# Effect of Macroeconomic Environment on Domestic Investment in Nigeria

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**Abstract**

*This research aimed at establishing the effect of macroeconomic environment on domestic investment in the Nigerian economy. The research work used Error Correction Model (ECM) approach on an annual time series that covers the period between 1981 and 2015, to establish the effect of macroeconomic environment on the investment behaviour in Nigeria. The analyses found that inflation, political instability and external debt stock were significant and positively related to domestic investment in the Nigeria economy, while exchange rate was initially positive and then negative and significant in tandem to a priori expectation. The major policy thrust in this analysis was that the exchange rate should be stable as much as possible (i.e., managed floating exchange rate system should be adopted, as well as the unification of exchange rate market in the country). The Nigerian economy depends on imported capital goods and, therefore, needs to maintain a stable and unified exchange rate to encourage investment.*

**Keywords:** Macroeconomics, investment behaviour, debt stock, exchange rate

**JEL Classification:** E44, N77, P45, Q56

## Introduction

The long-term economic growth of a country that will lead to a significant improvement in the standard of living can only be achieved on a sustainable increase in domestic private investment. Development cannot take place without growth, and growth is a consequence of investment. Investment serves as a stimulant of growth and development, and can be domestically driven or foreign-induced. Therefore, efforts to stimulate development and growth should necessarily include an in-depth understanding of what drives investment. The relationship between the components of investment is a critical factor that needs consideration when designing appropriate policies for financing development in developing countries like Nigeria. Among the several factors identified in the

literature for driving investment behaviour, macroeconomics remained most cogent. The essence of this study is to identify the role of macroeconomic environment in stimulating investment and subsequently easing the task of development prospect in Nigeria.

A large body of literature abounds on the analysis of the determinants of investment. Such analysis had been conducted at the firm level, industry level and at the level of national economy in general. But these theoretical and empirical studies could not find a universal applicability because macro-economic conditions in a given country could as dynamic as a phenomenon.

Macroeconomic policies may be broadly classified into those which affect the size and composition of aggregate demand (demand management policies) and aggregate supply (supply-side policies). Therefore, they may be viewed as instruments of short to medium term adjustment and stabilization, as well as instruments of long-term growth and development. The principal instruments for controlling aggregate demand are fiscal policy (taxation, expenditure and borrowing), monetary policy (which regulates cost and availability of credit and the supply of money through variations in reserves ratios, open market operations and/or changes in rediscount rate), exchange rate policies (which affect the composition of absorption and production between tradable and non-tradable goods), and external finance policies (which affect capital flows) (Chandavarkar, 1990).

Supply-side policies comprise structural policies for improving efficiency and allocation of resources and for expanding long-term productive capacity through investment, financial sector reforms, etc (Chandavarkar, 1990). Hence, the current study sought to examine the impact of macroeconomic environment on domestic investment in the Nigerian economy. While there are many factors that determine investment in a country, this study answered the question: What is the role of macroeconomic environment on investment dynamics in the Nigerian economy?

## Literature Review

Economic theories say a lot about the relationship between macroeconomic environment and investment. However, what such theories say are indistinct. Different theories emphasize different channels, some pointing to positive relationship, and others, negative relationship. Macroeconomic variables, such as inflation, interest rate, exchange rate and cost of capital face changes over times. Some of these changes are unpredictable; hence, they are termed uncertain. Several efforts have been made by governments and international organizations to maintain

stable macroeconomic environments in developing countries, but unfortunately, instability still remains a great economic problem.

Theories of investment under uncertainty can be classified into two sets. The first set of theories are further divided into: 1) those that view the firm in isolation and emphasize the variance of some aspects of the firm's environment, and 2), those that view a firm in relation to other firms and emphasize covariance in the returns between investment projects. In the first case, uncertainty matters for investment, while it is not for the second, except it affects the covariance. The second set of theories can also be distinguished into: theories that predict that the marginal revenue product of capital is convex in some random variables, and those that predict that the marginal revenue product of capital is concave. Also, in the first, an increase in the variance of the random variable will increase the inducement to invest, whereas in the second, it will daunt investment. The role of covariance is explored by Craine (1988) in the version of Capital Asset Pricing Model (CAPM). According to CAPM, the rate of return on investment should be positively related to the investment risk. CAPM submits that the greater the covariance in returns, the less the inducement to invest.

If investment is irreversible, it tends to make return on investment asymmetric; which means that if the future turns out worse than expected, the Marginal Revenue Product of Capital (MRPC) falls, and the investors will have low or negative yield on investment. On the other hand, if the future is prosperous, the investors will invest more, which will limit the rise in MRPC. This asymmetry implies that MRPC is a concave function of wages and prices. With this, the greater the level of uncertainty, the less the desirability to invest.

