

Analysis Of The Effect Of Exchange Rate Volatility On Gross Fixed Capital Formation In Nigeria

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Abstract: This study investigated the effect of exchange rate fluctuation on gross fixed capital formation. Mundell-Fleming Model is used as a theoretical framework for establishing relationship between relevant variables. The erratic fluctuation in exchange rates referred to as exchange rate volatility could be described as periods of domestic currency appreciation or depreciation. Exchange rate has considerable attention in terms of its influence on gross fixed capital formation. The study covered the period between 1980-2018 and Vector Error Correction techniques were used in estimating the relationship between variables included in the specified regression model. The data was collected from Central Bank of Nigeria Statistical Bulletin and the World Bank Indicators for Nigeria. The major finding of this study shows that the Exchange rate (EXCHR) has negative and significant linear relationship with gross fixed capital formation. The implication of this is that monetary authorities should adopt measures that will strengthen the naira against other currencies. The result equally shows that the Degree of trade openness (TOP) have positive and significant relationship with GFCF. Stringent trade measures should be adopted to protect local industries and reduce the depletion of our foreign reserves through excessive importation. The result of Inflation rate (INFL) revealed a positive and significant relationship with gross fixed capital formation. Stringent trade measures should be adopted to checkmate inflation mostly the imported inflation through foreign trade. The study therefore recommends that monetary authorities should adopt measures that will strengthen the naira against other currencies. Also that Stringent trade measures should be adopted to protect local industries and reduce the depletion of our foreign reserves through excessive importation.

Keywords: Analysis, Exchange Rate, Volatility, Gross Fixed Capital Formation

I. BACKGROUND TO THE STUDY

Gross fixed capital formation (GFCF) refers to the net increase in physical assets (investment minus disposals) within the measurement period. It does not account for the consumption (depreciation) of fixed capital, and also does not include land purchases. It is a component of expenditure approach to calculating GDP. GFCF is a flow value. It is measured by the total value of a producer's acquisitions, less disposals of fixed assets during the accounting period plus certain additions to the value of non-produced assets (such as subsoil assets or major improvements in the quantity, quality or productivity of land) realized by the productive activity of institutional units. In this way GFCF is a measure of gross net investment (acquisitions less disposals) in fixed capital (assets

by enterprises, government and households within the domestic economy, during an accounting period such as a quarter or a year. Gross private domestic investment is the measure of physical investment used in computing GDP in the measurement of nations' economic activity. This is an important component of GDP because it provides an indicator of the future productive capacity of the economy.

Exchange rate is one of the economic indicators which directly affect investment and other macroeconomic indicators; as such its role in the overall economic objectives of a country cannot be underestimated. This gives confidence to why the public sectors, foreign investor and private individual pay a lot of attention to the exchange rate variation. Exchange rate is among the most watched, analyzed and government controlled macroeconomic indicator. Since

September 1986, when the market determined exchange rate system was introduced via the second tier foreign exchange market, the naira exchange rate has exhibited the features of continuous depreciation and instability. Economic agents continued to be conscious with investment due to exchange rate volatility. This instability and continued depreciation of the naira in the foreign exchange market has resulted in declines in investment, standard of living of the populace, increased cost of production, which also leads to cost push inflation. It has also tended to undermine the international competitiveness of non-oil exports and make planning and projections difficult at both micro and macro levels of the economy. The exchange value of a country's currency is largely determined by economic forces (called economic fundamentals); with political factors playing only complementary roles.

II. STATEMENT OF THE PROBLEM

GFCF is called "gross" because the measure does not make any adjustments to deduct the consumption of fixed capital (depreciation of fixed assets) from the investment figures. According to CBN (2007) influx of foreign businesses into Nigeria was US \$2.3 billion in 2003 US \$5.3 billion in 2004 (138 per cent increase) US \$9.92 billion (87 per cent increase) in 2005. Due to stable exchange rate regime, Foreign Direct Investment into Nigeria grew by 134 per cent to #1.123 trillion (US \$9.6 billion) in 2007. In total, US \$36 billion of FDI went into Africa, and Nigeria received 26.66 per cent of the influx, because of this, Nigeria was tagged "A beautiful bride for foreign Investors".

The Nigeria pound has its parity defined in June 1962 in terms of gold at one Nigerian pound to 2.48828 grams for fine gold. From that time to August 14, 1971, the exchange rate of the Nigerian pound of the use dollar was determined by its gold parity. The Naira replaced the pound as Nigerian currency in 1973, and its par value was set at half that of the pound. Hence the exchange rate against the dollar became US \$ 1.52 to the Naira. Within a month of this the US dollar was devalued by 10 percent and Nigeria suit with a 10 percent matching devaluation, thereby maintaining the existing Naira-dollar rate. During most of 1973, the anchor currencies, the dollar and sterling weakened considerably, sustained weakness brought into sharp focus the dilemma, inherent in the method of determining the exchange rate of the Nigerian currency.

