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Illicit financial flow, capital flight and nigeria's economic growth performance

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Abstract
This study investigates the effect of capital flight on economic growth in Nigeria over the period of 1980-2021. Relying on the autoregressive distributed lag (ARDL) regression estimation framework, the result reveals an overall negative and statitically significant effect of capital flight on economic growth. The short-run ARDL estimates revealed that capital flight exerted a positive but insignificant short-run effect on economic growth. The error correction term (-0.788) indicates that 78.8% of the instability in the model is corrected annually. Given the findings, the study recommended that there is need to propel domestic investment via promotion of domestic enterprises. Of utmost significance is the establishment of supporting business environment.

Keywords: ARDL, economic growth, insignificant

Introduction

Capital flight has been a recurring occurrence in Nigeria, and it was projected to be occurring even before the introduction of the structural adjustment program in 1986. The deteriorating economic performance in Nigeria since the early 1980's has been accompanied in many instances by substantial amount of capital flight featuring lower export earnings, reduced income growth and mounting unpaid external debt obligation (Bello,1994). The scale of capital flight in developing nations, including Nigeria, has taken on a serious dimension, posing a significant danger to long-term prosperity, particularly in Africa. According to Boyce and Ndikumana (2001), many impoverished nations lose more resources due to capital flight than debt payments. Capital flight is more severe in Nigeria than in other Sub-Saharan African nations.

Nigeria's sustainable development may not be realized if sufficient resources are not mobilized and held domestically. These funds are required to fund the provision of critical services such as health care, infrastructure, and education, as well as the investments required to fulfil the Sustainable Development Goals (SDGs). Capital flight inhibits sustainable development by increasing reliance on foreign resources to fill the void created by domestic capital flight. Furthermore, if resources remain in the country, they might be invested with the intention of inspiring economic growth cum development. As a result, Nigeria's economy requires immediate governmental action to reverse the capital flight trend.

The problems associated with the menace of Nigeria's capital flight are multi-fold. First

Capital flight, whether regulated or unregulated has a damaging effect on any economy. It is one of the paradoxical challenges facing debt ridden developing countries like Nigeria. These economies are constantly canvassing for the operation and flow of foreign direct investment as well as engaging in external borrowing in order to augment domestic saving-investment gap. In spite of this, they are bedeviled with the prevalence of capital flight. Second, Capital flight is regarded as dissaving which shrinks the stock of financial resources obtainable for useful domestic investment and spending, in so doing weaken the capacity for the growth and development of the domestic economy (Olatunji and Oloye, 2015) [33]. Third, evidence abounds that a critical barrier to African economic progress is a lack of investment capital, which has hampered the government's delivery of fundamental social services (Almounsor, 2017). Furthermore, the persistently low rate of investment in Nigeria, compounded by the prevalence of capital flight in the country, has a knock-on effect on other aspects of the economy, such as rising unemployment, flow into poverty, poor education standards, fiscal deficit, inadequate infrastructure, and deterioration in resource allocation (Almounsor, 2017).

Fourth, past effort of the Nigerian governments to curb capital flight and illegal financial flows has yielded limited result. These included the formation of the *Economic and Financial Crime Commission* by the Obasanjo administration. This effort was to detect and prosecute financial crime offenders and help ensure sanity in financial related issues. A single window trade platform was introduced in every entry ports in the country alongside ensuring a mandatory data capturing process for companies during registration. Furthermore, a links was established between the Corporate Affair Commission and the *Federal Inland Revenue Service (FIRS)* database in order to gain a proper monitory channel. Other efforts include the implementation of the Voluntary Assets and Income Declaration Scheme (VAIDS), an amnesty scheme for self-repented offenders involved in tax-related crimes; the Bank Verification Number (BVN) scheme; and the passage of legislation granting the National Financial Intelligence Unit independence and liberty in the fight against money laundering and related crimes.

Fifth, internation effort to reduce illegal financial flow has produce some result but not without gaps. These included the *Financial Action Task Force (FATF)*, whose role is to set standards that guide international actions aimed at eliminating money laundering and financing terrorism; and the *Global Forum on Transparency and Exchange of Information for Tax Purposes*, whose role is to establish elucidated requirements for circulating tax information. Another example is the *Extractive Industry Transparent*

Initiative (EITI), which was established to ensure and improve responsible and open management of natural resources, as well as other later World Bank initiatives in numerous capital flight-related fields (IMF, 2018). It is against the backdrop of the limited result of past effort to curb capital flight and reverse its negative consequence of economic growth and development that the current study become imperative and compelling.

The broad objective of the study is to investigate the effect of capital flight on economic growth in Nigeria. More specifically, the study seeks to: (i) examine the effect of capital flight on economic growth in Nigeria; (ii) determine the nature of the causal relationship between capital flight and economic growth in Nigeria.

Literature

1. Conceptual framework on Capital Flight

Despite the fact that capital flight's actions have been documented since the seventeenth century, there is no universally recognized definition of it. There are several definitions of capital flight, therefore calculating it will produce a variety of results. As was already indicated, the phrase "capital flight" has been used equally across industrialized and developing nations, leading to a debate about its lack of a generally agreed meaning. Therefore, some schools of thought see capital outflows from wealthy nations as foreign direct investment while referring to the same action when it is conducted by citizens of a developing country as capital flight (Ajayi, 1995) [7]. It must be made clear, nonetheless, that the purpose for which an inflow or outflow has been put determines the difference.

