) effects and
ε_{it}	= error terms over the cross-section and time
i	= individual country
t	= time

3.2 Methods of Data Analysis

The method of data analysis adopted in the study is the panel data analysis method. This is because the panel data analysis method takes into consideration the cross-sectional

(countries) and times-series (years) features of the sample data. It allows the use of larger data which increases degrees of freedom in addition to ensuring more variability and less collinearity in the series leading to more efficient econometric estimates. The data being analysed are from 30 countries out of the 46 countries that make up sub-Saharan Africa. The countries often possess many differences that may be policy, institutional, or macroeconomic environments. Thus, any empirical analysis that does not take into cognizance these peculiar characteristics may produce biased results. In essence, the panel data analysis accommodates 'time as well as the heterogeneity' effects of the countries. The panel data analysis captures the aforementioned characteristics by including the individual country's specific effects which may be random or fixed.

The regression methods employed are the fixed and random-effects models. The Hausman test is used to select the best fit model between the fixed and random panel estimation techniques. To ensure that regression results are reliable, preliminary checks on the series are performed to ascertain the stationarity status and long-run co-integration of the series. For the stationarity check, a summary of the major panel unit root tests methods of Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), ADF Fisher Chi-Square and PP Fisher Chi-Square is applied while the Kao and Pedroni Residual co-integration tests are adopted to ensure the variables employed are co-integrated.

3.3 The Data

The data used in this study are annual data collected from 30 out of the 46 countries that make up sub-Saharan Africa. The sample size is limited to 30 countries because relevant data for the other countries are either unavailable or incomplete. The period covered is 1997 to 2019. The data is a combination of time series (years) and cross-sectional (countries) data, making it a panel data. The countries are Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Democratic Republic, Cote D'Ivoire, Gabon, Gambia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Sudan, Togo, Uganda, and Zimbabwe. The data on per capita gross domestic product (GDPPC), access to credit (DCPS/GDP), the ratio of foreign direct investment to GDP (FDI/GDP), and the ratio of gross fixed capital formation to GDP (GFCF/GDP) were obtained from the World Bank *World Development Indicators* database (2020) while the data on the human capital index (HCI) and the level of employment (EMP) are sourced from the Penn World Table Version 10.0 database (2021).

4. Results and Discussion of Findings

The descriptive statistics, panel unit root tests, panel co-integration tests, and model estimation results are presented in this section.

4.1 Descriptive Statistics

Table 2 presents the summary of descriptive statistics.

Table 2: Summary of descriptive statistics

Variable	Mean	Max.	Min.	Std. Dev.	Skew	Kurtosis	J-B	Obs.
GDPPC	1,661.42	11,208.34	102.59	2,186.03	2.21	7.37	1,112.15	690
DCPS/GDP	21.36	160.12	0.49	26.86	3.26	14.07	4,751.04	690
FDI/GDP	3.26	46.27	-11.62	4.94	3.96	26.15	17,218.34	690
HCI	1.76	2.93	1.05	0.43	0.59	2.57	46.27	690

EMP	7.56	73.02	0.25	9.73	3.42	17.69	7,557.35	690
GFCF/GDP	20.49	59.72	2.00	7.85	0.50	4.05	61.38	690

Source: Authors compilation from Eviews 9

A cursory look at the results shows that the mean value of per capita GDP (GDPPC) is US$1,661.42 indicating that on average, the income of residents per year in sub-Saharan Africa was US$1,661.42 for the period 1997 to 2019. This translates to an average per capita GDP of US$4.55 per day and it highlights the level of poverty in the sub-region when compared with annual per capita GDP figures for the same period of US$7,043.06 for East Asia and the Pacific, US$5,586.95 for the Arab World, US$35,194.33 for the European Union, US$11,433.79 for Central Europe and the Baltics, US$47,839.26 for the United States, US$47,561.55 for North America, and US$38,979.30 for the United Kingdom (WDI, 2020). The per capita GDP minimum and maximum values of US$102.59 and US$11,208.34 respectively as well as the standard deviation of 2,186 reveal the high dispersion in the per capita GDP figures in the sub-Saharan region. The skewness value of 2.21 shows that the distribution is skewed to the right. The kurtosis value of 7.37 which is greater than 3 indicates that the per capita GDP variable is peaked (i.e. leptokurtic) while the Jarque-Bera value of 1,112.15 with a probability value of less than 1 percent shows that the variable is not normally distributed for the sub-region.

The access to credit variable (measured as the ratio of domestic credit to the private sector to GDP) which is the main explanatory variable of interest has a mean of 21.36 percent indicating that on the average only 21 percent of the population of the sub-region have access to credit. This is poor when compared with developed countries of the world such as the United States, France, and the United Kingdom which post access to average credit rates of over 100 percent during the period. The average rate of access to credit in the world during the period under review is 125.46 percent (WDI, 2021). The standard deviation of 26.86 shows dispersion in DCPS/GDP figures in the region. The skewness value of 3.26 shows that the distribution is positive and skewed to the right. The kurtosis value of 14.07 is greater than 3 and it indicates that the DCPS/GDP variable is also peaked (i.e. leptokurtic) while the Jarque-Bera value of 4,751.04 with a probability value of less than 1 percent suggests that the DCPS/GDP series for the sub-region is not normally distributed.

The other variables follow a similar pattern. The J-B values for all the series are significant at the 1 percent level thereby rejecting the null hypothesis that the variables are normally distributed. The series are normalized after first differencing. This outcome clearly shows that the use of panel data analysis procedure for the estimation of the relationships in this study is appropriate considering the heterogeneity in all the data series.

4.2 Granger Causality Test

The Granger causality test is conducted to understand the direction of causality between access to credit (DCPS/GDP) and economic growth (GDPPC). The results as in Table 3 suggest a bidirectional relationship between access to credit and economic growth. That is, access to credit granger causes economic growth while economic growth also granger causes access to credit. The explanation is that greater access to finance in an economy positively propels economic growth while an economy experiencing inclusive growth

would often initiate and implement policies that would increase the rate of financial development which will increase access to credit in the economy.

Table 3: Pairwise Granger Causality Tests

Pairwise Granger Causality Tests
Sample: 1997-2019
Lags: 2

Null Hypothesis:	Obs.	F-Statistic	Prob.
DCPS/GDP does not Granger Cause GDPPC	600	15.7465	0.0000
GDPPC does not Granger Cause DCPS/GDP	600	379.163	0.0000

Source: Authors compilation from Eviews 9

4.3 Panel Stationarity Test

In this section, the state of stationarity of all the series is scrutinized so that the regression exercise does not throw up spurious and unreliable outcomes. To implement this, the most widely used panel unit root test methods of Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), ADF Fisher Chi-Square, and PP Fisher Chi-Square are applied. Table 4 contains a summary of the unit roots tests.

Table 4: Summary of panel unit root tests

Variable	LLC Test/ (Probability)	IPS Test/ (Probability)	ADF Fisher/ (Probability)	PP Fisher/ (Probability)	Remark
GDPPC	-10.1848/ (0.0000)	-9.90238/ (0.0000)	213.819/ (0.0000)	453.135/ (0.0000)	Stationary I (1)
DCPS/GDP	-9.41828/ (0.0000)	-9.60325/ (0.0000)	206.679/ (0.0000)	437.910/ (0.0000)	Stationary I (1)
FDI/GDP	-9.84465/ (0.0000)	-14.9834/ (0.0000)	321.134/ (0.0000)	1531.03/ (0.0000)	Stationary I (1)
HCI	-3.58778/ (0.0002)	-1.82427/ (0.0341)	84.8661/ (0.0190)	96.6310/ (0.0019)	Stationary I (1)
EMP	-2.52971/ (0.0057)	-2.64134/ (0.0041)	99.6574/ (0.0010)	148.772/ (0.0000)	Stationary I (1)
GFCF/GDP	-14.4919/ (0.0000)	-13.2480/ (0.0000)	284.173/ (0.0000)	513.060/ (0.0000)	Stationary I(1)

Source: Authors compilation from Eviews 9

The results of the unit root tests reveal that all the variables had unit roots at levels but after first differencing, they became stationary.

4.4 Panel Co-integration Test

Since the variables became stationary after being subjected to first differencing, it becomes necessary to find out if the variables still have long-run relationships. To do this, panel co-integrations tests are carried out using the Kao residual co-integration test and the Pedroni co-integration test.

In Table 5, the result of the Kao residual co-integration test is presented. The outcome reveals the existence of a long-run co-integrating relationship among the series. The t-statistic of -23.61172 and p-value of 0.0000 portray significance at the 1 percent level. Since the null hypothesis of the Kao model is no co-integration, the null hypothesis of no co-integration is rejected. Thus, it can be accepted that there are long-run relationships amongst the dependent and independent variables in the model.

Table 5: Kao Residual co-integration test
Sample: 1997-2019
Included observations: 690
Null Hypothesis: No co-integration

Series: DLGDPPC DLDCPS/GDP DLFDI/GDP DLHCI DLEMP DLGFCF/GDP		
	t-Statistic	Probability
ADF	-23.61172	0.0000
Residual variance	0.001000	
HAC variance	0.000838	

Source: Authors compilation from Eviews 9

The Pedroni co-integration test was conducted under two different test assumptions: the trend assumptions of no deterministic trend and no deterministic intercept and trend. There were no results for the third trend assumption of individual trend and individual intercept. The outcomes of the two tests as reported in Table 6 reveal that 16 out of the 19 outcomes indicate the absence of co-integration while 3 outcomes suggest the presence of co-integration among the variables.

Table 6: Pedroni Co-integration Tests

Sample: 1997-2019
Included observations: 690
Null Hypothesis: No co-integration

Outcome	No Deterministic Trend	No Deterministic Intercept or Trend
Panel v-Statistic	-7.245287 (1.0000)	-5.704933 (1.0000)
Panel v-Statistic (Weighted)	-7.245287 (1.0000)	-5.704933 (1.0000)
Panel rho-Statistic	8.365290 (1.0000)	7.466048 (1.0000)
Panel rho-Statistic (Weighted)	8.365290 (1.0000)	7.466048 (1.0000)
Panel PP-Statistic	8.245397 (1.0000)	8.248844 (1.0000)
Panel PP-Statistic (Weighted)	7.483806 (1.0000)	8.248844 (1.0000)
Panel ADF-Statistic	N/A	-10.46687 (0.0000)*
Panel ADF-Statistic (Weighted)	N/A	-10.46687 (0.0000)*
Group rho-Statistic	11.30465 (1.0000)	10.90663 (1.0000)
Group PP-Statistic	10.55540 (1.0000)	12.27654 (1.0000)
Group ADF-Statistic	N/A	-11.83776 (0.0000)*

(* passes significance test by at least 1 percent)
Source: Authors compilation from Eviews 9

In summary, while the Kao co-integration test strongly indicates the presence of co-integration in the series even at the conservative 1 percent level of significance, only 3 out of the 19 outcomes of the Pedroni co-integration tests support the existence of co-integration. Based on the results, that is, with the Kao test and 3 of the outcomes of the Pedroni tests (a majority of the test results) indicating the presence of co-integration, it

is safer to conclude that there exists long-run co-integration among the series than to accept the null hypothesis of no co-integration.

4.5 Regression Analysis

4.5.1 Random Effects Model, and Hausman Test Estimation

The study utilises the panel data estimation method of fixed and random effects models to estimate the relationship between the series. The method assumes that the biases in the pooled data may arise from cross-sectional (countries) heterogeneity or time series (periodic) variations. The Hausman test is used to determine the best effects model to be used for the analysis. Table 7 contains a summary of the estimation results of the random-effects model and the Hausman test.

Table 7: The Estimation Results – Random Effects and Hausman Test

Random Effects Model	
Variable	**Coefficient (p-value)**
DLDCPS/GDP	0.156286 (0.0000)
DLFDI/GDP	-0.234360 (0.0000)
DLHCI	11.50595 (0.0002)
DLEMP	7.117629 (0.0000)
DLGFCF/GDP	-1.612263 (0.0000)
R-squared	0.919040
Adjusted R-squared	0.917507
F-statistic	599.3762
Prob(F-statistic)	0.00000
Durbin-Watson stat	2.145489
Hausman Test (p-value)	**0.0000000 (1.0000)**

Source: Authors compilation from Eviews 9

After conducting the fixed and random effects tests, the outcome of the Hausman test is reviewed to determine the most appropriate model. The null hypothesis of the Hausman test is that the random effect model is the most appropriate. The result of the Hausman test reveals that the Chi-square statistic of the equation is highly insignificant with a probability of 1.0000 hence we accept the null hypothesis that the random effect model is the best model to be employed for the analysis. Consequently, the results of the random-effects model are used for the analysis.

The values of the coefficient of determination (R-squared) and adjusted coefficient of determination (adjusted R-squared) of the random effects model are both approximately 0.91. This is good and indicates that 91 percent of the systematic variation in the dependent variable is explained by the independent variables taken together. The F-statistic of 599.37 and the corresponding p-value of 0.0000 show that a significant relationship exists between per capita GDP and all the explanatory variables combined. The Durbin-Watson (DW) statistic of 2.14 is also good and suggests the likelihood of the absence of autocorrelation in the model.

The individual effects of the explanatory variables on the dependent variable are assessed based on the coefficients and p-values of the variables. From the results, the access to credit variable is positive and significant at the conservative 1 percent level portraying a strong positive link between access to credit and economic growth in sub-Saharan Africa. Thus, a 100 percent increase in access to credit would lead to a rise in per capita GDP by

15 percent. This result is consistent with the position of some studies which found a positive relationship between access to credit and economic performance of sub-Saharan African countries (Inoue & Hamori, 2016; Ncanywa & Mabusela, 2019; Bandura & Dzingirai, 2019). While Ncanywa and Mabusela (2019) found that bank credit to the private sector has a long-run positive influence on economic growth in the five countries studied, the results of the study by Inoue and Hamori (2016) on 37 sub-Saharan African countries for the period 2004 to 2012 indicated that access to finance has a significant and robust impact on economic growth in the region.

The coefficient of the FDI/GDP control variable is negative and significant. While the negative result may not be common in the literature, it is not out of place as some studies have found a negative correlation between FDI inflows and economic growth in developing countries. A study of 44 developing countries by Herzer (2010), for instance, found that, on the average, FDI hurt economic growth in developing countries. The result may be due to the misapplication of FDI inflows and the inability of some developing countries to influence and/or utilize FDI inflows to build critical national infrastructure that would propel growth and the inability to expand their export base.

The coefficients of the human capital index (HCI) and employment (EMP) variables in the model have positive signs and are significant at the 1 and 5 percent level of significance respectively. The signs conform to a priori expectation indicating that increasing human capital development and employment levels fuels economic growth in the sub-region as expected. A 1 percent growth in the human capital index and employment levels would propel economic growth by 11 and 7 percent respectively. This portrays the importance of increasing human capital development and employment levels by policymakers/governments of sub-Saharan African countries. However, the GFCF/GDP variable is unexpectedly significant with a negative sign.

5. Conclusion and Policy Recommendations

The study analysed data covering the period 1997 to 2019 from 30 out of the 46 countries that make up sub-Saharan African using panel data analysis methodology. The other countries were excluded either due to the unavailability of relevant data or incomplete data. The purpose of the study is to determine the nature of the relationship between access to credit and economic growth in sub-Saharan Africa. Employing the Granger causality test and the Fixed and Random effects regression techniques, the results indicated a bi-directional causal and positive relationship between access to credit and economic growth in sub-Saharan Africa. The result aligns with most empirical studies whose outcomes suggest a significant and positive relationship between the variables. The other control variables used in the study except for the GFCF/GDP variable were significant and correctly signed in line with a priori expectations.

Based on the positive access to credit-growth relationship, the study recommends that sub-Saharan African countries should formulate and implement appropriate fiscal and macroeconomic policies that would increase the level of financial development in the sub-region in order to substantially improve the availability of financial services which includes the opportunity to get loans and advances to a majority of the populace. This should include the creation of an enabling environment that will encourage more investment in the financial sector such as the establishment of more branches of financial institutions in order to bring financial services closer to the people. Emphasis should be

placed on the availability of flexible and affordable financial services such as avenues for savings, loans, payment channels, and insurance.

To increase the flow of credit to farmers and other players in the agricultural sector, governments and central banks should put in place policies/programmes that guarantee credits that are granted by banks and other formal lenders to the agricultural sector which employs a large number of persons in sub-Sharan Africa. An example of the guarantee scheme is the Agricultural Credit Guarantee Scheme Fund (ACGSF) in Nigeria which guarantees to the tune of 75 percent credit facilities extended to farmers. The guarantee scheme encourages financial institutions to lend to the agricultural sector which they often perceive as a high-risk sector when it comes to lending. The rural banking scheme which makes it mandatory for financial institutions to locate a prescribed number of their branches in rural areas should also be implemented in all countries of the sub-region so as to bring banking services closer to the people.

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COMMODITY PRICE FLUCTUATION AND FISCAL MANAGEMENT IN SUB-SAHARAN AFRICA

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Abstract

As in any economy, fiscal policy in a resource-rich country should be consistent with achieving macroeconomic objectives such as macroeconomic stability and an efficient allocation of resources. Given its crucial role in injecting part of the resource rent into the economy, fiscal policy has become a key tool used for short-run fiscal management among commodity exporting countries in Africa. However, reliance on revenue from commodity exports renders fiscal management, budgetary planning and the efficient use of public resources difficult. This study investigates the linkages between commodity prices and fiscal operations among a sample of commodity exporters in sub-Saharan Africa (SSA). Using data for the periods 1992 to 2019 for nine resource-rich countries in the region, the panel cointegration and error correction methodology (PECM) is used to explain the relationships. In particular, the study employs the panel ECM technique to trace short term effects of commodity prices on fiscal management and the fully modified OLS (FMOLS) technique to determine the long run relationships. The study finds that the elasticity of the fiscal policy measures with respect to the output gap is significant and positive suggesting that fiscal policy is actually procyclical in among the countries in the sample. Moreover, it is found that fiscal policy has not performed well in delivering macroeconomic stabilization. The difficulty in applying fiscal stabilization measures is attributable to the unstable revenue inflow due to the highly volatile nature of commodity prices in the international market.

Keywords: Commodity prices, fiscal policy, fiscal procyclicality, SSA, Dynamic OLS
JEL Code: E32, E62, H62, Q41

1. Introduction

Countries that rely on primary resources for a substantial share of their revenue face certain unique fiscal challenges: the revenue stream is exhaustible, uncertain, volatile, and largely originates from abroad. These problems raise several challenges for fiscal policy and for economic stabilisation more generally. As Barnett and Ossowski (2002) and Asfaha (2007) noted, instability in fiscal revenue complicates macroeconomic management, budgetary planning, and the efficient use of public resources. Large

declines in revenues often cause sharp cuts in expenditure, which is disruptive and costly. Increases in revenues may lead to the temptation to raise spending to unsustainable levels, and to pay insufficient attention to the quality of projects. This has given rise to the challenge of procyclicality of fiscal policy in many of such countries. The difficulty of distinguishing temporary from permanent shocks further complicates fiscal management. Empirical evidence suggests that commodity prices may have no well-defined time-invariant averages and that shocks are persistent (see Cashin, Liang & McDermott, 1999). Large fluctuations in resource revenues may give rise to real exchange rate volatility and increases in these revenues may lead to "Dutch disease." There are also sometimes concerns that large revenue inflows may be misused or otherwise subject to poor governance.

Fiscal policymakers need to decide how expenditure can be planned and insulated from revenue shocks arising from the volatility and unpredictability of commodity prices. Decisions also need to be made on the extent to which resources should be saved for future generations. Many African countries have recently adopted medium term expenditure framework which should put fairly long-term revenue streams into consideration when pursuing current expenditure measures such as using an oil price benchmark in budgetary operations. However, the overt dependence on commodity export for budgetary measures leaves the countries open to short term fiscal applications that may not be consistent with the framework devised. Institutional factors that consistently deride resource-rich and primary commodity dependent countries could also play some role in this direction. It is against this background that a study as this is imperative.

This study therefore empirically examines the effect of commodity price fluctuation on fiscal management among in a group of resource-rich Sub-Saharan Africa economies and the extent to which such commodity price instability has affected the stabilization role of fiscal policy in these countries. Specifically, we investigate whether or not commodity price volatility has significant impact on the behavior of fiscal policy and whether fiscal policy actually responds counter-cyclically to the business cycle in the resource-rich countries.

2. Brief Review of Literature

Fiscal management involves the application of fiscal measures to enhance or sustain macroeconomic performance. Certain critical issues are to be taken into consideration when considering fiscal management, especially for a country like Nigeria (Obadan&Uga,1996). One of such issues concerns the macroeconomic environment in the country, including the institutional setting in which the government applies its macroeconomic policy. This environment must be well defined and clear enough to the policy authorities and the agencies through which government implements its policy. Moreover, policy formation needs to include a well-structured data base upon which policy should be based. The macroeconomic targets of the fiscal policy shouldalso be flexible in order to adapt to short-term changes on either the demand or the supply sides of the policy implementation.

The role of commodity price movements in fiscal management and overall output cycles has increased over the years. In particular, the prevalence of procyclical fiscal policies in resource-rich countries has been widely documented and studied (Barnett &Ossowski, 2002;Bjørnland&Thorsrud, 2019; Lopez-Martin, Leal& Fritscher, 2019). It is

demonstrated in these studies that procyclicality of fiscal policy is linked to weak expenditure controls that prevent governments from saving revenue windfalls in good times. Weak expenditure control is rooted in ineffective budget procedures and execution, agency problems involving pressures from players to dissipate all forms of windfalls, and common pool problems (Tornell & Lane, 1999, Adegboye, 2015). Lee and Sung (2007) empirically investigated the responsiveness of fiscal policy to business cycles using a comprehensive data set of both 22 OECD countries and 72 non-OECD countries and economic fluctuations in neighboring countries as an instrumental variable. They showed that the response of fiscal policy is more significantly counter-cyclical in OECD countries than in non-OECD countries.