In July 2, 1987 at an exchange rate of N3.74: \$1.00. With this development, the first tier market was abolished and unified foreign exchange market (FEM) with a single rate that came into being. However, in September, 1986, the Second Tier Foreign Exchange market (SFEM) began as a dual exchange rate system which produced the official first tier rate and the SFEM or free market rate. The introduction of the autonomous market led to the existence of three exchange rates - FEM, rate autonomous and the parallel market rate which failed to show any tendency toward convergence.

In January 1999, Nigeria's dual exchange rate regime was abandoned as the official N22 to a dollar exchange rate was scrapped. Prior to then, the official rate co-existed with the rates on the Autonomous Foreign Exchange Market (AFEM)

and was used for selected government transactions including external debt service. In October 1999, a daily Inter-Bank Foreign Exchange Market (IFEM) replaced the AFEM. Under the IFEM, the CBN monopoly on the supply of foreign exchange was removed as oil exploration and producing companies were allowed to sell foreign exchange directly to banks rather than through the CBN. In July, 2002, Nigeria reintroduced a bi-weekly Dutch auction system (DAS) as an operational system for its foreign exchange market to replace the inter-bank foreign exchange market. The major problem confronting the Nigeria economy therefore is what precisely is the root cause of the unstable exchange rate regimes in Nigeria? How has this fluctuations impacted on the growth of gross fixed capital formation in the Nigeria economy? Is Gross fixed capital formation advantageous to the economy, valuable or beneficial as they emerge in theory? To what limit have they stimulated the growth of the Nigeria economy?.

The unstable exchange rate volatility is badly affecting the macro-economic variables and the growth of the economy in general.

III. OBJECTIVES OF THE STUDY

The main objective of the study is to carry out an investigative analysis of the effect of exchange rate volatility on the gross fixed capital formation.

IV. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Bakare (2011) carried out an empirical analysis of the consequences of the foreign exchange rate reforms on the performances of private domestic investment in Nigeria adopting the ordinary least square multiple regression analytical method. The multiple regression results showed a significant but negative relationship between floating foreign exchange rate and private domestic investment in Nigeria. The findings and conclusion of the study support the need for the government to dump the floating exchange regime and adopt purchasing power parity which has been considered by researchers to be more appropriate in determining realistic exchange rate for naira and contribute positively to macroeconomic performances in Nigeria.

Kanagaraj and Ekta (2011) examined the level of foreign exchange exposure and its determinants in Indian firms and it was found that only 16 percent of the firms had exchange rate exposure at 10 percent level of significance. About 86 percent of the firms are negatively affected by an appreciation of the rupee which confirms that Indian firms are net exporters. On the determinants of exchange rate exposure, changes in exchange rates are given various names depending on the kind of exchange rate regime prevailing. Under the floating-rate system, a fall in the market price of a currency is called a "depreciation" of that currency; a rise is an "appreciation. We refer to discrete official reduction in the otherwise fixed par value of a currency as a "devaluation", "revaluation" is the antonym describing a discrete raising of the official par. In this sub-section, we tend to review the impact of this changes

(changes in exchange rate) on GDP and by extension the factors that affect these changes. Suleiman (2010) carried out a research on foreign private investment capital formation and poverty reduction in Nigeria. Using data set spanning from 1990-2008 and adopting the Ordinary Least Square methodology, discovered that foreign private investments has a positive relationship with capital formation and contributed immensely to poverty reduction in Nigeria within the period.

Adetiloye (2012) estimated the relationship between domestic investment, capital formation and population growth. Adopting the curve estimation regression models, that study discovered that the state of investment in the Nigerian economy has been worrisome for some time now, given its poor performance and insignificant correlation with capital formation. Dania (2006), developing a time series simultaneous model and using the Indirect Least Square (ILS) method, undertook an empirical analysis and the impact of some macroeconomic aggregates on private capital formation in Nigeria from 1975 to 2002. It was observed that the most important variable that determines private capital formation is Gross Domestic Product. Their findings also revealed that domestic credit to the economy was significantly related to gross private capital formation having negative impact on capital formation.

