International Journal of Foodand Agricultural Economics
ISSN 2147-8988
Vol. 2 No. 4, (2014), pp.107-126

# EFFECTS OF CAPITAL FLIGHT AND ITS MACROECONOMIC DETERMINANTS ON AGRICULTURAL GROWTH IN NIGERIA (1970-2013)

**Francis Robert Usman**
Department of Agricultural Economics, University of Nigeria, Nigeria
E-mail: robertusmann@yahoo.com

**Chukwuemeka John Arene**
Department of Agricultural Economics, University of Nigeria, Nigeria

**Abstract**

*This study empirically examines the impact of capital fight and its macroeconomic determinants on agricultural growth in Nigeria from 1970 -2013. Data generated were analyzed using Unit root test, co-integration test, regression analysis. The study result found negative and insignificant relationship(P>0.05) between total capital flight and agricultural growth; meaning that capital flight has no direct impact on agricultural growth or the impact on agricultural growth is shadowed by the other macroeconomic variables in the system. Also, the stock of gross external debt (EXD) variable showed positive and statistically significant relationship (P<0.05) with agricultural growth. The result shows that a unit change in EXD will bring about 24% change in the growth of agriculture provided other factors are kept constant. Political instability (POL) variable has negative and significant effect on agricultural growth in Nigeria. The study recommends that Nigeria's judicious use of the income accruing from loans and Foreign Direct Investment (FDI) is paramount if Agricultural growth is to be enhanced. Furthermore, the overall peace, security of lives and property and guaranty of investment by the government is essential therefore; Government should take concerted step to improve security of life and property in the country*.

**Key Words:** *Capital flight, agricultural growth, macroeconomic variables, Nigeria*

## 1. Introduction

Capital flight from Africa and particularly Nigeria has been recently put at the forefront of the development policy debate. In recent years, considerable interest has arisen in the extent to which capital flight has a detrimental impact on economic development (United Nation Development programme UNDP, 2011). The sluggish economic growth and persistent balance of payment deficits in most developing countries have been attributed to capital flight (Ajayi, 1995). Indeed, the high levels of capital flight pose serious challenges for domestic resource mobilization in support of investment and growth in Africa (Fofack & Ndikumana, 2010). According to Ndikumana and Boyce (2001), many poor countries are losing more resources via capital flight than through debt servicing. Scholars have expressed concern over the magnitude, causes and consequences of these net flows. Investors from developed countries are seen as responding to investment opportunities while investors from developing countries are said to be escaping the high risks they perceive at home (Ajayi, 1997). Thus, according to Schneider (2003), Capital flight involves the outflows of resident capital which is motivated by economic and political uncertainties in the home country. The World Bank (1985) defines capital flight as the change in a nation's foreign assets. It is premised on trying to identify both the sources and uses of international funds by a nation; source funds consist of the increase in recorded gross external debt and net foreign direct investment, which can in turn be used to finance the current account and/or to increase official reserves. In essence, it equates capital flight with all non-official capital outflows. Capital flight is defined as that part of the increase in external claims that yields no recorded investment income. This in essence is the Dooley (1986) approach. In the Morgan Guaranty Trust Company study (1986), capital flight is defined as "the reported and unreported acquisition of foreign assets by the non-bank private sector and some elements of the public sector".

The International Monetary Fund IMF (1996) reveals that Nigeria suffered a loss of $7,573million between 1972 and 1989 to capital flight. Out of this total, the sum of US$7,362 million was lost between 1972 and 1978 against a capital inflow of $270 million within the same period. International Financial Corporation (1998) observed that Nigeria is among many African economies that have achieved significant lower investment levels as a result of capital flight. Such low level investment brought about by high rate of capital flight in Nigeria also has multiplier consequences on other aspect of the economy, including the alarming rate of unemployment as well as pronounced regressive effects on the distribution of wealth in Nigeria. The 2007 United Nation Conference on Trade and Development (UNCTAD) report showed that around $13 billion per year have left the African continent between 1991 and 2004. This represents a huge 7.6% of annual GDP with Nigeria having external assets 6.7 times higher than her debt stocks. In addition, the total stock of illicit outflows from Nigeria between 2002 and 2011 was put at $142,274 million (Global Financial Integrity, 2013). Capital flight has been regarded as a major factor contributing to the mounting foreign debt and inhibiting development efforts in the third world countries (Cuddington, 1986). External debt in Nigeria for example, increased by 700 percent from $3.5 billion in 1980 to $28.0 billion in 2000 (Ajayi, 2007) while debt outstanding at year end 2012 stood at $6522 million.

In spite of Nigeria's rich agricultural resource endowment; there has been a gradual decline in agriculture's contributions to the nation's economy (Manyong et al., 2003). In the 1960s, agriculture accounted for 65-70% of total exports; it fell to about 40% in the 1970s, and crashed to less than 2% in the late 1990s. The average agricultural growth rate for 2004–2007 was 7 percent but dropped to 5.2 percent from 2008-2013. Furthermore, the agricultural sector has been one of the least attractive sectors for Foreign Direct Investment (FDI) in Nigeria. Through 1970 to 2001 the sector comprised only 1.7 percent of the total FDI (FAO, 2012).

Studies on the determinants of capital flight and its impact on the Nigerian economy include those of Ajayi (1992; 1997), Lawanson (2007) and Onwiodwokit (2002). While many studies have been done on capital flight as it affects economic growth (Gosarova, 2009; Lan, 2009; Ameth, 2014), little or nothing has been undertaken in relation to the assessment of the impact of capital flight on agricultural growth. It is against this backdrop that this study sets to find out the effects of capital flight on agricultural growth in Nigerian

The broad objective of the study is to evaluate the effects of capital flight on agricultural growth in Nigeria. The specific objectives are (1) to describe the trend of capital flight and agricultural growth in Nigeria over the sample period 1970 to 2013; (2) to estimate the magnitude of capital flight from Nigeria using the World Bank and Morgan Guaranty company approaches; and (3) to estimate the effects of capital flight and associated macroeconomic determinants on agricultural growth in the country.

**Study Hypothesis:** The null hypothesis to be tested is that:

$H_0$: the volume of total capital outflows and its implicit factors have no significant effects on agricultural growth in Nigeria.

## 2. Literature Review

### 2.1 Approaches to Measurement of Capital Flight

#### 2.1.1 The Residual Method

In Lawanson (2007), capital flight estimates were based on the two authorities namely World Bank and Morgan Trust Bank and were defined as:

$$CF\ (WBi = FDI + \Delta ADJDEBTt - (CAD + \Delta TRSEG) \quad (1)$$
$$CF\ (MT)i = FDI + \Delta\ ADJDEBTt - \Delta FAB - (CADi\ + \Delta TRESG) \quad (2)$$

The notations are CF for capital flight, WB for World Bank and MT for Morgan Trust FDI for Foreign Direct investment, ΔADJDEBT is the changes in adjusted debt position ΔFAB is the changes in foreign assets holdings of banks CAD is current account deficit and ΔTRESG is the changes in total reserves less holdings of gold.

