

Exchange Rate Volatility, Institutional Quality, and Capital Flight in Nigeria

Fachanon Emmanuel Kefas¹ and Samson Adeniyi Aladejare²

¹Postgraduate Student, Department of Economics, Federal University Wukari, Nigeria.

E-mail: fachanonk@gmail.com

²Department of Economics, Federal University Wukari, Wukari, Nigeria.

E-mail: aladejare4reel2000@gmail.com

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Abstract: This study assessed how exchange rate volatility and institutional quality determined capital flight from Nigeria between 1991 and 2023. The research applied the dynamic ordinary least square estimation and the Toda-Yamamoto causality techniques. Hence, the research showed that exchange rate fluctuations impacts capital flight in the long term for Nigeria. This phenomenon is due to the empirical affirmation that increase in currency depreciation motivates more capital outflow. However, currency appreciation substantially reduces capital flight from Nigeria, since a strong currency encourages more capital retention within the economy. Also, while corruption has an insignificant effect, governance effectiveness and political violence substantially promote more capital flight, implying that weak institutions play significant role in the growth of capital flight from Nigeria. Furthermore, a substantial causal relationship between exchange rate volatility, institutional quality, and capital flight was found. Particularly, while a bidirectional nexus exist between currency depreciation and capital flight, a unidirectional impact from currency appreciation to capital flight was validated. Similarly, a unidirectional causal association exist from corruption and government effectiveness to capital flight in Nigeria. Based on this findings, the study recommended relevant policy measures to mitigate capital flight in Nigeria.

Keywords: Capital flight; Exchange rate fluctuation; Corruption; Political violence; Governance effectiveness; Nigeria.

JEL Classification: E20, F21, N17.

INTRODUCTION

Capital flights and its movement among countries are important economic issues that countries have to grapple with in the development process because of the importance investment assumes in the domestic economy. Capital flight specifically refers to the movement of money from investments in one country to another in order to avoid country-specific risks (such as hyperinflation, political turmoil and anticipated depreciation or devaluation of the currency), or in search of higher yield (Odior and Iwegbu, 2024). It is seen in massive foreign capital outflows from a country, and reflected often of domestic currency instability. The outflows, when they occur, are large enough to affect a country's entire financial system.

Capital flight is a major concern for all governments particularly for developing countries, as it depletes revenue collections, undermines development initiatives, and hinders effective governance (Aladejare and Dimnwobi, 2025a). A major limitation to economic development especially in African countries is the lack of sufficient financial resources in the face of immense needs in public investment in infrastructure and social service (Aladejare, 2022). Despite the natural resource endowment, many countries in Africa have not closed infrastructure gaps and have huge development needs due to lack of finance (Asongu and Odhiambo, 2019; Aladejare, 2020; Aladejare, 2025a); capital flight undermines effort to alleviate this challenge.

Hence, considering the trend of capital flight in Sub-Saharan African (SSA) countries, it is pertinent to state that Nigeria represents a special case study. According to Akinwale (2020), Nigeria is noted as the hotspot of capital migration in Africa. Equally, Transparency International (2017) reveals that about US\$4 billion was taken out of Nigeria between 1993 and 1998. Further evidence from the Economic and Financial Crimes Commission (EFCC), the country's financial crime watchdog, indicates that from 1999 to 2007, about US\$250 million was migrated from Nigeria to the United Kingdom, United States of America, and South Africa. Also, between 2003 and 2012, Nigeria lost an estimated US\$157.5 billion to illicit financial flows (Royal, 2019). Furthermore, the Central Bank of Nigeria (CBN, 2016) equally revealed that about US\$1.1 trillion and US\$8.8 trillion was flown out of Nigeria in 1999 and 2011, respectively. Again, the International Monetary Fund (IMF, 2018) reveals that about US\$11.6 trillion belonging to Nigeria was held in offshore accounts. Consequently, the income of about US\$866 billion accruable to such offshore assets was lost to other countries.

Similarly, Igwemma *et al.* (2018) document that a survey of six SSA countries (Nigeria inclusive) indicates that between 1989 and 2016, Nigeria alone lost about US\$21 billion, representing about 60% of capital flight from the six African countries. More worrisome is the fact that the country is bedevilled with a large scale of unemployment, poverty, increasing crime rate, the rising scale of insecurity, and several socio-economic vices, which can be related to capital flight (Aladejare and Dimnwobi, 2025a). In addition, it is not out of place to say that capital flight is a fundamental cause of most macroeconomic, social, and political disruptions being experienced in Nigeria.

