

On Exports and Capital Formation in Nigeria

ABSTRACT

One remarkable importance of exports is that it enables countries generate the required foreign capital needed to drive sustainable growth and development. This is to say that export earnings are capable of increasing capital formation through real investment. This study therefore focused on the relationship between exports and capital formation in Nigeria for a 40-year time period spanning from 1981 to 2020. Related works on the subject matter were reviewed. The unit root test showed that all the variables attained stationarity after first difference. The Johansen cointegration test result showed that there exists a stable long run relationship between gross fixed capital formation, oil export, non-oil export and exchange rate in the model. Using the OLS method in analyzing the data sourced, the results showed that oil export had a negative and insignificant impact on capital formation in Nigeria. Similarly, non-oil export and exchange rate exerted insignificant negative influences on capital formation in Nigeria for the period covered by the study. Based on the findings from the study, the following recommendations were made. First is that the proceeds from crude oil export should be used to acquire capital assets for investment which will in turn drive growth in the economy. Also the government through the CBN and relevant agencies should pay more attention to the non-oil sector in terms of the implementation of favourable policies, grants and loans, tax incentives, research and development, etc. to improve the export of the sector, making it compete favourably in the international market. This is because crude oil is an exhaustible asset that is liable to depletion. Finally, efficient exchange rate policies should be implemented by government through the relevant authorities to protect the value of the naira while ensuring that the products are not too dear in the international market.

Keywords: Exports, Capital Formation, Gross Fixed Capital Formation, Investment

1. INTRODUCTION

Exportation is a prerequisite in a country's quest to enhance its revenue base and move the economy on the path of growth and economic progress. Abogan, *et al.*, (2014) noted that a vibrant export trade is a reflection of how competitive the commodities and services of a country are and also how large her scale of the industrial base is. The earnings from export reduces the strain on the balance of payment position and also improves it. Also, the income earned through exports helps to increase the level of demand within the economy (Abogan, *et al.*, 2014). However, exports of goods and services in an economy should be done when the domestic demand for such commodities are met.

In Nigeria, exports are generally grouped into oil export and non-oil export. Oil export simply refers to the selling of crude oil in the international market while non-oil export refers to the selling of commodities apart from oil in the international market. In reality, the Nigerian economy is dominated by oil export which serves as a major source of foreign exchange earnings (Enoma and Isedu, 2011). Oil accounted for more than 90 percent of total exports in Nigeria, while the rest of total exports were accounted for by non-oil between 1980 and 2004 (CBN, 2005).

Generally, the growth of Nigeria's non-oil export has been fluctuating, with more records of declines, falling from about 40 percent in 1979 to 5 percent in 2010. Non-oil exports rose from ₦500.9 billion in 2009 to ₦913.5 billion in 2011. The figure however, dropped to ₦656.8 billion in 2016 before rising to ₦1.43 trillion in 2018. Non-oil export figures stood at N3.2 trillion in 2019 but as a result of a consistent decline in the second, third and quarters of 2020, the value of non-oil export dropped to N3.08 trillion by the end of the year (Uzoma et al, 2021).

In 2019, Exports equaled N19.19 trillion but fell by 34.75 percent in 2020 to N12.52 trillion. Agricultural export in the last quarter of 2020 accounted for just 1.75 percent of the nation's total exports. This gives credence to the fact that the Nigerian economy is still mono cultural and is yet to be diversified. Oil export fell by 35.71 percent from

N14.69 trillion in 2019 to N9.44 trillion in 2020. Factors that led to the drop in oil export was the outbreak of COVID 19 pandemic which disrupted economies of the world leading to the shutdown of industrial activities which in turn led to recession for most economies. Demand for crude oil dropped consequently as a result of over supply to the international market. Members of the oil petroleum exporting countries (OPEC), agreed to cut production to reverse the supply glut and reverse the downward movement in crude oil prices. This strategy worked till the end of 2020 as the prices increased although the reduction in supply meant lower revenue for the members of the organization.