#### 2.1.2 The Dooley Method

The Dooley method computes capital flight as the difference between total capital outflows and the change in external assets stocks. According to this method, total capital outflows are calculated as follows:

$$FETCit=EEit + INDEit - CCit + \Delta RESit - EONit - BMFMIit \quad (3)$$

Where FETC is total capital outflows; EE is foreign borrowing as reported in the balance of payments statistics; EON is net errors and omissions; and BMFMI is the difference between the change in the stock of external debt reported by the World Bank and foreign borrowing reported in the balance of payments statistics published by the International Monetary Fund (IMF). The stock of external assets corresponding to reported interest earnings is:

$$AE_t = GINT_t/r_t \quad (4)$$

Where AE is external assets; r is the US deposit rate (assumed to be a representative international market interest rate); and GINT is reported interest earnings. Capital flight according to the Dooley method (FCd) is then measured as:

$$FCdit = FETCit - \Delta AEit \quad (5)$$

### 2.1.3 Hot Money Measure:

Cuddington's (1986) "hot money" or "narrow measure" is the sum of non-bank private short-term capital outflows plus net errors and omissions in the balance of payments statistics. There are three variants of this measure and defined as follows:

$$F\,C\,1a\,i\,t = -(g\,i\,t + c\,1\,i\,t) \quad (6)$$

$$F\,C\,2\,a\,i\,t = -(g\,i\,t + c\,i\,t) \quad (7)$$

$$F\,C\,3\,a\,i\,t = -(g\,i\,t + c\,i\,t + e\,1\,i\,t + e\,2\,i\,t) \quad (8)$$

Where FC1a is the first variant of the hot money method; FC2a is the second variant of the hot money method; FC3a is the third variant of the hot money method; g is the net errors and omissions; e refers to the portfolio investment: e1 and e2 are the other bills and shares respectively; c is the other short-term capital of the other sectors; and c1 is the other assets.

### 2.1.4 Mirror Stock Statistics / The Asset Method:

Under this method, capital flight is measured as the change in cross border bank deposits of nonbanks by residence of the depositor. The total figures represent the amount of money owned by the citizens of a country in foreign banks. The yearly changes in this stock are referred to as capital flight. This method has been used by (Khan & Haque, 1987). Using this approach, the statistics for the calculation of capital flight are available directly from the IMF's international Financial Statistics publication.

## 2.2 The Determinants of Capital Flight

In the literature, the main determinants of capital flight are: Past capital flight, capital inflows, macroeconomic instability, rate of return differentials, financial development, external debt, governance and institutional quality, political risks and war, and uncertainty of public policies (Hermes & Lensink, 2001; Hermes, Lensink & Murinde, 2002; Ndikumana & Boyce, 2003, 2007; Ajayi, 2007; Cerra, Rishi & Saxena, 2008).

## 2.3 Theoretical and Empirical Models

The theoretical framework for the study is based on the Solow (Neoclassical) Growth Model. The Cobb-Douglas production function approach is used thus:

$$Q = AK^{\alpha}L^{1-\alpha} \quad (9)$$

Where Q is output, K is capital, L is labour, and A is a parameter meant to capture the technological state or total factor productivity (TFP), and $0<\alpha<1$. It is assumed that the function exhibits constant returns to scale and smooth substitutability which vary continuously with K and L. Considering the capital-labour ratio expression of the function, the marginal product of capital-labour ratio is given as:

$$\frac{dQ}{dK} = \alpha A(K)^{-(1-\alpha)} \quad (10)$$

Where k= K/L. This expression describes the rate of returns on capital, which is negatively related to capital-labour ratio but positively relayed to TFP variable. The TFP variable is production shift factor representing a collection of measures of the state of technology, the adequacy or otherwise of institutions, conduciveness of the economic environment for production activities, and others. A number of studies such as Hall and Jones (1999), Klenow and Rodriguez-Clare (1997), and Gournichas and Jeanne (2006) in the literature emphasizes the importance of TFP on growth.

Given that output is negatively related to marginal product of capital-labour ratio, the growth rate of output is dependent on the growth rate of capital per unit of labour, which is endogenously determined within the model. However, the perception of investors who are at the heart of capital formation, about the conduciveness or the effectiveness of institutions and implication for productive economic activity and the state of the technology influence the investment portfolio decision of investors. This therefore leads to capital accumulation process, which describe how capital stock evolves over time. The capital accumulation equations can therefore be expressed as dependent on proportion of output saved and the rate of depreciation of capital. Given that a proportion of output saved is invested in the economy, macroeconomic equilibrium condition for capital accumulation can be written as:

$$K = sY - \delta K \quad (11)$$

Where 's' is the saving rate as fraction of every unit of output saved and δ is the depreciation rate as a fraction of every unit of capital that is worn out. Both the 's' and 'δ' are exogenous to the model. The intuition for this equation lies in the national income accounting identity for a closed economy, such that the sum of private and government savings is equal to the gross investment in the economy. Discounting next period capital stock in the current period for depreciation in addition to current investment the aggregate capital growth is described by equation 12:

$$\mathrm{K}_{t+1} = (1 - \partial)\mathrm{K}_t + I_t \quad (12)$$

With savings expressed as a function of output, and savings = investment, this equation becomes

$$\mathrm{K}_{t+1} = (1 - \partial)K_t + sAL_t^{\alpha} L_t^{1-\alpha} \quad (13)$$

Assuming labour growth rate to be "n", the capital-labour ratio growth thus becomes

$$K_{t+1} = \left(\frac{1-\delta}{1+n}\right) K_t + \frac{sA}{1+n} K_t^{\alpha} \quad (14)$$

The long run steady state growth of capital output ratio can be derived as:

$$K_{t+1} = A\left(\frac{sA}{n+\delta}\right)^{1/(1-\alpha)\alpha} \quad (15)$$

The steady state level of real income and investment can be deduced respectively as:

$$y^* A(k^*)^{\alpha} = A\left(\frac{sA}{n+\delta}\right)^{\alpha/(1-\alpha)\alpha} \quad (16)$$

where μ is the population the per capita income (PCY) and investment can be expresses as:

$$y^*/_{\mu}\, A(k^*)^{\alpha} = A\left(\frac{sA}{n+\delta}\right)^{\alpha/(1-\alpha)\alpha} \quad (17)$$

, and

$$i^{*}/\mu = sf(k) = sA(k^{*})^{\alpha} = sA\left(\frac{sA}{n+\delta}\right)^{\alpha/(1-\alpha)\alpha} \quad (18)$$

The steady state capital growth therefore allows capital (K) to grow to accompany effective unit of labour and cover depreciation of old capital. Thus the required per capita investment rate becomes:

$$i^{*}/\mu = (n+\delta)k^{*} \quad (19)$$

Although investment is not usually per person but the model gives insight that investments should be proportionate to the population to create the desirable multiplier effects (Arene, 2014).

