Economic Growth and Investments in Nigeria: A Synthesis of Sustainable National Security and Enabling Political Environment.

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Abstract

This study uses the multinomial logistic regression model to classify three dependent variables. These are domestic investment (DINV), foreign direct investment inflows (FDIF) and economic growth (GGD). This approach is different from the traditional approaches to studying the relationship between factors affecting dependent variables individually. The objective is not to claim superiority of approach but an adventure to see if there is anything new. This study therefore adopted the multiple dependent variables design with two major independent variables as ***fixed factors (Categorical Predictors)*** *and other control variables as* ***covariates (Scale Predictors).*** *The categorical predictors, by default, applying the general linear model (GLM) multivariate procedure, using the multinomial analysis of variance (MANOVA), produce a model with all the factorial interactions; which means that each combination of factor levels can have a different linear effect on the dependent variables. The major variables of interest are political stability or instability (PST) and the status of national security or insecurity (SEC) because of the high premium placed on them as the major apron, to which investments and economic growth are tied to, in the country. The covariates (scale predictors) are interest rate (INT), inflation rate (INF), exchange rate (EXR) and company income tax (CIT). Contrary to expectation and to most previous findings, this study revealed that FDIF was neither significantly affected by interest rate (INT), inflation rate (INF), and exchange rate (EXR), nor was it significantly affected by insecurity (SEC=0), political instability (PST=00) and the interaction ([SEC=00]*[PST=00]). Instead, only CIT significantly affected FDIF at 5 percent. Most of the other variables exert significant effects on domestic investment (DINV). Also, EXR and CIT had significant relationships with economic growth (GDPB) at 1% and 5% respectively. It was recommended that the 30% rate of CIT be reduced as it is the singular predictor that significantly affected all the dependent variables.*

Keywords: *Multivariate Analysis of Variance, Multivariate General Linear Modeling, Multiple Dependent Variables, Domestic Investment, Foreign Direct Investment Inflows.*

1. Introduction

The wealth of any nation, either developed or developing, depends to a large extent on its multiple socio-political and economic factors. Countries diverse in their economic performance and these variances among countries are attributed to factors which can be political, institutional, international, as well as historical and regional. The variability among countries in their

economic performance, between governments and their political systems, as well as the countries' level of development, is argued to have an influence also on the countries' attractiveness of foreign direct investment (FDI)

One of the major economic problems in less developed countries (LCD) is how to ensure that there is economic growth. The apron of economic growth is tied to the level of capital formation to finance the necessary investment. Therefore, attention must be directed towards capital formation. It is a component of the gross domestic product (GDP) and it is normally referred to as gross fixed capital formation (GFCF). An important stimulant in increasing GFCF is foreign direct investment (FDI) inflows. Most literature on FDI are found to be related to growth as the studies by Otepola(2002) Oyeyide(2005), Akinlo(2004) have confirmed. They examined the importance of FDI on growth at their different periods of studies stating the criteria on which FDI may be of benefits to the economy. Oyatoye, et al, (2011) opined that an enabling environment should be created by host country in addition to the rationale for offering special incentives to attract FDI. The inflows may result in creating externalities in form of technology transfer and spill-over. Issues on insecurity and political instability therefore become disincentives as reported by Saibu and Keke (2014), where the environment was found to be unfavorable and therefore overwhelmed the positive impact of foreign private investment.

The GDP gives the value of all final goods and services produced within a nation in a given year. A nation's GDP at official exchange rate (OER) is the home-currency-denominated annual GDP figure divided by the bilateral average US exchange rate with that country in that year. It is equivalent to the income of a country.

This study will focus on three major economic players- Domestic Investment (GFCF), the Foreign Direct Investment Inflows (FDIF) and Economic growth as gross domestic product at current basic prices (GDPB) and how they are affected or determined by tax , political stability and the status of national security.

1.1 **Objectives of the Study**

The specific objective of this study is to:

i. Evaluate the effects of the much discussed political stability (PST) and national security status (SEC) in Nigeria on investments and economic growth.
ii. Observe the effects of other control factors on investment and economic growth in Nigeria.

2. Review of Related Literature

2.1 An Overview

Economic prosperity, growth and development can be quite successful only if there is a 'synergy' among the different players in a country, which includes banks, financial institutions, government entities, regulators and other arms of the government. Understandably, presence of 'synergy' among different stakeholders and players would be a major driving force to give a fresh innovation catalyst to the economic activities of a nation. Many economies, unfortunately, struggle owing to the absence of this significant phenomenon.