Jimoh (2006) examines the Nigerian data from 1960 to 2000 to see what support it provides for traditional theory of real exchange rate. He used the well-known Johanson's (1992) methods for estimating models whose variables are non-stationary but co integrated, the study found that the decisive trade liberalization programme of 1986 led to about 13 per cent depreciation in the Nigerian real exchange rate and made the real rate more responsive to changes in its terms of trade. He also found out that less decisive changes in trade regime produced no significant changes in the real exchange rate. Shehu and Aliyu (2006) estimate the long run behavioral equilibrium exchange rate in Nigeria. They used quarterly data from 1984Q1 to 2004Q4 and derive a Behavioral Equilibrium Exchange Rate (BEER) and a Permanent Equilibrium Exchange Rate (PEER). Regression results show that most of the long-run behavior of the real exchange rate could be explained by real net foreign assets, terms of trade, index of crude oil volatility, index of monetary policy performance and government fiscal stance. On the basis of these fundamentals, four episodes each of overvaluation and undervaluation were identified and the antecedents characterizing the episodes were equally traced to the archive of exchange rate management in the country within the review period. Among others for instance, large inflow of oil revenues into the country and stable macroeconomic were discovered to account for undervaluation of the real exchange rate between 2001Q1 and 2004Q4 in Nigeria. The results further suggest that deviations from the equilibrium path are eliminated within one to two years.

Uremadu (2004) analyzed the impact of foreign private investment on private capital formation in Nigeria. The paper obtained time series estimate using the Ordinary Least Square (OLS) methodology and discovered that foreign exchange rates leads private capital formation in Nigeria, followed by index of energy consumption and then debt service ratio. Imobighe and Akpokoje (2000), using time series data set

from 1985- 2000 and adopting the OLS methodology, explored the association between export earnings and private capital formation in Nigeria. The work discovered that export earnings fluctuations adversely impinges on investment (i.e., the change in capital stock) in the short-run. Akujuobi (2007) examined foreign direct investment and private capital formation in Nigeria for the period 1983-2003 using the recursive modeling technique. The work found that foreign direct investment is a significant positive contributor to the overall capital formation effort.

The output effect of exchange rate changes has long been recognized in the literature but there is however, no consensus as to the direction of the effects while the traditionalists argued that exchange rate depreciation would promote trade balance, alleviate balance of payments difficulties and accordingly expand output and employment provided the Marshall-Lerner conditions are met (Marshall-Lerner condition states that depreciation would lead to expansion in output if the sum of price elasticity of demand for export and the price elasticity of demand for imports is greater than unity. Gómez (2000) in a study titled exchange rate volatility effects on domestic investment in Spain argue that there is no unique expected exchange rate effect on investment, its sign and importance remaining as a mainly empirical question.

Agnès and Coeuré (2001), in their paper "The Survival of Intermediate Exchange Rate Regimes show how the traditional tradeoff between stabilization and disinflation can produce soft pegs as optimal exchange rate regimes even when financial fragility and the cost of regime switches in terms of credibility are taken into account. The optimal degree of exchange rate flexibility depends on the structural characteristics of the country and on the preferences of monetary authorities. The finding is confirmed by cross-section logic estimation for 92 countries before and after the 1997-1998 emerging markets crises, relating exchange rate regime choice with the countries structural patterns. The model correctly predicts up to 86% of observed regimes and some of the recent moves towards hard pegs.

The introduction of the autonomous market led to the existence of three exchange rates - FEM, rate autonomous and the parallel market rate which failed to show any tendency toward convergence. And as Akinmoladun (1990) has argued the merger of the first tier rate and the SFEM rate was more technical than real as shortly after the gap between the auction rate and those of the autonomous market rates began to grow at one point, there was more than 50 percent differential between the two rates and this became a source of concern for the monetary authorities. The price differential had the effect of making the auction funds sort of subsidized.

The operations of the autonomous market later became destabilizing arising from the tendency towards high arbitrage premium and accusations of authorized dealers of diverting official funds making substantial gains effortlessly (Ojo, 1991). Other malpractices also developed as the market officials or authorized dealers were accused of corruption and allocation of foreign exchange to favored customers. In the light of these, the autonomous market was merged with the official segment in January 1989 and the Inter-Bank Foreign Exchange Market (IFEM) was introduced. Growth models like the ones developed by Romer and Lucas (1986) predict that

increased capital accumulation can result in a permanent increase in growth rates. The relationship between capital formation of the nation and economic growth has been documented in a number of empirical investigations. The result which has been found in several analyses is that causality exists between capital accumulation and economic growth.

In summary, from the studies reviewed in the literature, none of the studies captured the pre SAP and post SAP era (1980 to 2018) and dearth of this study captured the attention of this study. The study is anchored on the theory of Mundell-Fleming model.