Recall that the model made room for labour and knowledge to grow at a constant rate 'n', but now not all of such labour and knowledge are employed, such that

$$n = (ep)^{\lambda}(np)^{\lambda-1} \quad (20)$$

Where: $(ep)^{\lambda}$ is employed and $(np)^{\lambda-1}$ is unemployed. Thus, population and unemployment can affect respectively capital formation and per capita income which can denote poverty. Given that the mechanism through which capital flight and external debt affect growth, in this case per capita income and by extension, poverty and unemployment is through investment, a slight modification of the model to account for incidence of capital flight, external debt flows and external debt servicing is made in equation (21). It is in line with the argument that debt can additionally influence economic growth via effect on the productivity of investment, and by leading to severely compressed budgets and fiscal deficits (Fosu, 1996). Equation (20) is therefore modified to become:

$$dk/dt = sA(k^{*})^{\alpha} - (n+\delta)k - (KF + EXD + FDI) \quad (21)$$

Where KF is capital flight growth rate, EXD is external debt and FDI is net foreign direct investment. While both capital flight and debt servicing adversely affect the rate of capital formation, the inflow of external debt tend to increase available resources for capital formation.

The other relevant variables which can affect investment and agricultural growth are inflationary rate (INF) which will also affect level of investment, gross domestic product (GDP), and political instability (POL) which will affect all socio economic functions. Keeping this at heart and using a simplified version, the fundamental Solowian differential equation is given as:

$$dk/dt = sA(k^{*})^{\alpha} - (n+\delta)k - (KF + EXD + FDI) + (-INF + GDP + POL + INTD + MINS) \quad (22)$$

## 3. Methodology

### 3.1 The Study Scope

Nigeria is the focus of the study. It is made up of 36 State and a Federal Capital Territory. It has an area of 923,769 km$^{2}$ (approximately 92.4 million ha) (Federal Ministry of Agriculture, water Resources and Rural Development, FMAWRRD, 1989; and African

Development Bank, ADB, 2010). As at 2006, the national census recorded a population of 140,431,790 for the country (National Population Commission, NPC, 2006) making it the most populous country in Africa.

### 3.2 Sampling and Data Collection

This study adopted survey research with Nigeria as the focus of the study. Secondary data and existing literature on capital flight were used to provide guide. The data were sourced from National Bureau of Statistics and Central Bank of Nigeria's statistical bulletin with respect to inflationary rate, agriculture GDP. Other data on capital flight were sourced from IMF International Financial Statistics, Direction of Trade Statistics, and Balance of Payment Statistics. Others include World Bank, World Debt Table data base.

### 3.3 Method of Data Analysis

The data for this study were analyzed using both descriptive statistics and ordinary least square. Objectives one (1) and two (2) were realized using descriptive statistics such as means, percentages, graphs, and trend analysis while objective three (3) was achieved with multiple regression analysis (OLS).

#### 3.3.1 Ordinary Least Squares (OLS)

Ordinary least squares (OLS) regression is a generalized linear modeling technique that may be used to model a single response variable which has been recorded on at least an interval scale. The technique may be applied to a single or multiple explanatory variables and also categorical explanatory variables that have been appropriately coded (Hutcheson, 2011).

Among the few studies carried out in Nigeria are, the study carried out by Onwioduokit (2002). He estimated the determinants of capital flight from Nigeria for the period of 1970-2000. The data were analyzed using ordinary least square (OLS). The results of the analysis revealed that domestic inflation, availability of capital, parallel market premium and competitive growth rate of the economy are the major determinants of capital flight in Nigeria.

In order to estimate the effects of capital flight and its macroeconomic determinants on agricultural growth, the shares of agriculture to gross domestic product will be modeled as a function of total capital outflows, stock of gross external debt, political instability, macroeconomic instability, interest rate differential, net foreign direct investment and inflation rate. Mathematically this can be specified as:

$$AGR = f(KF, EXD, MINS, POL, INTD, FDI, INF) \quad (23)$$

Assuming a linear relationship between our dependent variable and the independent variables and using the theoretical expected signs, the above mathematical equation can be transformed as follow:

$$AGR_t = \alpha_0 + \alpha_1(KF)_t + \alpha_2(EXD)_t + \alpha_3(MINS)_t + \alpha_4(POL)_t + \alpha_5(INTD)_t + \alpha_6(FDI)_t + \alpha_7(INF)_t + \mu_t \quad (24)$$

Where;

*AGR* = Shares of agriculture to gross domestic product

*KF* = Total capital outflows.

*EXD* = Stock of gross external debt.

*MINS* = Macroeconomic instability, captured by the standard deviation of GDP.
*POL* = Political instability captured by political freedom indicator
*INTD* = Interest rate differential measures by the difference between domestic interest rate and foreign interest rate.
*FDI* = Net foreign direct investment inflows.
*INF* = annual variability of consumer price index.
*t* = time period

To capture the actual effects of capital flight and its determining factors on agriculture growth, the above specification will be defined in an Autoregressive Distributed Lag (ARDL) approach. The stock of capital flight entails the spill-over of the past regime into the current set, and this can only be captured in an autoregressive distributed lag model. In all, both the current and past stock of capital outflows is expected to negatively affect agricultural growth, especially when measure as shares of agriculture to GDP. Therefore, effect of capital flight on agriculture growth requires long lags and reasonable time horizon as demonstrated in the next equations.

$$\Delta AGR_t = \alpha_0 + \delta_1 AGR_{t-1} - \delta_1 KF_{t-1} + \sum_{i=1}^{r} \varphi_i \Delta X_{t-k} + \mu_t \quad (25)$$

Where:
$X_{t-k}$ = lagged explanatory variables included in the model
$KF_{t-1}$ = lagged total capital outflows
$AGR_{T-1}$ = lagged of shares of agriculture to GDP
$\Delta$ = difference operator

The coefficient of this model can be expressed in an elasticity or proportionate forms, in which case, the equation (25) will translate to a log – log model as in equation (26) below;

$$\Delta \ln(AGR)_t = \alpha_0 + \delta_1 \ln(AGR)_{t-1} - \delta_2 \ln(kF)_{t-1} + \sum_{i=1}^{r} \varphi_i \Delta \ln X_{t-k} + \mu_t \quad (26)$$

### 3.3.2 Estimation Procedure

To avoid spurious results emanating from the use of non-stationary random process, the time series properties of the data will be examined. This process will begin with test of unit root to confirm the stationarity states of the variables that entered the model. Then co-integrating regression is obtained from the normalized coefficients of the model generated from the co-integrating vector. Should co-integration exist, the ECM model is estimated. Lastly, diagnostic tests of the stochastic properties of the models would be carried out.

### 3.3.3 Unit Root Tests

A co-integrating relationship exists between non-stationary stochastic processes, if there is a stationary linear combination between them. Therefore, one needs to test the stationarity of the time series first. Augmented-Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are adopted to determine whether or not the series are stationary. The testing procedure is specified in equation (27) below:

$$\Delta AGR_t = \lambda_0 + \beta t + \gamma AGR_{t-1} + \delta_1 \Delta AGR_{t-1} + \ldots + \delta_p \Delta AGR_{t-p} + \varepsilon_t \quad (27)$$

Where,
$\lambda_0$ = the intercept,
$\beta$ = the coefficient on a time trend,

$\delta$ = the parameter of the variable in question
$P$ = the lag order of the autoregressive process, and
$\Delta$ = the difference operator.