The foresight demonstrated by the organizers of the *"**First American Academic Research Conference on Global Business, Economics, Finance and Social Sciences"*** in New York from 25-28 MAY 2016, is unparalleled. The conference objectives include the proposition of economic success through synergy and the way forward in tackling economic challenges. According to the organizers, (SDMIND, 2016), the world is facing many economic challenges and issues. Increasing government debts, regional economic imbalances, geo-political

challenges, highly volatile global banking and financial system, sovereign debt in select European economies, environmental concerns and their impact on economic activities and trade, trade policies that are not conducive to business, migration of people from Asian and African countries are some of the disturbing developments currently being faced by the mother earth, today. To address these issues and challenges, the global community should make a coordinated effort for removing all the barriers and hindrances, on the path. Job creation and food security should be accorded top priority as these two have far-reaching ramifications if, unattended. Initiating dialogue with all the concerned stakeholders would go a long way in ensuring sustainable progress and economic development in the long-run. Health, environment, housing, transport and other infrastructure-related projects should be executed in a phased-manner, by each country. Banking and financial systems should be immune to economic and financial turmoil as these institutions are the major 'catalysts' for growth and development. Global trade and commerce should be conducted on a fair scale and the markets should offer a conducive environment and level playing field for the business community. .

2.2 Foreign Direct Investment.

Foreign direct investment refers to direct investment equity flows in an economy and other assets of international or multinational corporations. It may involve the joint ownership between the foreigners and the host government or resident national companies where the capital is invested and it is called the joint venture companies. Egbo (2012) defines FDI as an investment made to acquire a lasting management interest in a business enterprise in a given country other than that of the investor defined according to residency. It may also be a combination of merger and acquisition and new investments as well as the reinvested earnings and loans from and similar capital transfers between parent companies and their affiliates (Egbo, 2012). According to Shiro (2008), FDI elements are foreign resources such as technology, managerial and marketing expertise and capital which should have considerable positive impact on the host nation's production capacity. Direct investment is a category of cross-border investment associated with a residence in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. Ownership of 10 percent or more of the ordinary shares of voting stock is the criterion for determining the existence of a direct investment relationship.

In his opinion, Shenkar (2007) explains FDI as an investment by a firm directly in the production or other facilities in a foreign country in which it has affective control. FDI requires the establishment of production facilities abroad and on the other hand the service facilities or establishment of an investment presence through capital contribution and building office facilities. FDI was believed to have been playing key role in the growth and development process of developing nations, like Nigeria, who's human and material resources are not fully employed. FDI can diversify and invest in manufacturing, services, agriculture, or other sectors. It could have originated as green field investment (building something new), as acquisition (buying an existing company) or joint venture (joint ownership with a local company).

A country could be attractive to foreign investors because of one of more of these factors. It may, however be comparatively impossible for a single country to be endowed with all these socio-political and natural incentives. While countries in the Eastern Europe have high skilled labour at relatively lower wages, the same is not the situation in Western Europe. Some years ago, India was a target for cheap labour, and many industries relocated to the country. This is also the case of low wages in China. The U.S.A offers an enormous domestic market, a vast network of suppliers, better access to financing than many other countries, and much more. The U.S. still

receives more FDI than China, despite the substantially lower wages in China. Clearly, cheap labor is an important factor but it is not the primary driving force for international investment. The tax policy of Ireland favours the large European Union market because of comparably low taxes. An investment focus on natural resources would find most African countries as reasonable choice of investment location (Poelhekke and Ploeg, 2010) ; (Asiedu and Lein, 2011).

2.3 The Gross Fixed Capital Formation.

The GFCF, as a proxy of domestic investment, is defined as an addition to stock of capital assets set aside for future productive endeavours in real sector which will lead to more growth in physical capital assets of the country. In an open economy, national income (or GDP), is the addition of consumption (C), investment (I) and the net of exports and imports or change in the net foreign assets (X-M). Theoretically,

$Y = C + I + (X-M)$ (eq 1)

Where

Y = National Income (Gross Domestic Product) and can be disaggregated into Yp + T as private sector income and taxes.