V. RESEARCH METHODOLOGY AND MODEL SPECIFICATION

The research is designed to be totally an ex-post factor research using econometric technique of investigation on the analysis of exchange Rate Volatility on the Gross Fixed Capital Formation. The research adopted the vector Error Correction Model (VECM) analysis method of estimation technique. The study also utilized certain key variables as explanatory variables (Gross Fixed Capital Formation (GFCF), Exchange Rate (EXCHR), Inflation (INFL) and Trade Openness (TOP)).

VI. MODEL SPECIFICATION

In establishing, the effect of Foreign exchange (exch), Inflation and Trade Openness on the gross fixed capital formation (GFCF), we employed the use of VECM. The aim is to establish the relationship among the variables used in the model, i.e relationship between the dependent and the independent variables and the study adopted the growth model used by Adetiloye (2012) who estimated the relationship between domestic investment, capital formation and population growth. Adopting the curve estimation regression models, that study discovered that the state of investment in the Nigerian economy has been worrisome for some time now, given its poor performance and insignificant correlation with capital formation.

The model in its structural form is stated as follows:

$$GFCF = f(EXCHR, INFL, TOP) \dots \dots \dots 1$$

This could be stated in econometric form, as

$$GFCF = \beta_0 + \beta_1 EXCHR + \beta_2 INFL + \beta_3 TOP + U_t \dots \dots \dots 2$$

Where:

GFCF= Gross Fixed Capital Formation

EXCHR = Exchange Rate

INFL= Inflation

TOP = Trade Openness

β_0 is a constant

β_1, β_2 and β_3 are parameters to be estimated

μ = Error term

From the model, the Gross Fixed Capital Formation (GFCF) is the dependent variable. The independent variables in the model are Exchange Rate (EXCHR), Inflation (INFL) and Trade Openness (TOP). These were expected to affect the

rate of growth of Gross Fixed Capital Formation of the Nigerian economy negatively or positively.

A. APRIORI EXPECTATION

$$\beta_0 > 0, \beta_1 > < 0, \beta_2 < 0, \beta_3 < 0$$

Economic theory explains the nature of the variables on use and their relationship with one another especially the explained variable and the explanatory variables. The evaluation therefore is based on whether the coefficient conforms to the economic postulations. The expected relationship is that GFCF should have a significant effect on the economic growth of Nigeria.

VII. METHOD OF DATA COLLECTION AND SOURCES OF DATA

The data for this research was gathered entirely from secondary sourced materials. The materials would be sourced from the Central Bank of Nigeria and other secondary materials. The data sourced includes data for the Gross Fixed Capital Formation (GFCF), Exchange Rate (EXCHR), Inflation (INFL) and Trade Openness (TOP).

VIII. ESTIMATION PROCEDURE

An econometric analysis approach of Ordinary Least Square method regression is the instrument for analyzing the data. The VECM is employed to establish the relationship between the variables of the research from 1980-2018 covering the pre SAP and post SAP era in Nigeria.

IX. DATA PRESENTATION AND ANALYSIS OF REGRESSION RESULT

The study examined the effect of exchange rate volatility on gross fixed capital formation in Nigeria. Trends analysis of the variables used in the study period 1980 and 2018 was done with the use of line graphs. The descriptive statistics and the correlation matrix of the variables were carried out. In estimating the effect of exchange volatility on gross fixed capital formation in Nigeria, Vector Error Correction Model (VECM) regression analysis was employed using eviews 10 to establish the long run and the short run relationship amongs the variables of study.

A. DESCRIPTIVE STATISTICS AND TREND ANALYSIS

Statistics	GFCF	EXCHR	INFL	TOP
Mean	2704092.	64.72861	19.60389	0.520809
Standard Deviation	4793691.	63.25976	17.69075	0.155781
Maximum	15312486	158.5500	72.84000	0.818130
Minimum	2707.890	0.550000	5.380000	0.236090
Skewness	1.622711	0.316743	1.664644	-0.250287
Kurtosis	3.978938	1.299275	4.526998	2.238379

Jarque-Bera	17.23663	4.940656	20.12382	1.245963
Probability	0.000181	0.084557	0.000043	0.536343
Sum	97347294	2330.230	705.7400	18.74914
Sum Sq. Dev.	8.04E+14	140062.9	10953.69	0.849367
Observations	36	36	36	36