The unit root test is then carried out under the null hypothesis $\gamma = 1$ against the alternative hypothesis of $\gamma = 0$. Once a value for the test statistic

$$ADF_{\tau} = \frac{\hat{\gamma}}{SE(\hat{\gamma})} \qquad (28)$$

is computed we shall compared it with the relevant critical value for the Dickey-Fuller Test. If the test statistic is greater (in absolute value) than the critical value at 5% or 1% level of significance, then the null hypothesis of $\gamma = 1$ is rejected and conclusion of stationary series is drawn.

### 3.3.4 Co-integration Equation

$$\left[\eta_m \log AGR_t = \alpha_1 + \sum_{i=2}^{p} \alpha_i \eta_m Z_t - \left(\eta_m \log AGR_t - \sum_{i=1} \beta \log X_{t-i} + \nu_{2t}\right)\right] \qquad (29)$$

Where

$\left[\eta_m \log AGR_t - \sum_{i=1} \beta \log X_{t-i}\right]$ is the linear combination of the co integrated vectors,

X is a vector of the co integrated variables.

Because equation 28 is true, the individual influence of the co-integration variables cannot be separated unless with an error correction mechanism through an Error Correction Model (ECM).

### 3.3.5 The Error Correction Model Equation

The error correction model is specified in its general term as in equation (30)

$$\eta_m \log AGR_t = \alpha_1 + \sum_{i=2}^{p} \alpha_i \eta_m Z_t - \lambda ECM_{t-i} + \nu_{4t} \qquad (30)$$

Where

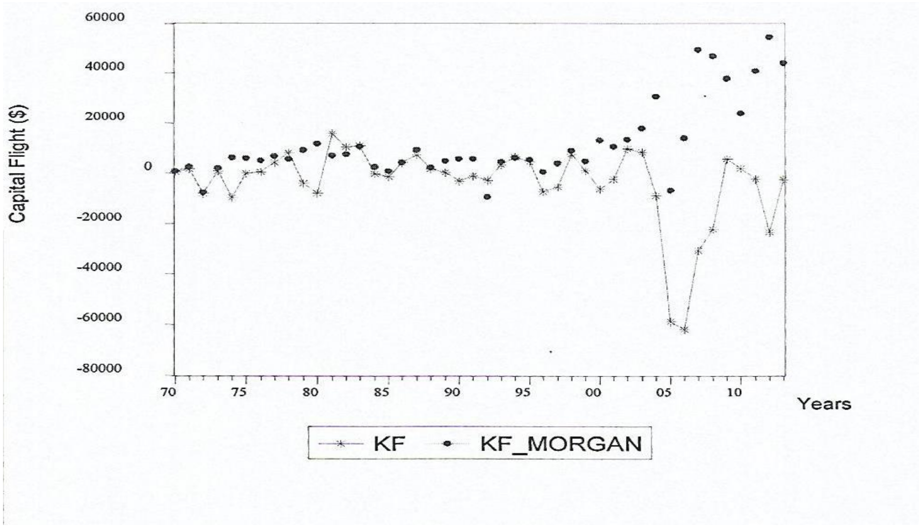
ECM = error correction mechanism,

$-\lambda$ = the magnitude of error corrected each period specified in its 'a priori' form so as to restore $\eta_m \log AGR_t$ to equilibrium.

## 4. Results and Discussion

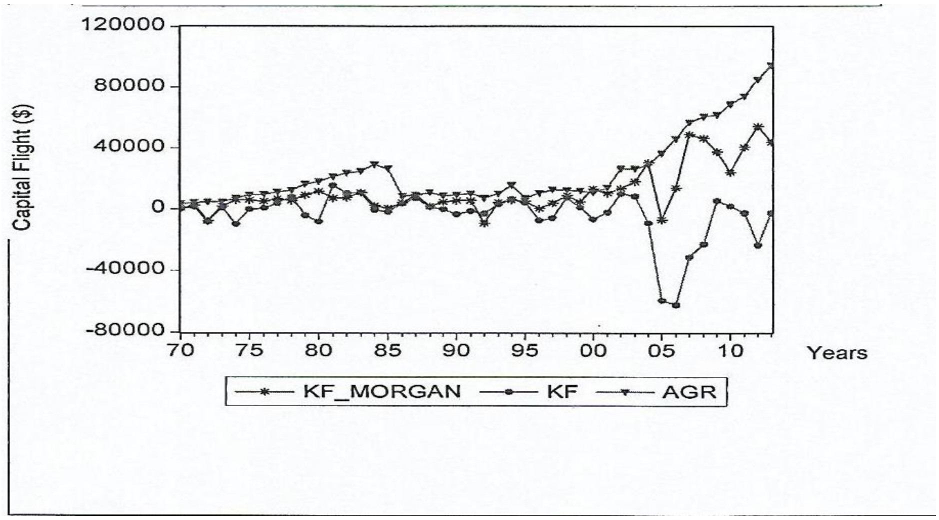
### 4.1 Trend Analysis of the Core Variables

The trend analysis of the difference in total capital flight measure of the World Bank and that of Morgan Guaranty Trust Company is presented below. Fig 1 below shows the trending estimate of the two measures of capital flight adopted.




**Source:** Author's computations using data from World Bank 2014, World Bank, World Development Indicators 2011; World Bank, IMF, International Financial Statistics 2011; National Bureau of Statistics, Central Bank of Nigeria. The time period is 1970–2013

**Figure 1.** Trend of Capital Flight (World Bank and Morgan Guaranty Measures) in Nigeria 1970-2013




**Source:** Author's computations using data from World Bank 2014, World Bank, World Development Indicators 2011; World Bank, IMF, International Financial Statistics 2011;National Bureau of Statistics, Central Bank of Nigeria. The time period is 1970–2013

**Figure 2.** Trend of Capital Flight (World Bank and Morgan Guaranty Measures) and Agricultural Growth in Nigeria 1970-2013

As indicated by the trends of capital flight and agricultural growth in Fig 2 above, a relatively trending pattern can be observed between agricultural growth and Morgan Guaranty Trust Company measure of capital flight. Agricultural activities in modern times require increasing capital (financial and physical) and when these capitals are taken out or brought into the country in the form of FDI, it positively or negatively affects agricultural activities, as well as growth. Based on this relationship, agricultural growth is expected to have a negative relationship with capital flight, as shown in World Bank measure of capital flight in Fig 2 above. Therefore, the capital flight measure of the World Bank seem to suggest a better theoretical relationship with agricultural growth, hence is adopted for the model estimation of this study. But before going deep into the model estimation, the unit root and co-integration tests were conducted.

### 4.2 Unit Root and Co-integration Analysis

In an attempt to normalize the data from unit root problem, we test for the presence of unit root in the variables and obtain their integrating order. If the dependent variable associated to the model is found to be integrated of the same order with the explanatory variables, then linear combination is suspected among the variables, hence co-integration test will be carried out to ascertain their long-run relationships (Ucak, Ozturk & Sarac , 2012).