C = Consumption disaggregated into private sector consumption (Cp) and public sector consumption (Cg)

I = Investment disaggregated into private sector investment (Ip) and public sector investment (Ig). The (Ip + Ig) is the domestic investment referred to as the gross fixed capital formation (GFCF)

X = Exports

M = Imports

2.4 The Gross Domestic Product.

This is the most popular report because it is a measure of all goods and services produced inside a country's borders. As such, it does not include imports, even though imports can add to job creation and prosperity in an economy.

A positive, rising GDP number is a sign that the economy is growing. A positive, but lower GDP value (in comparison to the previous quarter), is a sign that GDP growth is decelerating. I f there is a negative GDP value over two consecutive quarters, it is usually considered as a recession by economists: a period of falling demand, production, and economic activities which cause panic and great concern in financial markets generally

Economic growth in the last quarter of 2015 was 2.1% while total growth in the year was 2.8%, the slowest since 1999 to date (NBS, 2016). This statistics seems to toe the line of the global GDP growth projection of 2.5% which is 0.3% point less than November 2015 outlook (GEO, 2016)]. The GDP was down by April 2016, so to say, to August 2016, (showing a negative growth of -2.06% in Quarter II) and all efforts are being put in place to diversify, especially to agriculture and at the same time divert from crude oil. The Dollar-Naira exchange rates and other economic indicators- inflation rate of 17.6%, unemployment rate of 13.3%, underemployment rate of 19.3% - have not been in our favour either. The N6078Billion budget is being implemented at about 40% debt financing. Nigeria is in economic recession presently. There was a brief recession in 1991 after a previous prolonged recession of 1982-1984 in the country.

The economic report for a country is the most important determinant of its currency's value. Knowing all those factors and indicators to watch will help a country keep pace in the competitive and fast-moving world of foreign exchange market. Nigeria still maintain itslevel as

the African biggest economy with a GDP of $415.8 Billion. The International Monetary Fund's (IMF's) World Economic Outlook in October projected Nigerian economy to be "out of the woods" in 20017 with an expected growth of 0.6 percent.

Economic prosperity, growth and development cannot be quite successful without a 'synergy' among the different players within the globe. A world of interdependence signals world problem from individual country's problem. Any protracted problem of any country within the globe should be tackled by a coordinated effort with active support from the global community.

2.5 Challenges on the Nigerian Economy.

Apart from the general downturn in the global economy, there are various endogeneous centrifugal forces against Nigerian economy. These are in addition to normal economic challenges faced by developing countries like Nigeria. Empirical studies have tested various variables that can potentially attract or repel both domestic and foreign direct investment with the cumulative effects on economic growth. Such variables include market-driven variables such as rate of return, labor cost; and structural variables, such as cost of doing business e.g. corruption (Suriya etal, 2014), the status of national security especially religious conflict and terrorism (Omole, 2016), militancy (Ewokor, 2016; Risk Int 2016) and political stability ; policy variables such as macroeconomic policies targeted at economic growth, price stability and taxation (Goodspeed, 2006). The crude oil sales which accounted for at least 70% of government revenue are now a mirage.

2.6 Research Hypotheses

The hypotheses for the study will be tested using 5 % level of significance.

Hypothesis One**:** $\mathbf{H_{01}}$ = the political status, national security and their interaction, interest rate, inflation rate, exchange rate, company income tax will not have significant effects on economic growth in Nigeria.

Hypothesis Two: $\mathbf{H_{02}}$ = the political status, national security and their interaction, interest rate, inflation rate, exchange rate, company income tax will not have significant effects on domestic investments in Nigeria.

Hypothesis Three: $\mathbf{H_{03}}$ = the political status, national security and their interaction, interest rate, inflation rate, exchange rate, company income tax will not have significant effects on foreign direct investment inflows in Nigeria.

3. Methodology.

3.1 Data Collection

Time series data were collected from Central Bank of Nigeria (CBN, 2014) Statistical Bulletin and previous various issues. Specifically, domestic investment (Gross Fixed Capital Formation) from pp. 109-111, Gross Domestic Product at Current Basic Prices (p. 74), Real GDP growth rate (pp20&21), Inflation Rate (pp. 20&21), Interest Rate (p.37), Exchange Rate (pp. 232-233), and Imports and Exports (p. 211). The Foreign Direct Investment Inflows from the various issues of the CBN Statistical Bulletin. The Company Income Tax (1985-2014) was extracted from the CBN Statistical Bulletin (2008) and previous issues and CBN Annual Reports (2009 – 2014) and various previous issues. Data on Political Status (PST 1985 -2014) were historically collected on military years of rule and the democratic dispensation. Data on National Security Status (SEC - Coups, Crises, Boko Haram, and militancy) were historically collected and separated from peaceful years. All these were compiled in Table A-7 and used for this study.