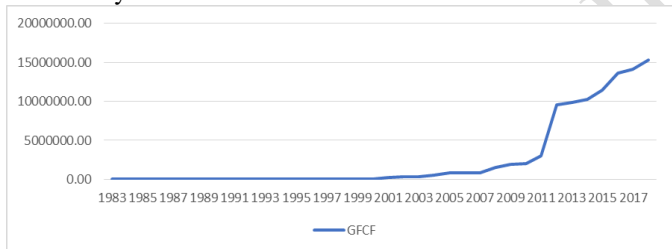
Source: Researcher's Computation using eviews 10, 2019

Table 1.1: Descriptive Statistics of the variables used in the study

Table 1.2 above shows that the mean of Gross fixed capital formation, Exchange rate, inflation and Degree of trade openness were 1063547, 78.88, 19.34, and 0.50 respectively. Given this we can conclude that the average Gross fixed capital formation, Exchange rate, inflation and Degree of trade openness were high between 1980 and 2018. The minimum, maximum and standard deviation values of the variables are shown in the table.

X. TREND ANALYSIS

To further provide information on the dataset used in the work, we attempt to chart each data to show their trend over time. From figure 4.1 below, the line graph provides us with further information on the trend of Gross Fixed Capital Formation (GFCF). The figure shows that though GFCF was constant between 1980 and 2004, it increased sharply and continuously from 2004 to 2018 at a constant rate. This implies that all things being equal, the productive capacity of the country has been on the increase from 2004 to 2016.



Source: Author's generated 2019

Figure 1.1: Gross Fixed Capital Formation in Nigeria, 1980 - 2018

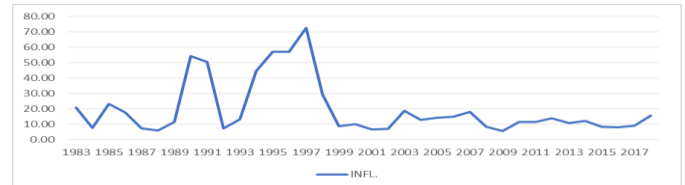
Secondly, the line graph for exchange rate in figure 4.2 also provides us with further information on the trend of exchange rate fluctuation. The figure shows that, EXCHR was at its minimum (strongest value) between 1980 and 1998 and increased (depreciated) sharply in 2000 getting to its in 2018. This implies that the naira was under intense pressure since 2000s to date and resulted in loss of purchasing power of the populace. On the other hand, a depreciated exchange rate should increase the country's external competitiveness all things being equal, but whether this was the case for Nigeria, is another area of study of its own.



Source: Authors generated 2019

Figure 1.2: Exchange Rate in Nigeria, 1980 - 2018

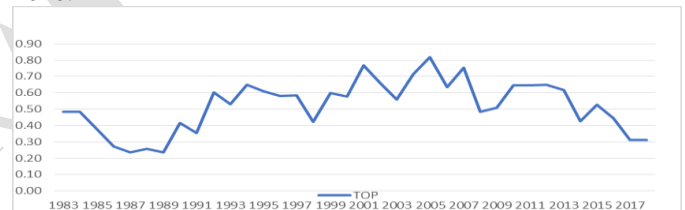
The line graph on inflation (INFL) in figure 4.3 below shows that inflation rate was at its minimum in the year 1986 and 2007. It fluctuated steadily getting to the peak in 1994. It recorded a sharp decline in 1995 and fluctuated between 2000 and 2018. The high level of fluctuations in inflation between 1986 and 1997 could mirror the level of uncertain macroeconomic environment in the country, and especially under military rule. The implication of high fluctuations in price level makes it difficult for investment decisions by both the household and businesses.



Source: CBN 2019

Figure 1.3: Inflation Rate in Nigeria, 1980 - 2018

Lastly, trade openness (TOP) fluctuated all through the study period 1980 - 2016 getting to its peak in 2001 (Figure 4.4). The decline in TOP in recent years might not necessary mean that the country's import and export had decreased, but could be as a result of the phenomenal rise in Nigeria's gross domestic product, especially with the rebasing of GDP in 2010.



Source: CBN Statistical Bulletin 2019

Figure 1.3: Trade Openness in Nigeria, 1980 - 2018

XI. PRESENTATION OF UNIT ROOT RESULTS

The Phillips-Perron unit root test was employed to test for unit root for all the macroeconomic variables employed for the study. The results are presented on the table below:

Variable	PP TEST		
	LEVELS	FIRST DIFF	ORDER of Integration
LGFCF	2.18443	-4.790742***	I(1)
LEXCHR	-0.111154	-5.517034***	I(1)
LINFL	-2.690016	-9.064182***	I(1)
TOP	-2.160972	-8.206726***	I(1)

Source: Extract from computer on regression of data using eviews 10

Table 1.3: Unit Root Test Result using Phillips-Perron

The decision rule here is that when the t-statistics is greater than the critical value at 5% significance level and the probability value (P-Value) is less than 0.05, it shows that the variable is stationary at level otherwise the difference is taken until it becomes stationary. The results show that all the variables tested were not stationary at level, but were stationary only at first difference - I(1), thus justifying the use

of VECM. The t-statistic values of all the variables are all less than the critical values at the standard 5% significant level and their probability values are greater than 0,05. The fact that the variables were not all stationary at level however connotes the existence of unit root and indication for co-integration. Therefore, in order to avoid the misinterpretation bias that comes with analyzing co-integrated variables using the VECM estimation technique, the study tested for cointegration.

