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CAPITAL FLIGHT AND TAX BASE IN NIGERIA

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Abstract

Capital flight in the form of taxable wealth transferred to secret jurisdictions is one factor limiting the broadening of tax revenue base in oil-resource rich African countries like Nigeria. This paper, therefore, explored the determinants of capital flight, estimate the size and trend and assess the impact on tax bases in Nigeria. Using the Johansen Co-integration test, error correction mechanism (ECM) and the vector autoregressive (VAR) approach on time series data from 1981 to 2015, the study found that annual borrowing, inflation rate, interest rate differentials, capital account openness, natural resource endowment and stock of external debt are the significant determinants of capital flight from Nigeria in the short run. Annual borrowing, exchange rate, interest rate differentials, capital account openness, natural resource endowment and stock of external debt are key long-run determinants of capital flight from Nigeria. Past capital flight increases future capital flight which terminates at the fourth year for Nigeria. Capital flight impacts consumption, export, import, gross capital formation, and real per capita income in Nigeria. Also, capital flight from the trend analyses is on the rise and needs to be curbed. Therefore, capital flight is deterrent to tax base broadening in Nigeria and transparency in international business and finance. The study, therefore, recommended the use of investment incentives to prevent base erosion cum profit shifting, automatic sharing of information to prevent secrecy banking and automatic sharing of invoice data between Nigeria and her trading partners.

Keywords: *Capital flight, Determinants, Tax base, Secret jurisdictions, Nigeria,*
JEL Classification: F21, H2

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1. INTRODUCTION

Capital flight in the form of taxable wealth transferred to secret jurisdictions is one factor limiting the broadening of tax revenue base in oil-resource rich African countries like Nigeria. It (capital flight) is the diversion of scarce resources away from domestic investment and productive activities that could generate taxable income. Several reasons for the capital flight phenomenon in Africa have been revealed in the existing literature. These include, pervasive tax evasion, security of property rights, existence of secrecy jurisdictions (tax havens), loss in value of local currency, low rate of return on domestic investment or higher capital gains, financial dishonesty and lower tax on investment income (Boyce & Ndikumana, 2014; Ajayi, 2014).

Of parallel relevance with the reasons for capital flight are the development of truncating consequences. Capital flight poses severe constraint for growth and development (Massa, 2014) by reducing growth potential, eroding or narrowing tax base, and adversely redistributing income (Ajayi, 2014). Considering the tax base erosion consequence of capital flight from Africa with reference to the recent domestic revenue mobilization drive for quality discharge of fiscal responsibilities towards sustainable development in Nigeria and Africa at large, stemming capital flight to expand tax revenue is crucial to escape from foreign aid (grant for instance) or natural resource dependence (oil exports in the case of Nigeria).

Capital flight in relation to tax base erosion arises from the fact that income and wealth licitly and or illicitly generated by multinational corporations and wealthy individuals are transferred and or kept in a secret jurisdiction not known to the domestic tax authorities of their country (Ajayi, 2014). Tax base erosion related capital flight is highly damaging to the thinly diversified economy like Nigeria where the tax base is dependent on taxing a few companies (multinationals) and rich individuals who engage in financial engineering to avoid tax assessment and payment. It causes huge revenue loss and frustrates domestic resource mobilization needed at sub-national levels for sustainable growth development.

For instance, Oxfam International estimates that potential tax revenue of $156 billion is lost annually from developing nations (Kedir, 2014). In 2010, developing countries (Nigeria inclusive) lost from a minimum of $859 billion up to $1,138 (Massa, 2014). African countries individually lost $885.8 (close to the minimum reported in Massa (2014)) taxable income annually through capital flight. In 2002, assets of wealthy individuals in the world based in the tax havens stood at $27.2 trillion (Alonso, 2018). According to Kumar, Akpokodje, and Sadeck (2015), about $90 billion on the average flow out of developing countries yearly, illicit outflows accounts for 82 per cent of net resource transfers from developing countries, and $13.4 trillion from developing countries were lost to trade misinvoicing in 2007. Ndikumana, Boyce, and Ndiaye (2014) stated that Nigeria has $311 billion as capital flight outside the reach of her national authorities. In 2010, a wealth of developing countries held abroad stood at $7 trillion (Alonso, 2018). The International Monetary Fund (IMF) estimates $123 billion in short-run revenue loss in 2014 and UNCTAD estimates $100 billion annual revenue loss in 2015. In April 2017, $12.3 in Swiss banks were traceable to foreigners and not residents of Switzerland (Alstadseter, Johannesen, & Zucman, 2017).