Kalu and James (2012) explained that an extremely important form of uncertainty faced by investor is the imperfect credibility of policy reforms. Investment-friendly reforms typically raise expected returns but may also increase uncertainty if investors have the notion that the reforms could be reversed. In this regard, the investor's perception about the probability of policy reversal becomes a key determinant of the investment response.

Empirical studies on investment–uncertainty relationship in sub-Saharan Africa are few; these are mainly Patillo (1998), Asante (2000), Dehn (2000), Fielding (2000), Gelb (2001), Kumo (2006), Ndiwulu and Manandzongani (2011) and Soleymani and Akbari (2011). Patillo (1998) and Asante (2000), both using data for Ghana, found that macroeconomic and firm-specific uncertainties have a negative impact on investment expenditure in Ghana. In the same line, Kumo (2006), using data from South Africa, found that macroeconomic (especially exchange rate) uncertainty has a very significant negative effect on investment spending in the economy. Fielding (2001) found that macroeconomic uncertainty

has a marginal impact on physical capital stock in the manufacturing sector of South Africa.

Moreover, using cross-sectional data set of 44 developing countries, Dehn (2000) found that macroeconomic uncertainty has no effect on private investment rates when controlling for shocks to commodities prices. Soleymani and Akbari (2011) used the fixed effect approach of panel data model on the relationship between exchange rate uncertainty and domestic investment, and found a negative relationship between the two variables for 15 sub-Saharan African countries. Ndiwulu and Manandzongani (2011) assessed the impact of uncertainty on private investment in the Democratic Republic of Congo (DRC), using an econometric analysis based on a flexible accelerator model of investment spending. They found that both macroeconomic and political uncertainties had negative impact on investment rates. They concluded that stabilization policies, especially their credibility, and adoption of policies which help reduce the risk of reverting to conflict are essential for promoting private investment in DRC.

The foregoing review showed that even where empirical studies found that uncertainty depresses investment, the findings were not unambiguous, but suggest further analysis. Also, most of these studies have considered only economic uncertainty, while investors in many developing countries also confronted political uncertainty. Where political uncertainties were investigated, findings showed that political instability deterred investment. None that we know specifically investigated the impact of both macroeconomic and political uncertainties on the domestic investment of Nigerian economy. This study therefore makes a contribution to the empirical analysis of the uncertainty-investment relationship by considering both macroeconomic and political uncertainties on the Nigerian economy.

## Methodology

### Specification of the Investment Equation

Following the work of Ndiwulu and Manandzongani (2011), an econometric analysis of aggregate investment was carried out based on a flexible accelerator model. This model has two main advantages. First, the accelerator model takes into account (in line with the Keynesian theory) conditions that prevail in the product market. Second, it enables us to account for the inertia mainly observed in the investment behaviour at the aggregate level. While this inertia is often attributed to time to build capital goods (see Jorgenson 1963), it may also be caused by non-convex adjustment costs (including irreversibility) and by the ‘wait and see’ behaviour in an uncertain environment. The flexible accelerator model of investment estimated took the following form:

$$\left(\frac{I}{Y}\right)_t = \beta_0 + \beta_1\left(\frac{I}{Y}\right)_{t-1} + \beta_2\Delta y_t + \beta_3 U_t + Z_t\beta_4 + \varepsilon_t\frac{\beta_3}{1-\beta_1} \quad (1)$$

Where
$\left(\frac{I}{Y}\right)_t$ is the investment rate at time *t*,
$\Delta y_t$ is the growth rate of GDP,
$U_t$ measures uncertainty,
$Z_t$ is a vector of control variables,
$\varepsilon_t$ is the error term.

Equation 1 describes the short-run dynamic of investment spending; the parameter $\beta_3$ measures the short-run effect of uncertainty on investment. The long-run impact of uncertainty is given by $\frac{\beta_3}{1-\beta_1}$.

In this empirical model, uncertainty measures were added to the traditional investment equation, following the common practice in empirical literature. Therefore, the structural parameters of uncertainty variables were unknown and the magnitude of different channels by which uncertainty affects investment could not be assessed. But the overall effect of uncertainty could be measured. It was expected that uncertainty has, on the whole, negative impact on investment, that is, parameter $\beta_3$ is negative.

Many variables are used in the literature to control the effect of other determinants of investment. Due to the limitation of the data, the current study considered three control variables among the most relevant: public investment rate($PI/Y$), real interest rate (which is the cost of capital (r)), and external debt burden (ED/Y). It included PI/Y as a variable of control, to test for the crowding out effect or the complementary effect of public investment. Many authors include this variable in their empirical investment equation (see, for example, Asante, 2000; Dehn, 2000). The debt burden variable tests for the debt overhang hypothesis according to which higher levels of external debt have a negative incidence on private investment and on economic growth, particularly in developing countries. This study also included the nominal interest rate as an explanatory variable to test for the neoclassical theory which emphasizes the role of the cost of capital in explaining investment, expected to be negative.