XII. COINTEGRATION TESTS

The result of the cointegration tests for the model is extracted in tables 4.5 as shown

Below;

Trace Test k=2				Maximum Eigenvalue Test k=2			
H ₀	H _A	(λ trace)	Critical Values -5%	H ₀	H _A	(λ Max)	Critical Values -5%
r ≤ 0	r > 0	66.10419*	47.85613	r ≤ 0	r > 0	40.48581	27.58434
r ≤ 1	r > 1	25.61838	29.79707	r ≤ 1	r > 1	15.10459	21.13162
r ≤ 2	r > 2	10.51379	15.49471	r ≤ 2	r > 2	10.16699	14.26460
r ≤ 3	r > 3	0.346798	3.841466	r ≤ 3	r > 3	0.346798	3.841466

* denotes rejection of the null hypothesis at the 5% level

Table 1.4: Cointegration Result for Gross fixed Capital Formation (GFCF) Model

Source: Computation by Researcher Using eviews 10.2019

The test statistics indicate that the hypothesis of no cointegration, H₀, among the variables can be upheld. The result shows the existence of at least one cointegrating equation and thus allowed us to estimate the Vector Error Correction Models. The results reveal the existence of cointegrating vector among the variables of interest in the GFCF model. The existence of a cointegration equation indicate a long relationship amongs the variables of interest and justifies the estimation of an VECM error correction model.

XIII. VECTOR ERROR CORRECTION MODEL (VECM)

Going by the cointegration results, long-term vectors were revealed between gross fixed capital formation and exchange rate movement in Nigeria. As a result, the need to evaluate and determine the short-long-run equilibrium adjustment path using the Vector Error Correction Model. This will help us measure the speed with which the variables under consideration converge towards their long-run equilibrium. Error Correction Term should be different from zero statistically and negative to show a long-term evidence of equilibrium and efficiency of Error correction tool.

Variables	Coefficients	T-statistics	Standard errors
C	-10776347		
LEXCHR	-143907.3	-4.12708	34869.1
LINFL	-354483.9	-3.19569	110926
LTOP	46962068	3.79974	1.2
R ² = 0.0513 Adjusted R ² = 0.3199 F-Statistic = 0.138			

Source: Computation by Researcher Using eviews 10
Table 1.5: Vector Error Correction Model (VECM) – Long Run Result for Gross Fixed Capital Formation Model

Variables	Coefficients	T-statistics	Standard errors
C	409205.5	1.36171	300508
Dlog (LGFCF (-1)	0.153189	0.69697	0.21979
Dlog (LGFCF (-2)	0.068154	0.30739	0.22172
Dlog(LEXCHR(-1)	-6137.362	-0.29905	20523
D(LEXCHR(-2)	-227.203	-0.01203	18887.1
Dlog(LINFL(-1)	-4320.552	-0.24468	17657.7
D(LINFL(-2)	1410.952	0.07775	18148.2
Dlog(LTOP(-1)	1224661	0.43660	2804999
D(LTOP(-2)	1249898	0.49420	2529153
CointEq1	-0.021746	-0.44371	0.04901