It has long been believed that commodity price variability generates unfavourable outcomes for primary producing developing countries, but there is less agreement about which particular manifestations of commodity price movements matter to exporting countries.In this direction,Barnett and Ossowski (2002) observed that the volatility of commodity prices leads to corresponding volatility in the fiscal cash flow in the domestic sector, and attendant risks in fiscal policy making. In the same vein, Medina (2010) estimated the dynamic effects of commodity price shocks in a group of Latin American commodity-exporting countries using quarterly datasets. The results indicate that Latin American countries' fiscal positions are critically influenced by commodity prices, although institutional quality appears to mitigate such effects. This hypothesis has been recognized in other literature, where there seems to be agreement about the influence of fiscal institutions on fiscal performance (Calderón et al., 2017). At the country level, Obadan and Adegboye (2013) found that oil price fluctuations significantly hinder the efficiency of fiscal policy as a macroeconomic management tool in Nigeria.

In the line of the role of institutions, Calderón et al. (2017) found that improved institutional quality among resource rich economies in SSA has led to significant delinking of fiscal policy from resource prices.Similarly, Roch (2017) found s evidence by noting that only efficient fiscal helps economies to effectively manage fiscal policy in the face of commodity price instability. In the same vein, Koh (2016) found that oil funds were effective in reducing fiscal procyclicality in oil-producing countries with high institutional quality. Thus, these strands of research have shown that if strong institutions are available, the effects of commodity price fluctuations on fiscal management can be mitigated over time.

In direct contrast to the findings above, Bjørnland and Thorsrud (2019) showed the widespread consideration that fiscal rules have led to reduction in fiscal procyclicality in periods of commodity price fluctuations among resource-rich countries does not hold. By adopting an econometric procedure that controls for global activity shocks and time-varying changes in both fiscal policy and the volatility of shocks, the study proved that fiscal management in resource-rich country was still inefficient during commodity price changes even with fiscal rules in place. Country-specific results also appear to support the findings that institutionalized fiscal management procedures may not be congruent with more efficient fiscal policy for commodity exporting economies. For instance, Ackah et al (2020) demonstrated that oil production "has not done much to ensure fiscal discipline and reduce the budget deficit" in Ghana. This is because oil revenues have become a revenue-replacing mechanism in the fiscal space for the country. Thus, fiscal management can be influenced critically by commodity revenues, which are in turn,

influenced by commodity price movements. This is the aspect that this study seeks to emphasis based on a dynamic framework.

3. Model and Methodology

3.1 The model

A dynamic framework is devised for the relationships included in this study. Hence, the basic econometric specification used to examine the long-run relationship between commodity prices and fiscal management is a conventional multivariate panel cointegration model of the form:

$$fisp_{it} = \alpha_i + \delta compr_{it} + \beta ygap_{it} + \gamma Z_{it} + \mu_{it} \quad (1)$$

where $i = 1, 2, \ldots, N$ is the country index, $t = 1, 2, \ldots, T$ is the time index, and the α_i are country-specific fixed effects. Following previous studies, we use the ratio of fiscal deficit to GDP as the measure of fiscal policy stance in each country. Also, *compr* is the commodity price associated with each country based on its main commodity export, and *ygap*is the output growth gap, measured as an HP filter of output growth for each country. This is used since it has been noted that output growth and fiscal policy trend over time (Lee & Sung, 2007; Fatás, 2019). *Z* is a vector of other variables in the model including a measure of financial and institutional factors (*fdepth* and *inst*) respectively and a dummy variable that captures periods of extremely high commodity prices and it is indicated as 1 for periods.When prices exceed the 75th percentile of the distribution and 0 for periods with when oil prices were below or equal to the 75th percentile. *fdepth* is measured as the ratio of banking sector credit to GDP. The functional form of the model may be specified as:

$$fpol = f(cumpr, ygap, open, fdepth, inst, dummy) \quad (2)$$

The model indicates that commodity prices as well as other control variables tend to determine the behavior of fiscal policy in the countries. The model is therefore akin to the fiscal cyclicality models developed by Gavin and Perotti (1997) and Alesina and Tabellini (2005) which when developed into an econometric form easily shows a coefficient of procyclicality as below:

$$fpol_{it} = \alpha_i + \delta fpol_{it-1} + \phi ygap_{it} + \beta_1 compr_{it} + \beta_3 open_{it} + \beta_4 fdpth_{it} + \beta_5 inst_{it} + \beta_6 comdum_{it} + \mu_{it} \quad (3)$$

The fiscal policy cyclicality is captured by ϕ, the short-term response of fiscal policy to the output gap. A positive value implies that fiscal policy is symmetric; a cyclical boom is associated with an increase in the government spending meaning that the behaviour of fiscal policy is procyclical and that government actions are systematically destabilizing. On the other hand, a negative coefficient on *ygap*implies that on average, the government seeks to increase the counter-cyclical bend of fiscal policy through discretionary measures.

The second analysis involves estimating output stabilization equation where commodity prices exert extensive effects. The model intends to show how fiscal policy affects output gap in the countries. In its functional form, the model can be specified as:

$$ygap = (fisp, compr, lag\ compr, inst, fdepth, dummy) \quad (4)$$

where all the variables are as earlier defined. In its econometric form, the model is stated as:

$$ygap = \lambda_0 + \phi fisp_{it} + \varphi compr_{it} + \pi_1 compr_{it-1} + \pi_2 inst_{it} + \pi fdepth_{it} + \pi dummy + u_{it} \quad (5)$$

The institutional factors included in the model are the measure of corruption control in each country (*inst1*) and *resource rent (inst2)* present in each of the countries. The data for corruption control is reported by the World Bank *World Governance Indicator*. Resource rents are the difference between the value of resource production at world prices and total costs of production. It shows the relative efficiency at which the resource is extracted in each country. The main source of inefficiency of extraction is the level of corruption in the country as well as weak human institutions in the country. Hence the variable is expected to have a negative impact on either fiscal management or output in the countries. In both models, we control for commodity prices in order to identify the general and particular effects of their fluctuations on the fiscal policy and ability of fiscal policy to influence output volatility.

3.2 Estimation Method and Procedure

The choice of a panel cointegration estimator for the relationships above is initially based on the trend pattern that has been noted for commodity prices as well as government fiscal patterns over time (Adegboye, 2015). This implies that the time series properties of the variables in the panel need to be examined usingthe panel unit root and cointegration techniques. Moreover, as noted in Debrun and Kapoor (2010), the effectiveness of fiscal policy entails reverse causality from government spending to output, thus introducing a downward bias in least-squares dummy variable estimation of the coefficients. To deal with this problem, one has to employ an asymptotically efficient (cointegration) estimator. To address these problems, the panel error correction mechanism (PECM) is adopted in the study. This method of analysis provides a dynamic framework for the study and (provided the variables are all I[1]) ensures a stable estimation of the coefficients (Koh, 2016).To improve robustness, the fully modified OLS procedure is employed in estimating the long run coefficients in the model. Given that a cointegrated system is assumed in the study, the initial test of stationarity for the panel data is conducted based on the Levin, Lin & Chu (LLC), and Im, Pesaran& Shin (IPS), and ADF-Fisher techniques. The existence of long run relationship is tested using the Pedroni and Kao systems.

3.3 Data Issues

Data used in the study is annual time series data for a panel of commodity exporting countries in SSA. The countries used in the sample are Gabon, Angola, Cameroun, Congo D.R. Ghana, Kenya, Tanzania, Equatorial Guinea, Nigeria, Sudan, and Zambia. The data covered the period 1992 to 2019 for which reliable data was available for all the commodity prices. Data on country series was obtained from the World Bank *World Development Indicators*, and the *World Governance Indicators* dataset. Data on commodity prices was obtained from the UNCTAD database.

4. Empirical Analysis

4.1 Preliminary Analysis

The analyses of the estimated models as well as the preliminary tests of the data used in the model are presented in this section. We begin by examining the time series properties of the series in order to observe the initial patterns of relationship among them. In Table 1 below, we present the time series properties of monthly commodity price for the sample period. In the Table, average monthly prices for all commodities were positive at 94.2 dollars, however, we focus on the volatility of the prices by considering their standard deviations. The standard deviation for each of the price series is less than the respective means, although they are relatively high. This indicates that for the period commodity prices have fluctuated considerably but not too high. The only commodity that is different is that of fuel. The prices have experienced quite high volatilities, considering the very high standard deviation (which is quite higher than that of the mean). This suggests that oil prices have been the most volatile among commodity in recent periods in the world market.

Table 1: Time series properties of world commodity prices

Quarter	T	$\bar{c}$	$\widehat{SD}(c)$	$\hat{\rho}_1$	$\hat{\rho}_6$	$\hat{\rho}_{12}$	Q_{12}	p-value
Agriculture	336	180.77	107.53	0.696	0.302	0.059	54.3	0
Fuels	336	72.30	31.60	0.957	0.402	0.066	79.3	0
Cocoa	336	94.88	31.86	0.890	-0.403	-0.119	40.2	0
Tea	336	2.12	0.53	0.905	0.311	0.092	131.5	0
Tobacco	336	3770.32	821.05	0.827	0.437	0.022	98.7	0
Copper	336	4771.85	2523.37	0.868	0.245	0.03	101.7	0
Gold	336	832.54	482.25	0.849	0.394	0.031	91.9	0
Oil	336	56.80	32.59	0.939	0.442	0.061	97.2	0

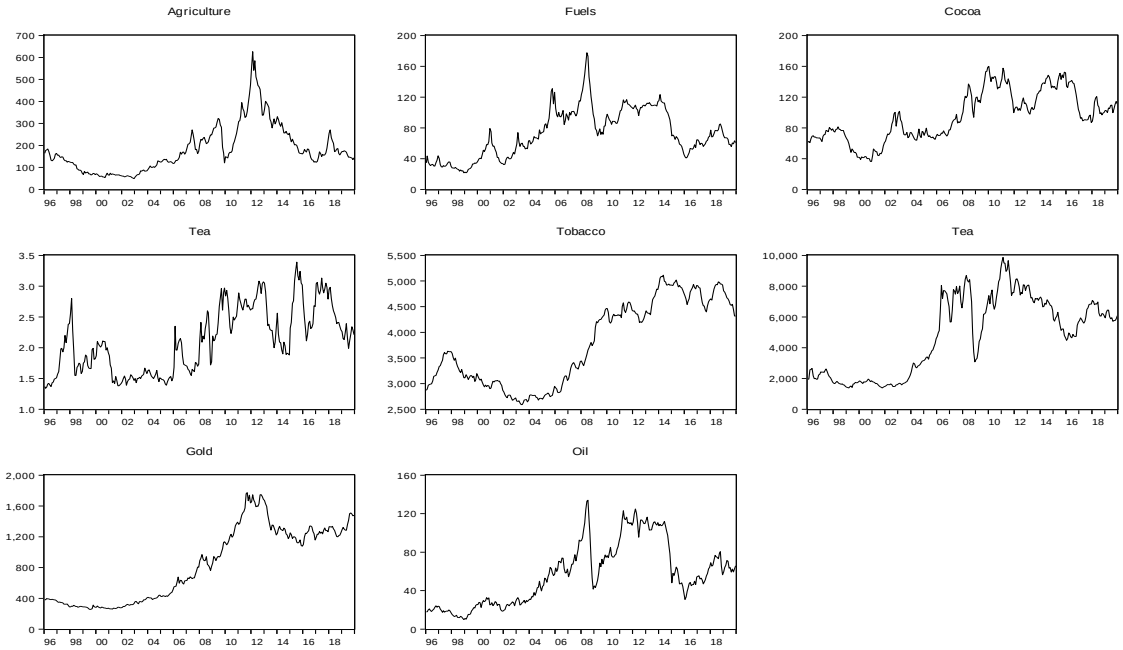
Note: T denotes the number of observations while $\bar{c}$ and $\widehat{SD}(c)$ are the sample mean and standard deviation; the $\hat{\rho}_{is}$ are the autocorrelation coefficients

Source: Author's computation

The disequilibrium persistence commodity prices also observed using the autocorrelation tests on the data. The first-order autocorrelation is 0.696(agricultural products) minimum and 0.957 (fuels) maximum among the commodities. These autocorrelation values are high, showing that commodity prices are highly serially correlated, and estimations based on the data need adequate consideration. Fuel prices appear to be the most serially correlated and suggests that any shock in the prices last for very long periods. This is perhaps the reason why oil producing countries tend to feel shocks in commodity price fluctuations more than any other country (Talvi & Vegh, 2005; Obadan& Adegboye, 2013). The test statistic for the joint null hypothesis that all autocorrelations are zero for lags 1 through 12 (Q_{12})is also significant for each commodity.

The trends in monthly commodity prices between 1992 and 2014 are also reported in Figure 1. There is a clear upward trend in the prices of the commodities over the years. The periods of negative shocks in 1998, 2002 and 2008 have been clearly marked in the charts for each of the commodities and their groupings. Moreover, the highest general periodic height for the commodity prices started in 2003 and the general high trend has remained for all commodities apart from that of agricultural commodities which fell below the pre-2003 period in 2008 although, it rapidly recovered in 2010. In all, tea prices appears to have experienced the most rapid fluctuations without any discernible short term trends observed the period. The series for tea prices actually appears to be mean reverting over time.

Figure 1: Trends in Commodity Prices



Source: Author's computation

In Table 2, the descriptive statistics for the other variables in the model are reported. The mean output growth for the sample of countries used in the study is 6.07 which is quite impressive for the Sub Sahara African region, although the standard deviation is high which indicates fluctuations either over periods or across countries in the study. The ratio of credit to GDP in the region is also high on average at 27.5 percent. However, over 1992 to 2019 period, the African countries had fiscal deficit of -1.7 percent of GDP, indicating high fiscal deficits for the region. The countries are also seen to be very open with trade openness mean of 93.7 percent which emphasizes that dependence of the African economies on external sector. The control of corruption variable is negative, suggesting poor effort at controlling corruption among these countries.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Skewness	Kurtosis	J-B	Prob.
Y	4.49	10.86	2.98	11.22	5342.1	0.00
Fpol	-2.33	6.05	1.02	4.92	382.9	0.00
Fdepth	30.28	32.11	1.14	4.99	44.9	0.00
Open	87.93	66.28	3.00	10.32	899.2	0.00
inst1	-0.91	0.47	0.09	1.93	16.4	0.00
inst2	21.02	27.29	2.02	13.22	3922.0	0.00

Source: Author's computation

4.2 Unit Root and Cointegration Test Results

In order to test the properties of the datasets used in the study, we consider the unit root and cointegration status. The panel unit root tests involve both the homogenous and the heterogenous tests. The results are presented in Table 3. It can be deduced from the table that the null hypothesis of the unit roots for the variables cannot be rejected when variables are taken in level, indicating that the variables are non-stationary in level. However, we reject this hypothesis when series are in first differences. These findings are supported by both the homogenous and heterogenous panel unit root tests. Since the variables became stationary after first difference, we then proceed to establish their long run relationship below.

Table 3 Panel Unit Root Result

	Homogeneous Unit Root Process		Heterogeneous Unit Root Process			
	Level	1st Diff	Level		1st Diff	
Variables	LLC	LLC	IPS	ADF-F	IPS	ADF-F
Y	0.81	6.00*	2.92	34.3	-11.50*	506.2*
Fpol	0.93	-4.49*	1.39	38.2	-10.01*	300.1*
Fdepth	-1.01	-8.69*	-1.33	33.7	-12.07*	505.3*
Open	-1.17	-5.05*	-1.64	40.0	-12.51*	1003.2*
inst1	-0.99	-6.21*	-2.01	42.1	-13.29*	1214.5*
inst2	0.87	4.93*	0.88	29.8	10.92*	619.1*
Compr	-1.6	-4.36*	-1.61	38.4	-13.28*	774.4*

Note: * indicates significant at 5%; IPS=Im,Pesaran& Shin; LLC=Levin, Lin & Chu

Source: Author's computation

Table 4 shows the outcomes of Pedroni's and Kao panel cointegration tests on the series. Note that the test results contain both within-group and between-group

dimensions.Except for the v-statistic test, the results of the within-group tests and the between-group tests show that the nullhypothesis of no cointegration can be rejected. This is also complemented by another residual based (Kao) panel cointgrationtest.The Kao residual cointegration test shown in table 4 indicates that the null hypothesis of no cointegration can be rejected of the series.

Table 4: Panel Cointegration Test Result

Series for Cointegration Test: *fpol, cumpr, ygap, open, fdepth, inst, dummy*					
Within-Dimension			**Between-Dimension**		**Kao (ADF)**
	Statistics	**Weighted Statistics**		**Statistics**	
Panel v	0.28	-0.61	Group rho	-0.79	
Panel rho	-3.00*	-1.37	Group PP	-2.73*	
Panel PP	-2.93*	-3.74*	Group ADF	-2.14**	
Panel ADF	63.2*	59.9*			
Series for Cointegration Test: *fpol, cumpr, ygap, open, fdepth, inst, dummy*					
Within-Dimension			**Between-Dimension**		**KAO (ADF)**
	Statistics	**Weighted Statistics**		**Statistics**	
Panel v	-1.24	-1.05	Group rho	1.11	
Panel rho	2.69*	1.27	Group PP	-5.22	
Panel PP	-3.32*	-4.36*	Group ADF	56.17*	
Panel ADF	51.51*	48.66*			

*Note: * indicate significance at 5% level.*Source: Author's computation

4.3 Analysis of Regression Results

The result of the estimates for fiscal management among the countries in the short run is reported in Table 5 below. The results are reported in three sections based on the control for low-price and high-price fluctuations. In the results, output gap is positive and significant, suggesting that a rise in output gap leads to a rise in fiscal deficits. This result is robust across the three estimates with control for prices, although the coefficient is higher when high price fluctuations are included in the model. The result shows that in the short run, fiscal managers respond in the direction of output gap: a boom brings about increase in spending while recession brings about a response of reduction in spending. This is what Talvi and Vegh (2005) and Gavin and Perotti (1997) referred to as procyclical fiscal policy management. This phenomenon is common among commodity

exporting countries where fiscal activities follow the same direction with output fluctuations.

Commodity prices have a significant negative impact on fiscal deficits in the result, suggesting the higher prices lead to lower deficits (which is to be expected). This result shows that unstable commodity prices make fiscal authorities in the SSA region to become more apprehensive about fiscal outcomes. Moreover, there is evidence that commodity price movement in itself does not generate procyclicality of fiscal policy in the region, rather it is the extent of short-term responses of fiscal managers to the price changes that has the impact on fiscal deficits. Financial depth has strong negative impact on fiscal deficits in the results, suggesting that highly developed financial markets tend to improve ability of governments to manage budgetary funds in the short run. The coefficient of institutions is significant and negative for each of the equations, indicating that corruption control tends to reduce fiscal deficits (and perhaps fiscal recklessness). Thus, improving corruption would likely reduce extra budgetary spending and indiscriminate fiscal deficits over the short run in SSA commodity exporters. The dummy variable of extreme commodity price volatility also has a negative impact on the fiscal policy equation.

The coefficient of panel ECM in the results is negative in each of the outputs and passes the significance test at the 1 percent level. This indicates that short term deviations of fiscal outcomes from equilibrium will be restored in the long run. The path for return to equilibrium is stable, although the size of the coefficients of ECM indicates that adjustment to equilibrium is slow.Essentially, the results show that shocks to fiscal deficits are persistent in commodity exporting countries in SSA.

Table 5: Short Run Fiscal Cyclicality Result

Variable	1	2	3
Δygap	0.17**	0.28**	0.16**
	(4.1)	(8.9)	(3.9)
Δcompr	-0.87**	-0.82**	-
	(-3.8)	(-3.5)	
Δfdepth	-0.28**	-0.27**	-0.29**
	(-4.8)	(-4.6)	(-4.6)
Δopen	-0.05	-0.03	-0.01
	(-1.1)	(-1.1)	(-0.9)
Δinst1	-1.82*	-1.31*	-0.45
	(-2.1)	(-2.3)	(-1.6)

Δinst2	0.01 (0.9)	0.01 (1.0)	0.02 (1.0)
Δdummy	-	-0.93* (2.6)	-
PECM(-1)	-0.36** (-10.3)	-0.37** (-11.0)	-0.33** (-10.9)
Adjusted R-squared	0.22	0.23	0.22

*Note: ** and * indicate significance at 1% and 5% levels respectively. T-statistics are written in brackets.*

Source: Author's computation

In Table 6, the result of output gap equation is reported. In the model, the coefficient of fiscal policy is only significant in the equation without commodity prices and commodity price volatility. This suggests that fiscal policy tends to be effective in the short run during periods when commodity prices are stable in the international markets. This result suggests that fiscal policy is weak in influencing short-term output gap among SSA commodity exporters, especially when prices are fluctuating significantly. Thus, macroeconomic stabilization has not been well captured by fiscal policy among these countries. The coefficients of commodity prices and its volatility are negative and significant, showing that commodity price instabilitylimits short run fiscal operations in the countries. The coefficient of institutions through corruption control is positive and shows that strong institutional setups that control corruption would ensure impressive growth in output in the short term. The coefficient of financial depth is negative and significantonly in the model without price volatility. This indicates that financial sector development only plays effective role in the economies when commodity prices are more stable, especially in the short run. Moreover, the coefficient of panel error correction is significant and negative. The value is high, and suggests that there is rapid approach towards equilibrium, after any short-term deviations of output gap within the economies in the sample.