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Fjeldstad, Jacobsen, Ringstad and Ngowi (2017) noted that the prosperity of taxpayers is key to the effective provision of public goods as 42.65% of the population in Africa in 2012 live with a daily income below $1.9. Capital flight resulting in tax base erosion has been linked to the existence of high tax rate, infrastructural decay, low returns to investment (low growth rate), undervalued home currency, multiple taxes etc. According to the National Bureau of Statistics (2018), Nigeria's internally generated revenue for 2017 is around $2billion. This figure is extremely low to the $311 billion capital flight from Nigeria as stated in Ndikumana, Boyce, & Ndiaye, (2014). The dearth of literature existing on capital flight from developing countries and Africa are based on country group analysis and are non-empirical, for example Alonso (2018), Ndikumana, Boyce and Ndiaye (2014), Kumar, Akpokodje, and Sadeck (2015), Boyce and Ndikumana (2014), Massa (2014), Murinde, Odieng and Meng (2014), Fjeldstad, Jacobsen, Ringstad and Ngowi (2017), Ajayi (2014), Heggstad and Fjeldstad (2010), Alstadseter, Johannesen and Zucman (2017 & 2018), Nwenga (2016), and Kedir (2014).

Consensus deduced from previous studies is that country group analysis will conceal the heterogeneity of the magnitude of capital flight and the consequent impact on tax bases in individual countries and therefore incapacitate domestic policymakers from making policies that can suit their peculiarities. This paper, therefore, seeks to explore the determinants of capital flight, estimate its size and trend and assess its impact on tax bases in Nigeria. Following this introduction are the review of previous studies, theoretical considerations, methodology, analyses of empirical findings, conclusion and recommendations.

2. LITERATURE REVIEW

Accessible studies on the capital flight have attempted to give unambiguous elucidations on the concept of capital flight, factors fueling its existence, the growth and development deteriorating consequences as well as its implication for sustainable development goals, and the mechanism through which it affects domestic revenue mobilization in Africa in which Nigeria is a country. Hejstad and Fjeldstad (2010) reviewed existing literature on the role of banks in capital flight from Africa. The review revealed that banks are active facilitators in the movement of capital from Africa. Banks assist capital flight from Africa through the provision of regulatory vacuum, financial protection rules as well as locating low tax jurisdictions that will conceal information about acquisition and ownership of property (money or liquid assets) from national tax authorities. Banks hide information about wealthy customers and politically exposed persons due to the nature of the banking business which is profit oriented. The study reveals that large regulatory loopholes facilitate illicit financial flows. The study suggests the need to quantitatively find out the economic conditions necessary to prevent banks from assisting in capital flight and given the non-uniformity of these conditions across Africa countries, there is a need for individual country analysis.

Hermes and Lensink (2000) assessed the impact of policy uncertainty (measured by budget deficits, tax payments, government consumption and real interest rates) on capital flight from developing countries. The study found a significant positive impact on capital flight. The findings did not reveal the country-specific relationship between capital flight and tax. Also, Hermes, Lensink and Murinde (2002) estimated the magnitude of capital flight for four regions namely East Asia, South Asia, Sub-Saharan Africa and Latin America for the period 1983-98 based on the

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residual measure. The findings only reveal that East Asia has the highest estimates of capital flight followed by Latin America, South Asia and Sub-Saharan Africa.

In Fjeldstad et al (2017) the existence of tax havens or offshore financial centres makes it possible for rich elites and large multinational companies to drain large amounts of wealth out of Africa. The role of multinationals and rich individuals reveals the importance of assessing empirically the impact of factors that influence investment opportunities in Africa. However, the differentials in infrastructure strength, tax rates and incentives, home currency value against vehicle currency, and external debt structure make it necessary for country-specific analyses. The study spurs the need to enquire into the taxpaying behaviour of domestic taxpayers and the use of tax havens by the elites and multinational companies. Tax havens are described as legal jurisdictions that offer a combination of low tax rates, limited regulations and secrecy about the ownership of registered corporations and individually owned assets. According to the study, capital flight limits domestic resources that could be made available for poverty reduction programmes, projects and economic activities. This equally provokes with reference to the focus of this study, the need to ask and answer the question-by how much would tax base increase in Nigeria if capital kept abroad are returned?