Source: Computation by Researcher Using eviews 10

Table 1.6: Vector Error Correction Model (VECM) – Short Run Result for GFCF

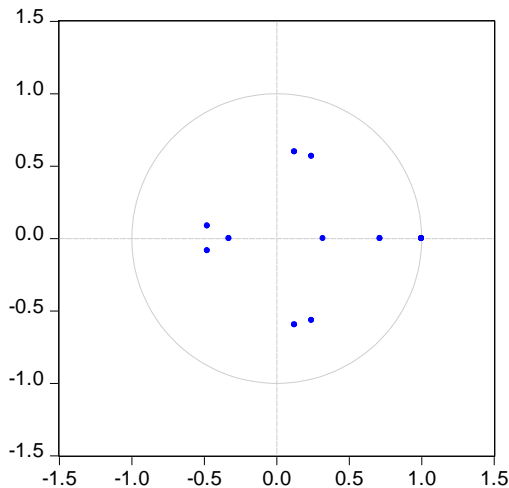
The result from the estimation shows that the Exchange rate (EXCHR) have negative relationship with gross fixed capital formation (GFCF). It implies that a unit increase in naira gain against other currencies will result to 143907.3 decrease in the GFCF. This however, conformed with the a priori expectation. Currency appreciation reduces external competitiveness in an economy, which implies that depreciation would increase or encourage domestic investments, which will lead to expansion in output. From the result, Inflation has a negative relationship with GFCF, that implies that, as inflation increase, the GFCF will decline, which also conform with a priori expectation. A unit increase in inflation leads to 354483.9 decline of the GFCF. A rise in inflation discourages investment because of erosion of capital, which means the public will be discourage from investing in productive activities. Trade Openness (TOP) has a positive effect on the GFCF, implying that, a unit increase in TOP, will lead to 46962068 increases in GFCF. It means a favourable Balance of Trade will result in higher investment, as businesses would be encouraged to produce more goods both for consumption and export. On the other hand, an unfavourable trade balance would serve as disincentive to investment and production.

The figure of Error Correction Term (ECT) as shown by the result is -0.021746, approximately 2%. Following from the principle of the error correction, the figure is significant and negative which provides further evidence that the GFCF need cointegrated with the explanatory variables. The results indicated that about 2 per cent of the disequilibrium of the last period's shock to GFCF would adjust within the current period back to attain equilibrium level in the long run. It represents the speed of adjustment between the variables.

XIV. POST ESTIMATION TEST - STABILITY TEST

The diagram below shows that there is stability in the variables used in the model, which also validate the use of the model. It implies that, the estimated VAR is stable (stationary) as the roots have modulus less than one and lies inside the unit circle.

Inverse Roots of AR Characteristic Polynomial



XV. AUTOCORRELATION TEST:

The result below shows there is no autocorrelation amongst the variables used in the model. The probability figures (**) are not significant at 5 per cent level of significance, thus there is no autocorrelation amongst the variables used.

VEC Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at lag order h
Date: 07/30/19 Time: 14:10
Sample: 1983 2018
Included observations: 33

Lags	LM-Stat	Prob
1	18.65318	0.2871**
2	15.41818	0.4942**

Probs from chi-square with 16 df.

t statistic

The t-test suggests that the EXCHR, INFL and TOP with values of -4.13, -3.20 and 3.79 respectively are statistically significant in explaining the changes in the GFCF.

XVI. EVALUATION OF REGRESSION RESULTS

The regression result above is evaluated under this subsection to know whether the signs of the variables adopted in the model conform to what the economic theory postulates. The constant which is the intercept is -10776.35 This shows that if all explanatory variables were held constant, GFCF will decrease by 10776.35

The result of the regression is:

$$\text{LogGFCF} = -10776.35 - 14397.3\text{LogEXCHR} - 354483.9\text{LogINFL} + 469620.68\text{LogTOP}$$

From the model estimated, the result shows a negative relationship existing between EXCHR and GFCF. This means

that a unit change in EXCHR will cause a decrease in GFCF of -14397.3. This conforms to the a priori expectation. The sign of the estimated coefficient of INFL is -354483.9. This confirms that, inflation rate of the economy is negatively related to GFCF (a unit change in INFL will reduce GFCF by -354483.9). TOP is positively related to GFCF, meaning a unit change in TOP will increase GFCF by 469620.68.

XVII. SUMMARY OF FINDINGS

In summary, the following findings were therefore made:

The result shows that the Exchange rate (EXCHR) have negative and significant linear relationship with gross fixed capital formation. This implies that a unit increase in naira gain against other currencies will result to 143907.3 decrease in GFCF. The implication of this is that monetary authorities should adopt measures that will strengthen the naira against other currencies. The result equally shows that the Inflation rate (INFL) have negative and significant relationship with gross fixed capital formation. This implies that a unit increase in inflation will result to a 354483.9 unit decline in GFCF. Stringent trade measures should be adopted to checkmate inflation mostly the imported inflation through foreign trade. The result, however, showed that the Degree of trade openness (DOP) have positive and significant relationship with GFCF. This implies that a unit increase in trade openness will result to a 46962068 unit increase in GFCF. Stringent trade measures should be adopted to protect local industries and reduce the depletion of our foreign reserves through excessive importation. This can be achieved through high tariffs, quotas and outright ban on some certain goods and services.