By the last quarter of 2020, the top ten export products in Nigeria were petroleum oils, oils from bituminous minerals and crude, liquefied natural gas, floating or submersible drilling or production platforms, and other petroleum gases in gaseous state. The non-oil export products include sesame seeds, cocoa beans, sesame oil, etc. the top five export destinations for Nigeria's export were India, Spain, South Africa, The Netherlands and the United States of America accounting for 17.1 percent, 9.81 percent, 8.03 percent, 6.09 percent and 5.33 percent of the nation's export respectively.

A remarkable importance of exports is that it enables countries to generate the required foreign capital needed to drive sustainable growth and development. This is to say that export earnings are capable of increasing capital formation through real investment.

Adebite & Owualla, (2007) noted that investments in the various sectors of the economy can tackle the economic challenges Nigeria is faced with. This is why the Nigerian government has introduced various economic policies to attract investments (both private and public) in the various sectors of the economy while focusing on autonomous investments which act as the main driver of other investments in the economy. Some of the benefits of these investments include creation of jobs, per capita income growth, poverty reduction, growth in GDP, increase in standard of living, amongst others.

The increase in real investment leads to an increase in capital formation in the economy thereby leading to an increase in productivity and output. This kind of investment can be done by the public or private sectors, with the government carrying out autonomous investments which act as the main drivers of other investment in the economy.

Capital formation is the building up of the stock of real capital in a country with investment in social and economic infrastructures leading to the production of tangible goods (i.e., plants, tools & machine) and intangible goods (i.e., qualitative & high standard of education, health, scientific tradition and research) in the country (Jhingan, 2006). It is a component of Gross Domestic Product by income together with consumption and net exports and services as an indicator of the level of investment in the economy. The concept implies that in a society, the entire production activities are not directed to immediate consumption but are sacrificed for the creation of capital goods (Jhingan, 2006). Capital formation fosters production and to a large extent, determines the growth of the different sectors of the economy resulting to technical progress (Pathania, 2013).

An analysis of the capital formation statistics from the Central Bank of Nigerian (CBN) reveals that the nominal investment in capital formation has dropped in real terms. While the investment the private sector undertakes for private capital accumulation could be social or soft in nature like housing, health and education, others could be infrastructural or hard like transportation, power and water or even purely economic (Orji & Peter, 2010; & Uremadu, 2006).

A channel through which export earnings link up with capital formation is gross capital formation. It comprises of the additions to the fixed assets of the economy plus net changes in the inventory level. These inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales. Gross capital formation leads to the realization of the economies of large scale of production and increases specialization, in terms of providing machines, tools and equipment for growing labour force. Thus, the accumulated capital enables the acquisition of new factories alongside machinery, equipment and all productive capital goods.

An examination of CBN Reports shows that Nigerian Gross fixed capital formation as a percentage of Gross Domestic Product has been low compared to other economies of the world. This suggests that poor capital formation is responsible for the failure in achieving the various development plans in Nigeria. Lucky and Uzah, (2016) further argued that the reason for the marginal growth in capital formation in Nigeria is that a significant proportion of the private and public income is laundered abroad in form of capital flight and not invested in the domestic economy.

Jhingan (2006), grouped gross fixed capital formation into gross private domestic investment and gross public domestic investment. The gross public investment includes investment by government and/or public enterprises while gross domestic investment is synonymous to gross capital formation. Capital accumulation is often suggested as a means for developing countries to increase their long-term growth rates. To increase capital accumulation, it is necessary to: increase savings ratios, maintain good banking system and system of loans, avoid corruption, good infrastructure to make investment more worthwhile (CBN, 2016).

Various governments have formulated policies geared towards improving both oil and non-oil export to make investments aimed at achieving adequate capital formation in Nigeria. This study is therefore focused on the relationship between export from oil and non-oil sectors and capital formation in Nigeria.

2. LITERATURE REVIEW

The export-led growth hypothesis (ELGH) explains that an expansion in exports promotes specialization in production of export products which in turn boosts productivity levels thereby causing the general level of skills to rise in the export sector. This in turn leads to a reallocation of resources from the inefficient non-trade sectors of the economy to the higher productive export sector. This productivity change leads to output growth.