Ajayi (2014) analyzed the implications of capital flight for economic growth and development in Africa. The study deduced that capital flight undermines domestic investment, and reduces the tax base, and thus brings about reduced public investment and social services. The analysis though not country-specific, is non-empirical and limited to theoretical and conceptual discourse. This study drew heavily from existing literature and reports from international bodies and research institutes. The study recognized the essence of individual country analysis. Kedir (2014) analyzed the tax implications of capital flight via tax havens. The study affirms that tax evasion compromises the integrity of tax reforms. From the study, capital flight is prominent among banks like the Swiss Bank, HSBC, the Barclays and multinational companies. The study found that when the government invest in basic services and infrastructure, respect property rights, treat their citizens with fairness, and fight corruption to increase taxpayers' propensity to pay taxes. According to the study, when the tax rate differs across countries and corporate income is highly taxed in the location where it is earned, multinational companies are motivated to shift their profits to low tax jurisdictions. This clearly supports the move for international tax cooperation or tax rates convergence which may be impossible given differentials in revenue targets of countries.

Nwenga (2016) discussed the consequences of illicit financial flows as contained in prior studies. The study refers to illicit financial flows (IFFs) as the cross-border movement of capital with an element of illegality in its creation or procurement, transfer and use. The study described IFFs as derivative of illicit capital flows. Analysis revealed that IFFs have four key negative spillovers. That is, the loss of jobs due to the acquisition of sterile assets like residential properties, base erosion and profit shifting, inflation of prices of capital in low tax jurisdictions, and reduction in the amount of public and private domestic savings which results in a reduction in capital formation.

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2.1 Theoretical Considerations.

Murinde et al (2014), demonstrates that capital flight depends on the behaviour of risk-averse agents who diversify their wealth in order to maximize returns. The study explained that capital flight is motivated by portfolio diversification and the difference between the risk-adjusted rate of returns of domestic and foreign asset holdings, inflation, high tax, political risks, macroeconomic uncertainty, exchange rate instability, long-term debt, aids and remittances. In the study, capital flight refers to funds outside the reach of tax officials in the country of residence of the owners. The study specified three models of capital flight. The first relates capital flight as a function of the change in external debt, net foreign investment inflows, current account deficit and change in foreign reserves. The second extends the first by including a change in domestic money. The third relates capital flight as the difference between total capital outflows and external assets. Total capital flows are a function of foreign borrowing in the balance of payment statistics, net errors and omissions, current account deficit, change in foreign reserves, and the difference between the change in the stock of external debt by the World Bank and foreign borrowing in the balance of payments statistics by the International Monetary Fund. External assets are a function of United States deposit rate (a proxy for foreign interest rate) and reported interest earnings.

From Hermes and Lensink (2000), these three models are evolutions from the residual method of measuring capital flight. This method estimates capital as the difference between changes in external debt plus changes in foreign investment inflow and the uses of these inflows which are reducing current account deficit and increasing reserves. The method makes use of the difference between World Bank debt data and the balance of payments statistics on debt to measure capital flight. It also takes into account the separation of normal from abnormal capital outflows. Morgan Guaranty (1986) as cited in Hermes and Lensink (2000), modified the residual measure by including a change in short-term foreign assets of the domestic banking system.

In Ndikumana, Boyce and Ndiaye (2014) the residual measure of capital flight is the difference between the change in the stock of external debt outstanding adjusted for exchange rate fluctuations plus net foreign direct investment and current account deficit plus net additions to the stock of foreign reserves. Of great relevance to this study is the capital flight model which depends on previous capital flight (to identify auto-regression), annual borrowing (change in external debt) previous external debt stock, GDP growth, inflation, interest rate differentials (difference between domestic and foreign interest rates), natural resource endowment (fuel exports/total exports), polity index and capital account openness.