Table 6: Short Run Output Gap Result

Variable	1	2	3
Δfpol	0.03 (1.3)	0.06 (1.7)	-0.42* (2.6)
Δcompr	0.49* (2.7)	0.28** (3.5)	-
Δfdepth	-0.09	-0.08	-0.17*

	(-1.8)	(-1.7)	(-2.3)
Δinst1	4.13*	5.21*	16.2**
	(2.7)	(2.3)	(9.9)
Δinst2	0.01	0.03	-0.07*
	(0.6)	(1.1)	(-2.3)
Δdummy	-	3.66**	
		(10.1)	
PECM2(-1)	-0.87**	-0.70**	-0.75**
	(-9.2)	(-8.3)	(-9.6)
Adjusted R-squared	0.37	0.44	0.39

*Note: ** and * indicate significance at 1% and 5% levels respectively. T-statistics are written in brackets.*

Source: Author's computation

The long run estimates for fiscal cyclicality estimates shown in Table 7 below indicates that fiscal policy is still procyclical in the long run, perhaps even with higher virulence. The coefficient of the *ygap* variable is significant and positive in each of the outputs and is slightly higher when commodity prices and its deep volatility are included in the model. Thus, even after all adjustments are made following a change in commodity prices, fiscal policy still acts in a destabilizing manner upon the commodity price movement. Thus, policy measures have acted to greatly inject instabilities in the international commodity markets into economic managements in resource-rich African countries.

Table 7: Long Run Cointegrating Estimates Based on FMOLS (Cyclicality of Fiscal Policy)

Variable	1	2	3
ygap	0.17**	0.28**	0.05*
	(4.2)	(6.8)	(2.4)
compr	0.35*	0.29*	-
	(2.1)	(2.4)	
fdepth	-0.19**	-0.08*	-0.08**
	(-6.4)	(-3.1)	(-2.8)
open	0.08*	0.03	0.04

	(2.2)	(1.7)	(1.8)
inst1	0.88*	0.53	0.57
	(2.3)	(1.3)	(1.3)
inst2	0.01	0.01	0.01
	(0.7)	(1.0)	(1.1)
dummy		1.33**	
		(4.9)	
Adjusted R-squared	0.40	0.37	0.40

*Note: ** and * indicate significance at 1% and 5% levels respectively. T-statistics are written in brackets.*

Source: Author's computation

Once again, the coefficients of financial development and institutions are significant, although signs of the institution coefficient are quite pervasive. Financial development is thus, a strong factor in improving fiscal management among African economies since strong financial systems can ensure stable fiscal operations even when external resources are depleting. On the other hand, control of corruption variable indicates that in the long run, better institutions might imply higher cost on governments which will be reflected in higher fiscal deficits in the countries.

In the long run estimates for output shown in Table 8 below, fiscal policy passes the significance test for the equations with controls for commodity prices or its volatility. The coefficients of fiscal policy in these equations are positive, indicating that when commodity prices are taken to cognizance, fiscal policy tends to exacerbate output gaps in the country. On the other hand, both commodity prices and its volatility are shown to exert strong positive impacts on output gap. Apparently, changes in prices, especially drop in commodity prices have the tendency of widening output gap within the countries. Financial depth is also shown to have strong negative impact on output gap. The results therefore indicate that commodity prices may have long-lasting effects directly on output or indirectly, by weakening fiscal stabilization measures among commodity exporting countries in the SSA.

Table 8: Long Run Cointegrating Estimates Based on FMOLS (Output Gap)

Variable	**1**	**2**	**3**
fpol	-0.06	0.21*	0.11*
	(-1.1)	(2.0)	(2.2)
compr	0.38**	0.41**	-
	(9.1)	(10.4)	

fdepth	-0.36**	-0.30**	-0.19**
	(-12.3)	(-11.6)	(-7.0)
inst1	3.66*	3.02*	1.58
	(2.8)	(2.0)	(1.1)
inst2	0.01	0.01	0.08*
	(0.8)	(0.9)	(2.5)
dummy	-	4.61**	-
		(5.7)	
Adj. R-squared	0.35	0.40	0.39

*Note: **, * indicate significance at 1%& 5% levelsrespectively. T-statistics are written in brackets.*

Source: Author's computation

5. Conclusion

This study has placed in perspective the cyclical stance of fiscal policy among commodity exporters in the sub-Saharan African region over the period 1992 to 2019. Although the outline of the study is not exhaustive, it has shown large inconsistency of fiscal policy as a countercyclical tool among the economies. The overall outcome of the empirical analysis in this study is that fiscal policy tends to be procyclical in commodity exporting countries in Africa which implies that government spending as a share of GDP tends to rise during periods of output growth and falls during periods of output slowdown. In particular, the study found evidence that commodity prices tend to weaken the capacity of fiscal policy to respond to output changes (especially downturns). Institutional effects are also found to be weak in terms of stemming the transmission of commodity price instability into the fiscal space of the sampled economies. It is therefore necessary for governments in resource rich SSA countries to pursue fiscal strategies aimed at breaking the procyclical response of expenditure to macroeconomic cycles. This would imply eliminating expansionary fiscal policy biases during output (and commodity) booms, and critically, targeting prudent fiscal balances over time and reducing fiscal deficit over time. Moreover, it is more expedient for discretionary fiscal adjustments to be made in a more gradual manner irrespective of the outcome of commodity prices. Large swings in discretionary fiscal policy arising from commodity price instability are destabilising to aggregate demand and may exacerbate uncertainty and induce macroeconomic volatility. Thus, in the short-run, efforts should be made to minimize the correlation between government spending and volatile commodity prices. From another perspective, the share of non-resource revenues should feature more prominently in the formulation of fiscal policy among the economies. This could also help in decoupling expenditures from the short-run vagaries of commodity prices.

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OPTIMAL MANAGEMENT OF FOREIGN EXCHANGE ASSETS IN NIGERIA

by

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ABSTRACT

In this paper, an attempt is made to discuss the meaning, uses and optimal management of foreign exchange assets in the Nigerian economy. Foreign exchange assets refer to owned liquid international reserve assets held by the Central Bank of a country for the purpose of financing balance-of-payments deficits, servicing external debt, and maintaining the par value of the national currency. They consist of monetary gold, convertible foreign exchange held by the central bank, special drawing rights, and the country's reserve position in the International Monetary Fund. Since foreign exchange assets are valuable, their optimal management is important and imperative. The optimal management of foreign exchange assets includes the efficient use of import substitution strategies, implementation of export promotion policies, and the proper investment of owned international reserves.

Key words: Foreign exchange assets, International reserves, Exchange rate, Nigeria

I. Introduction

In international finance or when dealing with the monetary aspects of international trade, the exchange rate is ubiquitous. The exchange rate is the price at which one currency sells for another. Thus, it is the link between the various national currencies in the area of international trade and payments. Indeed, the concept of exchange rate is so vital and critical that it is normally used to characterize the international monetary system in use at any time. In other words, international finance experts often use the term, "exchange rate system" to describe and identify an international monetary system. By an international monetary system, we mean the set of rules, regulations, conventions and institutions that govern the settlement of international payments and debts.

Since the collapse of the Bretton Woods System, we have been in the era of "managed" floating exchange rates. Under a regime of managed floats, exchange rate policy becomes very important. Good exchange rate policy would enable a country to have a realistic exchange rate (which approximates the equilibrium exchange rate) in order to optimize resource allocation and increase the rate of economic growth. An overvalued exchange

rate would be inimical to growth and would normally require devaluation in order to slow down the loss of foreign exchange reserves and restore balance of payments equilibrium.

II. Foreign Exchange Reserves and the Foreign Exchange Rate

Some important definitions:

Exchange Rate: This is the domestic price of a unit of foreign currency. Given two countries, Nigeria and the U.S.A., the exchange rate in Nigeria is the price in Naira of one U.S. dollar, say 400. Then the reciprocal of this number is the exchange rate in the U.S.A. In the free market case, the exchange rate is determined by the intersection of the demand and supply curves for foreign exchange. The demand for dollars in Nigeria is derived mainly from the Nigerian demand for U.S. goods and services while the supply of dollars is determined mainly by the U.S. demand for Nigerian goods and services.

Exchange Rate Policy: This is an instrument of macroeconomic policy often targeted at the attainment of the goal of external balance. It refers to the totality of measures, policies and strategies related to the choice of an exchange rate system, its effective functioning, and the elimination of balance-of-payments deficits.

Foreign Exchange: A term given to a country's holdings of (convertible) foreign currency. This is the main component of international reserves in less developed countries. Foreign exchange consists of holdings of foreign bank balances (mainly demand and time deposits), foreign Treasury bills, and other short-term government securities.

Foreign Exchange Management: This refers to the totality of measures, policies, and strategies designed to increase a country's foreign exchange earnings, promote prudent spending of foreign exchange, and contribute to the optimal investment of owned international reserve assets.

International Reserves: These are liquid international monetary assets that are universally accepted for the settlement of international debts. They include holdings of monetary gold (by national central banks), owned convertible foreign exchange, special drawing rights (SDRs) and reserve positions in the IMF (which consist of gold tranche and super gold tranche positions).

Note that international reserve assets (called “reserves” for short) are also sometimes called "international liquidity" since the international monetary assets listed above are highly "liquid", in the sense that they are easily convertible to cash at a predictable price with virtually no loss of value. Gold has been a means of settling international debts since time immemorial. The role of gold as a valued international reserve asset was consolidated in the 19th century when the Gold Standard was in ascendancy. Under the international monetary system known as the "gold standard", gold was the only recognized means of settling international debt. In the 20th century, the use of gold has been supplemented with that of SDRs and convertible foreign exchange (national paper currency). This type of international monetary system, of which the Bretton Woods or IMF system is a prototype, is often referred to as a “gold-exchange standard". Today, gold holdings comprise only a small fraction of reserves, especially for developing countries.

III. The Role, Importance and Determinants of Exchange Rates

3.1 Determinants of Exchange Rates

While the theoretical approach to exchange rate determination provides useful insights, it is nevertheless desirable to identify the key determinants of exchange rates in real world economies for the guidance of policy makers. The exchange rate, which is the relative price of the domestic currency, may be interpreted as the value or worth of that currency. What then determines the value of a given currency? According to the CBN (1996b)

> The worth of a national currency depends on a number of factors including, the state of the economy, the competitiveness and volume of exports, the level of domestic production, and the quantum of foreign reserves. (CBN 1996b, p. 1)

These determinants identified by the CBN are among those variables which macroeconomists and international finance experts refer to as "economic fundamentals". We may define economic fundamentals as basic indicators of an economy's wellbeing. However, in addition to economic fundamentals which are the core determinants of the exchange rate in the long-run, other determinants especially of the short-run fluctuations in the level of the exchange rate include social, psychological and political factors, and most importantly, in the era of globalization, financial contagion. Therefore, the determinants of exchange rate may be summarized as:

(a) Economic Fundamentals

Under this, we may focus on the growth rate of output or GDP (gross domestic product); the inflation rate; the balance of payments (and in particular the balance of trade or export surplus); the level of foreign exchange reserves; the level and rate of growth of external debt; and the rate of growth of money and credit. Note that balance-of-payments surplus will depend, *inter alia*, on export growth, international competitiveness, and foreign capital inflows. *Ceteris paribus*, the stronger the economic fundamentals are, the higher the value of the currency.

(b) Social, Psychological, Political and Geo-Political Factors

These include expectations, ethnic strife and general insecurity, civil war, political instability, geo-political uncertainties, drought and famine. These factors will mainly account for short-run fluctuations of the exchange rate.

(c) Macroeconomic Shocks and Financial Contagion

When analysing exchange rate volatility, particular attention is usually given to external shocks which include such issues as unfavourable effects or movements in the international trade cycle, unexpected commodity price collapse and unfavourable terms of trade movements. Financial contagion, as it occurred during the Asian financial crisis of 1997, is also worthy of mention. Financial contagion occurs when excessively volatile capital markets trigger financial crises that can much more easily ricochet from one country to another, spreading financial disaster, mayhem, and misery in its wake. In particular, financial contagion refers to the "herd" behaviour of (foreign) investors in hurriedly pulling out funds (sometimes called "hot money") from a country during a financial crisis. What usually happens is that when they observe the collapse of a given currency, they immediately begin to desert another currency (usually that of a geographically contiguous)

country, even though that currency has solid economic fundamentals – thus causing its collapse. The danger of financial contagion has recently increased with the frenzied pace of financial globalization, the internationalization of "emerging" capital markets and the rise in the volume and volatility of short-term capital flows.

3.2 Role and Importance of Exchange Rates

The exchange rate, being the link between the currencies of countries engaged in international trade, is clearly one of the principal tools by which a country can align its economic and financial activities with those of its trading partners in order to achieve rapid growth in income and employment. A change in the exchange rate, being equivalent to an import tariff-cum-export subsidy scheme, impacts on major economic aggregates, and in the process, corrects financial and structural imbalances. In particular a 10% depreciation of the domestic currency (also called a 10% devaluation) is equivalent to a simultaneous 10% increase in import tariffs and a 10% rise in export subsidies. Therefore, there will be an increase in exports and a reduction in imports, leading to an improvement in the merchandise trade balance and in the balance of payments.

Trade theorists have in fact derived the condition for a successful devaluation, that is, a devaluation that leads to an improvement in the balance of payments. This is the well-known Marshall-Lerner condition which states that a devaluation will be "successful" if the sum of the elasticity of demand for exports and the elasticity of demand for imports exceed unity, that is, if $\varepsilon_x + \varepsilon_m > 1$, where ε_x stands for elasticity of demand for exports and ε_m represents elasticity of demand for imports. Note that this condition is usually satisfied for advanced industrialized countries like the USA and Germany but not for primary commodity exporting developing countries like Nigeria. In short, the presumptive benefits of devaluation do not occur in the typical developing economy.

IV. Foreign Exchange Management

"Foreign exchange" is the term given to the stock of convertible foreign currencies which a county holds for the purpose of settling its international debts. Foreign exchange is the major component of "international reserves" which is the term given to the total stock of external assets (specifically, liquid monetary assets) available to the monetary authorities of a given country for the settlement of international economic transactions. In the case of Nigeria, foreign exchange often accounts for approximately 99 per cent of total international reserves. Hence, the two terms may be used interchangeably.

Foreign exchange earnings from international trade, capital inflows and foreign aid are critical for the economic transformation of less developed countries, particularly those in sub-Saharan Africa. There are several reasons for this. They include: (i) foreign exchange resources so earned are used for financing the importation of capital goods (since LDCs invariably have little or no capacity to produce capital goods domestically); (ii) foreign exchange is also needed to finance the imports of raw materials and critical intermediate inputs; (iii) foreign exchange resources can promote the development of technical skills and knowledge which should enhance domestic capital formation and economic growth; and (iv) many LDCs exhibit a high degree of trade "openness" which makes them highly vulnerable to external shocks resulting in payments imbalances. Foreign exchange resources permit such countries to finance balance-of-payments deficits and defend the parity of their currencies.

On account of the importance of foreign exchange resources for promoting economic growth and their scarcity in the LDCs, proper management of foreign exchange is not merely a *desideratum* but is in fact a *sine qua non*. Ojo (1990) has defined foreign exchange management as "the art of ensuring that the country's available foreign exchange resources meet the needs of the economy ... and that foreign exchange resources are optimally deployed". However, in its widest sense, foreign exchange management should be taken to include both the optimal generation of foreign exchange earnings and their optimal disbursement (including, of course, the optimal portfolio management of owned international reserve assets). Thus, the important issues in foreign exchange management include: (i) export promotion and export diversification strategies; (ii) import policy which would minimize waste, promote the development of the capital goods industry, and increase productive capacity; (iii) optimal tariff policy; (iv) appropriate exchange rate policy which would promote diversification and growth of the economy; (v) determination of the proportion of foreign exchange resources to retain as reserves; (vi) optimal debt management strategy (in particular, the issue of the proportion of foreign exchange resources to earmark for debt servicing); and (vii) optimal investment of international reserves.

V. **Policies for the Optimal Management of Foreign Exchange**

For less developed countries, like Nigeria, which are highly dependent on trade, often in deficit, highly indebted externally, and invariably short of international reserves, the efficient management of foreign exchange resources is an important macroeconomic policy objective. This would seem obvious since foreign exchange earnings are vital for the economic transformation of LDCs. Note that foreign exchange can make critical foreign resources like capital goods, raw materials and intermediates available to an LDC. Besides, foreign exchange can promote the transfer of technology, the acquisition of skills and entrepreneurial know-how and the development of knowledge -- all of which would enhance increased capital formation and promote economic growth. The more "open" an economy, i.e. the more dependent on trade and capital inflows it is, the more essential is the need to husband and manage foreign exchange resources. This is so because the more "open" an economy is, the more susceptible it is to negative external shocks and destabilizing balance-of-payments deficits. Following Ojo (1990), we may define foreign exchange management as referring to the set of measures and policies adopted by a trading country to generate sufficient foreign exchange earnings, ensure by prudent use that available foreign exchange resources meet the needs of the country, and that owned international reserve assets are optimally invested.

An examination of the above definition shows that foreign exchange management is multi-dimensional. It involves both proper generation and use of foreign exchange resources, the building up of official reserves and the prudent investment of owned foreign exchange assets. In investing owned international reserve assets, the country must endeavor to safeguard the value of the foreign exchange resources while ensuring that the resources are at a level adequate to meet its current trade needs and future balance-of-payments requirements. The country must try to obtain maximum returns while minimizing the risk of capital loss or default.

Instruments of Foreign Exchange Management

What are the main instruments or tools of foreign exchange management? How do they work? There are basically three types of instruments for managing foreign exchange

resources, viz., (i) those that operate through the compression of demand for foreign exchange; (ii) those which work through increasing the supply of foreign exchange; (iii) import substitution strategies (which work mainly to compress imports); and (iv) macroeconomic policy tools which enhance supply while simultaneously reducing demand for foreign exchange.

We shall now discuss the policy tools under each of these categories.

Demand Reducing Instruments

We may identify the following instruments which work mainly through the reduction of the demand for foreign exchange: (a) trade and exchange controls; (b) administrative controls; and (c) foreign exchange budgeting.

Among these three policy instruments, trade and exchange control is perhaps the most important. This policy tool, which is basically a set of policy instruments, involves the use of restrictions on international trade and on international payments to compress the demand for foreign exchange. Restrictions on trade include both tariffs and quotas. These act to reduce imports and hence disbursement of foreign exchange. Capital controls include the use of import licenses, foreign exchange allocation, Form "M" and multiple currency practices.

Instruments that Increase the Supply of Foreign Exchange

Under these, two key policy instruments may be identified. They are: (a) Export promotion; and (b) Portfolio diversification.

In general, export promotion is achieved by providing or increasing incentives to exporters. Policies and measures to enhance export promotion would include: (i) establishing an overall incentive regime favorably to exports; (ii) provision of adequate term financing to sustain export diversification; (iii) designing policies and incentives to encourage exporting to non-traditional markets; (iv) improvement of infrastructural facilities; (v) promotion of proper exporter education and information system; (vi) implementation of measures to enhance the productivity and competitiveness of enterprises in the export sector; (vii) improvement of investment climate; and (viii) differentiation of policies required to build capabilities in priority export sectors.

Macroeconomic Policy Tools for Foreign Exchange Management

Let us now discuss the last set of tools used for foreign exchange management. These consist of macroeconomic policy instruments which enhance supply of foreign exchange resources while at the same time reducing excessive demand for them. Under this, we may identify the following macroeconomic policy tools: (a) Monetary policy; (b) Fiscal Policy; and (c) Exchange rate policy.

Let us discuss exchange rate policy which is probably the most important of these macroeconomic policy tools when considering foreign exchange management.

In the free market case, it is determined by the supply and demand for foreign exchange. Any attempt to impose an exchange rate which diverges greatly from the "equilibrium exchange rate" will be problematic. For example, an overvalued exchange rate will lead to balance-of payments deficits and dwindling international reserves while an undervalued exchange rate will result in a balance-of-payments surplus. In either case, an inappropriate

exchange rate will create instability in the foreign exchange market and make the task of foreign exchange management more difficult. Conversely, an appropriate exchange rate will tend to maintain equilibrium in the country's inflow and outflow of foreign exchange thus facilitating the job of foreign exchange management.

Debt Management Strategy

For a country, like Nigeria, with a high external debt stock and a crippling debt-service burden, debt management is an integral part of foreign exchange management. This is because all debt-service on external debt must be paid in foreign exchange.

One important area where new initiatives are warranted is the issue of extreme "openness" of the Nigerian economy. The fact of the matter is that the Nigerian economy is extremely import dependent in production and on the export side depends almost entirely on the exportation of crude oil. For self-reliant and balanced growth, there is therefore need to adopt strategies to ensure: (i) export diversification (in the sense of expanding both into non-oil primary products and into the export of manufactured goods); and (ii) reduction in import dependence. Import dependence can be reduced most constructively by increasing the local sourcing of raw materials in the industrial sector, by developing a domestic capital goods industry, and by encouraging the development of indigenous technology. Thus, over time, the strategy is to reduce the importance of external trade to the economy thus bringing about self-reliant development in the true sense of the term.

5.1. Towards a more Effective Foreign Exchange Management: Some new ideas

Given the perennial problem if incessant depreciation of the Naira and the recent precipitous collapse of the domestic currency (to N400=$1), some new ideas seem desirable.

1. The parallel market should be eliminated. For this to work, the BDCs should be banned. All foreign exchange transactions should be through the commercial banks. This is what obtains in many countries, especially the advanced industrialized countries of Europe and North America. There is absolutely no need to fund the BDCs. This only encourages speculation against the Naira.
2. The Naira should be allowed to float properly. In order to make this effective and workable, the Central Bank of Nigeria (CBN) should be less visible and more subtle in its interventions, as is the case with other central banks that manage floating (flexible) exchange rates.
3. Multiple exchange rates should be abolished. Currently, Nigeria is a laughing stock among trading countries with almost a dozen different exchange rates for the Naira. Multiple exchange rate practices were in fact proscribed under the Bretton Woods international monetary system.
4. Adoption of feasible and workable industrial policies to facilitate industrialization of the Nigerian economy. It is imperative to promote the growth of the manufacturing sector in order to truly diversify a country’s exports. Note that economic growth in Asian countries has been driven and pushed by industrial exports.