**Table 1. ADF and PP Unit Root Test Results for Individual Variables**

| Variable | ADF | | | PP | | |
|---|---|---|---|---|---|---|
| | Level | 1^ST Diff, | Prob. | Level | 1^st Diff. | Prob. |
| AGR | 2.691048 | -4.565311** | 0.0007 | 2.498339 | -4.591585** | 0.0006 |
| KF | -3.771795** | -5.756241** | 0.0000 | -2.845773** | -10.45330** | 0.0000 |
| EXD | -0.891987 | -2.000464 | 0.2854 | -2.430205 | -15.17560** | 0.0000 |
| MINS | 1.220643 | -7.358975** | 0.0000 | -2.293847 | -14.29526** | 0.0000 |
| POL | -1.370399 | -6.397699** | 0.0000 | -0.996567 | -9.039709** | 0.0000 |
| INTD | -1.883225 | -4.733092** | 0.0004 | -1.854734 | -6.849086** | 0.0000 |
| FDI | 0.199165 | -9.556467** | 0.0000 | -0.371831 | -9.196390** | 0.0000 |
| INF | -3.463409** | -6.708184** | 0.0000 | -3.364647** | -11.39498** | 0.0000 |

**Note:** *** indicates significance at 5% and 1% level.*
*Where, AGR = Shares of agriculture to gross domestic product; KF =Total capital flight; EXD= Stock of gross external debt; MINS = Macroeconomic instability, captured by the standard deviation of GDP; POL = Political instability captured by political freedom indicator; INTD = Interest rate differential; FDI = Net foreign direct investment inflows; INF = annual variability of consumer price index.*

**Source:** E Views Output of ADF and PP Unit Roots Test using data from World Bank, Global Development Finance 2011; World Bank, World Development Indicators 2014; World Bank, Africa Development Indicators 2014, National Bureau of Statistics, Central Bank of Nigeria. The time period is 1970–2013

#### 4.2.1 Unit Root Testing for Stationarity of the Variables

The results of ADF and PP test statistics for the levels and first differences of the annual time series data for the period under investigation are presented in table 1 below. The asterisk (*) denotes rejection of the unit root hypothesis at the 1% level, while the asterisk (**) denotes rejection of the unit root hypothesis at the 5% level respectively. The ADF statistics were generated with a test for a random walk against stationary AR (1) with drift and trend at the maximum lag length of 9. While the PP test uses the automatic bandwidth selection technique of Newey-West.

From the result in table 1, both the ADF and PP results indicated that the dependent variable (AGR) is integrated of order one (Δ = 1) along side with all the explanatory variables, except the total capital flight (KF) and the annual variability of consumer price index (INF) that proved no unit root even at level (see table 1). When a variable is significant at level, it simply tells that such variable is integrated of order zero (Δ = 0). However, since the dependent variables (AGR) is integrated of the same order (Δ = 1) with most of the explanatory variables, this establish a prerequisite for the presence of long-run linear combination among them, and to avoid mistake of analysis in the long-run relationship and short-run analysis, a co-integration test for the variables is conducted.

### 4.2.2 Co-Integration Test

Given the established unit root properties of the variables, we proceed to implement the Engle-Granger Residual co-integration procedure. The explanatory variables that have the same order of integration (Δ = 1) with the dependent variable are included in an estimate of linear combination at their level form without the intercept term and their Residual (ECM) obtained from the estimate is then subjected to unit root – co-integration test as show in Table 2.

**Table 2. Co-Integration Tests**

| Null Hypothesis: The Residual has a unit root | | | t-Statistic | Prob.* |
|---|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | | -3.695016 | 0.0076 |
| Test critical values: | 1% level | | -3.592462 | |
| | 5% level | | -2.931404 | |
| | 10% level | | -2.603944 | |
| | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| RESID (-1) | -0.556739 | 0.150673 | -3.695016 | 0.0006 |
| C | 219.5382 | 1213.287 | 0.180945 | 0.8573 |

**Source:** E Views Output of Co-Integration Tests using data from World Bank, Global Development Finance 2011; World Bank, World Development Indicators 2014; World Bank, Africa Development Indicators 2014, National Bureau of Statistics, Central Bank of Nigeria. The time period is 1970–2013
**Note:** Lag Length: 0 (Automatic based on SIC, MAXLAG=9), *MacKinnon (1996) one-sided p-values.

As indicated in table 2 above, the t – statistic associated to the co-integration analysis (-3.695016) is less than the 1%, 5% and 10% critical values, implying significance at these three levels. The implication of this result is that there is evidence of co-integration or long-run linear relationship among the variables. Consequently, the study adopts the Error Correction Model which was specified in chapter three, in case, co-integration was noted among the variables.

### 4.3 Presentation of the Long-Run Result

The empirical results from modeling the nexus between agricultural growth, capital flight and some macroeconomic variables in Nigeria is presented in table 3 below.

**Table 3. ECM Result for Agricultural Growth (AGR) Model**

| R-squared = 0.818734; Adjusted R-squared = 0.776083; F-statistic = 19.19619<br>Prob (F-statistic) = 0.000000; Durbin-Watson stat = 1.968553 | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std Error | t – value | t – prob |
| C | 5.942007 | 0.969302 | 6.130194 | 0.0000 |
| KF | -1.40E-07 | 4.45E-06 | -0.031371 | 0.9752 |
| EXD | 0.244745 | 0.078685 | 3.110446** | 0.0038 |
| MINS | -0.065537 | 0.059916 | -1.093802 | 0.2817 |
| POL | -0.603660 | 0.027692 | -4.900143** | 0.0000 |
| INTD | -0.040366 | 0.013242 | -3.048370** | 0.0044 |
| FDI | 0.000134 | 5.19E-05 | 2.575657** | 0.0145 |
| INF | -0.001487 | 0.003998 | -0.372002 | 0.7122 |
| ECM(-1) | -1.96E-05 | 8.01E-06 | -2.443809** | 0.0199 |

**Note:** ***,* indicates significance at 5% and 1% level.*

*Where, AGR = Shares of agriculture to gross domestic product; KF = Total capital flight ; EXD = Stock of gross external debt; MINS= Macroeconomic instability, captured by the standard deviation of GDP; POL= Political instability captured by political freedom indicator; INTD= Interest rate differential; FDI= Net foreign direct investment inflows.*

*INF = annual variability of consumer price index.*

**Source:** E Views Output (2013) using data from World Bank, Global Development Finance 2011; World Bank, World Development Indicators 2014; World Bank, Africa Development Indicators 2014, National Bureau of Statistics, Central Bank of Nigeria. The time period is 1970–2013

From the coefficients of the above result in table 3, capital flight (KF), political instability (POL), interest rate differential (INTD), macroeconomic instability (MINS) and the annual variability of consumer price index (INF) exhibit negative relationships with agricultural growth in Nigeria. On the other hand, the external debt stocks (EXD), and foreign direct investment (FDI) have positive coefficients in the estimated model. By implications the above sign shown by the coefficient indicates that while some variables are in line with the theoretical expectation, others are in contrast with the expectation.