3. METHODOLOGY

The intent of this study is to estimate the magnitude of capital flight using the residual method by Hermes and Lensink (2000), examine its determinants using Ndikumana, Boyce and Ndiaye (2014) capital flight model and assess its (Capital Flight) impact on tax base (consumption, real per capita income, export and import in Nigeria) using the vector autoregressive (VAR) model to stent the impact of capital flight on the selected tax bases, that is consumption, real GDP per capita, export, and import. The VAR is used due to the presence of the lagged value of capital flight and the term vector is due to the fact that we are dealing with a vector of two or more

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variables. Annual time series data are retrieved from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Bank database. The period under investigation extends from 1981 to 2017. The residual measure of capital flight as contained in Ndikumana, Boyce and Ndiaye (2014) entails:

$KF_t = \Delta DEBTADT_t + NIFDI_t - CA_t - \Delta RES_t$

Where: KF is capital flight, ΔDEBTADT is changing in the stock of external debt outstanding adjusted for exchange rate fluctuation, NIFDI is net foreign direct investment inflow, CA is current account deficit and ΔRES is changed in foreign reserves.

3.1 The Capital Flight Model

The model is estimated using the error correction mechanism (ECM). The pre-estimation techniques used are the Augmented Dickey-Fuller (ADF) and the Phillips-Peron unit roots tests, Engle and Granger co-integration test, and or the Johansen co-integration test. ECM establishes the linear relationship present between the dependent variables and the respective independent variables of the four functions specified above. It also shows whether the independent variables jointly and individually have statistical significance on the dependent variables. The ADF unit root test ensures that time series data are stationary and free from a unit root which tends to make results misleading. Engle and Granger's error correcting level stationary test and Johansen co-integration test confirms the existence of a long-run relationship among the variables and it is a pre-condition for ECM and regressing variables stationary at a level on ones at first difference and vice versa. The ECM model estimated is composed of nine variables, namely: Capital flight (KF), annual borrowing (CED) Exchange rate (EXR), Inflation rate (INFR), previous year Stock of External Debt (SED), GDP growth (GDPGR), interest rate differentials (INTRD), capital account openness (KAO), and Natural Resource Endowment (NRE).

The model in functional form is as follows:

$KF_t = f(CED, EXR, INFR, SED, GDPGR, INTRD, KAO, NRE)$

3.2 The Impact Assessment Model

The vector auto-regressive model for assessing the impact of capital flight (KF) on tax bases, that is, consumption (CON), real income per capita (RIPC), gross capital formation (GCF), import (M) and export (X) is specified in the functional form below:

$CON = f(KF, RIPC, GCF, M, X)$
$RIPC = f(KF, CON, GCF, M, X)$
$GCF = f(KF, CON, RIPC, M, X)$
$M = f(KF, CON, RIPC, GCF, X)$
$X = f(KF, CON, RIPC, GCF, M)$

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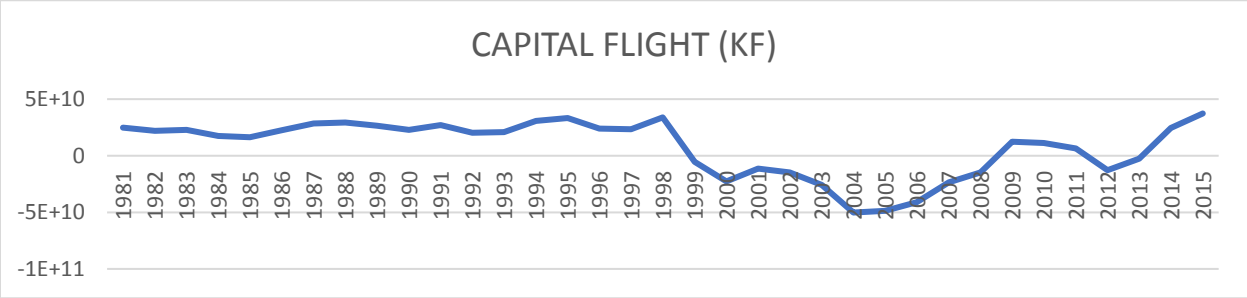
4. FINDINGS AND DISCUSSION

4.1 Magnitude and Trends of Capital Flight from Nigeria (1981-2015)



Source: Author's Computation using World Bank and Central Bank of Nigeria statistics