**Uncertainty measures**

The study supposed that macroeconomic uncertainty is related to the difficulties to anticipate some key economic variables. Thus, its measures of macroeconomic

uncertainties were variability in the inflation and exchange rate. Many authors consider inflation uncertainty as a measure of aggregate uncertainty because the variability of innovations on most macroeconomic variables is associated with unpredictable inflation movements (Goel and Ram, 2001; Byrne and Davis, 2004). In Nigeria, however, exchange rate seems to be important since most of its industrial input is imported. Therefore, the level of production is a function of exchange rate and demand shock uncertainty (inflation rate), and the correlation between the two.

**Model variables and data**

The period of analysis was between 1981 and 2015; data before 1981 were not available, while data after 2015 for all the variables in the model were not ready at the time of the study. The variables used in the estimation were in annual frequency. The annual inflation rate and real exchange rate series were used to compute economic uncertainty indicators. The explanatory variables were grouped into economic uncertainty, political stability and government policy, investor's confidence, cost of capital and domestic market size. Political stability indicators (POLI) was measured on a one-to-seven scale, with one representing the highest degree of political freedom and seven the lowest. Uncertainty with respect to future policies could increase the cost of outside financing, making investment more responsive to fundamentals than to prices; also, political instability creates uncertainty about future investment payoff and, in response, rational managers postpone investments until uncertainty is resolved (Bloom et al., 2007; Bloom, 2009). Investors' confidence is proxy by the ratio of total external debt to gross domestic product (D/Y). Investors' confidence is expected to be high in cases where the debt burden is low, so that there is no future tax obligation on the business community to pay back the debt.

**Econometric methods**

This study addressed the role of economic uncertainty and political instability in affecting domestic private investment in the sub-Saharan African economies. Inflation and exchange rate variability, as well as political instability were expected to impede domestic investment in the Nigerian economy. Apart from these uncertainty indicators, investors' confidence and market size, labour force availability, technology and infrastructural facilities are factors in deciding whether or not to invest in an economy. These control variables are expected to contribute to the flow of domestic private investment. It is evident from similar studies that the role of infrastructure and suitable policy environment is critical. By using proxy variables for the uncertainty indicators and other control variables, this study

estimated the impact of economic uncertainty and political instability on domestic private investment in sub-Saharan Africa. The following model was estimated:

$$I/Y_t = \beta_1 + \beta_2\left(\frac{I}{Y}\right)_{t-1} + + \beta_3 INFVL_t + \beta_4 EXRt + \beta_5 POLIt + \alpha Xit + \varepsilon t \quad (3)$$

Where
$I/Y_t$ measures ratio of domestic private investment (DI) to GDP in the Nigerian economy,
INF is the inflation variability,
EXCH is the exchange rate,
POLI is the political freedom indicator
Xit is a vector of control variables that measure market size (GDP growth rate, $\Delta y_t$); investors' confidence indicators, which is the ratio of external debt to GDP in the country (ED/Y); cost of capital, which is the nominal lending rate in the economy that can either be positive or negative, depending on the real lending rate (NLR); and the ratio of public investment to GDP (PI/Y).

Positive signs were expected for GDP growth rate (Δyt). Δyt was a measure of effective market size of the country. Market potential is often measured by growth rate of GDP. Again, high growth rate was expected to encourage investment, unless there is crowd out effect on domestic firms.

The data with the exemption of political instability, cost of capital and the government capital expenditure were taken from the World Bank development indicator data. The Freedom House provided the political stability indicator (Annual Survey of Freedom Country Ratings 1981- 2015) and the government capital expenditure and cost of capital were sourced from the Central Bank of Nigeria's statistical bulletin.

The following variables were used in the regression:

*Dependent variable*
DI/Y = ratio of private domestic investment to GDP

*Economic uncertainty indicators*
INF = inflation
EXCH= exchange rate.

*Political instability indicators*
POLI= political freedom indicators measured on a one-to-seven scale, with one representing the highest degree of political freedom and seven the lowest.

*Control variables*

ED/Y = ratio of total external debt to GDP.

$\Delta y_t$ = GDP growth rate of the country

NLR = Nominal lending rate

PI/Y = Ratio of Public investment to GDP

**Discussion of Results**

This discussion would start with the descriptive statistics for the variables used in the analysis. The descriptive statistics showed the minimum, maximum and average values of each variable used in the analysis, among other properties revealed. Other properties are standard deviation, skewness, kurtosis, Jarque-Bera and the sum of square of the deviation for each variable used. The unit root test followed the descriptive statistics. Augmented Dickey-Fuller test (ADF) was used. The unit root results, which indicated the order of integration of each of the variable, is presented in Table 3.