The classical theory of comparative advantage as developed by David Ricardo in 1817 proposes that a country should specialize in the production and export of commodities in which she uses a lower opportunity cost than her trading partner (Gbosi, 2011). The theory explains why countries engage in international trade even when one country's workers are more efficient at producing every single good than workers in other countries. They argued that if two countries that are capable of producing two commodities engage in the free market, each country will increase its overall consumption by exporting the good for which it has a comparative advantage while importing the other good, provided that there exist differences in labor productivity between both countries. Ricardo's theory implies that external trade arises not just from the difference in absolute advantage but from the difference in comparative advantage.

The Harrod-Domar Model explains that investment channels are components that bring about economic growth and development. The model attributed growth to the levels of capital formation in an ideal socio-economic system. Thus, if government is able to adequately save gains from foreign exchange and internally generated revenue, it will have a larger proportion allocated for capital formation. This will ensure government has enough money to purchase capital goods.

A number of studies have been carried out on export earnings and also on capital formation in Nigeria. However, not many studies on the relationship between the two have been carried out. Akpokodje (2000) explored the association between export earnings fluctuations and capital formation in Nigeria using a reduced form equation built around the flexible accelerator model and adopting a cointegration technique. Findings from his study revealed that the level of export earnings fluctuations impacts negatively on the change in capital stock in the short run.

Eze (2005) investigated the impact of crude oil export and corruption in Nigeria economy. The study focused on Nigeria's oil export and its contribution to economic growth. The result showed that oil export has significant impact on the economy despite its effect by corruption which appears to be negatively related to other economic variables. Based on the findings, the study recommended that the policy of oil and non-oil export promotion strategy should be taken serious by the government in order to effect a positive change.

Adegboyega and Odusanya, (2014) examined the nexus between trade openness, foreign direct investment (FDI), capital formation, and economic growth rate in Nigeria for a 25-year time period from 1986 to 2011 using the vector error correction model (VECM). Their results showed a long-run equilibrium relationship of gross domestic growth rate and trade openness, foreign direct investment (FDI), capital formation. Furthermore, their result showed a significant positive effect between the degree of trade openness, level of capital formation while a positive but insignificant relationship exist between the volume of FDI and gross domestic product growth rate. Based on their

findings, they recommended that the Nigeria government should increase the efficacy of its fiscal and monetary policies to increase more on its exports as well as rates of GDP growth.

Bakare & Oyelekan (2015) carried out an investigation on the impact of export earnings instability on economic growth in Nigeria for the period, 1981 to 2014 using the Ordinary Least Square regression method and the Granger Causality Test. The study showed fluctuating trends in export earnings during the period of the study. In addition, a bi-directional causality was found to exist between GDP and export earnings. The study therefore concluded that export earnings instability had impacted negatively on economic growth in the country and thus recommended rapid industrialization through empowering small and medium enterprises.

Lucky and Uzah (2016) examined Jhingan's propositions for sources of capital formation in Nigeria using Vector Error Correction Model and Granger Causality. Their Findings proved that M2/GDP, GNS/GDP, EXR, EXT/D/GDP, TT/GDP have negative and insignificant effects on capital formation while CPS/GDP, LR, INFR, PEX/GDP, GR/GDP and OPS/GDP have positive and insignificant effects on capital formation in Nigeria for the period covered by the study. The study therefore concluded that the Jhingan's proposition is valid in Nigeria. In recommendation, they suggested that the financial sector should be deepened, policies should be directed to discourage capital flight and government expenditure should be directed towards infrastructural development as against consumable goods to enhance capital formation in Nigeria.

Okereke (2016) examined the relationship between export earnings fluctuation and economic growth in Nigeria using for the ordinary least square (OLS) technique. In his study, export fluctuation index was calculated using the normalization approach combined with a 4 year moving average method. Findings from the result showed that the export earnings have little or no effect on economic growth in the short-run and thus continuous fluctuation in the long run could lead to capital flight.