The above chart shows the magnitude and trends of capital flight from Nigeria from 1981 to 2015. Between 1981 and 1998, capital flight maintained a positive trend and grew yearly at an average rate of 4.3%. This can be traced to rising foreign direct investment in oil extraction, reserves accretion, incessant borrowing leading to odious debt (debt gotten for the public but not used for what will benefit the public) or fungibility (diversion of public fund to the purchase of foreign currency denominated assets. Between 1999 and mid-2008, capital flight declined yearly by $25 billion approximately. This may be that the global financial crisis seriously cautioned holders of offshore wealth. Recently from 2012 to 2015, capital flight has been on the rise annually by $11.5 billion. This can be traced to the slump in global oil price (between mid-2014 and early 2015) which has reduced corporate oil profits, tightened external financing conditions and reduced petroleum profit tax.

4.2 Stationary Tests

Table 1 Augmented Dickey-Fuller Unit Roots Test

Variable	Level Test Statistics	Critical Value @5%	P. Value	1st Difference Test Statistics	Critical Value @5%	P. Value	Integration Rank
CED	-1.381173	-2.951125	0.5798	-5.827905	-2.954021	0.0000*	I(1)
EXR	0.328524	-2.951125	0.9765	-5.219976	-2.954021	0.0002	I(1)
GDPGR	-4.810951	-2.951125	0.0004*	-	-	-	I(0)
INFR	-2.740663	-2.951125	0.0778	-5.349658	-2.954021	0.0001*	I(1)
INTRD	-2.057676	-2.951125	0.2622	-6.027686	-2.957110	0.0000*	I(1)
KAO	-3.055628	-2.951125	0.0398*	-	-		I(0)
KF	-1.389245	-1.951000	0.1502	-5.782376	-1.951332	0.0000*	I(1)
NRE	-1.058009	-1.951000	0.2561	-4.906088	-1.951332	0.0000*	I(1)
SED	-1.534042	-1.951000	0.1156	-5.067499	-2.954021	0.0002*	I(1)

**indicates p-value < 0.05 and Test Statistics>Critical Value; thus, variable is stationary*

Source: Authors' analysis (2019)

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As shown in Table 1, only gross domestic product growth rate (GDPGR) and capital account openness (KAO) are stationary at level while annual borrowing (CED), inflation rate (INFR), interest rate differentials (INTRD), exchange rate (EXR), capital flight (KF), natural resource endowment (NRE) and stock of external debt (SED) are stationary at first difference.

Table 2 Phillips-Peron Unit Roots Test

Variable	Level Test Statistics	Critical Value @5%	Prob. Value	1st Difference Test Statistics	Critical Value @5%	Prob. Value	Integration Rank
CED	-1.438121	-2.951125	0.5521	-5.835361	-2.954021	0.0000*	I(1)
EXR	0.336615	-2.951125	0.9769	-5.217650	-2.954021	0.0002*	
GDPGR	-4.805108	-2.951125	0.0004*	-	-	-	I(0)
INFR	-2.613890	-2.951125	0.1001	-8.583237	-2.954021	0.0000*	I(1)
INTRD	-1.915494	-2.951125	0.3215	-9.722413	-2.954021	0.0000*	I(1)
KAO	-2.829976	-1.951000	0.0060*	-	-	-	I(0)
KF	-1.317541	-1.951000	0.1699	-5.833651	-1.951332	0.0000*	I(1)
NRE	-1.058009	-1.951000	0.2561	-4.862677	-1.951332	0.0000*	I(1)
SED	-1.534042	-1.951000	0.1156	-5.119225	-1.951332	0.0000*	I(1)

**indicates p-value < 0.05 and Test Statistics>Critical Value; thus, variable is stationary*

Source: Authors' Computation (2019)

Table 2 above confirms the ADF test's results that, only gross domestic product growth rate (GDPGR) and capital account openness (KAO) are stationary at level while annual borrowing (CED), inflation rate (INFR), interest rate differentials (INTRD), exchange rate (EXR), capital flight (KF), natural resource endowment (NRE) and stock of external debt (SED) are stationary at first difference. Also, tables 1 and 2 show that variables with I(1) are integrated of order one and are homogenous series while variables with I(0) are integrated of order zero (i.e no unit roots).