**Table 1: The model variables with their a priori expectation**

| *S/N* | *Variable* | *Definition* | *A-priori expectation* |
|---|---|---|---|
| | | *Dependent Variable* | |
| 1 | DI/Y | Gross Capital Formation (% of GDP) | |
| | | *Macroeconomic Indicators* | |
| 2 | INF | Inflation | Negative Sign |
| 3 | EXCH | Exchange Rate | Negative Sign |
| 4 | NLR | Nominal Lending Rate | Positive/Negative |
| | | *Political Instability Indicators* | |
| 5 | POLI | Political freedom indicators measured on a one-to-seven scale, with one representing the highest degree of political freedom and seven the lowest. | Negative Sign |
| | | *Control Variables* | |
| 6 | ED/Y | Total External Debt (% of GDP) | Negative Sign |
| 7 | GDPGR | GDP growth rate | Positive Sign |
| 8 | PI/Y | Government Capital Expenditure (% of GDP) | Positive/Negative |

*Source*: Computed by the author

**Table 2: Descriptive statistics of the variables use in the analysis**

| | *DI/Y* | *ED/Y* | *EXCH* | *GDPGR* | *INF* | *NLR* | *PI/Y* | *POLI* |
|---|---|---|---|---|---|---|---|---|
| Mean | 12.58818 | 70.79777 | 71.40880 | 3.671135 | 19.71465 | 17.61581 | 4.199824 | 5.000000 |
| Median | 11.74670 | 64.16125 | 22.06540 | 4.279277 | 12.21701 | 17.58562 | 4.060390 | 5.000000 |
| Maximum | 34.02084 | 228.3717 | 192.4405 | 33.73578 | 72.83550 | 29.80000 | 10.64341 | 7.000000 |
| Minimum | 5.467015 | 4.132155 | 0.617708 | -13.12788 | 5.382224 | 7.750000 | 0.859815 | 2.000000 |
| Std. Dev. | 6.122224 | 60.04462 | 66.18510 | 7.671722 | 17.93583 | 4.825057 | 2.087788 | 1.455214 |
| Skewness | 1.837585 | 0.704016 | 0.225740 | 1.179047 | 1.626154 | 0.171620 | 0.672853 | 0.058101 |
| Kurtosis | 6.809332 | 2.978146 | 1.349790 | 8.588489 | 4.372112 | 3.381014 | 4.052430 | 2.187500 |
| Jarque-Bera | 40.85941 | 2.891919 | 4.268583 | 53.65472 | 18.17112 | 0.383520 | 4.256196 | 0.982420 |
| Probability | 0.000000 | 0.235520 | 0.118328 | 0.000000 | 0.000113 | 0.825505 | 0.119064 | 0.611886 |
| Sum | 440.5864 | 2477.922 | 2499.308 | 128.4897 | 690.0129 | 616.5532 | 146.9938 | 175.0000 |
| Sum Sq. Dev. | 1274.375 | 122582.1 | 148935.9 | 2001.081 | 10937.60 | 791.5598 | 148.2012 | 72.00000 |
| Observations | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |

*Source***:** Computed by the author

**Table 3: Augmented Dickey-Fuller unit root test**

| *Variable* | *Order of integration* | *Percentage* |
|---|---|---|
| DI/Y | I(0) | 1% |
| ED/Y | I(1) | 1% |
| EXCH | I(1) | 1% |
| GDPGR | I(0) | 1% |
| INF | I(0) | 5% |
| NLR | I(0) | 5% |
| PI/Y | I(1) | 1% |
| POLI | I(0) | 5% |

*Source***:** Computed by the author

**Table 4: The Cointegration Test**

*Unrestricted cointegration rank test (Trace)*

| *Hypothesized No. of CE(s)* | *Eigenvalue* | *Trace Statistic* | *0.05 Critical Value* | *Prob.*** |
|---|---|---|---|---|
| None * | 0.963301 | 322.5517 | 159.5297 | 0.0000 |
| At most 1 * | 0.937933 | 213.4868 | 125.6154 | 0.0000 |
| At most 2 * | 0.805830 | 121.7619 | 95.75366 | 0.0003 |
| At most 3 | 0.544253 | 67.67417 | 69.81889 | 0.0733 |
| At most 4 | 0.430401 | 41.74217 | 47.85613 | 0.1661 |
| At most 5 | 0.243460 | 23.16904 | 29.79707 | 0.2378 |
| At most 6 | 0.209266 | 13.96205 | 15.49471 | 0.0840 |
| At most 7 * | 0.171632 | 6.213842 | 3.841466 | 0.0127 |