Anthony-Orji et al (2017) set out in their study to investigate the impact of non-oil export (NOIL) on capital formation and economic growth in Nigeria using a classical linear macroeconomic model for the period 1980 to 2013. Findings from their results showed that non-oil exports impacted positively on capital formation and economic growth in Nigeria for the period covered by the study. The study therefore recommended the diversification of the economy to create an enabling environment that will ensure the survival and functioning of the ailing industries. It is defined as an addition to stock of capital assets set aside for future productive endeavours in real sector.

Maura, et al (2017), carried out a study on Exports, capital formation and economic growth in South Africa using quarterly time series data ranging from 1975q1 to 2012q4. In their study, Johansen's cointegration procedure, impulse response functions, variance decomposition analysis and Granger causality tests were applied to shed light on the channels through which export growth may impact South Africa's economic growth rate. their results revealed that while export growth directly supported higher economic growth in the short-run, the long-term effect was found to lie in supporting faster capital formation, and in turn, significantly increasing economic growth, supporting the notion that the role of exports lies in their ability to encourage investment and capital formation.

In examining the impact of oil export on gross capital formation in Nigeria from 1980 to 2015, Udude et al (2017) developed a model using the VECM technique. Their result showed that oil export inversely and significantly impacts gross capital formation in Nigeria in short run and long run within the period under review. the study therefore recommended that government should legalize the operations of local (illegal) refineries operating in Nigeria and also help them operate at full capacity to ensure the availability of refined products for domestic consumption and consequently discourage the importation of refined products thereby saving the country huge foreign exchange used for importation so as to enable the revenue generated from oil export be used for investment purposes that will boost the gross capital formation of the country which will in turn lead to economic growth.

Ozuzu, C.S., Ewubare, D. B. (2020) assessed the effects of export earnings on capital formation in Nigeria for the period 1980 to 2018 using the ARDL/bounds test approach. The study, based on the findings concluded that oil export earnings had a negative effect on capital formation in the long run while Agriculture export and solid mineral export earnings impacted positively on capital formation both in the short and long run. The study therefore recommended that government should the cultivation of agricultural produce and mining of minerals by providing a specialized supervised fund through the Central Bank of Nigeria with exportation of these products as a major objective of the fund.

3. METHODOLOGY

The dataset used in this study was sourced from CBN Statistical Bulletin spanning from 1981 to 2020. This study adopted the ADF unit root test, Johansen co-integration test and Error Correction technique for the analysis. Also, post estimation tests were carried out to find out if the residuals have the skewness and kurtosis matching a normal distribution and also to determine the stability of the model. Specifically, the Jarque bera and CUSUM tests were applied.

3.1 Model Specification

The model for this study is functionally stated as;

$$GFCF = f(OXP, NOXP, EXR) \dots \dots \dots (1)$$

The econometric form of equation (1) is stated thus;

$$GFCF = \alpha_0 + \alpha_1 OXP + \alpha_2 NOXP + \alpha_3 EXR + u_t \dots \dots \dots (2)$$

Furthermore, the log –linear form of both sides of equation 2 is stated as follows:

$$\ln GFCF = \alpha_0 + \alpha_1 \ln OXP + \alpha_2 \ln NOXP + \alpha_3 EXR + e_t \dots \dots \dots (3)$$

Where GFCF = gross fixed capital formation, OXP = oil export, NOXP = non-oil export, EXR = exchange rate, Ln = natural logarithm, u = error term, α_0 = the intercept, α_1 , α_2 & α_3 are the slopes of oil exports, non-oil export, and exchange rate. On the *a priori*, it is expected that $\alpha_1 > 0$, $\alpha_2 > 0$, and $\alpha_3 < 0$.

4 RESULT AND DISCUSSION

DESCRIPTIVE STATISTICS

The summary of the descriptive statistics for the variables in the study are presented in the table below.