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4.3 Co-integration and Error Correction Results

4.3.1 Capital Flight Model:

Table 3: Co-integration Result for the Capital Flight Model

Trace Test				Maximum Eigenvalue Test		
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value
r=0	0.919125	310.0628	197.3709*	0.919125	82.98994**	58.43354
r=1	0.834510	227.0728	159.5297*	0.834510	59.36197**	52.36261
r=2	0.765426	167.7109	125.6154*	0.765426	47.84950**	46.23142
r=3	0.711650	119.8614	95.75366*	0.711650	41.03813**	40.07757
r=4	0.625587	78.82323	69.81889*	0.625587	32.41910	33.87687
r=5	0.509268	46.40413	47.85613	0.509268	23.49128	27.58434
r=6	0.376117	22.91285	29.79707	0.376117	15.56916	21.13162
r=7	0.192570	7.343688	15.49471	0.192570	7.058660	14.26460
r=8	0.008600	0.285028	3.841466	0.008600	0.285028	3.841466

*indicates 7 cointegrating equations for Trace test and **indicates 3 cointegrating equations for Max-Eigenvalue test at 0.05 level

Source: Authors' Computation (2019)

From table 3 above, the trace test shows 5 co-integrating equations while the Max-Eigen value test shows 4 co-integrating equations. At **r** equals 0, 1, 2 and 3 both tests show that all the variables co-integrate at 5% level of significance indicating evidence of a long-run relationship.

Table 4: Normalized Cointegrating Coefficients (standard error in parentheses)

KF	CED	EXR	GDPGR	INTRD	KAO	NRE	SED
1.000000	-0.976575	0.000555	0.000734	-0.015205	1.106228	0.205172	-0.137906
	(0.01566)	(0.00013)	(0.00076)	(0.00190)	(0.07263)	(0.05947)	(0.01695)

Source: Authors' Computation (2019)

The decision rule behind the use of the normalized co-integrating coefficients is that the calculated T-statistics must be greater than or equals to two (2). The T-statistics is calculated by dividing the coefficients by the corresponding standard errors. Performing this operation, the T-statistics for CED, EXR, GDPGR, INTRD, KAO, NRE and SED give 62.36, 4.27, 0.97, 8.003,

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15.23, 3.45 and 8.14. From the T-statistics calculated, it shows that annual borrowing, exchange rate, interest rate differentials, capital account openness, natural resource endowment and stock of external debt are key long-run determinants of capital flight from Nigeria except for economic growth. The signs of the coefficients show that annual borrowing, interest rate differentials, and stock of external debt are positive long-run significant determinants of capital flight while exchange rate, economic growth, capital account openness, and natural resource endowment are negative long-run significant determinants of capital flight in Nigeria.

Table 5: ECM Result for Capital Flight model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001619	0.006783	-0.238710	0.8134
D(CED)	0.912080	0.031364	29.08075	0.0000
D(EXR)	0.000153	0.000650	0.234769	0.8164
D(GDPGR)	-0.000628	0.000716	-0.878168	0.3886
D(INFR)	0.001415	0.000415	3.408376	0.0023
D(INTRD)	-0.009248	0.003298	-2.803916	0.0098
D(KAO)	-1.080151	0.091794	-11.76716	0.0000
D(NRE)	-0.370865	0.095201	-3.895614	0.0007
D(SED)	0.125436	0.044285	2.832441	0.0092
ECT(-1)	-1.302885	0.190133	-6.852483	0.0000
R-squared(R2)	*0.992786*	*f-Statistic*		*366.9896*
		Prob(f-Statistic)		*0.000000*
Adjusted R-squared	*0.990081*	*Durbin-Watson stat*		*1.800380*

*indicates variables that are statistically significant from standard error tests.
Source: Authors' Computation (2019)

The ECM result in table 5, shows that annual borrowing, inflation rate, interest rate differentials, capital account openness, natural resource endowment, the stock of external debt and the error correction term are the statistically and individually significant determinants of capital flight from Nigeria in the short run. The R^2 (0.992786) shows evidence of good fit for the capital flight (KF) model since it is greater than 0.5 or 50%. It indicates that approximately 99% of variability in KF is explained by annual borrowing (CED), exchange rate (EXR), economic growth (GDPGR), inflation rate (INFR), interest rate differentials (INTRD), capital account openness (KAO), natural resource endowment (NRE), and stock of external debt (SED). The good fit also implies that the model is well specified by Ndikumana, Boyce and Ndiaye (2014).