The foundation of the aforementioned dichotomy is that investors from industrialized nations are responding to greater possibilities overseas, while investors from developing nations are said to be fleeing perceived high-risk situations, such as expropriation, which is a feature of several emerging nations. However, it is generally accepted that all investors, whether from industrialized or developing nations, are rational and will base their choices on the relative risks and rewards of domestic and international investments.

2. Capital. Flight Theories

Four main theories have been identified in the area of capital flight (Njimanted, 2008) [30]. These include; (1) The investment diversion theory (2) Debt-driven capital flight theory also called debt – overhang theory (3) Tax – depressing theory and (4) Austerity generating theory.

2.1 The Investment Diversion Theory

This theory contends that because of the macroeconomic and political unpredictability in developing nations and the parallel existence of better investment opportunities in developed nations, such as high foreign interest rates, a wide range of financial instruments, political and economic stability, a favorable tax environment, and account secrecy, some dishonest corrupt leaders and bureaucrats typically divert scarce resources away from their nations and toward developed nations. Due to the lack of access to these funds for domestic investment, total investment has decreased, economic development has been slow, and as a result, employment has decreased, the dependence ratio has increased, and the death rate has increased. These unfavorable macroeconomic repercussions on these nations may drive the need to borrow money from abroad in order to revive the home economy, which occasionally leads to additional siphoning and perpetuates external reliance and debt. If the authorities are using a floating exchange rate system, the liquidity restriction might cause the local currency to decline in value (Ajayi, 2000) [6]. International reserves are lost when the exchange rate is defended at this time. One of the well-known negative effects of capital flight in the participating nations is provided by the investment diversion theory. However, on its own, it can only partially explain how capital flight affects the economy.

2.2 The Debt Driven Theory

According to this theory, capital flight diminishes the motivation to save and invest. The premise here is that with significant foreign debt, there are expectations of currency rate depreciation, fiscal crises, and the proclivity of crowding out local capital and asset expropriation to pay for the loan. The debt overhang hypothesis and the investment driven theory, considered combined, propose a mutually reinforcing relationship between capital flight, growth, and foreign debt. Capital flight causes low growth, necessitating the need to borrow in order to stimulate growth. More borrowing or indebtedness encourages capital flight, which leads to bad economic growth (Collier *et al*., 2001)

2.3 The Tax- Depressing Theory

On the word of this theory, capital flight results in potential revenue loss since assets stored overseas are not under the authority of the government where they are located and cannot, therefore, be taxed. High expected tax rates might reduce net expected returns to domestic investment and the volatility of the tax rates might raise investment risk, thereby leading to lower risk-adjusted returns to domestic investment (Ndikumana and Boyce, 2002). The challenge of using political and economic engineering to support growth and development was made more difficult by the decline in government funding. As a result, the government's ability to service its debt is reduced. The debt load thus rises, which inhibits economic development and progress.

The Austerity Theory

In line with this argument, capital flight has left the poor in a condition of extreme debt. They suffer more as a result of the illegitimate exportation of resources that could be utilized for life-saving and life-sustaining expenditure on basic healthcare and other necessary services (Kapoor, 2007). Poverty causes international reliance and inequality, widens the gap between rich and poor countries, and lowers emerging nations to a condition of relative deprivation. Additionally, the tax that the poor may be required to pay is low, which limits the government's capacity to raise sufficient funds to support growth and development while also eradicating poverty. The result is an upward spiral of external debt, capital flight, subpar growth, and external debt.

Empirical Review

Considering the issue of capital flight in Cameroon, Ghana and China, Njimanted (2008) [30] adopted the two stage least square technique and co-integration error correction mechanism to analyze capital flight measurement, its determinant and impact on economic growth in Cameroon

with time series data from the period of 1970 to 2005. The result of the findings posited that political instability, inflation, interest rate, external debt, fiscal deficit are the main factors determining capital flight.

Adedayo and Ayodele (2016), analysed the impact of capital flight on Nigeria economy. The research work made use of secondary data that covers the sample period between 1980 and 2014. An OLS, Augmented Dickey-Fuller unit root test and Co-integration test were adopted as the estimation technique for the study. The results revealed that the variables have a significant effect in the positive direction. This suggests that if capital flight grows, the nation's exchange rate would also increase, which will have a beneficial impact on the Nigerian economy over the time under consideration. According to the report, the government should foster an atmosphere that would stimulate foreign investment in Nigeria and discourage outflows of money by creating outlets for it.

Lawal, Kazi, Adeoti, Osuma, Akinmulegun, and Ilo (2017) [23] used the Autoregressive Distributed Lag (ARDL) model to evaluate data sources from the years 1981 to 2015 to assess the effects of capital flight and its causes on the Nigerian economy. The factors included the real gross domestic product, capital flight, inflation rate, foreign direct investments, foreign reserves, and current account balance. The outcome suggests that capital flight has a detrimental effect on Nigeria's economic growth.

In Ghana, Richmond, Camara, and Williams (2017) [43] deployed the ARDL techniques to carry out a study on the short run and long run determinants of capital flight in Ghana. The study showed a negative but significant relationship between capital flight and Ghana's real GDP growth whereas capital flight and lagged external debt is positively related. The study suggested that pro-growth policies and domestic borrowing should be encouraged.