VI. Summary and Conclusions

The analysis presented above has demonstrated that proper foreign exchange management is a *sine qua non* for balance-of-payments viability and self-reliant economic growth. On

the basis of this, what measures can be recommended for adoption by Nigerian policy makers in the years ahead? The following recommendations appear warranted: (i) Nigeria should continue to operate a market-determined exchange rate system. However, the Central Bank should stand ready to intervene in the foreign exchange market in order to stabilize the value of the Naira and prevent its incessant depreciation; (ii) Appropriate policies and measures should be adopted to facilitate export promotion and enhance export diversification. This will contribute to greater generation of foreign exchange resources and reduce the instability of export receipts; (iii) Appropriate policies and measures should be adopted to reduce import dependency. In particular, dependence on capital imports should be reduced by developing a domestic capital goods industry while dependence on imported raw materials should be eliminated by encouraging the local sourcing of raw materials. All these will help to reduce foreign exchange disbursements; (iv) Monetary policy and fiscal policy should be mobilized in the attempt to achieve the critical objective of balance-of-payments equilibrium over time; (v) Nigeria's debt should be prudently managed. In particular, measures should be adopted to reduce the debt stock and debt- service payments in order to ameliorate its effects on the balance of payments, investment, and economic growth; and vi) Measures and policies should be adopted to ensure the optimal deployment of Nigeria's foreign exchange assets. Emphasis should be on ensuring maintenance of the purchasing value of the assets in addition to maximizing returns at minimum risk.

In addition to these traditional recommendations, it is necssary to add the four new ideas presented above and in particular canvass the abolishment of BDCs and an end to multiple exchange rates. It seems clear that adoption and implementation of these strategies would enhance balance-of payments viability and contribute to the rapid development of the Nigerian economy in the years ahead.

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TAXATION AS A TOOL FOR ECONOMIC GROWTH EVIDENCE FROM NIGERIA

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ABSTRACT
The study investigated taxation as a tool for economic growth in Nigeria using the methodology of Group Unit Root Test, ARDL Bounds Testing and Co-integrating Long Run tests on annual data from 1986 to 2019 for robust policy recommendations. This work used GDP as the dependent variable and petroleum profit tax (PPT), companies' income tax (CIT), value-added tax, customs and exercise duty (CED) as the independent variables. The result shows that PPT, CED and CIT have positive effects on Gross Domestic Product (GDP), while Value Added Tax (VAT) has negative effects on GDP. The study recommends that FIRS and JTB in conjunction with government should enact appropriate policy on VAT remittance as well as putting measure in place towards the minimization of the bottleneck and bureaucracy on VAT administration to achieve the desired result. Appropriate policies and strategies should be in place geared towards improving the efficiency and effectiveness of tax administration in Nigeria. This will improve economic growth. Also that government should endeavour to support companies by providing basic public amenities to all nooks and crannies of the country as this will boost the level of tax compliance in Nigeria

Keywords: Bounds Test, Taxation, Economic Growth, Revenue, VAT,

JEL classification: C22, C32, C58

1.0 Introduction

The political, economic and social development of any country depends on the amount of revenue generated for the provision of infrastructure in that given country. However

one means of generating the amount of revenue for providing the needed infrastructure is through a well-structured tax system. The tax system is an opportunity for government to collect additional revenue needed in discharging its pressing obligations. A tax system offers itself as one of the most effective means of mobilizing a nation's internal resources and it lends itself to creating an environment conducive to the promotion of economic growth. Taxes constitute key sources of revenue to the federation account shared by the federal, state and local governments.

Tax is a compulsory levy imposed on a subject or upon his property by the government to provide security, social amenities and create conditions for the economic well-being of the society and taxes are imposed to regulate the production of certain goods and services, protection of infant industries, control business and curb inflation, reduce income inequalities, used as proxy for fiscal policy amongst others.

Tax revenue mobilization as a source for financing development activities in Nigeria has been a different issue primarily because of various forms of resistance like tax evasion, avoidance and corrupt practices attending to it. These activities are considered as sabotaging the economy and are readily presented as reasons for the underdevelopment of the country. In Nigeria the contribution of tax revenue has not met the expectation of government. Government has equally expressed this disappointment and has promised to expand the non-oil tax revenue. It is in the light of the foregoing that this study examines the extent to which taxation can be used to measure economic development in Nigeria.

The research questions for this are: (i) what is the effect of tax revenue on economic growth in Nigeria? (ii) What is the relationship between petroleum profit tax and economic growth in Nigeria? (iii) Is there any significant relationship between company income tax and economic growth in Nigeria? (iv) Is there any significant relationship between customs and excise duties and economic growth in Nigeria? (v) Is there any significant relationship between value added tax and economic growth in Nigeria?

The main objective of this study is to examine the role of taxation on economic growth in the Nigerian economy. The specific objectives are ::(i) To examine the effect of tax revenue on economic growth and development in Nigeria. (ii) To determine the relationship between petroleum profit tax and economic growth in Nigeria. (iii) To determine the relationship between company income tax, customs and excise duties and value added tax and economic growth in Nigeria. (iv) To determine the relationship between customs and excise duties economic growth in Nigeria. (v) To determine the relationship between value added tax and economic growth in Nigeria.

The research findings would be of importance to policy makers at national level as they design policies aimed at enhancing economic growth and development through a better tax revenue system. Policy makers, especially the Federal Inland Revenue service will use the outcome of the study to gauge its performance and determine the level of input it would have to make to impact positively to Nigerian economy. Students, academicians and other scholars who wish to undertake further research on taxation will find the literature arising from this study to be of great value, as it will be added to the existing literature.

This study is organized into five sessions: session one contain the introduction of the study, consisting of the background of the study, problem statement, research questions, objectives, the scope, the significance, and organization of the study. Session two will examine among other things, relevant literature from works that have already been done on the topic. Session three is the methodology of the study which includes the theoretical framework, data sources, model specification and model estimation technique. Session four would be devoted to thorough presentation, interpretation and analysis of data gathered from the field. In this chapter, statistical tools and techniques will be used for the analysis of data.Session five comprised the summary of findings, conclusions and recommendation.

2.0 Literature Review

2.1 Taxation and tax administration in Nigeria.

The Nigerian tax system has undergone several reforms geared at enhancing tax administration with minimal enforcement cost. The recent reforms include the introduction of TIN, (Taxpayer identification Number), which became effective since February 2008, automated tax system that facilities tracking of tax positions and issues by individual tax payer, E-payment system which enhances smooth payment procedure and reduces the incidence of tax touts, Enforcement scheme which engages special tax officers in collaboration with other security agencies to ensure strict compliance in payment of taxes.

Section 8(q) of Federal Inland Revenue Service (FIRS) Establishment Act 2007 has led to an improvement in the tax administration in the country, thus, the integrated tax offices and authorities now have autonomy to assess, collect record tax. Despite this improvement, there are still a number of contentious issues that require urgent attention and among them are appropriate tax authority to administer several taxes, the issue of multiple taxes severally administered by all the three tiers of government which sometimes imposes welfare cost and issue of the paucity of data base, which contributes to tax avoidance in the country (Unegbu et al (2011).

2.2 The Nigerian Tax structure and Tax System

The two major legal bodies connected to the administration of company income tax, petroleum profit tax, personal income tax, value added tax, Withholding tax, Education tax and Custom excise duty in Nigeria are Joint Tax Board (JTB) and Federal Inland Revenue Service (FIRS). The Joint Tax Board was established in 1961 to offer advice and coordinate various aspects of tax revenue and also to promote uniformity both in the application of the personal income tax Act 1993, and in the incidence of tax on individual throughout Nigeria. Company Income Tax Act 2004 further confirmed that FIRS is established to carry out the following functions: to exercise the powers and duties conferred on it by any enactment of the federal Government in respect of the above mentioned taxes; to advice the Federal Government on request on double tax revenue arrangement; to promote uniformity both in the application of the personal income tax Act 1993 and the incidence of tax on individuals; to advice the federal Government on request on capital allowances rates and other tax revenue matters, and to impose its decisions on matters of procedure and interpretation. The Federal Board of Inland Revenue was established with the power to administer company income tax act 1990. The operational arm of FBIR is the Federal Inland Revenue Service (FIRS) which was

established in 1993. FIRS has the responsibility of income tax assessment, collection, accounting and administration.

2.3 Federal Government Collectible Taxes in Nigeria.

Some forms of government generated taxes and their function are discussed below:

2.3.1 Petroleum Profit Tax (PPT)

Nigerian law by virtue of the Petroleum Profits Tax Act 990 requires all companies engaged in the extraction and transportation of petroleum to pay tax. Adigbe (2011) further stated that the taxable income of a petroleum company comprises proceeds from the sale of oil and related substances used by the company in its own refineries plus any other income of the company incidental to and arising from its petroleum operations Adigbe (2011) explained that the taxable income of a petroleum company is subject to tax at 85%, but this percentage is lowered to 65.75% during the first 5 years of operation but where oil companies operate under production sharing contracts they will be liable to tax at a rate of 50%.

2.3.2 Companies Income Tax (CIT)

Company income Tax Act, 1990 is the current enabling law that governs the collection of taxes on profits made by companies operating in Nigeria excluding companies engaged in Petroleum exploration activities. This tax is payable for each year of assessment of the profits of any company at a rate of 30% (Adereti 2011).

2.3.3 Value Added Tax (VAT):

VAT is a consumption tax that is relatively easy to administer and difficult to evade and it has been embraced by many countries world-wide (Federal Inland Revenue Service, 1993). Value-added Tax Act, 1993 is the law that regulates the collection of tax due on "vatable" goods or services. (Adereti 2011). It was introduced to replace the old sales tax. It is a consumption tax levied at each stage of the consumption chain, and is borne by the final consumer. It requires taxable persons upon registering with the Federal Board of Inland Revenue to charge the collect VAT at a flat rate of 5% of all invoiced amounts of taxable goods and services.

2.3.4 Personal Income Tax

The tax is on the Pay As You Earn (PAYE) basis, that is the tax payable depends on how much is earned by the tax payer. The tax is easy to collect from civil servants as it is deducted from source by the appropriate authorities unlike the private sector who will have to file returns of each tax payer which is not done in most cases. The PAYE tax payer is payable to both the Federal Inland Service and the state Board of Internal Revenue depending on the sector in which the tax payer is employed. The tax is regulated by personal income Tax Act 2004.

2.3.5 Custom and Excise Duties (CED)

Customs duties in Nigeria are the oldest from of modern tax revenue. Their introduction dates back to 1860 known as import duties, which represents taxes on imports into Nigeria, charged either as a percentage of the value of imports or as a fixed amount of contingent on quantity (Buba, 2007). Customs duty is a major source of revenue for the Federal Government which is payable by importers of specified goods

2.4 Theoretical Literature Review

According to Bhartia (2009), a tax revenue theory may be derived on the assumption that there need not be any relationship between tax paid and benefits received from state activities. In this group, there are two theories, namely; Socio-political theory and the expediency theory.

Socio-political theory: This theory of tax revenue states that social and political objectives should be the major factors in selecting taxes. The theory advocated that a tax system should not be designed to serve individuals, but should be used to cure the ills of society as a whole.

Benefit received theory: This theory proceeds on the assumption that there is basically an exchange relationship between tax-payers and the state. The state provides certain goods and services to the members of the society and they contribute to the cost of these supplies in proportion to the benefits received (Bhartia, 2009). Anyanfo (1996) argues that taxes should be allocated on the basis of benefits received from government expenditure.

Faculty theory: According to Anyanfo (1996) tthis theory states that one should be taxed according to the ability to pay. It is simply an attempt to maximize an explicit value judgment about the distributive effects of taxes. Bhartia (2009) argue that a citizen is to pay taxes just because he can, and his relative share in the total tax burden is to be determined by his relative paying capacity.

Expediency theory: This theory asserts that every tax proposal must pass the test of practicality. It must be the only consideration weighing with the authorities in choosing a tax proposal. Economic and social objectives of the state and the effects of a tax system should be treated irrelevant (Bhartia.2009). (Anyafo, 1996; Bhartia, 2009) explained that the expediency theory is based on a link between tax liability and state activities. It assumes that the state should charge the members of the society for the services provided by it. This reasoning justifies imposition of taxes for financing state activities by inferences, provides a basis, for apportioning the tax burden between members of society. This proposition has a truth in it, since it is useless to have a tax which cannot be levied and collected efficiently.

2.5 Role of Tax Revenue on Economic Growth and Development

The main purpose of tax is to raise revenue to meet government expenditure and to redistribute wealth and manage the economy (Ola, 2011; Jhingan, 2004; Bhartia, 2009). Jarkir (2011) outlined that for economic growth of a country, tax can be used as an important tool in following manner:-

Optimum allocation of available resources: Tax is the most important source of public revenue. The imposition of tax leads to diversion of resources from the taxed to the non-taxed sector. The revenue is allocated on various productive sectors in the country with a view to increasing the overall growth of the country. Tax revenues may be used to encourage development activities in the less developments areas of the country where normal investors are not willing to invest.

In the contemporary society, the public finance is not merely to raise sufficient financial resources for meeting administrative expense, for maintenance of law and order and to

protect the country from foreign aggression. Now the main object is to ensure the social welfare. The increase in the collection of tax increases the government revenue. It is safer for the government to avoid borrowings by increasing tax revenue, encouraging savings and investment: since developing countries have mixed economy, care has also been taken to promote capital formation and investment both in the private and public sectors. Tax revenue policy is to be directed to raising the ratio savings to national income.

Reduction of Inequalities in Income and Wealth: Through reducing inequalities in income and wealth by using an efficient tax system, government can encourage people to save and invest in productive sectors.

Acceleration of Economic Growth and Price Stability: Tax policy may be used to handle critical economic situation like depression and inflation. In depression, tax is set to increase the consumption and reduce the savings to increase the aggregate demand and vice versa. Thus the tax policy may be used to strengthen incentives to savings and investment. In under developed countries, there is another role to maintain price stability to ensure growth with stability.

Control mechanism: Tax policy is also used as a control mechanism to check inflation, consumption of liquor and luxury goods and to protect local poor industries from the uneven competition. Tax revenue is the only effective weapon by which private consumption can be curbed and thus resources transferred to the state. Thus the economy can ensure sustainable development.

2.6 Empirical Literature Review

The core function of tax revenue as a revenue generating tool in developing countries has been studied by eminent scholars. Adereti et al (2011) did a study on Value Added Tax and Economic Growth in Nigeria. They analyzed Time series data on the Gross Domestic product (GDP), VAT Revenue, Total Tax Revenue and Total (Federal Government) Revenue from 1994 to 2008 using both simple regression analysis and descriptive statistical method. The findings of the study showed that VAT Revenue accounts for as much as 95% significant variations in GDP in Nigeria. A positive and significant correlation exists between VAT revenue and GDP. Both Economic variables fluctuated greatly over the period through VAT Revenue was more stable. No causality exists between GDP and VAT Revenue, but a lag period of two years exists and also, this could be true as VAT is not easily evaded as it is collected at source on the consumption of goods and services.

Adegbie and Fakile (2011) examined the relationship between company income tax and Nigeria's economic development for the period 1981 to 2007. They used the GDP to capture the Nigerian Economy which was measured against total annual revenue from company Income Tax for the same period. They employed the use of chi-square and multiple linear regression analysis method to analyze data obtained from both primary and secondary sources. Their variables included various taxes regressed against GDP. With an R squared of 98.6% and an adjusted R impressive. It further showed that there is a significant relationship between company income tax and Nigerian economic development and the tax evasion and avoidance are the major hindrances to revenue generation.

Ramot and Ichihashi (2016) used panel data from 65 countries during the period 1970 to 2015 to examine the effects of tax structure on economic growth and income inequality and discovered that company income tax (CIT) rates have a negative impact both on economic growth and income inequality. They also discovered that personal income tax rate does not significantly affect economic growth and income inequality. The authors therefore recommended the need to develop a modest design into the tax system because countries which are able to mobilize tax resources through broad-based tax structures with efficient administration and enforcement will be likely to enjoy faster growth rates than countries with lower efficiency. Ariyo (2017) evaluated the productivity of the Nigerian tax system given the negative impact of persistent unsustainable fiscal deficits on the Nigerian economy for the period 1970-1990 to devise a reasonably accurate estimation of Nigeria's sustainable revenue profile. The results of his study showed a satisfactory level of productivity of the Nigerian tax system. The author therefore recommended an urgent need for the improvement of the tax information system to enhance the evaluation of the performance of the Nigerian tax system and facilitate adequate macroeconomic planning and implementation.

Tomljanocich (2018) in his study on the relationship between taxation and economic growth found that the CIT and PIT rate could reduce the economic performance of a country and compared progressive taxes and other tax indicators such as consumption tax and property tax.

Poulson and Kaplan (2018) explored the impact of tax policy on economic growth in the states within the framework of an endogenous growth model from 1964 to 2004. In this model, differences in tax policy pursued by the states can lead to different paths of long-run equilibrium growth. Regression analysis was used to estimate the impact of taxes on economic growth in the states and the analysis reveals that higher marginal tax rates had a negative impact on economic growth in the states. The analysis underscores the negative impact of income taxes on economic growth in the states.

Ogbonna and Ebimobowei (2018) examined the impact of tax reforms on the economic growth of Nigeria from 1994 to 2009. The study made use of relevant secondary data collected from the Central Bank of Nigeria (CBN) Statistical Bulletin, Federal Inland Revenue Service (FIRS), Office of the Accountant General of the Federation, and other relevant government agencies. The data collected were analyzed using relevant descriptive statistics and econometric models such as White test, Ramsey RESET test, Breusch Godfrey test, Jacque Berra test, Augmented Dickey Fuller test, Johansen test, and Granger Causality test. The results from the various test show that tax reforms is positively and significantly related to economic growth and that tax reforms granger cause economic growth. The study concluded that tax reforms improves the revenue generating machinery of government to undertake socially desirable expenditure that will translate to economic growth in real output and per capita basis.

Samuel, Adewole and Idih (2019) examined the implications of tax revenue on economy growth in Nigeria. It was revealed that there was a weak correlation between dependent and independent variable. It was also discovered that there was no significant relationship between tax revenue and gross domestic product in Nigeria. Osho, Ajibola & Omolola (2019) examined the impact of taxation on investment, social and economic development in Nigeria. The secondary data were obtained from relevant literatures, Central Bank of

Nigeria Statistical Bulletin and National Bureau of Statistics publications among other. Data were tested using the Ordinary Least Square Linear Regression model. The findings show that all the coefficients of the explanatory variables are all statistically significant to gross domestic product and Gross Fixed Capital Formation (GFCF) except company income tax.

3.0 Methodology

3.1 Theoretical Framework

The theoretical framework of this study is hinged on the Diffusion theory of Taxation. According to diffusion theory of taxation, under perfect competition, when a tax is levied, it gets automatically equitably diffused or absorbed throughout the community. Advocates of this theory, describe that when a tax is imposed on a commodity by state, it passes on to consumers automatically. Every individual bears burden of tax according to his ability to bear it. For instance, a specific tax is imposed on say, cloth. Manufacturer raises prices of commodity by the amount of tax. Consumers buy commodity according to their capacity and thus share burden of tax. In the words of Mansfield: "It is true that a tax laid on any place is like a pebble falling into a lake and making circles till one circle produces and gives motion to another". This quotation explains that just as a pebble gets diffused in a lake, similarly a tax imposed on a commodity is also absorbed and its burden is felt equally among various sections of community.

Advocates of this theory assume perfect competition in the market but in world of reality, it is imperfect competition which prevails. If tax gets automatically diffused through the community, then most of worries of finance minister will be over. He will simply impose tax and collect money from people without worrying about final resting place of a tax. In actual practice we find that taxes do not get distributed equally. Some taxes remain where they are imposed first and some are partly or wholly shifted on to me consumers. Diffusion theory of taxation has however been criticized. The diffusion theory of taxation has never gained any importance in the world of reality. It has never been seen that a tax gets automatically equitably distributed among people. It is true that in some taxes, diffusion or absorption does take place but that too is not throughout the community. Accordingly, another criticism of the theory of taxation is that there are few taxes like income tax, inheritance tax, toll tax in which there is no absorption at all.

3.2 Model Specification:

In order to examine the impact of tax revenue on Nigerian economic growth, a multiple linear model is built. The model captures the contribution of petroleum profit tax, personal income tax, company income tax, custom and exercise and value added tax to GDP. This is represented in the following function:

$$\mathbf{GDPgr = f (PPT, CIT, CED, VAT)} \qquad \mathbf{(1)}$$

From the above function, the following model is derived:

$$\mathbf{GDPgr} = \alpha + \beta_1 \mathbf{PPT}_t + \beta_2 \mathbf{CIT}_t + \beta_3 \mathbf{CED}_t + \beta_4 \mathbf{VAT}_t + \varepsilon \qquad \mathbf{(2)}$$

Where: GDPgr is the Gross Domestic Product growth rate: PPT is Petroleum Profit Tax CIT is Company Income Tax: CED is customs and Excise Duties: VAT is Value Added Tax

α is constant: β_1 - β_4 are the coefficient of the parameter estimate: ε is the error term.