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

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

*Unrestricted Cointegration Rank Test (Maximum Eigenvalue)*

| *Hypothesized No. of CE(s)* | *Eigenvalue* | *Max-Eigen Statistic* | *0.05 Critical Value* | *Prob.*** |
|---|---|---|---|---|
| None * | 0.963301 | 109.0649 | 52.36261 | 0.0000 |
| At most 1 * | 0.937933 | 91.72486 | 46.23142 | 0.0000 |
| At most 2 * | 0.805830 | 54.08773 | 40.07757 | 0.0007 |
| At most 3 | 0.544253 | 25.93200 | 33.87687 | 0.3249 |
| At most 4 | 0.430401 | 18.57313 | 27.58434 | 0.4482 |
| At most 5 | 0.243460 | 9.206996 | 21.13162 | 0.8154 |
| At most 6 | 0.209266 | 7.748203 | 14.26460 | 0.4049 |
| At most 7 * | 0.171632 | 6.213842 | 3.841466 | 0.0127 |

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
*Source***:** Computed by the author

With some variables stationary at levels, while others at first difference, the study proceeded to establish if there was a long-run cointegrating relationship among the variables by using Johansen cointegration test. The test revealed that the trace and maximum eigenvalue statistics showed the existence of three cointegrating relationships in the model. With this result of the cointegration test, couple with the fact that the dependent variable was stationary at levels (i.e I(0)), the error correction model was used for the analysis.

The error correction model (ECM) approach was used because some of the variables were not stationary at levels and the cointegration test revealed three cointegration equations. However, further test analysis revealed that there existed a unique long-run relationship for this model; unfortunately, it could not be identified due to the limit in the researcher's knowledge of econometric of this nature and the timeframe under consideration. However, ECM has the advantage of yielding consistent estimates of short-run coefficients that are asymptotically normal, irrespective of whether the underlying regressors are I(0) or I(1).

**Results of the parsimonious error correction model**

The long-run and over-parametrised result is in the appendix. The analysis began with the validity of the result obtained. Durbin-Waston (D-W) analysis did not perform well, especially with values outside the bound range of 1.8 and 2.2. The D-W result was not reliable when there was lagged dependent variable on the right-hand side (RHS) of the equation. Either the Durbin's h test or Breusch-Godfrey (B-G) serial correlation LM test was used. B-G was used because it has

the advantage of test for models where the unit root result is of I(1) and of higher orders and the value is relatively satisfactory. The adjusted R-square was 62%, which shows that the explanatory variables were able to explain at least 62% of the variation in the dependent variable.

The result shows that one lag of domestic investment was reinforcing domestic investment and was significant at 1% level of significance. External debt had mixed result. While the difference value was positive and significant at 5%, both the first and second lagged were negative and significant at 1% and 10%, respectively, and this was in tandem with the theory. The explanation for this might be that the investors (both foreign and local) did not see the debt stock as a deterrent factor to investment, but rather as a source of foreign exchange for imported investment goods in the economy; hence, it was positive. Also, investors did not view government external debt as a problem in Nigeria, since government really do not look towards tax to pay off their external debt. However, the debt burden affected the volume of resources available in the economy for the development of infrastructure and other government responsibility, which explained while the lag values affected investment in the near future. For exchange rate, the first lagged was positive and significant at 1%, while the second lagged was negative and highly significant at 1% also.

**Table 5: The result of the parsimonious error correction model**

Dependent Variable: D(DI)
Method: Least Squares
Date: 01/12/17 Time: 17:06
Sample (adjusted): 1984 2015
Included observations: 32 after adjustments

| *Variable* | *Coefficient* | *Std. Error* | *t-Statistic* | *Prob.* |
|---|---|---|---|---|
| C | -0.390575 | 0.381487 | -1.023822 | 0.3212 |
| D(DI(-1)) | 0.472789 | 0.136883 | 3.453969 | 0.0033 |
| D(ED) | 0.035936 | 0.015157 | 2.370865 | 0.0306 |
| D(ED(-1)) | -0.077003 | 0.023998 | -3.208733 | 0.0055 |
| D(ED(-2)) | -0.038335 | 0.018608 | -2.060171 | 0.0560 |
| D(EXCH(-1)) | 0.182535 | 0.047726 | 3.824687 | 0.0015 |
| D(EXCH(-2)) | -0.084950 | 0.028583 | -2.972071 | 0.0090 |
| D(GDPGR(-2)) | 0.114891 | 0.044272 | 2.595137 | 0.0195 |
| D(INF) | 0.097508 | 0.047655 | 2.046133 | 0.0575 |
| D(INF(-2)) | 0.172568 | 0.048823 | 3.534557 | 0.0028 |
| D(NLR) | 0.584650 | 0.182484 | 3.203841 | 0.0055 |
| D(PI) | 1.067678 | 0.344339 | 3.100656 | 0.0069 |
| D(PI(-2)) | 0.656295 | 0.225442 | 2.911154 | 0.0102 |
| D(POLI) | 0.852138 | 0.651152 | 1.308662 | 0.2091 |
| D(POLI(-2)) | 1.270153 | 0.446411 | 2.845253 | 0.0117 |
| ECM(-1) | -0.148743 | 0.124331 | -1.196342 | 0.2490 |