Gunter (2017) [19, 20] examined capital flight, corruption, and it relationship with economic growth of nexus in China. The study adopted residual method and Cuddington balance of payment method as a measure of capital flight, adjusting assets of banking industry in china and miss-invoicing china's trade balance. The result of the findings suggested that capital control and capital flight have no long term relationship. The study also considers corruption, migration and cost transaction as the major determinants of capital flight.

Orimolade and Olusola (2018) [37], investigated empirically the impact of capital flight on the growth of Nigerian economy. To achieve this task a model of GDP was specified explaining capital flight from Nigeria in line with the World Bank residual approach to the measurement of capital flight. The Autoregressive Distributed Lag approach was used to analyse both short and long run relationship between variables. Their findings reveal that there is a Long run negative relationship between GDP and all the capital flight variables in this study. The study therefore recommends a favourable economic policy to take care of inflation, poor and inadequate infrastructural facilities, high rate of taxation, and poor treatment of domestic capital, among others so as to discourage capital flight from Nigerian economy.

Bredino, Fiderikumo, and Adesuji, (2018) [11], examined the impact of capital flight on economic growth in Nigeria. The study employed time series data covering the period 1980 – 2012. The data collected was analysed using Ordinary Least Square (OLS) and co-integration/error correction methods. Results from the analysis showed that capital flight have adverse impact on the GDP, while exchange rate impacts positively on the GDP. Based on the findings, the study recommended that the government should setup appropriate institutions to check the volume of capital that is been flown out of the country.

The impact of capital flight on economic growth in Nigeria from 1990 to 2017 was examined by Uzoma and Godday (2019) [50]. These study periods' time series data were used, and cointegration analysis was used to analyze the data for both the short run and the long run. The OLS econometrics approach of data analysis was employed by the researchers. The OLS findings showed a significant correlation between the proxies for capital flight and the GDP as a measure of economic growth. The report suggested that in order to stop its detrimental impacts on economic growth, policy-makers and the relevant authorities should give the issue of capital flight and foreign debt servicing more than ever attention.

Okonkwo, Ojima, and Manasseh (2020) [32] investigated how capital flight affected Nigeria's economic expansion from 1981 to 2017. The study included time series data on capital flight, foreign reserves, external debts, and real gross domestic product. The data were analyzed using the Ordinary Least Squares estimation approach. The error correction technique and the Johansen co-integration were used. Capital flight has a detrimental effect on Nigeria's economic growth, according to evidence from the study's findings that there is co-integration among the study's variables. Based on these conclusions, the report advised that the government create an environment that facilitates investment to promote investments and prevent capital flight from Nigeria.

Tchoffo and Nembot (2020) [48] made a comparative analysis of the effects of capital flight on economic growth in ECCAS, ECOWAS and SADC countries over the 1984-2015 period. The empirical results from the pooled mean groups (PMG) regression shows that the effect of capital flight on economic growth is negative and significant in SADC, while it is either negative or positive in ECOWAS and ECCAS when considering the interaction between capital flight and private investment or not.

The effect of capital flight on the expansion of Nigeria's economy was examined by Amadi, Ihemeje, Hanson, Obioma, and Ogbonna in 2021. ADF unit root test, ARDL model, Cointegration and Bounds (long-run) tests, and Granger Causality tests were added to the study's OLS regression approach, which was used for analysis. The study's conclusions revealed a negative and statistically significant relationship between capital flight and the economy, a negative and statistically significant relationship between foreign direct investment and economic growth, and a positive and statistically significant relationship between external borrowing and the economy. Finally, there was a positive but insignificant association between Nigeria's current account balances and foreign reserves and economic development. It was advised to create and maintain a stable political and economic climate in light of the findings.

Evaluation and Summary of Past Literature Reviewed

Most of the studies reviewed focused on different countries, time period and also have used different proxy variables for capital flight. However, various literature reviewed did not

explain critically the effect of capital flight on economic growth. Different case studies and different methodologies tend to produce different results. Also, most capital flight studies are cross-country evidence while impact of capital flight on economic growth may be country – specific. The studies based on cross country suffer from potential biases induced by simultaneity, omitted variables and unobserved country specific effect on capital flight and economic growth.

Most of the previous studies, did not take into account the possibility of non- stationarity in the variable used before proceeding with the econometric estimation. (see Ajayi, 1992, Anumudu, 1999). Hence to avoid spurious regression, this study will take into account the possibility of non-stationarity in the variables by carrying out extensive unit root test using Augmented Dickey Fuller (ADF) before proceeding with econometric estimation.

This study makeS value-addition to past studies in this area by analyzing the impact of capital flight on economic growth for the period under review using the Autoregressive Distributed Lag Model (ARDL) and bound test co-integration approach to investigate the existence and nature of any potential long-run relationship among the variables. Other similar studies that have undertaken empirical analysis of the effect of capital flight on economic growth in Nigeria include: Orji, Ogbuabor, Kama, Anthony-Orji, 2020 [35]; Emmanuel, Dauda, and Baajon, 2018; and Olawale and Ifedayo, 2015 [31]; Lawal, Kazi, Adeoti, Osuma, Akinmulegun, and Ilo, 2017 [23], among other. Thus, this study attempts to extend the frontier of research in this area for Nigeria by not only extending the time (scope) dimension of earlier studies using more recent data but by also deploying a robust methodological framework, namely the ARDL bound testing approach in its empirical isometrics.