Table 1: Descriptive Statistics of variables

Variable	GFCF	OXP	NOXP	EXCR
Mean	6772.573	5238.985	409.7700	103.1512
Maximum	44187.03	20475.90	3788.000	382.1800
Minimum	87.14000	7.200000	0.200000	0.617700
Std. Dev.	9720.907	6164.763	732.9000	104.8237
Skewness	2.270795	0.936804	2.835098	0.953417
Kurtosis	8.325723	2.674335	12.54807	3.138574
Jarque-Bera	81.64894	6.027437	205.5280	6.092032
Probability	0.000000	0.049109	0.000000	0.047548
Sum	270902.9	209559.4	16390.80	4126.046
Observations	40	40	40	40

Source: Researchers Computation Using E-Views 10

The result from the descriptive statistics in table 1 showed that Gross fixed capital formation (GFCF), oil export, non-oil export and exchange rate averaged N6.7 trillion, N5.2 trillion, N0.4 trillion and N103/\$ respectively. GFCF grew to a maximum of N44.187 trillion with a standard deviation of N9.7 trillion. Oil export recorded a maximum value of N20.476 trillion and a standard deviation value of N6.16 trillion. Non-oil export peaked at N3.788 trillion alongside a standard deviation value of N0.73 trillion while the exchange rate of the naira to the US dollar recorded a maximum rate of N382.18 to a dollar at a standard deviation of N104.8. The skewness statistics showed that all the variables were positively skewed, suggesting that their distributions have a long right tail. Furthermore, the kurtosis statistics of oil export was platykurtic, suggesting that its distribution was flatter than a normal distribution while that of the rest of the variables were leptokurtic suggesting otherwise.

UNIT ROOT TEST

This involves testing for the stationarity properties of each of the variables using the Augmented Dickey Fuller (ADF) test to find the existence (or otherwise) of unit root in each of the time series. The results of the unit root test are presented in the tables 2 and 3 below.

Table 2: Unit Root Test at Levels

VARIABLE	ADF Test	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration
LGFCF	-2.254266	-4.219126	-3.533083	-3.198312	Not Stationary
LOXP	-0.840220	-4.211868	-3.529758	-3.196411	Not Stationary
LNOXP	-2.767535	-4.211868	-3.529758	-3.196411	Not Stationary
EXR	-0.752042	-4.211868	-3.529758	-3.196411	Not Stationary

Source: Researchers Computation Using E-Views 10

The stationarity test result presented in table two shows that at various levels of significance (1 percent, 5 percent and 10 percent), all the variables were not integrated at order zero.

Table 3: Unit Root Test at 1st Difference

VARIABLE	ADF Test	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration
LGFCF	-3.831181	-4.219126	-3.533083	-3.198312	Stationary
LOXP	-5.422953	-4.226815	-3.536601	-3.200320	Stationary
LNOXP	-7.377218	-4.219126	-3.533083	-3.198312	Stationary
EXR	-5.350541	-4.219126	-3.533083	-3.198312	Stationary

Source: Researchers Computation Using E-Views 10

The stationarity test result presented in table three shows that all the variables were stationary after first difference. Specifically, all the variables were integrated of order one.

CO-INTEGRATION TEST

The results of the co-integration test using the Johansen procedure are presented in the table four below.

Table 4: Johansen Co-integration Test Results

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	5% critical value	Max-eigen Statistic	5% critical value
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None*	0.734978	71.17214	47.85613	50.46186	27.58434
At most 1*	0.281186	20.71027	29.79707	12.54579	21.13162
At most 2	0.192805	8.164480	15.49471	8.139224	14.26460
At most 3*	0.000664	0.025257	3.841466	0.025257	3.841466

Source: Researchers Computation Using E-Views 10

The result of the co-integration in Table 4 was based on both the Trace Statistics and Maximum Eigenvalue. The results indicated the existence of one co-integrating equation at 5 percent significance level suggesting the existence of a long run equilibrium relationship amongst the variables, GFCF, oil export, non-oil export and exchange rate in the estimated model. Given the existence of co-integrating equations, the requirement for fitting in an error correction model is satisfied.

PARSIMONIOUS ERROR CORRECTION MECHANISM

The ECM result is presented in table 5 below based on the general-to-specific rule.