| | | | |
|---|---|---|---|
| R-squared | 0.804588 | Mean dependent var | -0.199520 |
| Adjusted R-squared | 0.621390 | S.D. dependent var | 2.773267 |
| S.E. of regression | 1.706427 | Akaike info criterion | 4.213533 |
| Sum squared resid | 46.59029 | Schwarz criterion | 4.946401 |
| Log likelihood | -51.41653 | Hannan-Quinn criter. | 4.456458 |
| F-statistic | 4.391899 | Durbin-Watson stat | 1.515809 |
| Prob(F-statistic) | 0.002759 | | |

*Source***:** Computed by the author, using the data in the appendix

The right explanation for this is that the Nigerian economy price responded more to exchange rate, with the business catching in on the consumer to make more profit, which will eventually turn to loss in the near future when the increase in exchange rate is hurting importation of capital goods and raw materials. This is so because investment goods and many raw materials needed in the economy were sourced from abroad and exchange rate played important role in obtaining these imported goods. GDP growth rate, though positive in tandem with a priori expectation, was not significant, so that the coefficient was not reliable.

Inflation was significant and positive, showing that inflation rate in Nigeria was moderate and within the threshold of reinforcing investment and not deterring it. This clearly demonstrated that inflation was not a macroeconomic problem in Nigeria during the period covered by the analysis. The cost of capital was also not a problem, as the nominal lending rate was positive and significant at 1% level of significance. The possible explanation for this is that real cost of capital was negative in Nigeria for many years, until recently when the financial markets were liberalized. Public investment was positive and significant at 1%, which means that it was complementing domestic investment and not substituting it. Political freedom as a variable was also positive and significant; in fact, beyond comprehension. Political instability is supposed to negatively affect domestic investment; but for Nigeria, it was positive and significant. This means that political instability reinforced domestic investment in the country.

**Conclusion**

This established the effect of macroeconomic environment on domestic investment in the Nigerian economy. It used the error correction model (ECM) to analyse annual time series data that covered the period 1981-2015. The results showed that inflation, political freedom and external debt were significant and positively impacting investment in the Nigerian economy. Exchange rate was negative and significant in tandem with expectation. This showed that exchange rate played a crucial role in deterring investment in the Nigerian economy.

The results also demonstrated that inflation was not a problem in the Nigerian economy, with regard to domestic investment. This was contrary to expectation, as it is generally assumed that inflation is kept in check to promote consumption and ultimately increase investment. However, the level of inflation in the economy should not be left unchecked. Political stability as a variable was also not a deterrent to investment, contrary to expectation. This means that the Nigerian economy survived without political stability; put in another way, that the economy was resilient in a politically unstable environment. The result on public investment was significant and complementing domestic investment. First lagged of external debt did not deter domestic investment; but the second lagged displayed opposite sign; hence, debt servicing was not good for the growth of the Nigerian economy, which relied heavily on imported capital goods for investment. Thus, external debt servicing would have been a drain on foreign exchange earnings. The major policy thrust of this analysis is that: exchange rate should be stable as much as possible (i.e. manage floating exchange rate system should be adopted, as well as unified exchange rate market in the country). The Nigerian economy depends on imported

capital goods and, therefore, needs to maintain a stable and unified exchange rate to encourage investment.

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**Appendix 1: Data used for the Analysis**