3.2 Model Description.

The model for this study is designed for multiple dependent variables with two major independent variables as ***fixed factors (Categorical Predictors)*** and other control variables as ***covariates (Scale Predictors).*** The categorical predictors, by default, using the GLM Multivariate procedure, produce a model with all factorial interactions, which means that each combination of factor levels can have a different linear effect on the dependent variable. This study relies on SPSS 21 to generate ***multiple dependent variable design*** with fixed factors and covariates as independent variables. SPSS was chosen largely because it applies Multivariate Analysis of Variance (MANOVA) using the Multivariate General Linear Modeling and since history, the IBM SPSS econometric software has been known for its high degree of consistency, reliability and dependability. The model is based on the following assumptions for the purposes of testing hypotheses concerning parameter estimates. The GLM Multivariate procedure assumes that:

• The values of errors are independent of each other across observations and the independent variables in the model. Good study design generally avoids violation of this assumption.

• The covariance of dependent variables is constant across cells. This can be particularly important when there are unequal cell sizes; that is, different numbers of observations across factor-level combinations.

• Across the dependent variables, the errors have a multivariate normal distribution with a zero mean ($u = 0$).

3.3 Model Specification

The model for the study uses domestic investments (DINV), GDP at current basic prices (GDPB), and foreign direct investment inflows (FDIF) as dependent variables on the one hand, and on the other hand, interest rate (INT), inflation rate (INF), exchange rate (EXR), company income tax (CIT), political stability (PST), national security status (SEC) and the interaction of PST and SEC (PST*SEC).

The econometric model is in equation 1 below:

$$\mathbf{Y_{ijk} = \alpha + \beta X + e} \qquad \textbf{(eq 2)}$$

where $\mathbf{Y_{ijk}}$ represents the dependent variables ($DINV_i$, $GDPB_j$, $FDIF_k$); **X** is a vector of independent variables, **β** is a vector of parameters to be estimated, **α** is an intercept and e is the stochastic error term. The elements of the vector **X** as defined in eq (2) below, are: INT, INF, EXR, CIT, PST, SEC and PST*SEC. Given the elements of the vector **X** equation (2) can be expressed as:

$$\begin{matrix} DINV_i \\ GDPB_j \\ FDIF_k \end{matrix} = \left[Y\right] = \left[\beta_0 + \beta_1 INT_{ijk} + \beta_2 INF_{ijk} + \beta_3 EXR_{ijk} + \beta_4 CIT_{ijk} + \beta_5 PPT_{ijk} + \beta_6 NEX_{ijk} + \beta_7 PST_{ijk} + \beta_8 SEC_{ijk} + \beta_9 PST{*}SEC_{ijk} + \mu_{ijk}\right]. \qquad \text{(eq 3)}$$

Where:

$DINV_i$ = Domestic Investment as a proxy for gross fixed capital formation.
$GDPB_j$ = Gross Domestic Product at Current Basic Prices as a proxy foreconomic
$FDIF_k$ = Foreign Direct Investment Inflows are dependent scale variables.
Other variables are independent either as fixed factors or covariates.
INT_{ijk} = Interest rate

INF_{ijk} = Inflation Rate
EXR_{ijk} = Exchange Rate
CIT_{ijk} = Company Income Tax (including education tax and any other charges consequent upon income.
PST_{ijk} = Political stability. It is accepted worldwide that democratic rule is significantly better than military. Hence investment and economic growth will thrive under civil rule (Addison and Heshmati, 2003). This is a categorical fixed factor where Civil Rule = 1 or 0 if otherwise.
SEC_{ijk} = The status of national security. Relative peace is a great incentive to investment and economic growth rather than coups, militancy and terrorism. There is always a spill-over effect of insecurity. The timeline of the militants' petroleum pipeline vandalisation, as documented by Risk Int (2016), may have several years' effects after 2016. This is a categorical fixed factor with Relative Peace = 1 or 0 if otherwise.
$PST*SEC_{ijk}$ = The interaction of PST and SEC on the dependent scale variables.
β_0 = The intercept or constant term.
β_1-β_9 = The vector of the array of coefficients of the independent variables to be estimated.
μ_{ijk} = The stochastic error term. This stands for any predictor left out in the model since it is impossible to list exhaustively all possible predictors.