Table 5: Parsimonious ECM Result

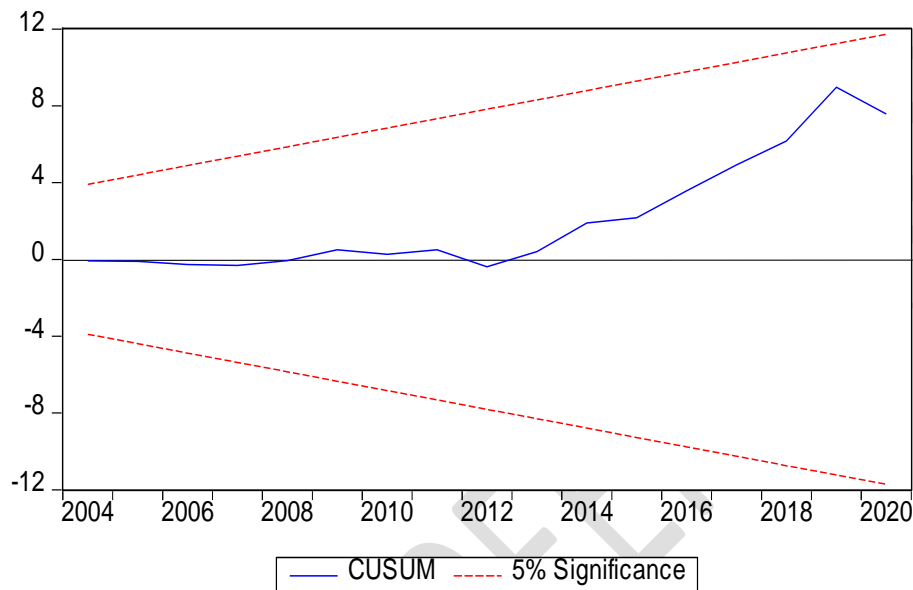
Dependent Variable: D(GFCF)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.681253	0.271779	2.506643	0.0171
D(GFCF(-1))	0.469027	0.146808	3.194833	0.0030
D(OXP)	-0.197071	0.237708	-0.829047	0.4186
D(OXP(-1))	-0.293067	0.224762	-1.303903	0.2096
D(NOXP)	0.145133	0.924384	0.157005	0.8771
D(EXR(-1))	-0.314722	0.530524	-0.593229	0.5608
ECM(-1)	0.442055	0.167247	2.643124	0.0122
R-squared	0.584467	Mean dependent var		-0.010587
Adjusted R-squared	0.546691	S.D. dependent var		0.607899
S.E. of regression	0.409287	Akaike info criterion		1.153007
Sum squared resid	5.528030	Schwarz criterion		1.327160
Log likelihood	-17.33063	Hannan-Quinn criter.		1.214404
F-statistic	15.47203	Durbin-Watson stat		2.075293
Prob(F-statistic)	0.000002			

Source: Researchers Computation Using E-Views 10

The result of the Parsimonious Error Correction Model in table 5 shows that the coefficients of the current form and one lagged form of oil export were negatively signed in contrast to *a priori* expectations and also not statistically significant at 5 percent level implying a negative relationship between oil export and gross fixed capital formation. This result corroborates the findings of Ozuzu (2020), Udude et al (2017) and Eze (2015). The insignificant impact of oil export on gross fixed capital formation in Nigeria is reflective of the fact that the proceeds from oil exports have not been efficiently channeled to investments in capital projects required to drive growth in the economy. Also, the negative effect of oil exports on capital formation in Nigeria can be attributed to the consistent oil price shocks globally. Similarly, the coefficient of non-oil export showed that it had an insignificant negative impact on gross fixed capital formation contrary to theoretical expectation. The result deviated from the findings of Antony-Orji (2017) that observed a direct relationship between non-oil export and capital formation in Nigeria. The implication of this is that the proportion of exports from the non-oil sector is inadequate to build up capital assets in Nigeria. This is also reflective of the country's over dependence on imported goods resulting to the strain on the nation's balance of payment position. Meanwhile, the coefficient of exchange rate shows a negative impact on gross capital formation in Nigeria in line with the findings of Ojide et al. (2014) and Udude et al (2017), consistent with economic expectations. This implies that an increase in the exchange rate of the naira to the dollar impedes on capital formation in Nigeria.