| ***YEAR*** | *(DI/Y)(%)* | *GDPGR* | **(PI/Y)(%)* | *INF* | *EXCH* | **NLR* | *ED/Y* | ***POLI* |
|---|---|---|---|---|---|---|---|---|
| 1981 | 34.02084 | -13.1279 | 6.962098 | 20.81282 | 0.617708 | 7.75 | 19.23268 | 2 |
| 1982 | 29.73934 | -1.05319 | 6.352957 | 7.697747 | 0.673461 | 10.25 | 23.82957 | 2 |
| 1983 | 21.87475 | -5.05045 | 4.438961 | 23.21233 | 0.72441 | 10 | 50.54493 | 7 |
| 1984 | 12.42067 | -2.02154 | 3.526295 | 17.82053 | 0.766527 | 12.5 | 64.16125 | 7 |
| 1985 | 11.35743 | 8.32283 | 4.06039 | 7.435345 | 0.893774 | 9.25 | 66.98344 | 7 |
| 1986 | 15.7025 | -8.75418 | 6.334762 | 5.717151 | 1.754523 | 10.5 | 115.123 | 7 |
| 1987 | 12.66393 | -10.7517 | 3.299656 | 11.29032 | 4.016037 | 17.5 | 133.7653 | 6 |
| 1988 | 9.848316 | 7.542522 | 3.167594 | 54.51122 | 4.536967 | 16.5 | 130.1487 | 5 |
| 1989 | 11.7467 | 6.467191 | 3.932936 | 50.46669 | 7.364735 | 26.8 | 136.0208 | 6 |
| 1990 | 14.42773 | 12.76601 | 5.088049 | 7.3644 | 8.038285 | 25.5 | 120.054 | 5 |
| 1991 | 13.79346 | -0.61785 | 5.193757 | 13.00697 | 9.909492 | 20.01 | 134.4481 | 5 |
| 1992 | 12.80218 | 0.433725 | 4.542599 | 44.58884 | 17.29843 | 29.8 | 110.1218 | 5 |
| 1993 | 13.61295 | 2.090378 | 5.001635 | 57.16525 | 22.0654 | 18.32 | 228.3717 | 7 |
| 1994 | 11.19636 | 0.909763 | 5.066667 | 57.03171 | 21.996 | 21 | 210.3345 | 7 |
| 1995 | 7.083232 | -0.30747 | 4.166611 | 72.8355 | 21.89526 | 20.18 | 129.5068 | 7 |
| 1996 | 7.303718 | 4.993706 | 5.280517 | 29.26829 | 21.88443 | 19.735 | 95.90211 | 7 |
| 1997 | 8.372144 | 2.802256 | 6.436754 | 8.529874 | 21.88605 | 13.5425 | 84.75968 | 7 |
| 1998 | 8.619863 | 2.71564 | 7.745819 | 9.996378 | 21.886 | 18.2925 | 103.8918 | 6 |
| 1999 | 7.011568 | 0.474238 | 10.64341 | 6.618373 | 92.3381 | 21.32 | 103.5151 | 4 |
| 2000 | 7.03106 | 5.318093 | 3.566668 | 6.933292 | 101.6973 | 17.98 | 80.45666 | 4 |
| 2001 | 7.593798 | 4.411065 | 6.362348 | 18.87365 | 111.2313 | 18.2925 | 78.46163 | 4 |
| 2002 | 7.020332 | 3.784648 | 4.122474 | 12.87658 | 120.5782 | 24.85 | 59.9405 | 4 |
| 2003 | 9.913518 | 10.35418 | 2.437967 | 14.03178 | 129.2224 | 20.71 | 61.18991 | 4 |
| 2004 | 7.401317 | 33.73578 | 3.078152 | 14.99803 | 132.888 | 19.18 | 51.15961 | 4 |
| 2005 | 5.467015 | 3.444667 | 3.555364 | 17.86349 | 131.2743 | 17.95 | 26.04605 | 4 |
| 2006 | 8.273721 | 8.210965 | 2.97548 | 8.239527 | 128.6517 | 17.26 | 6.831155 | 4 |
| 2007 | 9.256423 | 6.828398 | 3.675604 | 5.382224 | 125.8081 | 16.9375 | 7.855301 | 4 |
| 2008 | 8.329817 | 6.270264 | 3.954878 | 11.57798 | 118.546 | 15.13543 | 6.805709 | 4 |
| 2009 | 12.09461 | 6.934416 | 4.649453 | 11.53767 | 148.9017 | 18.99083 | 10.29062 | 5 |
| 2010 | 17.29074 | 7.839739 | 1.63062 | 13.7202 | 150.298 | 17.58562 | 4.430893 | 5 |
| 2011 | 16.21198 | 4.887387 | 1.44169 | 10.84079 | 153.8616 | 16.02131 | 4.541816 | 4 |
| 2012 | 14.90769 | 4.279277 | 1.204827 | 12.21701 | 157.4994 | 16.79031 | 4.132155 | 4 |
| 2013 | 14.90391 | 5.394416 | 1.36821 | 8.475827 | 157.3112 | 16.72283 | 4.321776 | 4 |
| 2014 | 15.8027 | 6.309718 | 0.86881 | 8.057383 | 158.5526 | 16.54839 | 4.506546 | 4 |
| 2015 | 15.4901 | 2.652694 | 0.859815 | 9.017684 | 192.4405 | 16.84845 | 6.236407 | 4 |

*Source:* World Development Indicator, *Freedom House Annual Survey of Freedom Country Rating.