Methodology and Data

Research Design

The empirical isometric of this study starts with specification of the mathematical form of the relationships amongst the variables, as follows:

$$GDPGR = f(GFCF, EMP, KF, EXCH, INF) \quad (1)$$

Where; GDPG is real GDP growth rate, GFCF is gross fixed capital formation (% GDP) as a proxy for investment/capital, EMP is total employment as a proxy for labour, KF is capital flight (% GDP), EXR is nominal exchange rate of Naira to dollar, INF is inflation rate.

Thus, we express Equation 3.1 in its mathematical form in Equation 3.2 then in econometric form by introducing an error term ε_t , and then take the natural log to linearize to Equation 3.3 such that:

$$GDPGR_t = \beta_0 + \beta_1 GFCF_t + \beta_2 EMP_t + \beta_3 KF_t + \beta_4 InEXCH_t + \beta_5 INF_t \quad (2)$$

$$GDPGR_t = \beta_0 + \beta_1 GFCF_t + \beta_2 EMP_t + \beta_3 KF_t + \beta_4 InEXCH_t + \beta_5 INF_t + \varepsilon_t \quad (3)$$

Therefore, the generalized form of the ARDL model for the objective is specified as Equation 3.4:

$$GDPGR_t = \alpha_0 + \sum_{i=1}^{n} \beta_i GDPGR_{t-i} + \sum_{i=0}^{n} \partial_i GFCF_{t-i} + \sum_{i=0}^{n} \vartheta_i EMP_{t-i} + \sum_{i=0}^{n} \delta_i KF_{t-i} + \sum_{i=0}^{n} \varphi_i EXCH_{t-i} + \sum_{i=0}^{n} \delta_i INF_{t-i} + \varepsilon_t \quad (4)$$

Where α_0 is the constant and $\beta_i, \partial_i, \vartheta_i, \delta_i, \varphi_i, \delta_i$, are the parameters to be estimated and ε_t is the white noise error term.

To perform the bounds test for co-integration, the conditional ARDL model is specified as Equation 5

$$\Delta GDPGR_t = \alpha_0 + \sum_{i=1}^{n} \beta_i \Delta GDPGR_{t-i} + \sum_{i=0}^{n} \partial_i \Delta GFCF_{t-i} + \sum_{i=0}^{n} \vartheta_i \Delta EMP_{t-i} + \sum_{i=0}^{n} \delta_i \Delta KF_{t-i} + \sum_{i=0}^{n} \varphi_i \Delta EXCH_{t-i} + \sum_{i=0}^{n} \delta_i \Delta INF_{t-i} + \lambda_0 GDPGR_{t-1} + \lambda_1 GFCF_{t-1} + \lambda_2 EMP_{t-1} + \lambda_3 KF_{t-1} + \lambda_4 EXCH_{t-1} + \lambda_5 INF_{t-1} + \omega_t \quad (5)$$

The signs in the parenthesis represent apriori expectations of each of the variables used in this study: GFCF (+), EMP (+), KF (-), EXCH (+/-) and INF (-)

Justification of the Model

A justification of the merit and appropriate of the estimation technique, ARDL, employed in this study is in order. The Autoregressive Distributed Lag (ARDL) model is employed to check the presence of a co-integration relationship between the dependent variable and independent variables. The existence of a conintegrating relationship them justified the application of the error correction mechanism. The AEDL was chosen over other alternative cointegration methods for a number of reason. In other words, its key merits are are as follows:

1. The limits testing strategy of the ARDL does not require that the variables under study be integrated in the same sequence, in contrast to other approaches like the Johansen cointegration approach. No matter if the model's regressors are strictly I(1), strictly I(0), or mutually co-integrated, this statement is true.
2. The dynamic nature of autoregressive distributed lag (ARDL) model – as opposed to static models – makes it appropriate for this study given that the study focus on the dynamic impact of capital flight on Nigeria's economic growth profile (Ogbuabor, Kama, Anthony-Orji, 2020) [35]. The ARDL model is typically characterized by the use of endogenous and exogenous variables combined together, making it more suitable than VAR model, for instance, that are designed particularly for endogenous variables. Therefore, since this study is interested on the behavior of our endogenous variables given the exogenous variables, it becomes appropriate to adopt this model.
3. In contrast to other conventional cointegration procedures, the limits testing approach is suitable for small or finite sampling data. It is crucial to emphasize that this study is appropriate for small sample investigations given the short sample period (36 years).

Data Sources

The data used for this study were obtained from secondary source. Annual data from 1981 to 2020 were retrieved from the World Bank Development Indicators (WDI). With the except of KF and EMP, all other variables are sourced from the World Bank World Development Indicators. Capital flight is obtained from the capital flight dataset constructed by Ndikumana and Boyce 2021) [29]. Employment data is retrieved from the Penn World Table 10.0.

Results

Descriptive and Unit Roots Analysis

As a starting point to the analysis in the economic growth of capital flight, Table 4.1 presents some descriptive statistics

of the all variables used in the study for the period 1981-2018. For instance, real GDP growth averaged 3.174 percent on the period with a standard deviation of 5.538 suggesting that Nigeria's economic growth has been very volatile. On the flip side, the economy recorded the highest growth of 15.329 in the year 2002 which coincided with the oil boom period of the early 2000s whereas in 1981 it recorded a negative growth of -13.127