4. Results and Discussion.

In addition to some comments, observations and explanations under each of the Tables A-1 to A-6 in the appendix, the discussions below follow.

4.1 The 'a priori' Expectation.

This is an expectation based on theoretical economic background. It is a priori that when the price of a commodity falls, more will be demanded. The Tables A-1 to A-6 in the appendix are estimated output of the model. Since INT, INF, EXR are at inverse trend to economic growth (logGDPB) and domestic investment (DINV) as well as foreign direct investment inflows (FDIF) 'a priori' expectation is for the coefficients of these variables to be negative as well as the political (PST) and insecurity status (SEC).
Table A-6 shows that:

- For GDPB, insecurity (SEC=00) has negative coefficient of -0.260. All other independent variables are with positive coefficients.
- For DINV, political instability (PST=00) has negative coefficient of -.283.72 and the interaction of political instability with insecurity ([SEC=00]*[PST=00]) has negative coefficient of -10700.02. All other independent variables are with positive coefficients.
- For FDIF, the interaction of political instability with insecurity ([SEC=00]*[PST=00]) has negative coefficient of -191.59. All other independent variables are with positive coefficients.

The dummy variables SEC and PST should be interpreted as SEC=00 (crisis, religious conflicts terrorism, militancy) and SEC=1.0 (relative peace). Also PST=00 (coups, counter coups, instability) and PST=1.0 (peaceful civilian/democratic rule). These are summarized in Table 5 below.
The INT, INF, EXR all violated the "a priori" expectation. Company income tax (CIT) coefficient can either be positive or negative depending on tax policies and economic circumstances

4.2 The Adjusted R-Square

The statistical criteria satisfied show the adjusted R-square (AR^2) in Table A-5. The predictors were able to explain 95.3 of the variation in logGDPB, 93.5% of the variation in DINV and 65.4% of the variation in FDIF.

4.3 The T-test and Significance of Predictors.

Table A-5 show the significant of the predictor INT, INF, EXR ,CIT, SEC, PST and SEC*PST while Table A-6 split SEC and PST into SEC=00, PST=00 and [SEC=00]* [PST=00]. The effects of SEC=00, PST=00 and [SEC=00]*[PST=00] were stressed in the Table A-6. All non-redundant variables are significant at T-Stat ≥ 2. Summary statistics is as below:

Table 1 Coefficients and Significance of Predictors.

	logGDPB		DINV		FDIF	
PREDICTORS	Coeff	Sig	Coeff	Sig	Coeff	Sig
INT	-0.019	0.451	-53.49	0.013	7.554	0.650
INF	0.007	0.271	3.372	0.472	2.293	0.556
EXR	0.032	0.000	4.186	0.221	0.342	0.903
CIT	0.001	0.038	1.556	0.008	1.094	0.021
SEC	-	0.894	-	0.005	-	0.437
PST	-	0.457	-	0.069	-	0.938
[SEC*PST]	-	0.458	-	0.034	-	0.631
SEC=00	-0.260	0.608	1229.2	0.006	241.07	0.447
PST=00	6.182	0.673	-283.74	0.416	67.72	0.814
[SEC=00]*[PST=00]	0.446	0.458	-1070.02	0.034	-191.59	0.637

Table 5 has addressed the three hypotheses respectively; compiled by the author.

1. Only EXR,CIT significantly affected logGDPB at 1% and 5% respectively
2. Only INT, CIT, SEC, [SEC*PST], SEC=00 and [SEC=00]*[PST=00] significantly affected DINV at 5 % each.
3. Only CIT significantly affected FDIF at 5%.

4.4 Econometric Criteria

4.4.1 Autocorrelation-Table A-2 is the Levene's test of equality of error variance and the significance of the dependent variables in the Table is greater than 0.05 showing the absence of autocorrelation.

4.4.2 Heteroscedasticity- Tabble A-3 is the BOX's M test statistics hypothesized that the observed covariance matrices of the dependent variables are equal across groups. This was violated since the table is significant. Efforts for improvement include obtaining the log of GDPB after observing the Spread versus-level plot on a scatter plot. Data was screened and checked for outliers. Bivariate correlation was conducted and correlation across are relatively constant.