From the analysis, it was observed that Gross Fixed Capital Formation (GFCF) was constant between 1980 and 2004, GFCF increased sharply and continuously from 2004 to 2018 at a constant rate. Exchange Rate (EXCHR) was at its minimum between 1980 and 1998 and increased sharply in 2000 getting to its in 2018. Inflation (INFL) rate was at its minimum in the year 1986 and 2007. It fluctuated steadily getting to the peak in 1994. It recorded a sharp decline in 1995 and fluctuated between 2000 and 2018. Trade openness (TOP) fluctuated all through the study period 1980 - 2018 getting to its peak in 2001. A negative and significant relationship was found to exist between exchange rate and gross fixed capital formation in Nigeria between 1980 and 2018. A positive but significant relationship was found to exist between trade openness and gross fixed capital formation in Nigeria between 1980 and 2018 while a negative but significant relationship was found to exist between inflation and gross fixed capital formation in Nigeria between 1980 and 2018.

XVIII. POLICY RECOMMENDATIONS

The policy implications from the findings can be summarized as follows:

- ✓ Exchange rate is a necessary and sufficient policy instrument for influencing gross fixed capital formation growth rate, thus naira should not be allowed to

depreciate rapidly, as doing so would lead to erosion of investment.

- ✓ Exchange rate management is pivotal for the growth and development of the economy and requires close monitoring.
- ✓ Monetary authorities should adopt measures that will strengthen the naira against other currencies by adopting a forward looking monetary policy.
- ✓ Stringent trade measures should be adopted to protect local industries and reduce the depletion of our foreign reserves through excessive importation. This can be achieved through high tariffs, quotas and outright ban on some certain goods and services.
- ✓ Regulated trade measures should be adopted to checkmate inflation mostly the imported inflation through foreign trade.

XIX. CONCLUSION

Our choice of subject in this thesis is hinged on the premise that gross fixed capital formation can continue to increase when the exchange rate of a country's currency with the dollar is in an economically favourable rate. As such our study has made some findings on which conclusions will be arrived at. The rate at which the naira exchanges for the dollar over the years has impacted negatively on gross fixed capital formation growth rate. Though the trend of exchange rate and gross fixed capital formation are not appealing, however, the study still found that exchange rate has proven to influence gross fixed capital formation negatively in Nigeria between the study periods. Therefore, it is necessary to pay more attention to the importance, exchange rate play in the Nigerian economy.

REFERENCES

- [1] Akinmoladun I. (1990), "External debt, Investment and Economic Growth: Evidence From Nigeria." Central Bank of Nigeria: Economic and Financial Review, Vol.44(1): 81- 113.
- [2] Adetuloye, I. (2012), "Effect of External Debt on Economic Growth and Development of Nigeria." International Journal of Business and Social Sciences. Vol.3(12): 26
- [3] Ajayi, S. I. (2003) Globalization and Africa. Journal of Africa Economics, Vol.12, (12): 120-150.
- [4] Akpojeje O.A,(2000). Exchange Rate Volatility on Investment and Growth in Nigeria, an Empirical Analysis.Global Journal of Management and Business Research, Vol.5(10) 23-16
- [5] Agnes, G.andCoeure B. (2001). Impact of foreign exchange volatility on import: A case of Nigeria foreign exchange market. Proceedings of the 7th International Conference on Innovation and Management The Impact of Exchange Rate Fluctuations on Private Domestic Investment Performance in Nigeria DOI: 10.9790/5933-0703010715 www.iosrjournals.org 15 | Page
- [6] Akujuobi, V. (2007) 'Segmented Asset Markets and Optimal Exchange Rate Regimes'.
- [7] Federal Reserve Bank of New York, Iowa State University and UCLA and NBER
- [8] Adam,S. (1776). An Inquiry in Nature and Causes of Wealth of the Nations Book 2
- [9] Bakare A.S (2011). The Consequences of Foreign Exchange Rate Reforms on the Performances of Private Domestic Investment in Nigeria. International Journal of Economics and Management Sciences, Vol.1(1): 25-31
- [10] Gomez, M.A. (2000), "Exchange Rate Volatility Effects on Domestic Investment in Spain (1980-1995)." Anales de Economia Aplicada.
- [11] Jayaraman,B. F. (1996) Foreign Exchange and Economic Development, An Empirical Study of Selected Latin American countries. Review of Economic and Statistics, Vol. 54,(20): 208-212.
- [12] Jimoh, R. (2006) Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation." The Economic Journal, Vol.74 (294), 388-409.
- [13] Kanagaraj, A and Ekta, S. (2011) A Firm Level Analysis of the Exchange Rate Exposure of Indian Firms: Journal of Applied Finance and Banking, 2011, vol. 1, Issue 4,7