### 4.3.1 Total Capital Flight (KF) - Agricultural Growth (AGR)

Starting with total capital flight variable, the result indicates that, though, negative relationship exist between total capital flight and agricultural growth at 5% probability, it is not statistically significant. Implying that capital flight has no direct impact on agricultural growth or the impact on agricultural growth is shadowed by the other macroeconomic variables in the system. However, the establishment of negative influence of capital flight on growth conformed to economic theory, since according to Akinlo (2004), capital flight has insignificant negative influence on growth. The argument here is that extractive industries capital flight might not exert significant impact on agricultural sector compared to the capital flight in manufacturing sector. Additionally, capital flight may influence agricultural growth negatively once there is an evidence of foreign investors transferring profits, or other investment gains to their home country.

### 4.3.2 Stock of Gross External Debt (EXD) - Agricultural Growth (AGR)

On the stock of gross external debt (EXD) variable, the result show positive coefficient (0.244745) and statistically significant impact on agricultural growth. It shows that a unit change in EXD will bring above 24% change in the growth of agriculture provided other factors are kept constant. This is not surprising when looking at the fact that external debt, if properly utilised, is expected to help the debtor country's economy by producing a multiplier effect which leads to increased employment, adequate infrastructural base, a larger export market, improved exchange rate, favourable terms of trade and increase in agricultural growth (Hameed et al, 2008). The main lesson of the standard "growth with debt" literature is that a country should borrow abroad as long as the capital thus acquired produces a rate of return that is higher than the cost of the foreign borrowing. In that event, the borrowing country is increasing capacity and expanding output with the aid of foreign savings.

The above growth with external debt relationship is supported in this study by the significant nature of EXD on agricultural growth in Nigeria. The variable has t-value of 3.110446, and with the '2-t rule of thumb', a variable is statistically significant at 5% level when its t-value is greater than or equal to 2 in absolute terms, or when the t-probability is less than or equal to 0.05. Therefore EXD has statistically significant relationship with agricultural growth in Nigeria.

### 4.3.3 Macroeconomic Instability (MINS) - Agricultural Growth (AGR)

The result of the macroeconomic instability (MINS) variables show that a unit increases in macroeconomic instability will result to 6.5% decline in agricultural growth in Nigeria. As argued by Hermes and Lensink (2001), macroeconomic instability leads to rising expectations of imposing higher taxes and tax-like distortions, such as exchange rate devaluation, which in turn lowers returns with increased risk and uncertainty of domestically-held wealth. This increases incentives for capital flight. On the other hand, Le & Zak (2006) argued that macroeconomic risk is the major cause of capital flight. High inflation reduces the real value of domestic assets, inducing the residents to hold their wealth outside the country (Hermes et al., 2002). However, the size from the estimated parameter in table 4.3 did conform to the theoretical expectation, but the MINS variable show no significant impact on agricultural growth in Nigeria.

This study is in-line with other studies, such as Ndikumana and Boyce (2003) that also found negative and non-statistically significant impact of macroeconomic instability on economic growth in Nigeria; whereas the overall instability does not significantly affects growth in all sectors of the economy, as other result of uncertainties like political uncertainty in this study has shown.

### 4.3.4 Political Instability (POL) - Agricultural Growth (AGR)

As indicated in table 4.3 above, political instability (POL) variable has negative and significant effects on agricultural growth in Nigeria. The result show that a unit increases in political instability (as a measure of political freedom indicator) will result to 60% decrease in agricultural growth, other factors kept constant. This result absolutely conformed to the theoretical expectation, since political instability may increase the risks and uncertainty regarding the policy environment and its outcomes for growth is normally negative. Confidence in the domestic political situation may fall; inducing more capital flight episodes since residents may channel their assets overseas due to the increasing risks of losses in their domestic assets and that will negatively affects agricultural growth.

This politically unstable economy has also witnessed a massive decline in the contribution of agricultural to the nations' economic growth. In the 1960s, agriculture accounted for 65-70% of total exports; it fell to about 40% in the 1970s, and crashed to less than 2% in the late 1990s (Lawal, 2011).

**4.3.5 Interest Rate Differential (INTD) - Agricultural Growth (AGR)**

The result in table 4.3 shows that interest rate differential has negative influence on agricultural growth in Nigeria. It shows that every unit increase in interest rate differential will have 4% decline in agricultural growth in Nigeria, provided other factors are kept constant. The variable is statistically significant in influencing agricultural growth, judging from the t-value of -3.048370, which is greater than 2 in absolute term. As noted by Alam and Quazi (2003), higher real interest rate differentials between the capital-haven countries and capital less economies contribute to high capital flight and decline in growth of the capital less economy. On the other hand, high rate of capital flight that affects growth negatively is caused by the interest rates deferential both in the short and in the long run.

**4.3.6 Foreign Direct Investment (FDI) - Agricultural Growth (AGR)**

The estimated coefficient of foreign direct investment variable in table 4.3 is very low, implying that FDI is not a robust instrument that affects agricultural growth in Nigeria. Specifically, the result shows that a unit increase in FDI will increase agricultural growth by 0.013%, other factors kept constant. Although, FDI proved in this study to be a significant factor that stimulates growth of agriculture, when judged by the t-value of 2.57657, in Nigeria.

It is worthy of note here, in Nigeria, given her natural resource base and large market size (a population of about 160 million), qualifies to be a major recipient of FDI in Africa and indeed, is one of the top three leading African countries that consistently received FDI in the past decade. However, the level of FDI attracted especially to agriculture is small compared to the resource base and potential needs; this is in line with the FAO which posited that the agricultural sector has been one of the least attractive sectors for FDI in Nigeria. Through 1970 to 2001 the sector comprised only 1.7 percent of the total FDI (FAO, 2012). Nigeria's share of FDI inflow to Africa averaged around 20.68% between 1976 and 2007. The percentage of FDI inflow to the agricultural sector in Nigeria during the same period is less than 1%. Between 1980 and 1984, it was 2.46% which was the highest and stood at 0.37% in 2007 (Abu & Nurudeen, 2010).

**4.3.7 Variability in Consumer Price Index (INF) - Agricultural Growth (AGR)**

The parameter for the variability in consumer price index has negative value, in-line with theoretical expectation, which states that variability in inflationary variable has negative consequences on growth tendency mostly in developing nation such as Nigeria. The result shows that a unit increase in the variability of consumer price index (INF) will cause agricultural growth to reduce by 0.014%, provided other factors are kept constant.

This shows that as consumer price increases, domestic agricultural production also reduces, implying that agricultural growth is negatively related to increase in variability in consumer prices. This may be due to the fact that unstable consumer price reduces supply on the farmer's side leading to decline in agricultural growth. More agro-processing activities must therefore be embarked upon in order that farmers may be able to dispose of their produce at fairly reasonable prices. However, the effects of the variability of consumer prices to agricultural growth is not different from zero, implying not statistically significant, as shown by the result in table 4.3 above. This also goes a long way to tell that in Nigeria, variability in consumer prices is not the major factor bedeviling growth in agricultural sector. In their words, Ajuwon and Ogwumike (2013) noted that, while there are many factors influencing agricultural growth in the country, discovering of oil in Nigeria, frequent political and macroeconomic instability, bureaucratic bottlenecks, lack of political will and corruption forestall agricultural growth in Nigeria.