Fortunately the significance of all the independent variables on the Levene;s table are 0.214, 0.312, and 0.342. If the significant values are greater than 0.10, there is no reason to believe that the equal variance assumption is violated.

4.4.3 Multicolinearity – No table that specifically deal with this problem. The correlogram of the predictors is a solution. This is different from bivariate correlation on the BOX' M test statistics. The predictors are of three groups- INT, INF, and EXR are rates (or ratios); CIT is Scale, while SEC and PST are nominal (dummy of I or 0). The correlograms will be performed separately for

INT, INF, and EXR and SEC, PST. None of the standard errors of the predictors in Table A-6 is high abnormally.

Table 2 Correlations

		interest rate	inflation rate	exchange rate
interest rate	Pearson Correlation	1	.416*	-.401*
	Sig. (2-tailed)		.022	.028
	N	30	30	30
inflation rate	Pearson Correlation	.416*	1	-.416*
	Sig. (2-tailed)	.022		.022
	N	30	30	30
exchange rate	Pearson Correlation	-.401*	-.416*	1
	Sig. (2-tailed)	.028	.022	
	N	30	30	30

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3 Correlations

		political stability	Security
political stability	Pearson Correlation	1	.110
	Sig. (2-tailed)		.563
	N	30	30
Security	Pearson Correlation	.110	1
	Sig. (2-tailed)	.563	
	N	30	30

Correlations are not high to suspect multicolinearity among predictors.

This study has not presented the Multivariate test for the analysis of Pillar's Trace, Wilk's Lamba, Hotelling's Trace and Roy's Largest Root because of the little significance in this study.

Conclusion

The present study used the General Linear Multivariate Analysis of Variance Model to determine the factor responsible for economic growth and domestic investment in Nigeria.

The company income tax (CIT) is the singular predictor that is significant to have affected all the three dependent variables. The present high rate of 30% should be reduced so that a favourable tax policy would attract foreign direct investment inflows in Nigeria.

Attention should be focused on domestic investment (DINV) because of the series of attacks on it by the predictors. Interest (INT) and [SEC=00]*[PST=00] were negatively significant but PST=00 has negative relationship to DINV.

The exchange rate (EXR) is a deep rooted determinant of economic growth in Nigeria. This is followed by company income tax (CIT). Only CIT challenged FDIF and not by political instability or insecurity which were much discussed and believed to have affected foreign direct investment inflows in Nigeria. Summarily, INT, EXR, CIT, SEC, PST, PST=00, SEC==00 and

[SEC==00]*[PST=00] are the major determinants of economic growth and investment in Nigeria.

Recommendation

The reduction of the current 30% rate of company income tax as it affected economic growth, domestic investment and foreign direct investment inflows in Nigeria. A careful management of the exchange rate is also economically obligatory to save the economy from the present recession.

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APPENDIX**

Tables under the appendix are numbered as **A-1, A-2 . . . . . A-n**

Table A-1 Between-Subjects Factors

		Value Label	N
political stability	.00	military rule	13
	1.00	civil rule	17
Security	.00	coups,militantancy,terrorism	12
	1.00	relative peace	18

This table shows the allocation of dummy to factors. The focus of the study is that there must be peace and political stability with allocation of 1 each.

Table A-2 Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
log of gdp basic prices	1.513	3	26	.234
domestic investment	1.250	3	26	.312
foreign investment inflow	1.165	3	26	.342

This Table tests the null hypothesis that the error variance of the dependent variable is equal across groups. The dependent variable is free from autocorrelation since the significance of each dependent variable is greater than 0.10 under the multivariate general linear modeling.

a. Design: Intercept + INT + INF + EXR + CIT + SEC + PST + SEC * PST

Table A-3 Box's Test of Equality of Covariance Matrices[a]

Box's M	116.335
F	4.920
df1	18
df2	1521.085
Sig.	.000

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + INT + INF + EXR + CIT + SEC + PST + SEC * PST

The equality of covariance (homoscedasticity) is violated since the significance is less than 0.05. The log of GDPB was used to reduce F to 4.92 in the Box's M test.