Modeling ARDL

In its basic form, an ARDL regression model is specify thus:

$$\Delta y_t = \alpha_0 + \beta_i y_{t-1} + \lambda_k \sum_{k=1}^{k} \Delta SR_{k,t-1} + \sigma_k \sum_{k=1}^{k} LR_{k,t-1} + \mu_t \qquad (3)$$

Where: Δ denotes first difference of variable, μ_t is a random "disturbance" term, y_i is the dependent variable, while *SR* is the short-run dynamics of explanatory variables, *LR* is the long-run dynamics of the explanatory variables. $\beta, \lambda \text{ and } \sigma$ are the parameters to be estimated; α_0 is the constant parameter (Bahmani-Oskooee & Fariditavana 2016) and (Ohiomu 2020)

The ARDL representation of the macroeconomic relationship between the selected variables can be constructed from equation (3) as:

$$\Delta GDPgr = \alpha_0 + \beta_1 GDP_{t-1} + \Lambda_2 PPT_{t-1} + \Lambda_3 CIT_{t-1} + \Lambda_4 CED_{t-1} +$$
$$\Lambda_5 VAT_{t-1} + \delta_1 \sum \Delta GDP_{t-1} + \delta_2 \sum \Delta PPT_{t-1} + \delta_3 \sum \Delta CIT_{t-1} + \delta_4 \sum \Delta CED_{t-1} +$$
$$\delta_5 \sum \Delta VAT_{t-1} + ECM_{t-1} + \mu_t \qquad \ldots\ldots\ldots \qquad (4)$$

.3 Sources and Method of Data Analysis

The data for this study were collected from the Central Bank of Nigeria (CBN) statistical Bulletin (2019), NBS and Federal Inland Revenue Service (FIRS). The range span from 1986 to 2019 comprising of GDP, petroleum profit tax, company income tax, value added tax customs and exercise duties. Personal income tax variable was not included since its returns were sent to various states and Federal Capital territory. Such inclusion will amount to the use of panel data regression which is outside the scope of this study. Separate is in progress on that study to avoid possible duplication. The ARDL technique of analysis is used for this study on E-views application. The Pesaran et al (2001) methodology was used to obtain the group unit root test while the Bounds testing was used to ascertain co-integration between the regressand and the regressors in the model.

4.0 Data Presentation and Analysis

4.1 Descriptive Statistics

This section of the analysis provides an overview on the data set while attempt is also made to describe the main attributes of the data.

Table 1 Descriptive Statistics

	GDPgr	PPT	PIT	CIT	CED	VAT
Mean	27855.76	761107.5	223463.0	223463.0	85295.40	294450.9
Maximum	113711.63	3201319.	1229017.	1229017.	241400.0	802964.6
Minimum	192.27	3747.000	403.0000	403.0000	1616.000	7261.000
Std. Dev.	35195.117	1002442.	358484.6	358484.6	91349.56	282443.3
Skewness	1.632034	1.129565	1.642998	1.642998	0.572107	0.652274
Kurtosis	4.159849	2.958314	4.442973	4.442973	1.601924	1.871164
Jarque-Berra	17.49910	7.445388	18.78325	18.78325	4.079801	2.728107
Probability	0.000159	0.024169	0.000083	0.000083	0.130042	0.255623
Observations	33	33	33	33	33	24

Source: Researchers' Computation from E-views

Table 1 shows the summary descriptive statistics of all the variables under study in their raw form. Specifically, the mean values of the Companies Income Tax (CIT), Value Added Tax (VAT), Petroleum Profit Tax (PPT), and Customs and Excise duty (CED) stood at about ₦223,463 million, ₦294,450 million, ₦761,107million, and ₦85,295illionm respectively. Also, the mean of Gross Domestic Product (GDP) stood at about ₦27855 billion. This shows the average values of Tax revenue and GDP of Nigeria for the 34 years under study. The standard deviation values shown on Table 1 indicate the dispersion or spread in the data series. The variable with a higher degree of dispersion from the mean is the Gross Domestic Product (GDP), this further explains its variations over the years under study. The skewness, kurtosis and Jarque berra statistics of all variables shown on Table 1 do not fully indicate the true nature of the data series since the probability value of Jarque berra statistics of all the series are shown to be less than the acceptable 0.05 for GDP, PPT, and CIT, indicating non-normality of the series and normality of the series of CED and VAT with p-values higher than 0.05.

Group Unit Root Test Results

The result of the Group unit root test using Pesaran and Shin W-Statistics at 1 percent critical values (Table 2)

Table 2: Group Unit Root Test Result

Group unit root test: Summary
Series: GDPgr, PPT, CIT, CED, VAT
Date: 12/17/20 Time: 18:27
Sample: 1986 2019
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 7
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	9.32329	1.0000	5	141
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	10.2770	1.0000	5	141
ADF - Fisher Chi-square	0.11177	1.0000	5	141
PP - Fisher Chi-square	0.16777	1.0000	5	165

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Source: Researcher's computation (2020)

Bounds Test Results

The result from the Auto-regressive distributed lag bounds test suggests the existence of a long run co-integrating relationship among the variables used in the model. This decision is reached by observing that the null hypothesis of no co-integrating equation is rejected since the values of F-statistics is higher than their respective critical upper bound values at the 1% level of significance.

Table 3: ARDL Bounds Test

ARDL Bounds Test
Date: 12/17/20 Time: 18:31
Sample: 1989 2018
Included observations: 30
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	17.04148	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Test Equation:
Dependent Variable: D(GDP)
Method: Least Squares
Date: 12/17/20 Time: 18:31
Sample: 1989 2018
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	0.096930	0.305797	0.316976	0.7585
D(GDP(-2))	-0.602776	0.675297	-0.892608	0.3953
D(GDP(-3))	-0.707883	0.265412	-2.667105	0.0257
D(CIT)	-0.000398	0.003727	-0.106792	0.9173
D(CIT(-1))	-0.043794	0.020142	-2.174286	0.0577
D(CIT(-2))	-0.047519	0.022261	-2.134660	0.0616
D(CIT(-3))	-0.033248	0.013479	-2.466733	0.0358
D(CED)	-0.007414	0.006375	-1.163046	0.2747
D(CED(-1))	-0.035045	0.020195	-1.735346	0.1167
D(CED(-2))	-0.068186	0.017038	-4.001899	0.0031
D(CED(-3))	-0.021028	0.030480	-0.689898	0.5077
D(VAT)	-0.014173	0.008195	-1.729348	0.1178
D(VAT(-1))	0.080143	0.037835	2.118215	0.0632
D(VAT(-2))	0.092083	0.021566	4.269939	0.0021
D(VAT(-3))	0.059600	0.021046	2.831937	0.0197
C	-97.26538	244.9996	-0.397002	0.7006
PPT(-1)	6.85E-06	0.000825	0.008298	0.9936
CIT(-1)	0.041899	0.023010	1.820923	0.1020
CED(-1)	0.039337	0.017381	2.263241	0.0499
VAT(-1)	-0.073670	0.035676	-2.064966	0.0689
GDP(-1)	0.314146	0.402925	0.779662	0.4556

R-squared	0.998456	Mean dependent var	4680.377
Adjusted R-squared	0.995024	S.D. dependent var	5544.958
S.E. of regression	391.1648	Akaike info criterion	14.97216
Sum squared resid	1377089.	Schwarz criterion	15.95300

Log likelihood	-203.5824	Hannan-Quinn criter.	15.28594
F-statistic	290.9200	Durbin-Watson stat	2.057067
Prob(F-statistic)	0.000000		

Source: Researcher's computation Using E-Views

ARDL Test Results

Table 4: ARDL Test Results

Dependent Variable: GDP
Method: ARDL
Date: 12/17/20 Time: 18:29
Sample (adjusted): 1989 2018
Included observations: 30 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): PPT CIT CED VAT
Fixed regressors: C
Number of models evalulated: 2500
Selected Model: ARDL(4, 0, 4, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	1.413144	0.249182	5.671141	0.0003
GDP(-2)	-0.746674	0.427898	-1.744980	0.1149
GDP(-3)	-0.701032	0.440364	-1.591937	0.1459
GDP(-4)	0.231546	0.245466	0.943291	0.3702
PPT	-0.001579	0.000538	-2.932476	0.0167
CIT	0.017941	0.006684	2.684131	0.0250
CIT(-1)	0.006291	0.004526	1.389933	0.1980
CIT(-2)	0.007011	0.004522	1.550454	0.1554
CIT(-3)	0.019808	0.006885	2.876829	0.0183
CIT(-4)	0.025776	0.004796	5.373997	0.0004
CED	-0.003117	0.004462	-0.698605	0.5025
CED(-1)	0.013323	0.004266	3.123360	0.0123
CED(-2)	-0.045739	0.008171	-5.597768	0.0003
CED(-3)	0.058671	0.014235	4.121726	0.0026
CED(-4)	0.044465	0.018494	2.404249	0.0396
VAT	-0.011477	0.005932	-1.934745	0.0850
VAT(-1)	-0.002343	0.010940	-0.214180	0.8352
VAT(-2)	0.025709	0.013255	1.939593	0.0844
VAT(-3)	0.008952	0.017267	0.518452	0.6166
VAT(-4)	-0.048759	0.015448	-3.156253	0.0116
C	146.3562	189.7989	0.771112	0.0504

R-squared	0.986785	Mean dependent var	35300.25
Adjusted R-squared	0.975952	S.D. dependent var	40542.17
S.E. of regression	279.7265	Akaike info criterion	14.30153
Sum squared resid	704222.1	Schwarz criterion	15.28237
Log likelihood	-193.5229	Hannan-Quinn criter.	14.61531
F-statistic	30458.49	Durbin-Watson stat	2.10955
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Source: Researcher's computation using E-Views

Co-integration Long Run Results

Table 5: ARDL Co-Integrating and Long Run Results

ARDL Cointegrating And Long Run Form
Dependent Variable: GDP
Selected Model: ARDL(4, 0, 4, 4, 4)
Date: 12/17/20 Time: 18:32
Sample: 1985 2018
Included observations: 30

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	1.216160	0.439822	2.765119	0.0219
D(GDP(-2))	0.469486	0.573948	0.817994	0.4345
D(GDP(-3))	-0.231546	0.245466	-0.943291	0.3702
D(PPT)	-0.001579	0.000538	-2.932476	0.0167
D(CIT)	0.017941	0.006684	2.684131	0.0250
D(CIT(-1))	-0.007011	0.004522	-1.550454	0.1554
D(CIT(-2))	-0.019808	0.006885	-2.876829	0.0183
D(CIT(-3))	-0.025776	0.004796	-5.373997	0.0004
D(CED)	-0.003117	0.004462	-0.698605	0.5025
D(CED(-1))	0.045739	0.008171	5.597768	0.0003
D(CED(-2))	-0.058671	0.014235	-4.121726	0.0026
D(CED(-3))	-0.044465	0.018494	-2.404249	0.0396
D(VAT)	-0.011477	0.005932	-1.934745	0.0850
D(VAT(-1))	-0.025709	0.013255	-1.939593	0.0844
D(VAT(-2))	-0.008952	0.017267	-0.518452	0.0366
D(VAT(-3))	0.048759	0.015448	3.156253	0.0116
CointEq(-1)	-0.803015	0.474446	-1.692531	0.0248

Cointeq = GDP - (-0.0020*PPT + 0.0957*CIT + 0.0842*CED -0.0348*VAT + 182.2583)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PPT	0.001966	0.000741	2.653813	0.0263
CIT	0.095672	0.045007	2.125702	0.0125
CED	0.084187	0.038388	2.193044	0.0460
VAT	-0.034766	0.053338	-0.651804	0.0308
C	182.258318	171.469052	1.062923	0.0155

Source: Researcher's computation (2020)

From Table 4 and judging by the values of the t-statistic of the explanatory variables of the model and their corresponding probabilities, it can be inferred that PPT at first difference, VAT at third lag, CIT at second and third lags as well as CED at first lag to third lags are statistically significant determinants of economic growth in the model at 1 % and 5% levels of significance on the short-run. Hence, the null hypothesis is rejected meaning that the values of tax revenue from the period of 1986 to 2019 have an impact on economic growth (GDP) on the short-run. On the long run, the tax revenue from PPT, CIT and CED significantly contributed to economic growth

The result also shows that R^2 in this model and its adjusted counterpart is about 98.89% and 97.6% respectively. This means that about 97.6 percent of the variations in economic growth (GDP) are explained by variations in the explanatory variables. This implies that the unexplained variation in the model is just about 2.4 percent. The value of the F-statistic which is a measure of the significance of R^2 for the model is high at about 30458.5, and also statistically significant even at the 1 percent level. Based on this, we therefore accept the hypothesis that all slope coefficients in the model are simultaneously significantly different from zero and as such the overall model is significant in explaining the changes in economic growth (GDP) over the sample period. Finally, the Durbin-Watson statistic of about 2.1 depicts that serial correlation is absent from the model.

From Table 5, there is evidence of existence of a positive long run relationship between revenue PPT, CIT and CED and economic growth. Revenue from VAT is however shown to have a negative insignificant effect on economic growth. Perhaps, the fluctuations in prices and bottleneck in the remittance of VAT from the appropriate agencies to government during the period under review could be attributed this dismal performance.

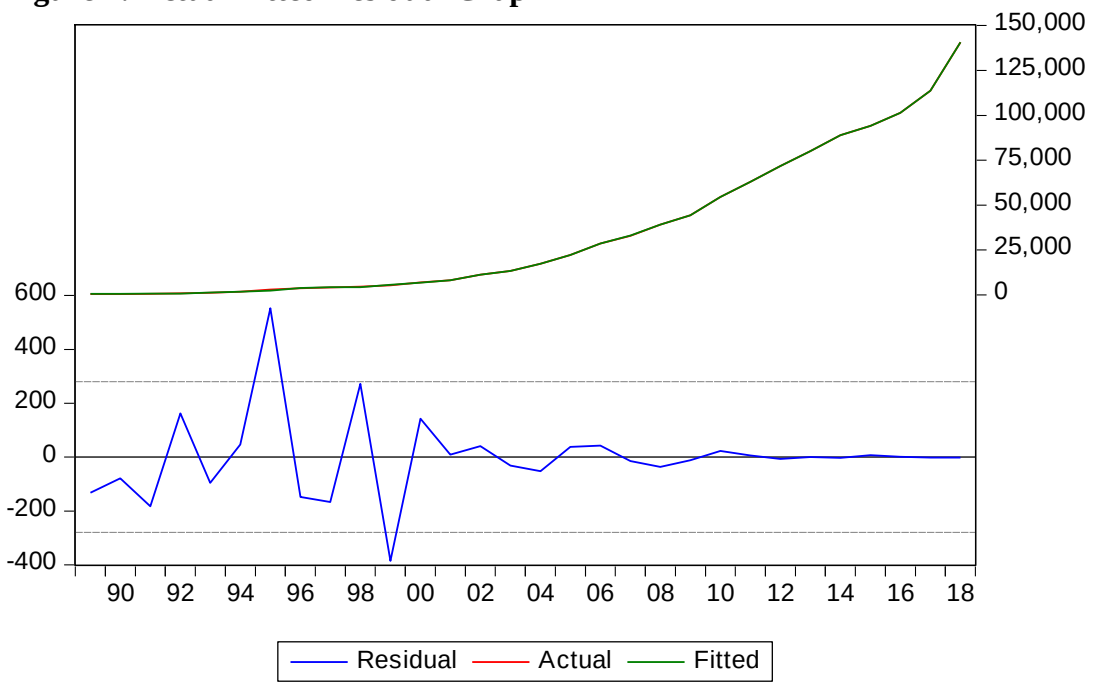
Justification for Cointegration: When the F-statistic is below the lower critical bounds value, it implies no cointegration; when the F-statistic falls into the bounds then the test becomes inconclusive. However, when the computed F-statistic exceeds the upper critical bounds value, then the H0 is rejected which implies there is cointegration (Narayan 2004, 2005) and (Ohiomu 2019). Similarly, a significant negative coefficient for ECM_{t-1} not only supports cointegration but the size of coefficient measure the speed of convergence towards equilibrium. Invariably, cointegration is supported by both the F test and ECM_{t-1}

4.3 Policy Implications

The result obtained from the ARDL Bounds test was used as a guard for the policy implication of the research. The result shows that there is a positive long run relationship between revenue PPT, CIT and CED and economic growth. Revenue from VAT is however shown to have a negative insignificant effect on economic growth. Perhaps, the fluctuations in prices and bottleneck in the remittance of VAT from the appropriate agencies to government during the period under review could be attributed this dismal performance. Hence policies should be made towards the minimization of the bottleneck and bureaucracy on VAT administration while more efforts should be geared towards improving the efficiency and effectiveness of tax administration in Nigeria. This will improve economic growth. Perhaps, the institutions and the machinery of taxation should be well established and strengthened, as advocated by Professor Douglass North, to achieve the desired objectives. Thus this findings show that there is a significant relationship between revenue taxation and economic growth (GDP) in Nigeria.

The actual-fitted residual graph is shown in figure 1 while the standardized graph and the gradient graphs are show in figure 2 and figure 3 respectively

Figure 1: Actual Fitted Residual Graph

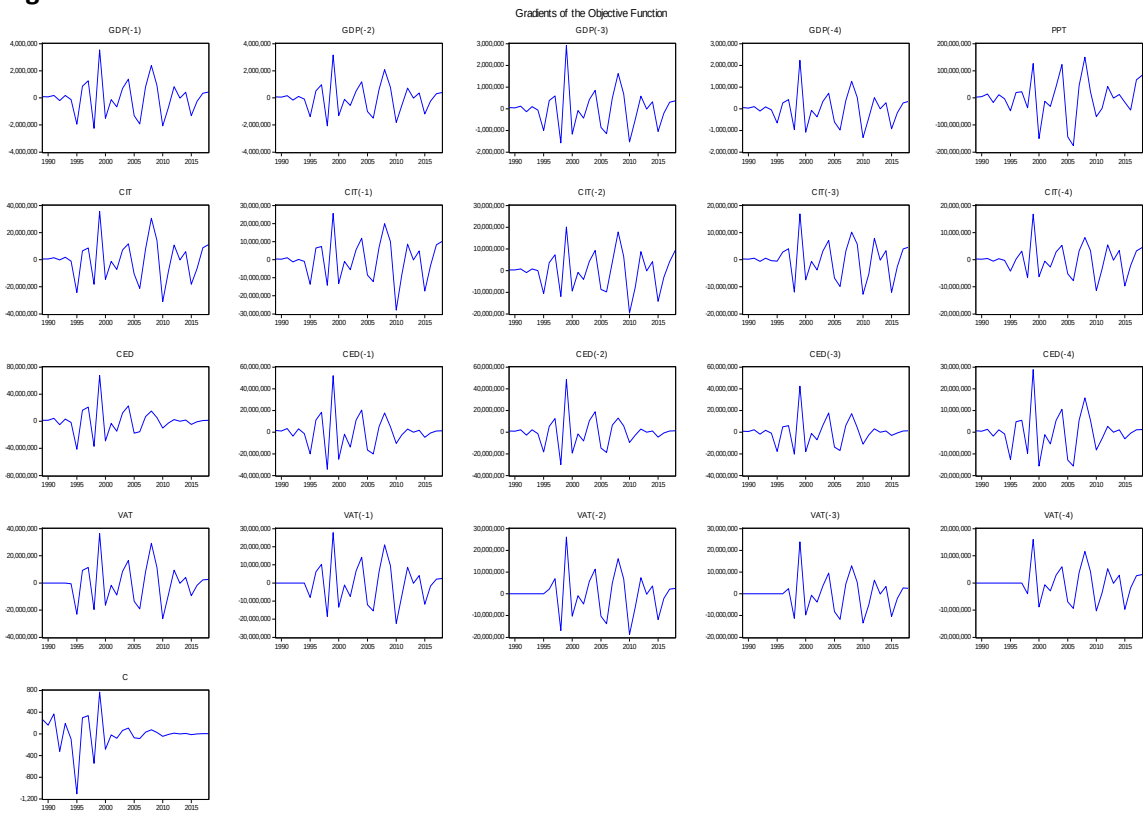


Source: Researcher's computation using E-Views

Figure 2: Standardized Graph

Source: Researcher's computation (2020)

Figure 3: GRADIENT GRAPH



Source: Researcher's computation using E-Views

5.0 Summary, Conclusion and Recommendations

5.1 Summary

The research work focuses on the examination of nexus between Taxation and economic growth in Nigeria. Results showed that there is a positive relationship between the contribution of taxes and GDP and the tax revenue has a great impact on the GDP of Nigeria. The null hypothesis which states that taxation does not have any significant impact on the growth of the Nigeria economy is hereby rejected. It can therefore be said that there is a strong positive relation between contribution of revenue from taxes and GDP as shown in the result presented where an R^2 = 99.2% and adjusted R^2 of 99.1% was reported. This signifies that tax revenue has a very high impact on the economic growth of Nigeria as a source of revenue available to government for the purpose of Growth and development. The finding agrees with the findings of Adegbie (2011). This implies that taxes contribute largely to Nigeria's GDP as a developing nation unlike Botswana where tax revenue over the nation's GDP is not impressive.

The test carried out on the various tax revenues to determine their individual impact on GDP shows that petroleum profit tax, company income tax and custom and exercise duties have positive impact on Nigeria's economic growth while value added tax poses insignificant negative influence on Nigeria's economic growth. The findings of this study can be rationalized by the explanation given by expediency theory, where the theory explains that taxes generated in a nation should be able to meet its economic and social objectives. The main issue facing the Nigerian tax system is the effectiveness and efficiency in the administration of these taxes. Tax revenue provides a powerful set of policy tools to the authorities and should be effectively used for remedying economic

and social ills of the society such as income inequalities, regional disparities, unemployment, and cyclical fluctuations and so on.