### 4.4 Result of the Long-Run Parameter (ECM)

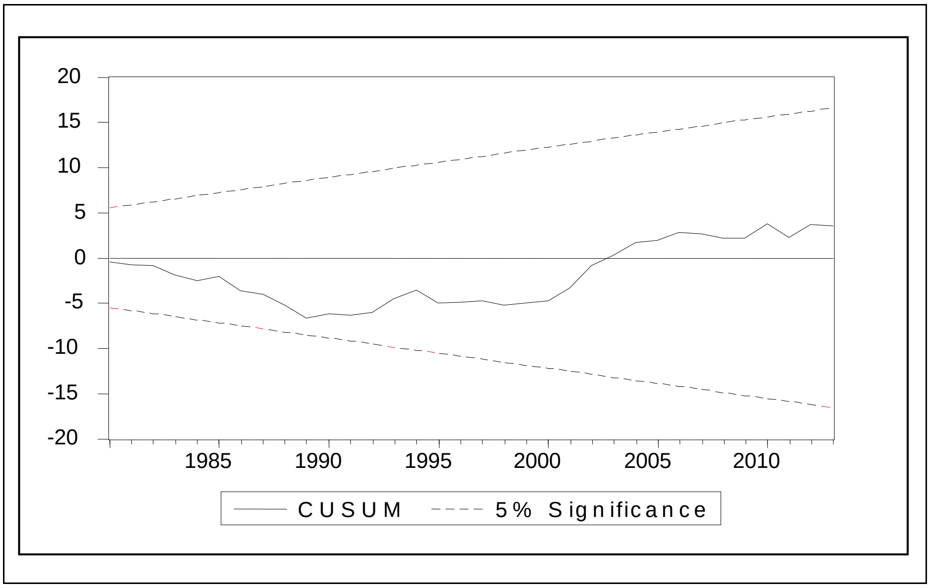
The long-run error correction mechanisms proved to be statistically significant in correcting the disequilibrium at lag one in the two models. It shows that 0.009% correction is made to the disequilibrium result from the co-integrating vector, at every one year to position agricultural growth in Nigeria to its equilibrium root. The long-run factor in the model has the right sign of negative, showing that at every disequilibrium in the growth of agriculture in Nigeria, there is positive adjustment mechanism at every one year to put them back to equilibrium track, provided other factors are controlled.

### 4.5 Model Fitness/Stability Results

Based on the underlying properties of the models specified for this study, such as; linearity in parameters, random sampling of the exogenous variables, homoskedasticity (equal variance), and finally, the no-serial correlation, we analyzed the fitness of the model using the F-statistics and coefficient of multiple determination $R^2$ and the Durbin-Watson (DW) statistic.

The coefficient of multiple determinations $R^2$ of approximately 0.82 suggests that 82% of the variation in the agricultural growth model was explained by the explanatory variables included in the model; an evidence of goodness of fits. In the same vein, F – statistic of 19.19 shows that the model is well specified and as a result maintains good fit. Another interest measure of the precision of this analysis is the Durbin-Watson (DW) statistic. A rule of thumb shows that when the DW statistic is less than $R^2$ in a model, not minding the significant level, such model is said to suffer from multicollinearity, positive first order autocorrelation and spurious regression. Therefore, with the DW statistic of 1.968, being greater than the $R^2$ in this study, and with reasonable number of the significant factors, the model is said to be free from multicollinearity, positive first order autocorrelation, estimation bias emanating from wrong specification of model and spurious regression.

Finally, the graphical representation of the stability test is done using CUSUM stability analysis as shown in fig 3 below.




**Source:** E Views Output of CUSUM Stability using data from World Bank, Global Development Finance 2011; World Bank, World Development Indicators 2014; World Bank, Africa Development Indicators 2014, National Bureau of Statistics, Central Bank of Nigeria. The time period is 1970–2013

**Figure 3: CUSUM Stability Result**

The CUSUM stability analysis shown in the graph above proved that the model is stable. This was proved by the mean reverting trending of estimated model as can be observed by the trending in the graph. For unstable model, its mean will fluctuate through a definite direction without reverting toward the zero roots in the graph.

### 4.6 Evaluation of Research Hypothesis

The only hypothesis stated for this study, which is 'the volume of total capital outflows and its implicit factors have no significant effects on agricultural growth in Nigeria' is evaluated as stated earlier using the F- Statistic result in table 4.3 above. The F – Statistic tells how significant the overall parameters are in explaining the variations in the dependent variables, here, agricultural growth proxy by the shares of agriculture to gross domestic product (GDP). Thus, from the result the F-statistic value is 19.19619 with the probability value of 0.00000, implying that the volume of total capital outflows and its implicit factors have significant effects on agricultural growth in Nigeria; therefore the null hypothesis was rejected at 5% significant level.

## 5. Conclusion and Recommendations

Nigeria experienced low and volatile investment growth rate in the agricultural sector during the research period. Theory explaining capital flight suggests that this phenomenon is driven by both private and public actors, implying that an increase in capital flight would affect private and public investments, then agricultural growth. By testing economically this hypothesis, the results show that capital flight significantly reduces agricultural growth in

Nigeria. Therefore, capital flight poses a huge threat to high and sustainable growth in the country. This result is in consistence with previous findings in the literature (Lan, 2009; Guvsarova,2009; Ameth, 2014). Based on the summary of the findings of this study, it was obvious that stock of gross external debt (EXD), political instability (POL), interest rate differential (INTD) measured by the difference between domestic interest rate and US interest rate, and the net foreign direct investment (FDI) inflows are the significant factors that affect agricultural growth in Nigeria. In addition, total capital flight (KF), macroeconomic instability (MINS) captured by the standard deviation of GDP, and annual variability of consumer price index (INF) show negative relationship with agricultural growth. However, their effects were not statistically significant, implying that the effects of these variables are not statistically different from zero. The key implication of these results is that capital flight repatriation contributes to a significant increase in the volume of agricultural investment in the country, credit to the private sector, the quality of institutions, and domestic savings, implying that this repatriation requires the minimization of uncertainty with respect to the macro-economic and institutional environment in order to reduce risks of losses in the real value of domestic assets of private investors. Moreover, efforts to improve governance, to strengthen institutional quality, and to promote a stable political environment are necessary to repatriate fled capital. In that sense, capital flight repatriation calls for the Nigerian government to behave more responsibly, particularly in managing public resources and for foreign banks to be morally responsible in the repatriation of public funds that are supposed to be used in financing agricultural sector in the country.

In addition, Nigeria's judicious use of the income accruing from loans and FDI is paramount if agricultural growth is to be enhanced. Furthermore, the overall peace, security of lives and property and guaranty of investment by the government is essential.

## 6. Research Limitations and Avenues for Further Research

The study is agricultural real sector-specific. Service activities within the agricultural setting need to be incorporated in further research. There is also the need to investigate the determinants of capital flight: this will provide policy guide for reducing the incidence of illicit capital flight in developing countries.