The coefficient of the explanatory variables shows that annual borrowing, exchange rate, inflation rate, and stock of external debt are positively related to capital flight, while economic growth, interest rate differentials, capital account openness, and natural resource endowment are negatively related to capital flight. That is, a one percent rise in annual borrowing, exchange rate, inflation rate, and stock of external debt will bring about 0.912%, 0.000153%, 0.0014%, and 0.125% increases in capital flight while a one per cent rise in economic growth, interest rate differentials, capital account openness, and natural resource endowment will bring about

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(0.000628)%, (0.009248)%, (1.080151)%, and (0.370865)% decreases in capital flight in the short run.

This implies that exchange rate depreciation, more borrowing, external debt accumulation, rise in prices of domestic assets, fall in interest rate differentials, minimal capital control measures, and low oil revenue (leads to loss of confidence in oil extraction business) will stimulate wealthy individuals, multinationals, and other business owners to stash or keep money abroad. These factors suggestively will reduce corporate profits and make tax incidence serious felt. These findings lend support to Boyce and Ndikumana (2014) that investment incentives are important to suppress the drive for capital flight. Also, if domestic assets yield lower than foreign assets (low-interest rate differentials), banks will be encouraged to assist in capital flight (Hejjstad &Fjeldstad, 2010). The results also confirm Murinde, Ochieng and Meng (2014) that capital flight is motivated by a difference in the rate of returns of domestic and foreign asset holdings, inflation which could result from high tax, exchange rate instability, long-term debt (which includes external debt stock). They also found that capital flight negatively relates to growth in Nigeria, South Africa, Egypt and Algeria

The coefficient of the ECT(-1) though explosive, shows that about 130% rate of abnormality in KF in Nigeria in the previous year is corrected by the current year. The Durbin-Watson Stat 1.800380 is greater than the R2 0.99 and less than 2. This shows evidence of no spurious regression result and the absence of serial correlation respectively. The probability value of the F-statistics 0.000000 is less than 0.05. This implies that the predictor variables have joint statistical significance in explaining changes in the criterion variable KF.

4.4 Results from the Estimated Impact Assessment Model

Table 6: Impulse Response Analyses

Period	Response of KF to KF	Response of CONS to KF	Response of GCF to KF	Response of RPCI to KF	Response of M to KF	Response of X to KF
1	1.08E+10	5.90E+08	1.51E+08	-8.20E+08	-37.36275	-4.21E+09
2	8.52E+09	-2.62E+09	6.17E+08	-2.53E+09	-39.26720	-5.99E+09
3	5.36E+09	-6.30E+09	-53630532	-4.34E+09	-59.43476	-7.06E+09
4	2.37E+09	-1.03E+10	-1.33E+09	-5.95E+09	-91.27975	-7.69E+09
5	-1.55E+08	-1.45E+10	-2.77E+09	-7.17E+09	-126.1554	-7.95E+09
6	-2.20E+09	-1.84E+10	-4.11E+09	-7.94E+09	-157.3945	-7.80E+09
7	-3.81E+09	-2.19E+10	-5.19E+09	-8.21E+09	-180.8624	-7.21E+09
8	-4.95E+09	-2.45E+10	-5.96E+09	-7.97E+09	-194.2684	-6.16E+09
9	-5.55E+09	-2.60E+10	-6.37E+09	-7.20E+09	-196.4333	-4.66E+09
10	-5.52E+09	-2.64E+10	-6.38E+09	-5.94E+09	-186.8954	-2.80E+09

Source: Authors' Computation (2019)

At the initial, second, third and fourth periods, a positive from capital flight to itself will lead capital flight to go up by the shocking amount. This implies that previous capital flight encourages future capital flight. This finding is supported by Murinde, Ochieng and Meng (2014)

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that past capital flight increases capital flight but in the case of Nigeria, it will only last for four years. Consumption responds negatively to capital flight in periods 2 through to 10. Real per capita income has the highest response negatively to capital flight shocks from periods 1 to 10. Exports and imports respond negatively from periods 1 to 10, and gross capital formation responds negatively to capital flight shocks from periods 3 to 10. This shows that capital flight limits capacity to mobilize additional revenue through value-added tax, personal income tax, exports and imports duties and frustrates domestic capacity to create capital. This finding lends its support to Nwenga (2016) that illicit capital outflows directly cause a reduction in revenue, reduction in private domestic investment and consequently loss of jobs cum inflation of prices of capital. Also in Ajayi (2014), it was revealed that capital flight erodes tax base and frustrates domestic resource mobilization.