5.2 Conclusion

The findings of this study contribute towards a better understanding of tax revenue and economic growth in Nigeria. GDP and four other variables that represent petroleum profit tax, company income tax, custom and excise duties, and value added tax were developed to test which factors best describes economic growth in Nigeria.

The result shows that petroleum profit tax, company income tax, custom and excise duties are significant variables in explaining the economic growth in Nigeria. Out of all the four independents variables, it is only Value Added Tax that shows a negative insignificant relationship with economic growth which implies that they are both moving in inverse direction. The implication of our findings is pointing majority at policy makers, especially the Federal Board of Inland Revenue as most of our variables shows a positively significant relationship with economic growth, meaning that there should be no area in tax collection that should be taken lightly as they have all proven to be a major variable in connection to the growth of the economy.

One of the main purposes of tax revenue is to raise revenue that the government can use to provide adequate amenities and infrastructure for its citizens as well as enhance growth and development but the case seems to be different in Nigeria as the physical evidences does not show that funds generated from tax revenue are used for this purpose. Our analysis has thrown some light on the impact of tax revenue on Nigeria's economy. It is glaring that the Nigerian total tax revenue generated has a significant impact on the economy in general.

5.3 Recommendations

The following recommendations emerged from the findings and conclusions of the study:

- FIRS and JTB in conjunction with government should appropriate policy on VAT remittance as well as putting measure in place towards the minimization of the bottleneck and bureaucracy on VAT administration to achieve the desired result.
- Appropriate policies and strategies should be in place geared towards improving the efficiency and effectiveness of tax administration in Nigeria. This will improve economic growth. Perhaps, the institutions and the machinery of taxation should be well established and strengthened
- It is recommended that Government should transparently and judiciously account for the revenue it generates through PPT by investing in the provision of infrastructure and public goods and services. It is expected that the more effectively and efficiently revenue is utilized by Government to create growth, employment opportunities and wealth in the economy, the more willing taxpayers would be to meet their obligations to the Government and discharge their duties in the overriding goal of achieving National Development.

Recommendation for Further Research

The result from this study showed that VAT revenue posed negative influence and insignificant to economic growth contrary to expectation and existing theory. What would have been responsible for this absurdity? It is hereby recommended that further study be carried out on the influence of VAT revenue on GDP and other macroeconomic variables in developing economies including Nigeria.

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TRADE LIBRALIZATION AND ECONOMIC GROWTH IN NIGERIA

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Abstract

The relationship between trade liberalization and economic growth in Nigeria was examined in this study from 1980 to 2019. The study used the Error Correction Model (ECM). The results showed that trade liberalization do not support economic growth in Nigeria. Hence, the cogency of the extensive trade liberalization promotion in developing countries through the bright idea of international groups in the 1980s and 1990s was not authenticated. The study, therefore, recommends that policymakers government functionaries should symmetry its strategies of trade liberalization as a result of the inability of the economy to absorb the hostile shocks from foreign trade, suitable fiscal and monetary policies should be deployed by the government for the safeguard of the economy against foreign powers and the diversification of the structure of export is obligatory to ensure that manufactured products are exported more. Also, the Central Bank of Nigeria and policymakers of the government should propose comprehensive macroeconomic policies that will safeguard price stability to condense the qualms allied with investment in the economy to boost economic growth. The government should also provide motivations to investors and a favorable environment for investment. Moreover, the government should initiate policies of growth for the advancement of trade.

Keywords:-Trade liberalization, economic growth, trade openness

JEL Classification: F15, F43 and F62

1.0 Introduction

The world becoming a global village with the attendant neo-liberal economic policy has impacted on the economic growth and national development in developed countries. Nevertheless, the application of these policies in developing countries such as Nigeria led to an increased level of socio-economic disproportion and a deteriorated process of national development. There are two types of trade: International trade and internal trade. The former is the exchange of goods and services between countries, while the latter is the trade that ensues within the geographical boundaries of a country (Kimberly, 2018). International trade, just like internal or domestic trade, is very central to the economic life of all nation. Its dearth poses critical macroeconomic complications. The glitches among others comprise; massive external debt, balance of payment disequilibrium and protracted inflationary problem (Giddens, 1996).

In the past, trade has acted as a dynamic apparatus of growth for countries at different stages of development, not only by contributing to a more creative allocation of resources within countries, but also by diffusing growth from one part of the world to another.

In the past years, many economies of the World have become progressively connected, through expanded trade. International trade has repeatedly played a fundamental role in the chronological know-how of the developing world. This is because of the economic influence that trade has on development. There are, however, stagnant and vibrant gains from trade between countries, but these gains are not fairly distributed. The classical and neo-classical economists devoted so much importance to foreign trade in a nation's development that they regard trade as an engine of growth. Foreign trade has been acknowledged as the oldest and most imperative part of a country's external economic relationships. It plays a spirited and fundamental role in the development of a modern international economy. Its bearing on the growth and development of countries has amplified significantly over the years and has meaningfully contributed to the development of the world economy.

The influence of international trade on a country's economy is not only restricted to the quantifiable expansions, but also structural transformation in the economy and enabling of international capital movement. Trade boosts the resourceful production of goods and services through the transfer of resources to countries that have comparative advantage in their production. As trade grows, international earnings surge. However, international trade cannot happen without the economic openness of the countries involved. Open economies have been able to harness the power of trade to increase competitiveness and productivity, helping improve living standards and sustain economic growth. Trade openness is the condition where nations of the world yoke together to the level that they have free trade, free movement of capital and financial activities (Igudia, 2004).

Economists generally see the notion of trade openness as the integration among the nations of the world. Openness also point toward the reliance of the country on foreign trade. The size of openness rate indicates the importance level of foreign trade for the economy of the country. Openness to trade is important for enhancing manufacturing sector growth and attracting more technological innovations. Openness to trade, including openness to flow of factors, ideas and information stimulates economic and political progress of nations of the world. (Aboagye, 2006).

The modes and indicators of trade openness include the rapid growth of international trade, foreign direct investment and international flows of capital and information. This could be one of the reasons for the formation of various regional economic groups around the world such as European Union (EU), Organization of Economic Co-operation and Development (OECD), Organization of Petroleum Exporting Countries (OPEC), with a view to harmonizing policies in order to reap the gains of economies of scale. Usually, trade openness leads to trade liberalization. Trade liberalization is a shift of the trade regime from the use of quantitative restriction to the use of price instruments, (Kruager, 1998). With this definition, a conversion of quantitative restriction to tariff would constitute liberalization. However, a particular important property of the definitions which have been given is that trade liberalization does not require zero or even very low tariff. It is possible to have a liberalized economy with a very high tariff (Edwards, 1993). The debate on whether the liberalization of trade will lead to higher growth rate is an ancient one that has survived the test of time from the founding fathers like Adam Smith, John Stuart Mill, all the way to John Maynard Keynes and many others. Two diametrically opposed views have emerged from this critical debate. One perspective is of the opinion that trade liberalization will shift manufacturing productivity by opening

up the economy to superior foreign product which compels infant industries to close up. The other is that outward-oriented trade policy will induce overall industrial efficiency in the economy by exposing local firms to competition, thereby improving the allocation of factors across sector and increasing the value of domestic production. Given that the economic growth rate in Nigeria has increased to warrant attention of why there has not been development and reduction in poverty, the concern of this study is to investigate the role played by trade liberalization since the impact of trade varies from country to country depending on the level of social, economic and political development.

1.2 Statement of Problem

The institutions necessary to aid the success of trade liberalization as it affects economic growth in Nigeria are scanty or are poor since there are no efficient and corrupt-free institutions in the country. The major aim of trade liberalization is to open up economies so that countries can learn from themselves and improve production and output. However, most developed countries are not truly willing to expose their methods of production and technologies simply because of the fear of domination.

International trade is expected to be beneficial to participants in form of lower prices, variety of products etc, as studies have it that firms exposed to the world's best practices demonstrate higher production through channels such as learning from these best practices, and also creating new products and processes in response to this exposure, but in the case of Nigeria, it has left our industries and subsequently, our economic growth in a state of comma as domestic infant industries are destroyed by competition with already established international firms without bringing about creation of new ones.

Also, majority of the countries engaging in trade hoard important commodities which are needed in Nigeria; yet they get every single thing they need from Nigeria. This therefore results in a situation where trade is liberalized only in words but not in action. The developing countries, specifically Nigeria, learn more or less nothing when it comes to improved ways of doing things. Instead, we are used as a dumping ground by other countries.

It is on the basis of the above that the study intends to address these various problems hindering the supposed impact of trade liberalization on the economic growth in Nigeria. It also intends to address the issues confronting the Nigerian manufacturing sector and to suggest ways to increase manufacturing output through an efficient liberal trade regime and thereby enhancing the economic growth of the Nigeria nation state.

2.0 Literature Review

The relationship between trade liberation and economic growth has been generally examined by numerous economists across the globe using various methods of analysis. Unfortunately, the empirical observations have been found to lack uniformity across nations. In addition the various methodologies used to carry out these studies differ widely and range from the use of the Ordinary Least Square Framework (OLS) to the Vector Error Correction Model (VECM) among others, has further led to an open playing field when it comes to the analysis of this relationship.

2.1 Theoretical Background

The theory of absolute advantage by Adam Smith, comparative advantage by David Ricardo, Heckscher-Ohlin model of factor endowment and the new growth theory or the

endogenous growth theory models are some of the models that explain the benefits of trade liberalization to countries. The theory mostly used by researchers to scrutinizing the link between trade liberalization and economic growth is the Factor Endowment Theory Hechscher, (1919) and Ohlin, (1933), two Swedish Economists advanced this theory also known as Hechscher-Ohlin trade theory. This theory studies the general equilibrium characteristics of an open economies. It clarifies the explanations for differences in relative commodity prices and economical advantage between two nations. According to this theory, a nation will export the commodity whose production requires intensive use of the Nations relatively abundant and cheap factors and import the commodity whose production requires intensive use of the Nations scarce and expensive factors. Thus, a country with an abundance of cheap labour would export labour – intensive products and import capital – intensive goods and vice-versa. It suggests that the patterns of trade are determined by factor endowment rather than productivity. This implies that developing countries are labour abundant and therefore they should concentrate in the production of primary products and should import capital intensive products i.e. manufactured goods from the developed countries. The model also assures two countries, two commodities and factor inputs, and labour and capital which are assumed also to be homogenous (Pugel and Lindert, 2000

2.2 Empirical Literature

Elijah and Musa (2019) using the dynamic weight of trade libralization on Nigeria's economic growth from 1980 – 2016 using the Error Correction Model (ECM). The short-run and long-run results showed that trade openness hurt economic growth in Nigeria. In same vain, Ajayi and Araoye (2019) used the VECM to examine the influence of trade openness on Nigeria's economic growth for the period of 1970 to 2016. The result of the cointegration test displayed the presence of a long-run relationship among the variables. The findings revealed that trade openness had undesirable relationship with economic growth in Nigeria.

Moyo and Khobai (2018) studied the link between of trade libralization and economic growth for eleven Southern African Development Cooperation (SADC) countries of Botswana, Madagascar, Mauritius, Namibia, Swaziland, Zambia, Lesotho, Malawi, Mozambique, South Africa and Tanzania over the period of 1990 to 2016 using the ARDL Bounds test method and Pooled Mean Group (PMG) model. The findings showed that trade openness exerted a negative impact on economic growth in the long-run.

Yakubu and Akanegbu (2018) probed empirically on the relationship between trade liberalization and economic growth in Nigeria over the period of 1981 to 2017 using the OLS. The outcomes showed that trade openness exerted a positive and substantial effect on economic growth. However, the result of the Granger causality test revealed that there is a unidirectional causality running from real Gross Domestic Product (GDP) to degree of openness.

Correspondingly, Kalu, Nwude, and Nnenna (2016) using the Classical Linear Regression Model (CLRM) over the period of 1991 to 2013, reconnoitered the effect of trade openness on economic growth in Nigeria. The results discovered that export and net export both had positive and significant relationships with economic growth. However, import had a positive and significant link with economic growth.

Additionally, Manwa (2015) examined the effect of trade liberalization on the economic growth of the five Southern African Customs Union (SACU) countries of Botswana, Namibia, South Africa, Swaziland and Lesotho through the ARDL Bounds testing method to cointegration for the period of 1980 to 2011. The study utilized fixed–effects panel data estimations as well for testing the strength of empirical findings among the five countries. The results revealed that in the case of Lesotho, Botswana, Swaziland and Namibia, liberalization of trade measured through trade ratios, tariffs, the real effective exchange rate and adjusted trade ratios exerted an insignificant impact on economic growth. However, in the situation of South Africa, trade liberalisation had an impact on economic growth.

Ude and Agodi (2015), in their study: Does Trade Openness Make Sense? Investigation of Nigeria Trade Policy" using Real gross domestic product, exchange rate, interest rate and trade openness, it further empirically examined whether trade openness make sense using Nigeria trade Policy as a yardstick using secondary data from the period under investigation ranged from when Nigeria adopted unrestricted trade policies, that is 1984-2013. The study employed Auto-regressive conditional Heteroscedasticity (ARCH), Generalized Auto-regression Conditional Heteroscedasticity (GARCH) and Pairwise-Granger causality methodology. Results shows that trade openness have a significant impact on economic growth. The control variables (Interest rate and exchange rate) have significant positive effect on economic growth in Nigeria. The Pairwise Granger causality test shows that there is a unidirectional causality between economic growth and trade openness at lag one only.

Dao (2014) used the technique of panel data and pooled Ordinary Least Square (OLS) regression to examine the nexus between trade liberalization and economic growth for 71 countries panel globally for 1980-2010. The results showed that trade shares had a positive and significant link with economic growth.

Kalu *et. al*., (2016), investigated the impact of trade liberalization and institutions on economic growth in thirty (3) selected sub-Saharan African developing countries. The scope of the study covered the period of 1985 – 2012. The study focused on economic, political and cultural institutions. Selection of countries was based on world banks (2007) classification of countries into moderately outward oriented (MOO), moderately inward oriented (MIO) and strongly inward oriented (SIO) countries. Variables used were independent variables: Gross fixed capital formation (G kap), labour (Lab), Institutional variables (INST), and Trade liberalization (TLIB). While the dependent variable is growth rate of gross domestic product (GRGDP). The statistical measure used is the pooled ordinary least square, while the estimation methods are least square Dummy variables (LSDV) and the Generalised methods of moment's technique (GMM). The findings/results shows that the impact of trade liberalization, economic and political institutions on growth were more visible in central Africa while cultural institutions impacted more on growth in East and Southern Africa. International trade seem to be affected more by strong political and cultural institution than strong economic institutions. The study therefore concludes that trade liberalization and institutions have significant impacts on economic growth, in order for the countries under study to harness maximum gains from international trade, there has to be the presence of strong institutions.

3.0 Research Methodology

Here we presents the methodology of the study. Specifically, it covers data sources and definition, model specification, a-priori expectation, estimation techniques and model evaluation.

3.1 Source Data

The data that was used for this study come primarily from secondary sources. That is, data will come principally from the publications of the Central Bank of Nigeria's (CBN) Annual Reports and Statement of Accounts; Economic and Financial Review: and Principal Economic Indicators. Furthermore, publications from the National Bureau of Statistics (NBS): Annual Abstract of Statistics and the International Financial Statistics (IFS) published by the International Monetary Fund (IMF); as well as the yearly Expenditure of the Federal Government during the period of study were perused.

3.2 Model Specification

The model for this study was specified in line with the study of Molem and Ndifor (2016). Recall that the objective of the study is to examine trade liberalization and economic growth in Nigeria. GDP was used as the proxy for economic growth. The functional form of the model is stated as follows:

$$GDPPC = f(TOP, GCF, INF, GOE) \quad \ldots\ldots\ldots\ldots (1)$$

The econometric models that express the cause-effect relationship between the variables under investigation can be stated as:

$$GDPPC_t = \beta_0 + \beta_1 TOP_t + \beta_2 GCFt + \beta_3 INF_t + \beta_4 GOE_t + u_t \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

$GDPPC_t$ = GDP per Capital at time t

TOP_t = Trade Openness per period measured as ratio of the sum of Exports (X) and Imports (M)

at a particular period to the Gross Domestic Product, i.e., $TOP_t = \left[\frac{(X+M)_t}{GDP_t}\right]$

GCF_t = Gross Capital Formation at time t

INF_t = Inflation Rate at time t

GOE_t = Government Expenditure at time t

β_0= intercept; β_{irs} = the various slopes of respective variables, and U_t is the stochastic error term.

Table 3.1 Variable name, definitions, measures, source and expected signs

Variable Name	Definition and/or Proxy	Source	Expected Sign
Dependent Variable			
GDP per Capital (GDPPC)	Gross Domestic Product per Capital (GDPPC) in US Dollars	CBN, WB, WDI	Dependent Variable
Independent Variables			
Trade Openness (TOP)	Sum of Exports and Imports divided by GDP	CBN, WB, WDI	Positive

Gross Capital Formation (GCF)	Gross Capital Formation	CBN, WB, WDI	Positive
Inflation Rate (INF)	Consumers Price Index	CBN	Negative
Government Expenditure (GOE)	Government Spending on Goods and Services	CBN	Positive

Source: Authors' Compilation

3.3 Model Estimation Techniques

The model would be estimated using the application E-views (econometric views) which will help ascertain all statistical test and significance that would suit the linear model. The Ordinary Least Square (O.L.S) technique would be implemented in the analysis of the relationship between trade liberalization and economic growth in Nigeria. This is because the ordinary least square estimate is the best linear unbiased estimator and is used to know the magnitude and relationship between trade liberalization and gross domestic product in the specified time period. The data derived are secondary data and are mainly from 1980 to 2019 a 40 year period.

3.4 Model Evaluation

The model is evaluated based on two criterions

Economic Criteria: These criterion assesses the signs and size of coefficient estimates. It is also known as the a-priori expectation. It investigates parameter estimates align with the expected results.

Statistical Criteria: This criterion is equally the first-order criteria. It consists of coefficient of determination, t-test statistic, probability values, F-value, the unit root, cointegration and error

4.0 Presentation and Interpretation of Results.

This sub-section presents the statistical properties of the variables. The trend in variables of interest, and the univariate statistics of the variables which include; the mean, median, skewness, Jarque-Bera, kurtosis, among others are reported.

Table 4.1 Descriptive Statistics

	GDPPC	TOP	GCF	INF	GOE
Mean	1747.918	32.30104	35.94513	19.14692	3.726667
Median	1581.560	34.02000	34.05000	12.55000	2.090000
Maximum	2563.900	53.27800	89.39000	72.84000	9.450000
Minimum	512.2500	9.140000	14.17000	5.390000	0.910000
Std. Dev.	486.3210	12.40451	19.39011	17.06324	2.835646
Skewness	0.139573	-0.368717	1.027076	1.783736	0.798864
Kurtosis	2.420853	2.250624	3.718335	4.998151	2.175168
Jarque-Bera	0.671668	1.796230	7.695263	27.16913	5.253760
Probability	0.714742	0.407337	0.021330	0.000001	0.072304

Sum	68168.81	1259.740	1401.860	746.7300	145.3400
Sum Sq. Dev.	8987307.	5847.130	14287.09	11063.86	305.5537
Observations	39	39	39	39	39

Source: Author's Computation

The first two descriptive statistics that is the mean and median are measures of central tendency for all the variables. The GDPPC has the highest standard deviation (deviation from the mean) while GOE has the lowest standard deviation.

Beginning with the statistical properties to determine the normality of the study variables, the probability of the Jarque- Bera statistics tells whether the distribution is normal or not. Therefore, if the probability is less than 0.05, we reject the null hypothesis and concluded that the distribution is not normal.

GDPPC; given this time period (1980-2019), an average; minimum and maximum GDPPC of 1,747.91 512.25 and 2,563.90billion US dollar respectively were recorded with risk of 486.32b. TOP: had a mean, minimum, maximum and risk of 32.30b, 9.14b, 53.28b, and 12.40b respectively. GCF; had a mean, minimum, maximum and risk of 35.95b, 14.17b, 89.39b and 19.39b respectively. INF; had a mean, minimum, maximum and risk of 19.15%, 5.39%, 72.84%, and 17.06%all in USD respectively. GOE; had a mean, minimum, maximum and risk of 3.73b, 0.91b, 9.45b and 2.84b all in USD respectively

4.2 The Unit Root (Stationarity) Results

Macroeconomic data usually exhibit stochastic trend that can be removed through only differencing. We employed the Augmented Dickey Fuller (ADF) test, to test the order of integration of the variables. The regressions were run for all the series at both level and first difference and, with constant and trend in the equation. The results of the ADF test is presented in the table below.

Table 4.2 Augmented Dickey- Fuller Unit Root Test

Variables	Augmented Dickey Fuller (ADF)	5% Mackinnon Critical Value	Remark	Order of Integration
GDPPC	-9.090792***	-2.943427	Stationary	I(1)
TOP	-7.937716***	-2.941145	Stationary	I(1)
GCF	-4.571662***	-2.941145	Stationary	I(1)
INFL	-5.835052***	-2.941145	Stationary	I(1)
GOE	-5.794031***	-2.941145	Stationary	I(1)

Source: Author's Computation

*Note: *, **, *** statistically significant at 10%, 5%, and 1% Significant levels respectively.*

The unit root result above shows that all the variables were found to be integrated of order 1. That is, they are 1 (1) variables. The result from the stationary test therefore calls for long-term relationship.

4.3 Johansen Co-Integration Test

The co-integration test establishes whether a long-run equilibrium relationship exist among the variables. To establish co-integration, the likelihood ratio must be greater than the Mackinnon Critical Value @ 5% levels of significance and the co-integrating equation is chosen from the normalized co-integrating coefficient with the lowest log likelihood.

Table 4.3 Johansen Co-integration Result of GDPPC and TOP.