Table 1: Summary Statistics

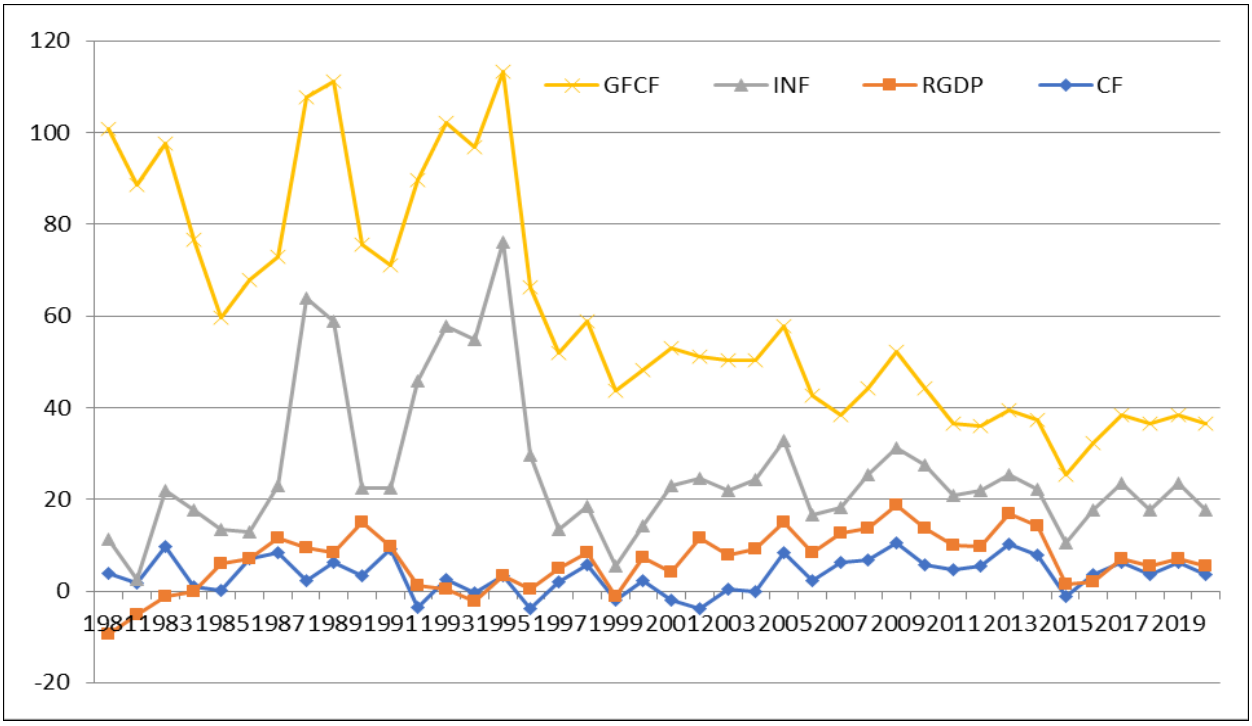
	GDPG	GFCF	EMP	KF	INF	EXR
Mean	3.174	36.220	41.080	3.516	19.350	95.050
Median	4.212	35.315	38.420	3.448	12.715	97.017
Maximum	15.329	89.386	71.115	10.594	72.835	306.080
Minimum	-13.127	14.168	26.434	-3.825	5.388	0.617
Std. Dev.	5.538	19.572	12.842	4.022	17.243	83.924

Source: Author Computation, 2021.

For capital flight which is expressed as a percentage of the GDP, it averaged 3.516 percent over the period with a standard deviation of 4.022. this suggest that capital flight from the country has been also volatile. For the rest of the variable, it can be observed that inflation on average has been in double digits for the Nigerian economy with 19.35 percent, while the nominal exchange rate has been very volatile having a standard deviation 83.924 percent which suggest that the domestic currency has been under significant pressures due to persistent devaluation of the currency and given that the Nigerian economy is highly import dependent on the rest of the world. with the exception of the total employment, capital flight and nominal exchange rate, all other variables exhibit features of non-normality as suggested by the Jarque-Berra test for normality.

Turning next to the stationarity (unit roots) properties test, recall that the ARDL model framework for cointegration is applicable provided the variables are purely I(0), I(1) or fractionally integrated. The presence of I(2) variables renders the computed F-statistics invalid (Pesaran *et al*, 2001). This is because the bounds test assumes that variables are either of an I(0) or I(1) integration process. Hence, examining the stationarity properties becomes necessary to ensure that no variable is integrated at a the second order, I(2) or beyond. Consequently, the conventional Augmented Dickey Fuller (ADF) and Phillips and Perron (PP) test for unit roots is used to for the stationarity tests with the results presented in Table 2.

Figure 1 shows the trend dynamics of Nigeria's growth profile with other macroeconomic fundamentals. Nigeria revised its economic computation in 2014 to take into consideration the GDP contributions of industries that are expanding quickly, such as banking, telecommunications, and the film sector. "New No. 1 in Africa" (2014). The "2020 Human Development Report" claims that both non-energy-related infrastructure and human capital are insufficient, with Nigeria's ranking in the 2019 United Nations Development Index being 161 out of 189 countries. Nigeria had advanced efforts to provide universal primary education, protect the environment.



Source: Study

Fig 1: Trend of Regression Variables

An persistent supply crisis in the power industry hurts the Nigerian economy. Residents routinely encounter problems with electricity supply despite the country's fast expanding economy, some of the largest coal, oil, and gas reserves in the world, and its position as Africa's top oil producer. next we report the unit root test.

The general picture that emerges from Figure 1 is that most macroeconomic fundamentals under review – including capital flight, inflation, and gross fixed capital cformation – have closely mimicked Nigeria' s economic growth output. This suggest the need for a more robust analysis of the structural relationship among the variables.