Specifically, the volatile nature of the naira, especially in recent times and the perceived weak institutions in the country can be said to be aiding capital flight. Thus, these challenges have sparked lack of confidence by domestic and international investors in the economy and is even encouraging domestically generated capital to flee from the economy. While foreign capital that has been invested in the economy can leave after some time if the investors' objectives are achieved, domestically generated capital flowing offshore should generate and report returns. However, a situation that encourages domestically generated capital to find solace and investment grounds abroad leave much to be desired. The concern here is that the level of autonomous investment that should be undertaken suffers because capital has relocated out of the economy.

Accordingly, given the level of infrastructural deficit facing the country, the required capital to construct, replace and rehabilitate infrastructure is either not domestically available or would be sourced at some expense (Odey *et al.*, 2025; Aladejare, 2025b). In other words, an increase in capital flight can raise uncertainty about the government's capacity to finance its budget deficit or its debt on capital projects. Secondly, the challenge of exchange rate volatility and weak institutions encouraging capital flight manifest in terms of reduced per capita earnings for the country (Zubair and Aladejare, 2017; Aladejare and Musa, 2024). This scenario in-turn generate macroeconomic challenges for policymakers as to how to retain capital in the economy in the face of competing real rates of return.

The justification for this study is borne from the fact that despite the ravaging effects of capital flight on the Nigerian economy, there is relatively a few country-specific studies examining the effect of exchange rate and institutional quality on capital flight, especially for Nigeria. Previous studies on Nigeria have focused either on the exchange rate-capital flight or institutional quality-capital flight nexus for

Nigeria (Achu and Edet, 2022; Ogbeide-Osaretin, 2020; Uche and Effiom, 2021; Abbah *et al*, 2021; Odionye *et al.*, 2024). Rarely do previous studies considered the potential effects of exchange rate volatilities and institutions on capital flight in the context of Nigeria. Also, none of these extant papers simultaneously concentrated on the role of exchange rate fluctuations and institutional quality on capital flight in the context of Nigeria as this study. The absence of the above vital information calls for further review, such that could provide policymakers with relevant policy tools to guide against both internal and external factors influencing capital migrations from Nigeria.

Thus, this study examined the effects of exchange rate volatility and institutional quality on capital flight between 1991 and 2023 for Nigeria. The rest of this study are sectioned in this direction. Section 2 provides the synopsis of the literature. Section 3 captures the data description and methodology, while section 4 contains the empirical outcomes and results discussion. Section 5 provides the concluding remarks.

2. LITERATURE REVIEW

2.1. Theoretical Review

2.1.1. *Portfolio choice theory of investment*

The portfolio theory argument is a popular justification for preferring foreign investments. Since static models and one-country assumptions are easily understood and assimilated, discussions on portfolios tend to become dynamic and evoke a high level of esotericism. Things are a little more complicated because of currency considerations, real effective exchange rates, the potential for domestic or foreign bias, the effects of risk levels, and real rates of return (Tille and Wincoop, 2007). Nonetheless, the most often used strategy for dealing with global capital flights and flows is the portfolio method (Obstfeld, 2004). The portfolio approaches appear to have gained the upper hand in the analysis of many of the capital flights that were examined. The decision is heavily influenced by the investors' decision over whether to keep their money domestically or abroad. The trade-off between risk and return, among other factors, greatly influences the decision to choose any of these.

In their analysis, Kraay and Ventura (2003) divided the factors influencing foreign portfolio flows into two categories: models for portfolio expansion and reallocation. Increases in national savings that result in capital outflows are referred to as portfolio

growth components. This is equivalent to the increase in national savings times the portfolio share of foreign assets. Active portfolio reallocation of wealth across assets is the second. Since changes in asset prices impact portfolio shares without any asset trade—a dimension known as passive portfolio management—capital outflows associated with portfolio reallocation indicate a shift in portfolio shares away from passive portfolio. The aforementioned scenario ignores the additional relative factors that influence the inflow and outflow of capital on equities prices and exchange rates. The real effective exchange rate and the prices of the accessible equity stocks at home will surely be impacted by a significant rise in the influx of resources.

2.4.2. Portfolio theory of capital flight

In one of the earliest theoretical models, Khan and Haque (1985) showed that when both local and foreign investors face an asymmetric risk of expropriation, two-way capital flow, or private capital flight, can occur concurrently with private foreign borrowing. Due to the increased danger of expropriation, domestic investors choose to invest overseas, and as a result, foreign money are used to finance domestic investments. Additionally, Dooley (1988) concentrated on the idea that both foreign and domestic investors are exposed to asymmetric risk; however, he expanded the scope of this risk to include a variety of implicit taxes that could be created, for example, by rapid inflation or exchange rate depreciation. The government may become more dependent on the inflation tax as a result of a fiscal shock, which devalues domestic financial assets and encourages residents to purchase overseas assets. As domestic citizens sell their domestic securities, the decline in prices (an increase in yields) may draw in foreign investors. Because they may frequently get claims denominated in foreign currency with explicit or implicit government guarantees, foreigners are less exposed to risk.