Table 7: Variance Decomposition (VD) Analyses

Period	VD of KF to KF	VD of CONS to KF	VD of GCF to KF	VD of RPCI to KF	VD of M to KF	VD of X to KF
1	100.0000	0.040279	0.036441	2.374399	0.797423	15.29392
2	78.27987	0.399901	0.345124	2.372910	3.391694	19.56764
3	56.12854	1.590915	0.228512	3.210204	7.096282	22.28793
4	41.96603	3.515747	0.866481	5.053216	11.13443	24.15257
5	33.57935	5.958581	2.890208	7.717171	14.88779	25.47587
6	28.67764	8.664036	5.964002	10.76740	18.00758	26.29050
7	25.89523	11.39182	9.421920	13.75637	20.33652	26.50491
8	24.28951	13.94441	12.71124	16.35754	21.80879	26.03319
9	23.06122	16.17303	15.48721	18.37611	22.40336	24.88684
10	21.56481	17.97276	17.55724	19.71227	22.15296	23.22917

Source: Authors' Computation (2019)

The variance decomposition shows that impact of shocks from capital flight to itself declines continually from period one to the tenth period. Capital flight will increase initially by 100% before it declines till the tenth period by 21%. This means that the impact of previous capital flight on future capital flight faces a downward trend in Nigeria. For consumption in the first period, 0.04% of the variance in the forecast error of consumption explained by a unit shock from capital flight. In period six, the impact of shocks from capital flight increase to 8.6% and further to 17.9% in period 10. This means that the impact of capital flight on consumption has an upward trend. Thus, increases in capital flight will cause consumption to gyrate. Though with varying levels of impact, the same trend as is from capital flight shocks to consumption so is from capital flight to the gross capital formation, import, real per capita income, except export which declined

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from period 7 to 10 by an average of 1.1% (could be considered insignificant). This suggests that the capital flight phenomenon is a serious menace to the achievement of sustainable development goals in Nigeria as it will hinder future capacity to invest domestically, mobilize additional revenue through duties (import and export), personal income tax and value-added tax, and narrow infrastructural gap. In short, its impact with narrow tax base in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

This study has surveyed the theoretical and empirical literature on capital flight, estimated the magnitude from 1981 to 2015, analyzed the trends from 1981 to 2015, examined the long and short run determinants and assessed the impact on tax bases like consumption, real per capita income, gross capital formation, import and export. The findings from the study showed that annual borrowing, inflation rate, interest rate differentials, capital account openness, natural resource endowment and stock of external debt are the significant determinants of capital flight from Nigeria in the short run. Annual borrowing, exchange rate, inflation rate, and stock of external debt are positive drivers of capital flight, while economic growth, interest rate differentials, capital account openness, and natural resource endowment are negative drivers of capital flight from Nigeria. Past capital flight increases future capital flight which terminates in the fourth year in the case of Nigeria. Consumption responds negatively to capital flight in periods 2 through to 10. Real per capita income has the highest response negatively to capital flight shocks from periods 1 to 10. Exports and imports respond negatively from periods 1 to 10, and gross capital formation responds negatively to capital flight shocks from periods 3 to 10. In conclusion, capital flight limits Nigeria's capacity to mobilize additional revenue through value-added tax, personal income tax, exports and imports duties and frustrates domestic capacity to create capital. Therefore, capital flight is deterrent to tax base broadening, domestic revenue mobilization goals towards sustainable growth and development in Nigeria and transparency in international business and finance.

This study, therefore, recommends that Nigeria should adopt the strategies for stemming capital flight as put forward by Boyce and Ndikumana (2014). These options include automatic sharing of information to prevent secrecy banking, automatic sharing of invoice data between the customs authorities, use of fixed margins to calculate alternative prices (transfer mispricing), global formulary apportionment, country by country reporting, limiting the amount of interest payment deductible due to thin capitalization of using less of equity and more of debt.

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