Cointegration analysis

Following the stationarity tests, the possible existence of a of long-run relationship between the variables was examined using the ARDL bounds cointegration testing approach. The lag length selection was determined using the Akaike Information Criterion (AIC) allowing for a maximum lag length of four (4). Applying the bounds cointegration test to Equation 3.5 which is estimated using the Ordinary Least Squares (OLS) technique, the computed F-statistics for the joint significance of the lagged levels of the variables are compared with the critical values provided in Narayan (2005). As presented in Table 4.3, the computed F-statistics of 13.955 exceeds the upper critical bounds of 6.04 at the 1% significance level. Therefore, a long-run relationship can be said to exist among the variables.

Technically, this implies that there is a long-run cointegration relationship between economic growth (as proxied by the real GDP growth) and domestic investment, total employment, capital flight, inflation and the nominal exchange rate.

Table 3: ARDL Bounds Cointegration test

Critical Bounds for F-Statistics						
	10%		5%		1%	
k	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
5	2.508	3.763	3.037	4.443	4.257	6.04
Optimal specification: ARDL (4,4,3,4,4,4)						
Calculated F-statistics:						
$F(GDPG \mid GFCF, EMP, KF, INF, EXR)$ = 13.955						

Source: Author Computation, 2021.

Long-run and Short-run error correction estimates

Given the established long-run relationship based on the ARDL bounds cointegration test, Table 4.3 presents the long-run ARDL model estimates for the respective variables in the model specification. For each of the explanatory variables, their respective impact is evaluated in terms of the sign, size and significance of the parameter (i.e., coefficient) estimates.

Table 4: ARDL Long-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$GFCF$	-0.598	0.213	-2.803	0.0379
EMP	-1.465	0.659	-2.223	0.0768
KF	2.805	1.473	1.904	0.1152
INF	-0.248	0.141	-1.766	0.1376
EXR	0.172	0.137	1.256	0.2642
EC = GDPG - (-0.598*GFCF -1.465*EMP + 2.805*KF - 0.248*INF + 0.172*EXR)				

Starting with other explanatory variables except capital flight, the impact of domestic investment as measured by gross fixed capital formation as a percentage of GDP, that is the size of domestic investment in the economy, is negative with a coefficient estimate of -0.598. This means that a 1% increase in share of domestic capital formation will in the long-run reduce output by -0.598%. The negative sign of the coefficient though contrary to the expected positive impact may suggest inadequate domestic investment in the economy.

It is important to note that the gross fixed capital formation encompasses both private and public investment. For instance, public investment especially through infrastructural provision has been grossly inadequate and insufficiently provided in the Nigerian economy context. Nigeria is still beleaguered by shortage of infrastructure in the areas of transportation and power etc which are prerequisites for economic growth as well as socio-economic transformation. Thus, the available infrastructures are not of requisite standard and quality capable of satisfying the ever-increasing demand by the population. This is the situation for the Nigerian economy which has struggled with the perennial problem of infrastructural deficits and an overstretched infrastructure base.

Hence, with an over-stretched infrastructure with lack of maintenance and insufficient provision of new ones, in the long-run, the output effect of infrastructure is bound to diminish. This in turn, can hamper the investment potentials of the economy and therefore a constraint for private sector driven investment. Meanwhile, the coefficient estimate is statistically significant at the 5% level which suggest that capital accumulation through increased domestic investment is indispensable for accelerating economic activity through output expansion and the overall socio-economic development of a country.

The impact of employment on economic growth as measured by the real GDP growth is negative in the long-run contrary to the positive *a priori* expectation though statistically significant at the 10% level. With a coefficient estimate of -1.465, a one percent increase in employment will reduce economic growth by -1.465%. The significance of the employment variable is in tandem with the fact that labour is an important factor input in the production and growth process. However, the negative coefficient estimates which implies a declining growth effect in the long-run may be linked to the quality and competence or skills of the labour force. Shortage of skilled labour force can undermine its usefulness as an important factor input and contribution to productivity growth. Such is typical of the Nigerian scenario where despite a large labour force, significant portion are deemed unemployable due shortage in relevant skills and competence. Hence, low quality of the labour would have significant diminishing effect on economic growth in the long-run.

Turning to the impact of inflation and the nominal exchange rate, the impact of inflation is negative as expected with a coefficient estimate of -0.248. This is consistent with the theory that high and volatile inflation creates uncertainty and macroeconomic instability which undermines economic growth. A 1% increase in inflation is expected to reduce real GDP growth by -0.248%. However, the impact of inflation which is not statistically significant in the long-run. The long-run impact of exchange rate is positive with a coefficient estimate of 0.172 and is not statistically significant. Thus, the long-run evidence suggests both inflation and exchange rate may have limited growth effects on the Nigerian economy. When the long-run impact of capital flight is considered as shown in Table 4 above, and with a positive coefficient estimate of 2.805, capital flight has a positive effect on economic growth in Nigeria. This is contrary to the a priori expectation of negative growth effect. However, the importance of capital flight in the long-run on economic growth is statistically non-significant suggesting that with appropriate measures to stem capital flight in the country, its effect can be limited.

In view of the relative unimportance of inflation, exchange rate and capital flight in the long-run, a consideration of their short-run adjustment becomes very imperative to

further deciphering their impacts and time appropriateness of policy prescriptions. Consequently, Table 4.5 below presents the short-run adjustment estimates and the error-correction mechanism.