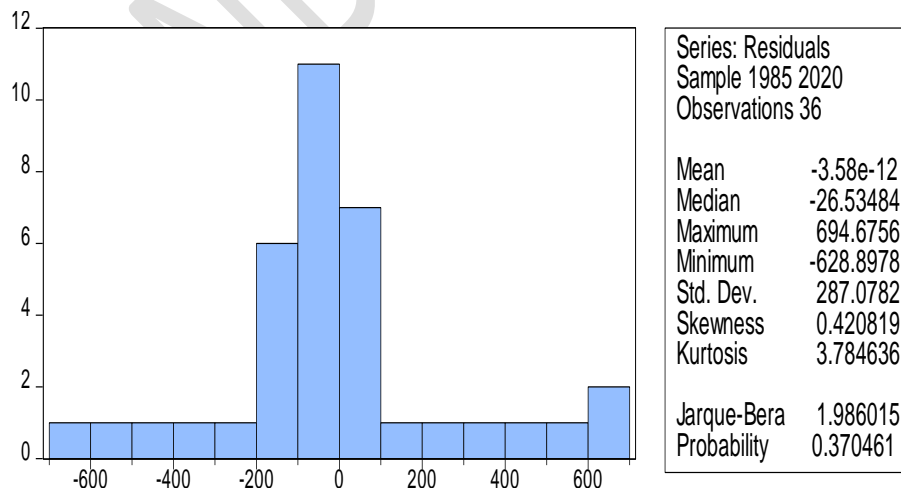
Furthermore, the error correction term was negatively signed and statistically significant at 5 percent level. Specifically, 44 percent disequilibria in capital formation in the previous year were corrected for in the current year. It therefore, follows that the ECM could rightly correct any deviations from short run to long-run equilibrium relationship of the dependent and the explanatory variables. The R^2 value showed that that about 58 percent of the total variation in Nigeria's capital formation is influenced by changes in oil export, non-oil export and exchange rate over the period under investigation. The F-statistic showed that the overall explanatory variables are significant in explaining capital formation in Nigeria. The Durbin Watson value of 2.075 suggests the absence of autocorrelation in the model.

Figure 1: CUSUM Test of Stability



An observation from the stability test using the plot of the cumulative sum of recursive residuals (CUSUM) in figures 1 shows that it stayed within the 5 percent critical line, indicating the constancy or stability of the regression estimates throughout the period covered by the study.

Figure 2: Normality Test



The Jarque-Bera normality test result showed that the model scaled through the diagnostic tests as the probability value of 0.37 was greater than 0.05 implying that the null hypotheses of normal distribution is accepted implying that the estimated parameters are stable over time and can therefore produce a reliable forecast.

CONCLUSION AND RECOMMENDATIONS

This study examined the effect of exports on capital formation in Nigeria for a 40-year time period spanning from 1981 to 2020. Related works on the subject matter were reviewed. The unit root test showed that all the variables attained stationarity after first difference. The Johansen cointegration test result showed that there exists a stable long run relationship between gross fixed capital formation, oil export, non-oil export and exchange rate in the model. Using the OLS method in analyzing the data sourced, the results showed that oil export had a negative and insignificant impact on capital formation in Nigeria reflecting that oil export earnings have not been efficiently channeled to capital projects in Nigeria. Similarly, non-oil export and exchange rate exerted insignificant negative influences on capital formation in Nigeria for the period covered by the study.

Based on the findings from the study, the following recommendations were made. First is that the proceeds from crude oil should be used to acquire capital assets for investment which will in turn drive growth in the economy. Also the government through the CBN and relevant agencies should pay more attention to the non-oil sector in terms of the implementation of favourable policies, grants and loans, tax incentives, research and development, etc. to improve the export of the sector, making it compete favourably in the international market. This is because crude oil is an exhaustible asset that is liable to depletion. Finally, efficient exchange rate policies should be implemented by government through the relevant authorities to protect the value of the naira as well as ensuring that the products are not too dear in the international market.

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