## Acknowledgement

This article is distilled from the first author's M. Sc dissertation in the department of agricultural economics, University of Nigeria, Nsukka. The second author is the dissertation supervisor. The authors gratefully acknowledge constructive criticisms from members of the departmental postgraduate board on an earlier draft.

## References

Abu O. G & Nurudeen (2010). "Determinants of FDI in Nigeria: An empirical analysis". *Global Journal of Human Social Science.*

Ajayi, I.S. (1992). An economic analysis of capital flight from Nigeria. World Bank Working Paper 993. The World Bank, Washington, D.C.

Ajayi, I.S. (1995). Capital Flight and External Debt in Nigeria. Research Paper 35, *African Economic Research Consortium* (AERC), Nairobi, Kenya.

Ajayi, S.I. (1997). An Analysis of External Debt and Capital Flight in the Severally Indebted Low Income Countries in Sub-Saharan Africa. Research Department, International Monetary Fund Working Paper 68 (Washington DC).

Ajayi, I.S. (2007). "Dynamics of capital flight: Causes and determinants". Paper prepared for the Senior Policy Seminar on Capital Flight from sub-Saharan Africa: Implications for Macroeconomic Management and Growth, 30 October–2 November 2007, Pretoria, South Africa.

Akinlo, A.E., (2004). "Foreign Direct Investment and Growth in Nigeria": An Empirical Investigation. *Journal of Policy Modelling,* (26): 627-639.

Ameth, S. N. (2014). "Capital Flight from the Franc Zone: Exploring the Impact on Economic Growth", AERC Research Paper269, African Economic Research Consortium, Nairobi, Kenya.

Arene, C.J. (2014). *Agricultural Economics: A functional Approach*, 2nd Edition: University of Nigeria Press, pp185-193

Cerra, V., M. Rishi & Saxena, S.C. (2008). "Robbing the riches: Capital flight, institutions, and debt". *Journal of Development Studies*, 44(8): 190–213.

Cuddington, J. (1986). Capital Flight: Estimates, Issues, and Explanations. Princeton Studies in International Finance No. 58. Princeton University, Department of Economics. Princeton, New Jersey.

Dooley, M.P. (1988). Capital flight: A response to differences in risk. International Monetary Fund Staff Paper, 35: 422–36.

FAO (2012). Foreign agricultural investment country profiles http://www.fao.org/tc/policysupport/investment-policy/databases-and-country-profiles

Federal Ministry of Agriculture, Water resources and Rural Development, FMAWRD (1989). Strategies for development of social forestry in Nigeria: a study of the background and opportunities for social forestry development in Nigeria. Forestry Management, Evaluation and Coordinating Unit. 6-14.

Fofack, H. & Ndikumana, L. (2010). "Capital Flight Repatriation: Investigation of its Potential Gains for Sub-Saharan African Countries". *African Development Review, 22(1): 4-22.*

Fosu, A.K. (1996). "The Impact of External Debt on Economic Growth in Sub-Saharan Africa". *Journal of Economic Development, 1 (21): 93-118.*

Global Financial Integrity (2013). Illicit Financial Flows from Developing Countries: 2002-2011,Washington DC.

Gosarova, V. (2009). "The Impact of Capital Flight on Economic Growth", Unpublished Master's Thesis, Kyiv School of Economics.

Gournichas, O., & Jeanne, O. (2006). The Elusive Gains from International Financial Integration, Review of Economic Studies, (73):3

Hameed A., Ashraf H. & Chaudhary M. A. (2008). "External Debt and its Impact on Economic and Business Growth in Pakistan". *International Research Journal of Finance and Economics .Issue 20.*

Hermes, N. & Lensink, R. (2001). Capital flight and the uncertainty of government policies.Economics Letters, 71(3): 377–81.

Hermes, N., R. Lensink & Murinde, V (2002). Capital flight, policy uncertainty, and the instability of the international financial system. In A. Mullineux and V. Murinde, eds., Handbook of International Banking. Cheltenham: Edward Elgar (forthcoming) IMF.

Hutcheson, G. D. (2011). Ordinary Least Squares Regression. in L. Moutinho and G.D. Hutcheson, the SAGE Dictionary of Quantitative Management Research. Pp 224-228.

International Monetary Fund (1996). International Financial Statistics yearbook, 1995, IMF, Washington D.C.

Khan, M. & Haque, N. U. (1987). Foreign Borrowing and Capital Flight: A Formal Analysis, Staff Papers, International Monetary Fund, 4 (32): 606-628.

Klenow, P. J & Rodriguez Clare, A. (1997). Eds. Bernanke, B. & J-J. Rotemberg, 'The Neoclassical Revival in Growth Economics: Has It Gone Too Far?' in, NBER Macroeconomics Annual, MIT Press: Cambridge and London.

Lan,S. K. (2009). "Effects of Capital Flight on Economic Growth in selected ASEAN Economies", Unpublished Ph.D Thesis, University of Putra, Malaysia.

Lawanson, A.O. (2007). An econometric analysis of capital flight from Nigeria: A portfolio approach. AERC Research Paper 166. *African Economic Research Consortium*, Nairobi.

Le, Q.V. & Zak, P.J. (2006). "Political risk and capital flight". *Journal of International Money and Finance, 2 (25): 308–29.*

Manyong, V.M., A. Ikpi, J.K. Olayemi, S.A. Yusuf, B.T. Omonona, V. Okoruwa, & Idachaba, F.S. (2003). Agriculture in Nigeria: Identifying opportunities for increasedcommercialization and investment. International Institute of Tropical Agriculture, Ibadan, Nigeria.

Morgan Guaranty Trust Company (1986). "LDC debt reduction: A critical appraisal". World Financial Markets, (7): 1–12.

Ndikumana L. & Boyce, J.K. (2001). "Is Africa a net creditor? New estimates of capital flight from severely indebted sub-Saharan African countries, 1970–1996". *Journal of Development Studies, 38(2): 27–56.*

Ndikumana, L. & Boyce, J. K. (2003). Public debts and private assets: Explaining capital flight from sub-Saharan African countries. World Development 31(1): 107–30.

Ogwumike, F. O. & Ajuwon O. S. (2013). "Uncertainty and Foreign Direct Investment: A Case of Agriculture in Nigeria". *Mediterranean Journal of Social Sciences 1(4) No. 155*

Onwioduokit E. A. (2002). Capital Flight from Nigeria: An Empirical Re- Examination Accra, Ghana: West African Monetary Institute.

Schneider B. (2003). Measuring Capital Flight: Estimates and Interpretations. IMF Working Paper No 194.

Ucak, H., Ozturk, I., & Sarac, T. B. (2012), "Total Factor Productivity and Export Relationship: The Case for Agriculture Sector in Four Mediterranean Countries", Actual Problems of Econoomics, 9(135) 514-525.

UNCTAD (2007). World Economic Situation and Prospects. Available at: www.unctad.org/en/docs/wesp2007_en.pdf

UNDP (2011). Sustainability and Equity: A Better Future for All. Human Development Report 2011. New York.

World Bank (1985). World Development Report 1985. Washington DC: World Bank.