Focusing on the short-run dynamics of the growth impact of capital flight, the effect of the contemporaneous effect of the change in capital flight has a coefficient of 0.192 with statistical significance at the 10% level which is consistent with the long-run effect; however, other dynamics in terms of the first, second and third lagged effect of capital flight are negative with coefficient estimates of -1.087, -0.639, and -0.469 respectively and all are statistically significant at the 1% percent level. The impact of these short-run lagged adjustment of capital flight suggest that capital flight has a negative short-run effect on economic growth. Since the impact of the short-run effect can be described as a joint sum of the respective short-run coefficient estimates, for capital flight this equals to -2.003 (0.192 – 1.087 – 0.639 – 0.469 = -2.003) which is consistent with the a priori expectations that capital flight has an adverse effect on economic growth as it leads to diversion of resources away from growth-promoting economic activities. Hence, by this evidence, our result show that the short-run impacts of capital flight are growth-retarding.

Other notable evidence from the ARDL short-run estimates in Table 4.5 show that the short-run dynamics of employment for its contemporaneous, first and second lagged changes, are generally negative and statistically significant consistent with the result in the long-run. Again, this buttress the fact that employment is an important variable, however its usefulness and relevance would depend greatly on the quality, competence and skills of the labour. To re-emphasize the outcome of the long-run effect, poor quality of the labour force has diminishing effect on economic growth.

Table 5: ARDL Short-Run Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
constant	64.418	5.018	12.834	0.0001
$\Delta GDPG_{t-1}$	-1.001	0.091	-10.957	0.0001
$\Delta GDPG_{t-2}$	-0.354	0.117	-3.023	0.0293
$\Delta GDPG_{t-2}$	0.119	0.079	1.495	0.1951
$\Delta GFCF_t$	0.275	0.105	2.602	0.0481
$\Delta GFCF_{t-1}$	-0.124	0.094	-1.306	0.2481
$\Delta GFCF_{t-2}$	0.564	0.087	6.434	0.0013
$\Delta GFCF_{t-3}$	0.233	0.071	3.273	0.0221
ΔEMP_t	-4.053	0.368	-10.990	0.0001
ΔEMP_{t-1}	-4.259	0.442	-9.634	0.0002
ΔEMP_{t-2}	-4.563	0.535	-8.522	0.0004
ΔKF_t	0.192	0.081	2.362	0.0646
ΔKF_{t-1}	-1.087	0.143	-7.565	0.0006
ΔKF_{t-2}	-0.639	0.108	-5.913	0.0020
ΔKF_{t-3}	-0.469	0.081	-5.750	0.0022
ΔINF_t	-0.131	0.018	-7.064	0.0009
ΔINF_{t-1}	0.101	0.020	4.885	0.0045
ΔINF_{t-2}	0.173	0.021	8.007	0.0005
ΔINF_{t-3}	0.048	0.019	2.430	0.0593
ΔEXR_t	-0.042	0.019	-2.133	0.0860
ΔEXR_{t-1}	0.144	0.023	6.068	0.0018
ΔEXR_{t-2}	0.077	0.030	2.554	0.0510
ΔEXR_{t-3}	0.201	0.030	6.689	0.0011
ecm_{t-1}	-0.788	0.061	-12.941	0.0000
R-squared	0.983	F-statistic		25.654
Adj. R-squared	0.945	Prob.		0.000

Further, the joint impact of domestic capital as measured by the gross fixed capital formation, are positive given that the contemporaneous and second lagged effect are positive and statistically significant. The impact of inflation in the short-run id dominated mostly by positive short-run coefficients consistent with the fact that some level of inflation may be growth-enhancing. Here, on the contemporaneous short-run effect of inflation has a negative growth effect with a coefficient of -0.131. For the nominal exchange rate, aside the contemporaneous impact with a coefficient of -0.042, the rest of the short-run impact in terms of the first to third lagged effect are positive with coefficients of 0.144, 0.077 and 0.201 respectively which are in accordance with the positive long-run impact. Thus, while inflation and exchange rate may have limited long-run effect, in the short-run, they have strong effect. This explains why there are significant concerns for economic growth when the economy is faced with significant inflationary pressures and wide exchange rate fluctuations.

Turning to the short-run error-correction mechanism (ecm_{t-1}), the parameter for the lagged error correction (ecm) coefficient is negative with an estimate of -0.788 and statistically significant at 1% level. This confirms the established cointegration relationship between the variables.

Moreover, the estimate measures the speed of adjustment back to long-run equilibrium relationship following a shock. Thus, the meaning of the coefficient estimate of -0.788 is that approximately 79% disequilibrium in the economic growth (as proxied by the real GDP growth rate) of the previous year's shock adjusts back to long-run equilibrium in the current year. In other words, the model can restore the short-run relationship to the dynamic long-long equilibrium at the speed of about 79%. More generally, the coefficient of the error correction terms reflects the speed of adjustment, that is, the speed of convergence to equilibrium value. It can be interpreted as the share of deviation from the equilibrium value eliminate during a single period.

The speed of adjustment is usually measured by the half-life. The half-life is the time needed in order to eliminate 50% of the deviation from equilibrium. It is calculated as follows:

$$t_{half-life} = \frac{\ln 2}{ecm_{t-1}} = \frac{0.69}{ecm_{t-1}} = \frac{0.69}{0.79} = 0.87$$

Thus, given that this study used annual data, the half-life is approximately 0.87 years which implies about nine months. This is interpreted to imply that it would take about 9 months to eliminate deviation from equilibrium.