Maximum Eigen Value	Trace Statistics	5% Critical Value	Hypothesized No. CE(S)
0.600597	70.29491	69.81889	r = 0*
0.336003	36.33690	47.85613	r ≤ 1
0.299672	21.18620	29.79707	r ≤ 2
0.161767	8.006542	15.49471	r ≤ 3
0.039147	1.477564	3.841466	r ≤ 4

Source: Authors' Computation.

**denotes rejection of the hypothesis at 5% significance level.*

Using the trace statistics, table 4.4.1 shows one co-integrating equations at 5% significance level. This implied that long run relationship exists among the variables. This led to the rejection of the hypothesis of no co-integration. The co-integrating equation chosen from the Normalized co-integrating coefficients is;

GDPPC = 21.30641 TOP 32.62786 GCF -6.643566 INF -53.53945 GOE
(5.15104) (4.57367) (3.40300) (25.0747)

Note: Standard Error statistics are stated in parenthesis

From the co-integrating equation, TOP and GCF have a negative relationship with GDPPC in the long run. In the long run, a unit increase in TOP and GCF lead to a decrease in GDPPC by 21.30641 and 32.62786 units respectively. While an increase in INF and GOE will respectively cause GDPPC to increase by 6.643566 and 53.53945.

4.4 Error Correction Model (ECM)

Co-integration is a prerequisite for the error correction mechanism. Since co-integration has been established, it is pertinent to proceed to the error correction model.

Table 4.4 Result of the Error CorrectionModel (ECM) Dependent Variable = d(GDPPC**)**

Variable	Coefficient	Standard Error	t-statistics	Probability Value
C	22.63563	32.84505	0.689164	0.4957
D(TOP)	-6.281875	3.843746	-1.634311	0.1120
D(GCF)	5.953755	6.427733	0.926260	0.3612
D(INF)	-5.153274	2.175553	-2.368719	0.0241
D(GOE)	1.694136	30.02246	0.056429	0.9554
ECM(-1)	-0.579747	0.127242	-4.556266	0.0001

R^2 =0.433640	**R^{-2}** =0.345146	**f-statistics** =4.900230	**Prob (F-Statistics** = 0.001930	

Source: Authors' Computation

The ECM equation shows that TOP has a negative and insignificant relationship with GDPPC. The negatively signed coefficient of TOP contradicts the a priori expectation. A unit increase in TOP consequently means that GDPPC falls by 6.281875units. The findings suggest that trade openness has not been beneficial to Nigeria and that it does not play much of an important role in the per capital growth process of Nigeria. This could be attributed to the fact that Nigeria depends more on imported good and produce less for export. This invariably means that spend more foreign exchange on import than we gain from export. Gross capital formation exerts an insignificant positive pressure on GDPPC. The positive sign goes in line with the a priori expectation though not statistically significant. A unit increase in FCF leads to an increase in GDPPC by 5.953755units. This implies that Gross capital formation has a positive impact of per capital growth of Nigeria. Inflation is in conformity with the a priori expectation is negatively related to GDPPC and it is statistically significant. A unit increase in INF leads to 5.153274units decrease in GDPPC. This implies that as Inflation increases GDPPC Growth reduces. GOE has a positive relationship with GDPPC, thus conform to the a priori expectation however it is insignificant on RGDPPC. The implication of GOE connotes that the more government expenditure increases the GDPPC growth is boosted. The coefficient of ECM (-1) is significant with the appropriate negative sign. Its coefficient of -0.579747means that the present value in GDPPC adjusts rapidly to previous changes in TOP, GCF, INF and GOE

The R^2 in the ECM shows that the exogenous variables in the ECM equation explains 43% of total variation or changes in GDPPC and the remaining 57% is accounted for by factors outside the model. Also, the F-Statistic of 4.900230 the ECM with its probability value of 0.001930 provides basis to logically conclude that the overall result obtainable in ECM is statistically significant.

4.5 Implication of Empirical Results

The result of the study indicates that trade libralization has not been beneficial to Nigeria and that it does not play much of an important role in the real per capital growth process in Nigeria. This result although not consistent with our expectations but it supports the study of Elijah and Musa (2019); Ajayi and Araoye (2019) whose findings revealed that, trade openness had a negative link with economic growth in Nigeria. Besides, that short-run and long-run results revealed that trade openness hurt economic growth in Nigeria.

5.0 Summary, Recommendations and Conclusion.

The main objective of this study is to assess the impact of trade openness on economic growth in Nigeria. This study explored the short-run and long-run relationship between trade liberalization and economic growth in Nigeria from 1980-2019. Both the long-run short-run results shows trade liberalization exerted a negative relationship with economic growth. Same for and gross fixed capital formation in the long-run While, inflation rate and general government final consumption expenditure had a positive impact on economic growth. The negative relationship between trade liberalization and economic growth implies that trade liberalization does not support economic growth in Nigeria.

The recommendations from these results are as follows:

1. The Central Bank of Nigeria (CBN) and policymakers of the government should prescribe sound macroeconomic policies that will ensure price stability to reduce the uncertainties associated with an investment in the economy to boost economic growth.
2. There is distinct need for government to improve on the infrastructural capacity of the country, with emphasis on the building of a better road network and the provision of constant electricity power supply. This will to a large extent, facilitate a greater productive capacity of the country which will in turn boost exports and hence, international trade and economic growth.
3. Policies orientation should gear towards strong export-orientation coupled with import substitution trade policies. This distinct combination will encourage exportation of goods while reducing the dependency on imports. This will serve as a means of promoting entry into new external markets. Thereby diversifying the export supply and developing domestic linkages to export activities.
4. For increase productivity which will stimulate exports and hence increase the impact of international trade on economic development, there is the need for government to embark upon the re-orientation of values in the average Nigerian so that they imbibe the spirit of patriotism, discipline and a belief in themselves.
5. Finally, the diversification of the structure of export is necessary to ensure that manufactured products are exported more than our dependent on crude oil for export.

The study have shown that trade liberalization has a negative relationship with Nigerian economic growth. This implies that a rise in trade openness will lead to a fall in the real GDP. Moreover, it impact is not significant. We can conclude here that Nigeria might not have gained as expected from the trade liberalization efforts. Hence, the need for re-adjustment of its trade policies.

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INFLATIONAND DOMESTIC INVESTMENT IN NIGERIA: A NON-LINEARAUTO-REGRESSIVE DISTRIBUTED LAG (NARDL) APPROACH

BY

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ABSTRACT

The paper examined the impact of inflation and domestic investment in Nigeria. The time frame covered the periods between 1980 - 2019 based on secondary data obtained from the Central Bank of Nigeria (CBN) statistical bulletins, and World Bank development indicators. The Non-linear autoregressive distributed lag (NARDL) estimation approach was adopted in the study to capture the asymmetry and non-linearity in the relationship between inflation and domestic investment. The findings of the study revealed that for the asymmetric impact of inflation on domestic investment, the positive inflation (increase in inflation), negative inflation (decrease in inflation) and the lag of negative inflation significantly affects domestic investment in the short run while positive inflation significantly affects domestic investment in the long run. The study recommends that to grow domestic investments, an effective inflationary and exchange rate policy be maintained to attract more domestic investors. Furthermore, Nigeria must continually find pathways to checkmate the rise of inflation if potential domestic is to be attracted. A conscious effort should therefore be made to reduce inflation, when investors see an improvement in inflation rates, they will be encouraged to invest in the Nigerian economy that result in productivity and boost in economic activities and increased economic growth in the long-run.

Keywords: Inflation, Domestic Investment, Non-Linear autoregressive distributed lag Approach

JELClassification:B41,C87,E22

Introduction

For many years the developing countries economists have extensively attempted to cross-examine the intrinsic underlining of the developed countries higher growth rate. The extensive notion of domestic investment has created contentious debates in recent times; the issues regarding the volume of public investment is required for driving the process of economic growth and real sector development in a country. The recognition of this question is not restricted only to theoretical and empirical economics but has gain attention in the political landscape and general public discourse. The Keynesian economists believed that, growth in public investment is an central policy tool for motivating the level of economic affluence and overcoming short-term cyclical variations in total spending (Ukwueze, 2015). Although theory and empirical evidences offered some explanations for increased state involvement, excessive size and growth of public investments have been described as harmful to economic wealth of countries in general.

Developing nations like Nigeria, in their strive on all fronts to increase the level of investments on one hand, are faced with the issue of inflation. Inflation reduces real returns to savings and value-reducing effects which in turn led to informational friction that disturbs the financial system via its uncertainty condition (Ozekhome, 2016). Inflation can retard and repel the inflow of all types of investment (corporate, private and foreign).

In Nigeria, it has been noticed by policymakers, macroeconomic analysts and financial professional that one of the macroeconomic pointers that investors, mainly corporate investors, consider is the level of inflation (Consumer Price Index (CPI)). It is an investment yardstick in the corporate world to which the government and the monetary authority Central Bank of Nigeria (CBN) pay adequate and serious attention. The Nigerian inflationary trend has been explosive rate for many years now, In 1966, inflation rose to 9.69% , 1988 it hit 54.51% and to its highest ever at 72.84% in 1995, a significant fall to 8.53% in 1997, From there on, inflationary rates in Nigeria has been below 20%, in 2007 it was 5.39% but it has since over's between 13.72% in 2010, 8.06% in 2014, 16.52% in 2017 and 11.4% in 2019 (Obinna, 2020).The inflationary rates based on year on year in monthly analysis indicated that in March(15.97%), April (18.12%), May (17.93%) and in June (17.75%) in 2021 (National Bureau of Statistics)

It has been established by some studies that there exists a non-linear relationship between inflation and investment :(Khan&Senhadji, 2001; Khan&Rana, 2012, Iqbal & Nawazi, 2012).Hence, this paper soughtto examine inflation and domestic investment, based on a non-linear autoregressive distributed lag empirical approach in Nigeria, it also extended the scope available in literature from 1980-2019.

This study seeks to establish the extent to which inflation rate influences domestic investment in Nigeria. The paper is structured into the following sections: Section one is the introductory, followed by related literature in section two, section three is theoretical framework and methodology, section four is the analyses of results, while section five is the concluding part contains summary, conclusion and recommendations.

Review of Literature

This review of empirical literature is grouped into two classes, first for other countries around the world and the second specifically for Nigeria. Weeks (2001) scrutinized the relationship between FDI and domestic investment. The study exposed that foreign direct investment may 'crowd-in' or 'crowd out' domestic investors using 18 countries in Latin America from 1960 -1999. He included real export growth and the elasticity of domestic and foreign investment into his model and indicated that the stimulant effect of foreign direct investment varies significantly across Latin American countries.

Khan, Senhadji and Smith (2001) estimate the threshold level of inflation, for 168 countries by using NLLS estimation for 1960 - 1999 .They observed that inflation between the ranges of 3% to 6% had a negative impact on investment and growth.

Mallik and Chowdhury (2001) studied the short-run and long-run dynamics of the linkage between investment, inflation and economic growth for four South Asian economies: Bangladesh (1974 - 1997), India (1961 - 1997), Pakistan (1957 - 1997), and Sri Lanka (1966 – 1997). They co-integration and error correction models to the annual and find two inspiring results. First, the relationship between inflation and economic growth is positive and statistically significant for all four countries, but the relationship between inflation and investment was negative. Second, the sensitivity of growth to changes in inflation rates is smaller than that of inflation to changes in the level of investment. That moderate inflation support economic growth, faster economic growth attracts inflation by overheating the economy. Hence, these four countries examined are at the turning point of the inflation economic growth relationship.

Sweidan (2004) evaluated whether the relationship between inflation and investment rates have a structural breakpoint effect or not for the Jordanian economy between 1970 - 2003.The relationship observed tends to be positive and significant below an inflation rate of 2% and the structural breakpoint effects arise at an inflation rate equal to 2%. Beyond this threshold, level inflation affects investment levels negatively.

Ahmed and Mortaza (2005) considered the relationship between inflation and investment in Bangladesh from 1981 - 2005. The empirical verificationexposed that there was a statistically significant long-run negative relationship between inflation and investment for the country Li (2006) estimates the non-linear relationship between inflation and economic growth for 27 developed and 90 developing countries over the period 1961-2004. In the context of developing countries, Li found the presence of two thresholds in the inflation-growth relationship. When the rate of inflation is below the first threshold, the effects of inflation on the economic growth rate is insignificant or even positive; at moderate rates of inflation, that is, rates of inflation between the two thresholds, the effects of inflation are negative and significant; at extremely high rates of inflation, the marginal impact of additional inflation on the economic growth diminishes rapidly but is still significantly negative. Furthermore, the first threshold level of inflation is estimated at 14% per year, and the second threshold level is estimated at 38% per year. For developed countries, only one threshold is detected and proved to be significant. This unique 13 threshold is estimated to be at 24% per year and works the same way as the second threshold for developing countries.

Ciccarelli and Mojon (2010) show that inflation is a global phenomenon by citing that the inflation rate in the OECD countries has moved together over the last 45 years. This co-movement, on average, accounts for 70% of the variability of country inflation. They specify a multiple regression model trying to explain the determinants of global inflation. Many common determinants were tested and they concluded that looking at the 1971-2004 samples only a few variables contain explanatory power with regards to global inflation. Cost variables, including commodity prices, wage and real GDP, as well as monetary policy developments have been all proven to have a positive (though not always significant) impact on global inflation. Then they investigate how much impact global inflation has on domestic inflation and found the long-term response of domestic inflation to global inflation. They conclude that this response to global inflation is lower in countries with a tight commitment to price stability.

In analyzing the asymmetric effect of inflation on real corporate investment in Iran, Valadkhani, Kamaliani and Pahlavani (2009) found that real gross domestic product (GDP), openness, and inflation can influence corporate investments asymmetrically using a threshold regression model and annual data (1960-2008). The study noted a threshold endogenous estimate of the inflation rate to be 11.9%. It warns that an annual inflation rate exceeding this threshold would have a negative effect on corporate investment. An inflation rate below this threshold would raise aggregate prices, which in the long run, is likely to boost corporate investments.

Khan and Rana (2012) conduct a study explaining inflation-growth non-linearity through its impact on human and physical capital. The study sought to analyze the impact of inflation on the accumulation of physical and human capital using a large panel of data of 104 countries throughout 1971-2010. The empirical results, based on the instrumental variable (2SLS) model, substantiate the view that inflation enhances the accumulation of physical capital while it reduces the accumulation of human capital. Moreover, this relationship is found to be non-linear since the effects were reversed after certain inflation thresholds. Finally, certain macroeconomic developments i.e. financial development and trade openness are found to increase the sensitivity of this relationship between inflation and capital accumulation (both physical and human).

Combey (2016) examined the determinants of private investment in the West African Monetary Zone (WAMZ) between 1995 and 2014 considering private investment as the dependent variable and also using GDP, output gap, interest rate, inflation rate, credit to the private sector, government consumption, and term of trade, trade openness and political stability as independent variables using the panel data regression technique. It was observed that economic growth and political stability have a significant effect on private investment in the long run.

Asab and Al-Tarawneh (2018) highlighted the nonlinear relationship between inflation and investment in Jordan. Applying a threshold model over the period 1980-2016, the results reveal that investment is retracted by inflation when the inflation rate reaches a threshold of 10%. This suggests that inflation rates should remain below 10% to sustain and improve investment levels.

On studies connected to Nigeria, there appears not to be a consensus in the debate on inflation and investment. In the vein of the above, Omoke and Ugwuanyi (2010) tested

the relationship between inflation, money supply and investment in Nigeria using Johansen Co-integration and Granger Causality test from 1970 to 2009. The results suggest that price stability can contribute to an increased level of investment. The study found that major determinants of investment were monetary aggregates, real output, inflation and exchange rates. This study never considered the role government expenditure plays in the determination of investment level.

Bakare (2011) examined the determinants of private domestic investment in Nigeria between 1978 and 2008. The study used a ratio of nominal private investment to the gross domestic product as the dependent variable and also used nominal public investment as a percentage of nominal GDP, exchange rate, corruption perception index, inflation rate, infrastructure, savings rate and political instability as the independent variables. Employing the Error Correction Modeling technique, it was revealed that political instability and poor infrastructure have a negative effect on private domestic investment.

Inyiama (2013) examine the link between inflationary rate, investment and economic growth in Nigeria for the period 1979 to 2009. Employing co-integration, error correction and Granger Causality test, the findings indicated that inflation has a significant negative impact on investment and economic growth. He recommended that efforts should be geared towards keeping inflation at a single digit to stimulate investment and economic growth.

Aisien and Iyoha (2014) using evidence from threshold regression examine the relationship between inflation and economic growth in Nigeria with quarterly time series data for the period 1981-2012. Using non-linear least squares estimation pioneered by Khan and Senhadji (2001), a non-linear relationship between inflation and economic growth with an inflation threshold of 8% is found. The results further show that up to the threshold, inflation has a positive and significant impact on growth. The study thus concludes that the double-digit inflation rate would retard economic growth in Nigeria. According to the authors, since a key macroeconomic goal of Nigeria is to achieve accelerated economic growth, an appropriate policy should be put in place by the Central Bank of Nigeria to reduce the inflation rate to 8% or less. The rising inflation rate has diminishing impacts on investment and economic growth. Inflation destabilizes economic growth through its eroding effect on money, financial assets, capital accumulation and uncertainty syndrome.

Onwe and Olarenwaju (2014) studied the adverse effects of inflationary pressures on corporate investment, with special emphasis on the West-African monetary zone (WAMZ) from 1980 to 2011. The study aimed at unfolding the short-and long-run effects of inflation on corporate investment, using the error correction mechanism (ECM) in the analysis of factors affecting the rate of corporate investments in selected countries within impacts on corporate investment; and finally, the short-run impact of financial development on corporate investment. The study concluded that the short-run dynamics of inflation and interest in the West-African monetary zone can be summarized as follows: first, a long-run positive relationship exists between inflation and corporate investment and a short-run negative relationship between inflation and corporate investment; secondly, the short-run dynamics of the economic environment in the WAMZ indicated that real rates of interest, government spending, and relative prices of capital goods are statistically insignificant in determining the level and rate of corporate

investment in the selected countries within the West-African monetary zone; third, economic growth does not have significant rates in the West-African monetary zone appear to be associated with economic impacts that are contrary to theoretical expectations.

Ozekhome (2016) using a GARCH framework and Two-Stage Least squares (2SLS) instrumental variable technique and quarterly time series data spanning the period 1981-2013 from Nigeria, observed that high inflation rates and inflation variability destabilizes investment (Gross capital formation). Against this background, it was recommended that sound macroeconomic policies, as well as institutional structures, will stimulate investment and enhance its relevance for rapid economic growth.

Agbarakwe (2019) examined the determinant of investment in Nigeria from 1980 to 2018 using the Autoregressive Distributed Lag (ARDL) model to estimate both the short-run and long-run relationship between investment and selected macroeconomic variables which includes inflation. The study found the results according to apriori expectation and recommends that the economic environment be put to attract private investment.

Ezeibekwe (2020) using data from 1981 to 2018 and applying the vector error correction model (VECM), sought to determine how the changes in the inflation rate affect the ability of monetary policy tools to stabilize the Nigerian economy and stimulate investment. The findings of the study suggest that the impact of the interest rates on investment depends on the level of the inflation rate. The size of the effect of interest rates on investment gets weaker as the inflation rate increases suggesting that monetary policy tools, such as the monetary policy rate (MPR), that directly change the interest rates are robust stabilization tools during periods of declining inflation rates but not relevant during periods of rising inflation rates. This is attributable to low bank lending rates.

Methodology

Theoretical Framework

The theoretical foundation of this study is based on the neoclassical investment theory, advocated by Jorgensen (1963). Theframework seeks to establish the correlation between input and output prices, and corporate investment. Theneo-classical theory begins with the corporate optimization problem, with the assumption that maximizing periodicprofits will yield an optimal capital stock.

The logical production function in this case is of the form:

$$Y = f(L,N) \quad (1)$$

Where Y represents corporate output; L, labour input; and, N represents capital input.

Model Specification

Considering the theoretical foundation of the study being considered, the theoretical framework proposes that the relationship between inflation and domestic investment could lead to economic growth through capital accumulation. However, there is an econometric bias in the study of the investment-inflation linkage resulting to economic growth with the use of single inflation (Adebayo, Akinsola, Olushola & Abolaji, 2020). It should be noted that taking the inflation figures over a period of time has embedded in

its moments of deflation and inflation. To be able to understand how deflation and inflation relate to investment and growth, there is a need to employ the use of an adequate model that can decompose the inflation variable into positive and negative trends. This asymmetrical relationship requires the use of the Non-linear Autoregressive Distributed Lag (NARDL) model as developed by Shin *et al* (2011) which is an extension of the ARDL by Pesaran and Shin (1999) and Pesaran *et al* (2001) to explain the long and short-run asymmetries in the investment–inflation and economic growth relationship. Shin *et al* (2011) depended on Granger and Yoon (2002) and Schorderet (2001) to decompose a stationary variable into its positive and negative partial sums. Where Granger and Yoon (2002) developed the concept of "hidden cointegration", where the long-run relationship may be defined between negative and positive components of an underlying variable, Schorderet (2003) generalized the stationary linear combination of the partial sum components in a multiple regression model.
In the adoption of this methodology, the model of this study are therefore specified as:
$DIV = f(IF, RG, MS, ER, PS, IR)$ (2)

Equation 2 determines the influence of inflation on domestic investment.
The non-linear econometric model is expressed as:
$\ln DIV_t = \alpha_0 + \alpha_1 \ln IF_t^{+} + \alpha_2 \ln IF_t^{-} + \alpha_3 \ln RG_t + \alpha_4 \ln MS_t + \alpha_5 \ln ER_t + \alpha_6 \ln PS_t + \alpha_7 \ln IR_t + U_t$ (3)
Where:*DIV*(Domestic Investment),*IF* (Inflation),*RG* (Real Gross Domestic Product), *MS* (Money Supply Growth), *ER(*Exchange Rate), *PS*(Political Stability) and*IR(*Interest Rate).