Table A-5 Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	log of gdp basic prices	111.989[a]	7	15.998	84.487	.000	.964

	domestic investment	51860040.267[b]	7	7408577.181	60.971	.000	.951
	foreign investment inflow	5195250.402[c]	7	742178.629	8.838	.000	.738
Intercept	log of gdp basic prices	21.834	1	21.834	115.307	.000	.840
	domestic investment	1034750.278	1	1034750.278	8.516	.008	.279
	foreign investment inflow	6969.810	1	6969.810	.083	.776	.004
INT	log of gdp basic prices	.111	1	.111	.588	.451	.026
	domestic investment	889913.138	1	889913.138	7.324	.013	.250
	foreign investment inflow	17751.030	1	17751.030	.211	.650	.010
INF	log of gdp basic prices	.242	1	.242	1.278	.271	.055
	domestic investment	65007.328	1	65007.328	.535	.472	.024
	foreign investment inflow	30057.172	1	30057.172	.358	.556	.016
EXR	log of gdp basic prices	11.164	1	11.164	58.958	.000	.728
	domestic investment	192494.941	1	192494.941	1.584	.221	.067
	foreign investment inflow	1287.878	1	1287.878	.015	.903	.001
CIT	log of gdp basic prices	.924	1	.924	4.879	.038	.182
	domestic investment	1043178.573	1	1043178.573	8.585	.008	.281
	foreign investment inflow	515907.668	1	515907.668	6.143	.021	.218
SEC	log of gdp basic prices	.003	1	.003	.018	.894	.001
	domestic investment	1200586.358	1	1200586.358	9.881	.005	.310
	foreign investment inflow	52579.291	1	52579.291	.626	.437	.028
PST	log of gdp basic prices	.109	1	.109	.574	.457	.025
	domestic investment	442758.122	1	442758.122	3.644	.069	.142
	foreign investment inflow	520.482	1	520.482	.006	.938	.000
SEC * PST	log of gdp basic prices	.108	1	.108	.572	.458	.025
	domestic investment	621807.798	1	621807.798	5.117	.034	.189
	foreign investment inflow	19935.318	1	19935.318	.237	.631	.011
Error	log of gdp basic prices	4.166	22	.189			
	domestic investment	2673230.621	22	121510.483			
	foreign investment inflow	1847481.235	22	83976.420			
Total	log of gdp basic prices	2232.501	30				
	domestic investment	88572312.098	30				
	foreign investment inflow	14256172.418	30				
Corrected Total	log of gdp basic prices	116.155	29				
	domestic investment	54533270.888	29				
	foreign investment inflow	7042731.637	29				

This Table is arranged based on individual predictor's relationship with the dependent variables.
a. R Squared = .964 (Adjusted R Squared = .953)
b. R Squared = .951 (Adjusted R Squared = .935)
c. R Squared = .738 (Adjusted R Squared = .654)

Table A-6 Parameter Estimate

Dependent Variable	Parameter	B	Std. Error	T	Sig.	Partial Eta Squared
log of gdp basic prices	Intercept	4.892	.601	8.140	.000	.751
	INT	.019	.025	.767	.451	.026
	INF	.007	.006	1.130	.271	.055
	EXR	.032	.004	7.678	.000	.728
	CIT	.001	.001	2.209	.038	.182
	[SEC=.00]	-.260	.500	-.521	.608	.012
	[SEC=1.00]	0[a]	.	.	.	.
	[PST=.00]	.182	.427	.427	.673	.008
	[PST=1.00]	0[a]	.	.	.	.