Discussion of Findings

The empirical results for both long-run and short-run effects of capital flight on economic growth show that in the long-run, capital flight might be growth-enhancing which is contrary to its short-run growth-retarding effect. However, the effect of capital flight on long-run growth is insignificant implying that capital flight has a limited role or put differently, capital flight may not be a robust determinant of economic growth in Nigeria. However, in the short-run, capital flight has a negative and statistically significant effect on economic growth. The short-run result supports the a priori expectation that capital flight is growth-retarding since it leads to resource outflows and diversion from the economy thereby precluding expansion in domestic investment and overall productivity. The short-run cumulative negative growth effect of capital flight is in tandem with previous studies on the Nigerian economy (Olatunji and Oloye, 2015 [33]; Lawal *et al*., 2017 [23]; Orimolade and Olusola, 2018 [37]; Bredino *et al*., 2018 [11]; Okonkwo *et al*., 2020 [32]; Orji *et al*., 2020 [35]; Amadi *et al*., 2021). These studies found that capital flight has a deleterious and adverse effect on the domestic economy. Thus, for the Nigerian economy, the results suggest that policy measures of curbing further capital flight from the economy should be taken as an utmost priority. For instance, reversing the trend of capital flight in the economy would require an enabling and conducive business climate is prerequisite for the growth and productivity of of both domestic and foreign investment outlets. Moreover, capital flows management would be essential to close possible channels of leakages or routes for capital flight within the country. These measures may be essential for capital retention in order to spur economic activities and growth within the economy.

Coclusion

This study examined the effect of capital flight on economic growth in Nigeria is being investigated to track the potency of capital flight in influencing economic growth in Nigeria. The coverage of the study is between 1981 to 2019 which has covered periods of both military and civilian administrations, as well as capturing era of key economic reforms like the Structural Adjustment Programme (SAP), Millennium Development Goals (SDGs), and Vision 2020. The study employed the autoregressive distributed lag (ARDL) to ascertain the influence of capital flight on economic growth. Meanwhile, the Granger causality test was utilized to trace the direction of causality between capital flight and economic growth. The summary of findings are as follows:

1. Capital exerts a negative and significant long-run effect on gross domestic product. The negative effect though contrary to the expected positive impact may suggest inadequate domestic investment in the economy. The gross fixed capital formation encompasses both private and public investment. Such as, public investment through infrastructural provision has been grossly inadequate and insufficiently provided in the Nigerian economy context. Nigeria is still beleaguered by shortage of infrastructure in the areas of transportation and power etc. which are prerequisites for economic growth as well as socio-economic transformation. Thus, the available infrastructures are not of requisite standard and quality capable of satisfying the ever-increasing demand by the population.
2. Labour exerts a negative but insignificant long-run effect on the gross domestic product of Nigeria. The significance of the employment variable is in tandem with the fact that labour is an important factor input in the production and growth process. However, the negative coefficient estimates which implies a declining growth effect in the long-run may be linked to the quality and competence or skills of the labour force. Shortage of skilled labour force can undermine its usefulness as an important factor input and contribution to productivity growth. Such is typical of the Nigerian scenario where despite a large labour force, significant portion are deemed unemployable due shortage in relevant skills and competence. Hence, low quality of the labour would have significant diminishing effect on economic growth in the long-run.
3. Capital flight has a positive but insignificant long-run effect on economic growth. This is contrary to the a priori expectation of negative growth effect. However, the importance of capital flight in the long-run economic growth is statistically non-significant suggesting that with appropriate measures to stem capital flight in the country, its effect can be limited.

On the basis of the finding from this study, I conclude with the following recommendations:

1. Since capital flight exerts a negative and significant short-run effect on economic growth, it is recommended that moves to retard capital flight should be developed and implemented to the fullest. This would ensure domestic investment of our financial resources. This can be achieved via setting up the necessary infrastructures for businesses to thrive, promoting security and political stability, along with

setting up favourable business laws that will not deter people from investing within the domestic economy.

2. As the study indicates, capital flight retards economic growth. This highlights the necessity of boosting domestic investment through the promotion of homegrown businesses that could boost domestic capital, discourage capital outflow and promote growth. The creation of an environment that will support industry is of the highest importance. It is also crucial to provide a diverse range of domestic financial assets on which local money may be assessed and invested at a cheaper rate compared to international financial instruments in order to increase the domestic economy's appeal to investors. In addition to reinvesting the earnings, creating a supportive business environment can increase the inflow of international investors. A positive move would be to lessen political instability and provide infrastructures to lower operational costs. For the sake of its long-term beneficial impacts, capital outflows that support the importation of necessities and capital goods necessary for developmental drives should be revived.
3. Given the adverse effect of capital flight on economic growth, the country should not only enact laws on selective control of capital, and the repatriation of illicit financial outflow but also ensure its conscientious implementation. This would guarantee sustainable economic growth.
4. As a matter of emergency, government at all level should strengthen anti-graft agencies to improve their effort in tackling laundering of public fund. This will reduce or possibly end the laundering of public funds abroad by public officials – illicit financial outflow. This can be achieved by terminating all money laundering channels both locally and international. Also, more effort should be added to create a financial and economic friendly environment that would limit or eliminate economic uncertainty, improve foreign direct investment and possibly reverse capital outflow.

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