Method Applied
Pre-estimation tests such as the descriptive statistics, correlation test, unit root and Co-integration tests were conducted to get an overview of the data, to determine the correlational relationship, and to ascertain the extent of stationarity among the variables under consideration and determine if there is a long-run equilibrium relationship among the considered variables.

The study adopted the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Units roots test to check the stationarity properties of the time series. This helped to guide against spurious regression results. The ARDL bounds test is based on the assumption that the variables are I(0) or I(1). So, before applying this test, we determine the order of integration of all variables using the unit root tests. The objective is to ensure that the variables are not I(2) to avoid spurious results. In the presence of variables integrated of order two, we cannot interpret the values of F statistics provided by Pesaran *et al.* (2001). Evidence of cointegration implies that there is a long-run relationship between the variables and their connection is not a short-lived situation, but a more permanent one, which can be recovered every time there is a disturbance.

The Non-linear ARDL model recently developed by Shin, Yu, and Greenwood-Nimmo (2014), uses positive and negative partial sum decompositions in detecting the asymmetric effects in the long-run and the short-run periods. Compared to the classical cointegration models, the NARDL models present some other advantages. Firstly, it performs better for determining cointegration relations in small samples (Romilly, Song, & Liu, 2001). Secondly, it can be applied irrespective of whether the regressors are

stationary at the level or the first difference (i.e., I(0) or I(1)). It cannot be applied however if the regressors are I(2).The other advantages of NARDL are; it helps not only to gauge the short-run and long-run asymmetries but also to detect hidden cointegration. Adopting Shin *et al*(2014) and remodifying it to incorporate the study variables, an asymmetric model of equations 4 and 5 are shown belowas:

$$\Delta \ln DIV_t = \rho(\ln DIV)_{t-1} + \alpha_1^{+'}(\ln IF)_{t-1}^{+} + \alpha_2^{-'}(\ln IF)_{t-1}^{-} + \alpha_3(\ln RG)_{t-1}$$
$$+ \alpha_4(\ln MS)_{t-1} + \alpha_5(\ln ER)_{t-1} + \alpha_6(\ln PS)_{t-1} + \alpha_7(\ln IR)_{t-1} + \sum_{j\approx 0}^{p-1}\phi_0\Delta(\ln DIV)_{t-j}$$
$$+\left(\sum_{j\approx 0}^{q-1}\left(\upsilon_1^{+'}\Delta \ln IF_{t-j}^{+} + \upsilon_1^{-'}\Delta \ln IF_{t-j}^{-}\right)\right) + \sum_{j\approx 0}^{r}\gamma_3\Delta \ln RG_{t-j} + \sum_{j\approx 0}^{v}\eta_4\Delta \ln MS_{t-j}$$
$$+ \sum_{j\approx 0}^{u}\delta_5\Delta \ln ER_{t-j} + \sum_{j\approx 0}^{v}\tau_6\Delta \ln PS_{t-j} + \sum_{j\approx 0}^{w}\omega_7\Delta \ln IR_{t-1} + \psi_t \quad \text{.....4}$$

Re-simplifying more precisely in error correction from equations 4 yields

$$\Delta \ln DIV_t = \rho\xi_{t-1} + \sum_{j\approx 0}^{p-1}\phi_0\Delta(\ln DIV)_{t-j} + (\sum_{j\approx 0}^{q-1}(\upsilon_1^{+'}\Delta \ln IF_{t-j}^{+} + \upsilon_1^{-'}\Delta IF_{t-j}^{-}))$$
$$+ \sum_{j\approx 0}^{r}\gamma_3\Delta \ln RG_{t-j} + \sum_{j\approx 0}^{\mu}\eta_4 \ln MS_{t-j} + \sum_{j\approx 0}^{u}\kappa_5\Delta \ln ER_{t-j} \sum_{j\approx 0}^{v}\pi_6\Delta \ln PS_{t-j}$$
$$+ \sum_{j\approx 0}^{w}\omega_7\Delta \ln IR_{t-j} + \alpha_7(\ln IR)_{t-1} + \psi_t \quad \text{.....5}$$

Where $\xi = \ln DIV_t\chi^{+'}(\ln IF)_t^{+} - \chi^{-'}(\ln IF)_t^{-}$ is the nonlinear error correction term and$\chi^{+} = -\alpha_t^{+}/\rho$ and $\chi^{-} = -\alpha_t^{-}/\rho$ are the corresponding nonlinear long-run parameter (Shin *et al*., 2014). Equations 16 and 18 show the long run and short-runcomponents of the NARDL model specified where p,q,r,s,u, v, w denote lag order operator $\sum_{j\approx 0}^{q-1}o_2^{+1}$ explains the short-run effects of a rise in inflation on an investment. Also, $\sum_{j\approx 0}^{q-1}o_2^{-1}$ measures the short-run effects of a decrease in inflation on an investment. Inclusive in the model in the long run asymmetric relationship between inflation and investments. Therefore, $(\ln IF)_t^{+}$and $(\ln IF)_t^{-}$ are partial sums of positive and negative changes in inflation.

$$IF_t^{+} = \sum_{j\approx 11}^{i}\Delta IF_t^{+} = \sum_{j\approx 1}^{i}\max(\Delta IF_{j,}0) \quad (6)$$

$$IF_t^{-} = \sum_{j\approx 11}^{i}\Delta IF_t^{-} = \sum_{j\approx 1}^{i}\min(\Delta IF_{j,}0) \quad (7)$$

Equations 20 and 21 respectively reflect a decomposition strategy where inflation is decomposed into its positive and negative components.

The adequacy of the dynamic specifications of the model was evaluated basedon a diagnostic test, including the Jarque–Bera normality test, Durbin–Watson and Breusch–Godfrey autocorrelation diagnostics, Breusch–Pagan–Godfrey tests for heteroscedasticity, Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of recursive Residuals (CUSUMQ) plots for testing parameter and variance stability, and Ramsey RESET for model stability.

Data on DIV, RG, MS, ER, IF, and IR were sourced from the Central Bank Statistical Bulletin while data on PS, was obtained from World Bank World Development indicators from 1980 to 2019.

Presentation and Interpretation of Results

Table 1 shows the descriptive statistics of the variables employed in the model for the time period. Domestic investment (DIV) has a mean and standard deviation of ₦8722 billion and ₦2192 billion respectively, it has a maximum of ₦15789.67 billion and a minimum of ₦8206.8 billion. Foreign Investment has a mean and standard deviation of ₦122.14 billion and ₦220.81 billion respectively, it also has a maximum of ₦803.67 billion and a negative minimum of ₦0.4 billion. The mean and standard deviation for inflation as displayed on the table is 18.9% and 16.9%. While the maximum and minimum was 72.8% in 1995 and 5.38% in 2007 respectively, RG for the time period has an average of ₦34183 billion and a maximum and minimum of ₦71387 billion and ₦13779.billion respectively. Money supply (MS) has a mean of 23.853% and a standard deviation of 18.23%. The exchange rate (ER) during the period under review has a mean value of 91.8 and a maximum of 306.9 in 2019 and a minimum of 0.54 in 1980. Political stability (PS) has a 0.6 mean and a standard deviation of 0.49, a maximum of 1 and a minimum of 0 as experienced with dummy variables. The interest rate has a mean of 0.21%, a standard deviation of 14.43%, a maximum and minimum of 18.18% and -65% respectively.

Table 1 Descriptive Statistics

	DIV	IF	RG	MS	ER	PS	IR
Mean	8722.006	18.91711	34183.15	23.85324	91.80354	0.600000	0.211257
Median	8206.832	12.38637	23068.85	20.04437	97.01772	1.000000	3.666917
Maximum	15789.67	72.83550	71387.83	87.76135	306.9210	1.000000	18.18000
Minimum	5668.868	5.388008	13779.26	-0.794167	0.546781	0.000000	-65.85715
Std. Dev.	2192.004	16.90501	20232.87	18.23441	92.81156	0.496139	14.43095
Skewness	1.308693	1.823472	0.706769	1.341879	0.839392	-0.408248	-2.640212
Kurtosis	4.848484	5.151977	1.927793	5.270635	2.889805	1.166667	12.44914
Jarque-Bera	17.11268	29.88535	5.246197	20.59723	4.717433	6.712963	195.2818
Probability	0.000192	0.000000	0.072578	0.000034	0.094541	0.034858	0.000000
Sum	348880.2	756.6842	1367326.	954.1294	3672.142	24.00000	8.450279
Sum Sq. Dev.	1.87E+08	11145.39	1.60E+10	12967.25	335945.5	9.600000	8121.836
Observations	40	40	40	40	40	40	40

Source: Own data processing in Eviews 10 Author's Computation (2021)

Apart from the first moment statistics of the series, the results of other statistics are also evident from the table. Jarque-Bera for instance measures the series to ascertain whether it is normally distributed or not. The null hypothesis of a normal distribution is rejected at a 5% confidence level for all the variables except RG and ER. A look at the skewness levels which measures the asymmetry of the series around its mean shows that all the variables except PS and IR are positively skewed. Positive skewness is linked with long right tails and implies that there are higher values around the mean. However, negative skewness is linked with long left tails and suggests that there are lower values around the mean. Furthermore, kurtosis checks whether a variable is light or heavy-tailed relative to a normal distribution. All the variables except RG, ER and PS have kurtosis greater than 3, and thus they are leptokurtic while others are platykurtic. This implies that RG, ER and PS have thinner tails than a normal distribution and they are faced with fewer outliers.

Correlation Analysis

The correlation analysis is conducted to examine the correlation between the variables of interest in the model. Table 2 shows the results of the correlation test.

Table 2 Correlation Test

	LDIV	LIF	LRG	MS	LER	PS	LIR
LDINV	1.0000						
LINF	0.1855						
LRGDP	0.8653	0.2007	1.0000				
MS	-0.1850	-0.2487	-0.0855	1.0000			
LEXR	0.7986	0.2456	0.8768	0.0824	1.0000		
PST	0.6598	0.2452	0.8163	0.0679	0.8999	1.0000	
LINTR	0.2337	-0.1868	0.1855	0.0786	0.2552	0.1666	1.0000

Source: Own data processing in E-views 10 Author's Computation (2021)

From the correlation matrix, a positive relationship is observed between all variables except for IF and IR, MS and IF, DIV and MS, RG and MS which are negatively correlated. A strong positive correlation is seen between domestic investment and economic growth while with relation to inflation and DIV show a weak correlation relationship.

Stationarity Test

It is a prerequisite to confirm the order of integration before any time series analysis. This study applied the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests to determine the order of integration for each variable. Considering that the ADF test does not perform well when applied to small samples (Cheung & Lai, 2000), the PP unit root tests are applied to test the robustness of the stationarity test.

Table 3: Unit Root Test

`	ADF	PP	Order Of Integration
LDIV	-2.5760	-2.5267	
ΔLDIV	-4.6685***	-5.6544***	
LIF	-3.4941***	-3.3711***	
ΔLIF	-6.5434***	-13.7847***	
LRG	0.2996	0.5213	
ΔLRG	-3.4449***	-3.4394***	
MS	-3.7836***	-3.7946***	
ΔMS	-7.0844***	-13.1459***	
LER	-1.9493	-1.9519	
ΔLER	-5.2698***	-5.2698***	
PS	-1.4389	-1.5010	
ΔPS	-6.0000***	-6.0000***	
LIR	-4.5693***	-4.7365***	
ΔLIR	-12.6869***	-10.9001***	
***, **,* implies significance at 1%, 5%, and 10% respectively*			

Source: Own data processing in Eviews10 Author's Computation (2021)

The result of the unit root test in table 3 above shows that at a 5% level of confidence, all variables except inflation (IF), interest rate (IR) and money supply growth (MS) are not stationary at the level. They however become stationary when the first 1(0) difference is applied, therefore they are integrated of the order of one, I(1) process. IF and IR,

however, are stationary at level, I (0) process. This result is consistent in the different unit root tests applied to the variables.

Cointegration Test

Model (Domestic Investment)

Table 4 Model 1 Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
F-statistic	5.2210	10%	2.03	3.13
K	7	5%	2.32	3.5
		2.5%	2.6	3.84
		1%	2.96	4.26
t-Bounds Test		**Null Hypothesis: No levels relationship**		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
t-statistic	-5.4665	10%	-2.57	-4.23
		5%	-2.86	-4.57
		2.5%	-3.13	-4.85
		1%	-3.43	-5.19

Source: Own data processing in Eviews 10 Author's Computation (2021)

The F-statistics in table 4 is 5.2210, which is greater than the critical lower bound value of 2.32 and upper bound value of 3.5 which represent the 5% significance level for the lower and upper bound respectively. Therefore, we reject the null hypothesis of no levels of co-integrating relationship, hence, there is a long-run relationship between the dependent and the independent variables in the model as also confirmed by the statistics, which have a lesser value (-5.4665) than the 5% lower band (-2.86) and upper band (-4.57) critical values.

NARDL Estimation

Table 5: NARDL Estimate Model

Short Run Error Correction Estimate					Long Run Estimate				
Dependent Variable: DIV					Dependent Variable: DIV				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**	**Variable**	**Coefficient**	**Std. Error**	**t-Statistic**	**rob.**
C	4.9635	0.6698	7.4108	0.0000	LIF_POS	0.3409	0.1593	2.1406	0.0436
D(LIF_PS)	0.1123	0.0468	2.4005	0.0253**	LIF_NEG	0.1015	0.1228	0.8262	0.4175
D(LIF_NEG)	-0.1117	0.0364	-3.0707	0.0056***	LRG	-0.0152	0.2068	-0.0733	0.9422
D(LINF_NEG(-1))	-0.1541	0.0398	-3.8727	0.0008***	MS	-0.0021	0.0020	-1.0335	0.3126
D(LER)	0.1192	0.0655	1.8198	0.0824*	LER	-0.2455	0.1606	-1.5289	0.1405
D(LER(-1))	0.1785	0.0510	3.4976	0.0020***	PS	0.3693	0.2403	1.5370	0.1385
D(PS)	0.0047	0.0841	0.0554	0.9563	IR	-0.0042	0.0044	-0.9725	0.3414
ECM(-1)	-0.6161	0.0830	-7.4201	0.0000					
R-squared	0.7018	F-statistic		9.7491					
Adjusted R-squared	0.6298	Prob(F-statistic)		0.0000					
Durbin-Watson stat	2.09								
Where *,**and *** represents 10%, 5% and 1% level of significance respectively									

Source: Own data processing in Eview 10 Author's Computation (2021)

Table 5 shows the non-linear ARDL estimation for the domestic investment model. The model selected was the: ARDL (1, 1, 2, 0, 0, 2, 1, 0) using a maximum of one lag for the dependent variable and two lags for the regressors. From the short-run model, the F statistics of 9.7491 is statistically significant which means that the independent variables jointly affect the dependent variable. The adjusted R- squared of 0.6298 implies that 62.98% of the variations in domestic investment is brought about by the changes in the dependent variables. The Durbin Watson statistics is 2.09 which signify the absence of serial correlation in the model.

The coefficient of the variables in the short run shows that the positive inflation, decrease in inflation, a period lag of negative inflation and a period lag of exchange rate were discovered to be statistically significant at a 5% level of significance while the exchange rate was at 10% level of significance. The coefficient of the positive change in inflation is 0.1123. This shows a direct relationship with the domestic investment so therefore a 10% decrease in inflation will increase domestic investment by 1.12%. Negative inflation has a coefficient of -0.1117 which means that the decrease in inflation is inversely related to domestic investment. Therefore a 10% decrease in inflation will increase investment by 1.117%. The coefficient of the period lag of negative inflation is -0.1541 which implies that a 10% fall in the previous period inflation will increase the current inflation by 1.54%. The coefficient of the exchange rate is 0.1192, which implies that a 10% increase in the exchange rate will increase domestic investment by 1.19%. The coefficient of the lag of exchange rate is 0.1785, this implies that if the previous period exchange rate increases by 10%, the domestic investment will increase by 1.78% in the short run. The error correction term was observed to be statistically significant, with a coefficient of -0.6161 which means that the speed of adjustment of the model to equilibrium in the event of an imbalance, will take about one and a half time periods as the next time period adjustment is 61.6 percent

The long-run estimation results show that only the positive inflation variable, is statistically significant. The coefficient of positive inflation is 0.3409, this signifies that in the long run, a 10% increase in inflation will result in a 3.4% increase in domestic investment. Negative inflation is positively related to domestic investment while RG is inversely related and statistically not significant in the long-run model.

Diagnostic Test

Table 6: Model 1Diagnostic Test

Breusch-Godfrey Serial Correlation LM Test:				**Heteroskedasticity Test: Breusch-Pagan-Godfrey**			
F-statistic	3.2557	Prob. F(2,20)	0.0697	F-statistic	0.6919	Prob. F(14,22)	0.7590
Obs*R-squared	9.0875	Prob. Chi-Square(2)	0.0706	Obs*R-squared	11.3108	Prob. Chi-Square(14)	0.6615
				Scaled explained SS	5.6153	Prob. Chi-Square(14)	0.9753

Source: Own data processing in Eviews 10 Author's Computation (2021)

The diagnostic test of model is shown in table 6, consequently, the serial correlation and the heteroskedasticity test show that there is no evidence of autocorrelation and heteroskedasticity hence, the null hypothesis cannot be rejected as the probability recorded is greater than 5% level of significance.

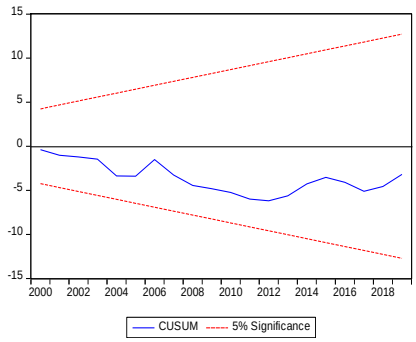

Figure 4.1(a) CUSUM Test

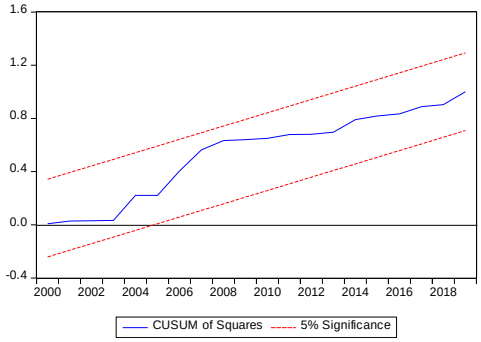

Figure 4.1(b) CUSUM of Squares Test

Source: Own data processing in Eviews 10 Author's Computation (2021)

The CUSUM and the CUSUM of squares test shows the relative stability of the model. The blue line on both lay within the critical levels hence signifying that model 1 is stable.

Discussion of Results

The study, in using the nonlinear ARDL method, split inflation into its positive and negative figures in order to capture asymmetry.

It was discovered from the results of the first model that captures the impact of inflation on domestic investment on inflation and the other variables. In the short run, the increase in inflation (LIF_PS) and the decrease in inflation (IF_NEG) were significant while in the long run, only the increase in inflation (IF_PS) was significant. The implication was that as inflation increased and reduced, domestic investment increased in the short run while in the long run, only the increase in inflation will increase domestic investment. This result implies that domestic investors are encouraged to invest more in the short run due to the falling rate of inflation as expected from the existing literature and surprisingly, they still increase investment when inflation is rising which can be attributed to panic investment for the fear of a further increase altogether, however, the long-run increases in inflation do not discourage domestic investors. The previous period fall in inflation also leads to an increase in domestic investments. So, therefore, if the rate of inflation falls today, domestic investors are willing to invest tomorrow. The finding of a significant relationship is consistent with the findings of Ozgur (2007), Ahortor and Adenutsi (2009),Fisher (2013), Olanipekun and Akeju (2013) and Agbarakwe (2019) however, their studies instead showed that inflation had an inverse relationship with investment, which was not the case in this study. This study is in tandem with the findings of Onwe and Olarenwaju (2014).

Conclusion

This study has been able to expose several findings on the impact of inflation on investment in Nigeria during the period under consideration. However, the major findings of the study are enumerated as follows: From the model estimations, it was

discovered that domestic investments are determined by inflation, and exchange rate in the short run and inflation, in the long run. The asymmetric impact of inflation showed that for domestic investment, the positive, negative inflation and the lag of negative inflation were significant in the short run and the positive inflation significant in the long run. In the short-run model, negative inflation and lag of negative inflation were inversely related to domestic investment while in the long run economic growth, money supply growth, exchange rate and interest rate were inversely related to domestic investment but were insignificant in the long run estimation.

The study recommends that to grow domestic investments, an effective inflationary and exchange rate policy be maintained to attract more domestic investors. Furthermore, Nigeria must continually find pathways to checkmate the rise of inflation if potential domestic is to be attracted. A conscious effort should therefore be made to reduce inflation, when investors see an improvement in inflation rates, they will be encouraged to invest in the Nigerian economy that result in productivity and boost in economic activities and increased economic growth in the long-run.

The study examined the impact of inflation on investment in the Nigerian economy between the periods 1980-2019 with the focus of investment, which is in the form of domestic investment. The study relied on the Nonlinear Autoregressive Lag (NARDL) thereby capturing the asymmetry in the inflation rate. The pre-estimation test carried out include the correlation and unit root test while the diagnostic test for serial correlation, heteroskedasticity and model stability were carried out on the residuals of the estimation. In conclusion, the study calls for proper monitoring of inflation issues and the other macroeconomic variables that influence domestic investment in Nigeria if policymakers are keen on attracting the required volume of investment which will spur economic growth and development in the Nigerian economy.

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