	[SEC=.00] * [PST=.00]	.446	.590	.756	.458	.025
	[SEC=.00] * [PST=1.00]	0[a]	.	.	.	.
	[SEC=1.00] * [PST=.00]	0[a]	.	.	.	.
	[SEC=1.00] * [PST=1.00]	0[a]	.	.	.	.
domestic investment	Intercept	875.444	481.385	1.819	.083	.131
	INT	-53.488	19.765	-2.706	.013	.250
	INF	3.372	4.610	.731	.472	.024
	EXR	4.186	3.326	1.259	.221	.067
	CIT	1.556	.531	2.930	.008	.281
	[SEC=.00]	1229.210	400.840	3.067	.006	.299
	[SEC=1.00]	0[a]	.	.	.	.
	[PST=.00]	-283.724	341.903	-.830	.416	.030
	[PST=1.00]	0[a]	.	.	.	.
	[SEC=.00] * [PST=.00]	-1070.020	473.010	-2.262	.034	.189
	[SEC=.00] * [PST=1.00]	0[a]	.	.	.	.
	[SEC=1.00] * [PST=.00]	0[a]	.	.	.	.
	[SEC=1.00] * [PST=1.00]	0[a]	.	.	.	.
Foreign investment inflow	Intercept	-17.807	400.188	-.044	.965	.000
	INT	7.554	16.431	.460	.650	.010
	INF	2.293	3.832	.598	.556	.016
	EXR	.342	2.765	.124	.903	.001
	CIT	1.094	.441	2.479	.021	.218
	[SEC=.00]	241.072	333.229	.723	.477	.023
	[SEC=1.00]	0[a]	.	.	.	.
	[PST=.00]	67.724	284.233	.238	.814	.003
	[PST=1.00]	0[a]	.	.	.	.
	[SEC=.00] * [PST=.00]	-191.591	393.226	-.487	.631	.011
	[SEC=.00] * [PST=1.00]	0[a]	.	.	.	.
	[SEC=1.00] * [PST=.00]	0[a]	.	.	.	.
	[SEC=1.00] * [PST=1.00]	0[a]	.	.	.	.

** SPSS21 OUTPUT

The arrangement of the dependent variables and the predictors in this Table is based on individual dependent variable.

Table A-7 Data in Naira Billions for all the Variables except INT, INF and EXR which are in Rates

YEAR	DINV	INT	INF	FDIF	EXR	CIT	PST	SEC	GDP(Current Basic Prices
1985	8.80	10.00	8.00	1.85	1.00	1.00	.00	.00	134.60
1986	11.35	10.00	5.70	14.41	3.32	1.10	.00	.00	134.60
1987	15.23	13.00	11.30	-7.89	4.19	1.24	.00	1.00	193.10
1988	17.56	13.00	54.50	5.06	5.35	1.55	.00	1.00	263.30
1989	26.83	19.00	50.50	797.75	7.65	1.91	.00	1.00	382.26
1990	40.0	19.00	7.40	414.60	9.00	2.98	.00	.00	472.65
1991	45.2	15.00	13.00	411.50	9.76	3.83	.00	.00	545.67
1992	70.8	18.00	44.60	260.10	19.66	5.40	.00	1.00	875.34
1993	97.0	26.00	57.20	532.70	22.63	9.50	.00	.00	1089.68
1994	106.	14.00	57.00	328.20	21.89	12.30	.00	.00	1399.70
1995	142.	14.00	72.80	191.75	84.57	21.80	.00	1.00	2907.36
1996	204.	14.00	29.30	597.18	79.60	22.00	.00	1.00	4032.30
1997	243.	14.00	8.50	102.97	74.63	26.00	.00	1.00	4189.25
1998	242.	14.00	10.00	158.80	84.37	33.00	1.00	1.00	3989.45
1999	232.	18.00	6.60	172.82	92.53	46.00	1.00	1.00	4679.21
2000	331.	14.00	6.90	168.94	109.55	51.00	1.00	1.00	6713.57
2001	372.	14.00	18.90	93.88	112.49	69.00	1.00	1.00	6895.20
2002	500.	19.00	12.90	172.16	126.40	89.00	1.00	1.00	7795.76
2003	866.	16.00	14.00	167.32	135.40	115.00	1.00	1.00	9913.52
2004	863	15.00	15.00	260.75	132.67	113.00	1.00	1.00	11411.07
2005	804.	13.00	17.90	14.64	130.40	140.00	1.00	1.00	14610.88
2006	1546	12.00	8.20	319.62	128.27	245.00	1.00	1.00	18564.59
2007	19xx	9.00	5.40	867.53	117.97	275.00	1.00	1.00	20657.32
2008	2053	10.00	11.60	1051.59	130.75	417.00	1.00	1.00	24296.33
2009	3051	7.00	11.50	1525.14	147.60	500.00	1.00	.00	24794.24
2010	4013	6.00	13.70	911.72	148.67	658.00	1.00	.00	54612.26
2011	3656	9.00	10.80	816.76	156.20	701.00	1.00	.00	62980.40
2012	3651	12.00	12.20	1530.13	155.26	848.60	1.00	.00	71713.94
2013	3471	12.00	8.70	1227.44	157.30	985.50	1.00	.00	80092.56
2014	3340.	13.00	8.00	1601.23	158.60	1207.30	1.00	.00	89043.62