**Appendix 2: Long Run Result of the Analysis**

Dependent Variable: DI
Method: Least Squares
Date: 01/12/17 Time: 17:14
Sample: 1981 2015
Included observations: 35

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 39.82517 | 5.604740 | 7.105622 | 0.0000 |
| ED | -0.017044 | 0.025435 | -0.670115 | 0.5085 |
| EXCH | -0.054868 | 0.019735 | -2.780177 | 0.0098 |
| GDPGR | -0.228038 | 0.113237 | -2.013809 | 0.0541 |
| INF | 0.028867 | 0.057619 | 0.500993 | 0.6204 |
| NLR | -0.375130 | 0.204502 | -1.834360 | 0.0776 |
| PI | -0.790664 | 0.474070 | -1.667821 | 0.1069 |
| POLI | -2.383058 | 0.695806 | -3.424890 | 0.0020 |

| | | | |
|---|---|---|---|
| R-squared | 0.617070 | Mean dependent var | 12.58818 |
| Adjusted R-squared | 0.517792 | S.D. dependent var | 6.122224 |
| S.E. of regression | 4.251347 | Akaike info criterion | 5.929981 |
| Sum squared resid | 487.9968 | Schwarz criterion | 6.285489 |
| Log likelihood | -95.77466 | Hannan-Quinn criter. | 6.052702 |
| F-statistic | 6.215563 | Durbin-Watson stat | 1.246399 |
| Prob(F-statistic) | 0.000214 | | |

**Source:** Computed by the author, using the data in the appendix.

**Appendix 3: The Over-Parameterised Model**

Dependent Variable: D(DI)
Method: Least Squares
Date: 01/11/17 Time: 18:04
Sample (adjusted): 4 35
Included observations: 32 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.285785 | 0.613241 | -0.466024 | 0.6554 |
| D(DI/Y(-1)) | 0.525273 | 0.260907 | 2.013256 | 0.0840 |
| D(DI/Y(-2)) | -0.049437 | 0.278778 | -0.177336 | 0.8643 |
| D(GDPGR) | -0.090631 | 0.107012 | -0.846927 | 0.4250 |
| D(GDPGR(-1)) | -0.058942 | 0.107003 | -0.550842 | 0.5989 |
| D(GDPGR(-2)) | 0.098391 | 0.076779 | 1.281493 | 0.2408 |
| D(INF) | 0.048679 | 0.102266 | 0.476006 | 0.6486 |
| D(INF(-1)) | -0.019274 | 0.054696 | -0.352391 | 0.7349 |
| D(INF(-2)) | 0.138392 | 0.115564 | 1.197530 | 0.2701 |
| D(POLI) | 1.294343 | 1.731312 | 0.747609 | 0.4791 |
| D(POLI(-1)) | -0.482099 | 0.875198 | -0.550846 | 0.5989 |
| D(POLI(-2)) | 1.061173 | 0.736461 | 1.440908 | 0.1928 |
| D(PI/Y) | 1.010194 | 0.751441 | 1.344342 | 0.2208 |
| D(PI/Y(-1)) | -0.756251 | 0.903415 | -0.837103 | 0.4302 |
| D(PI/Y(-2)) | 0.389567 | 0.461118 | 0.844832 | 0.4261 |
| D(ED/Y) | 0.026650 | 0.043774 | 0.608797 | 0.5619 |
| D(ED/Y(-1)) | -0.046277 | 0.062552 | -0.739810 | 0.4835 |
| D(ED/Y(-2)) | -0.030505 | 0.031252 | -0.976104 | 0.3615 |
| D(NLR) | 0.514937 | 0.293929 | 1.751911 | 0.1232 |
| D(NLR(-1)) | 0.020184 | 0.342037 | 0.059012 | 0.9546 |
| D(NLR(-2)) | -0.057188 | 0.179779 | -0.318104 | 0.7597 |
| D(EXCH) | -0.000146 | 0.044585 | -0.003264 | 0.9975 |
| D(EXCH(-1)) | 0.197040 | 0.097487 | 2.021182 | 0.0830 |
| D(EXCH(-2)) | -0.135568 | 0.078721 | -1.722138 | 0.1287 |
| ECM(-1) | -0.190908 | 0.240088 | -0.795157 | 0.4526 |

| | | | |
|---|---|---|---|
| R-squared | 0.841040 | Mean dependent var | -0.199520 |
| Adjusted R-squared | 0.296034 | S.D. dependent var | 2.773267 |
| S.E. of regression | 2.326846 | Akaike info criterion | 4.569579 |
| Sum squared resid | 37.89949 | Schwarz criterion | 5.714685 |
| Log likelihood | -48.11326 | Hannan-Quinn criter. | 4.949149 |
| F-statistic | 1.543175 | Durbin-Watson stat | 1.904856 |
| Prob(F-statistic) | 0.287613 | | |