According to this hypothesis, if the risk-adjusted return on domestic investments is much less than the risk-adjusted return on overseas investments, economic agents will generally move their capital out of a nation. According to this idea, excessive inflation, political unpredictability, regulatory ambiguity, or expected currency devaluation are some of the variables that can encourage investors to relocate their funds outside and cause capital flight. Significant capital flight can lead to economic instability, decreased investment, and unfavourable economic devaluation.

2.4.4. *Theoretical Synthesis*

The portfolio theory of capital migration is used in this study in light of the theoretical explanation provided above. The theory was chosen because it aligns with the research's central hypothesis, which is that economic agents assess their investment preferences across several markets based on risk-adjusted returns before deciding to transfer their capital to other economies—basically, flying it to safer havens. However, there are similarities between the portfolio theory of capital flight and the portfolio choice theory of investment. In the former, economic agents would decide to diversify their stock holdings with the primary goal of lowering risk in the face of expected instability in their own economy. The portfolio theory of capital flight, on the other hand, is frequently influenced by elements like currency devaluation or volatility, political unrest, weak institutions, and subpar domestic economic performance, whereas the portfolio choice theory is predominantly driven by greater international returns.

2.2. Empirical Review

2.2.1. *Studies on exchange rate and capital flight*

Ogbeide-Osaretin and Olotu (2020) embarked on the empirical determination of the factors aggravating capital flight in Nigeria. The paper used the Autoregressive distributed lag (ARDL) estimation procedure to arrive at its conclusion that along with other factors, exchange rate appreciation was critically responsible for reducing the level of capital flight in the long run for Nigeria. Similarly, Uche and Effiom (2021) tried to determine the likely effect of exchange rate misalignment on capital flight through the quantile autoregressive distributed lag (QARDL) model for Nigeria. The study showed that a long-run association prevails between exchange rate volatilities and capital flight in Nigeria. In addition, the impact of exchange rate volatility is sensitive to various quantiles of capital flight distributions. Third, capital flight demonstrated robust proof of hysteresis in all quantiles. Thus, they concluded that capital flight is a systemic challenge as past capital flight triggers further capital flight.

Basorudin *et al.* (2021) assessed the determinants of capital flight in Indonesia. The study employed a residual based analytical method. Findings from the research showed that macroeconomic variables such as exchange rate do not significantly determine capital flight, rather, non-macroeconomic factors are responsible for

capital flight in Indonesia. Likewise, Tarawalie and Jalloh (2021) examined the drivers of capital flight via the ARDL and the Granger causality method for Sierra Leone. Empirical evidence from the study suggests that real effective exchange rate promotes capital flight in the long run. Also, a uni-directional causal effect from real effective exchange rate to capital flight was revealed by the study.

Furthermore, Yalta and Yalta (2021) evaluated the asymmetric relationship between real exchange rate and capital flight through the ARDL method in resource scarce MENA economies. Based on the result of the study, capital flight was reported to be more responsive to real exchange rate devaluation in Egypt. In addition, the study noted that the Arab spring has led to more capital flight in Morocco and Egypt in the long-term. Nevertheless, lagged institutional quality and capital flight were reported to significantly promote current level of capital outflows in Tunisia. Also, Otieno *et al.* (2021) investigated the determinants of capital flight in East African Community (EAC) nations. The study used the fixed effect (FE) regression estimation technique to derive that exchange rate significantly and positively determines capital outflows in the EAC countries. In a related study, Otieno *et al.* (2022) examined the exchange rate-capital flight nexus for East African countries. The study applied the OLS method to derive its findings. Evidence from the research showed that exchange rate significantly and positively determines capital outflows in East African countries. Furthermore, the research noted that the positive impact of currency variation on capital outflows suggest that capital flight is sensitive to currency depreciation.

Also, Macamo and Jalloh (2022) evaluated the role of macroeconomic variables in illicit financial outflows in Mozambique's natural resource sector. To derive its results, the study employed the ARDL technique for its estimation. From the outcome, real effective exchange rate was demonstrated to have a substantial and positive effect on illicit capital flow from the natural resource sector in the long run for the country. However, while no causal relationship was found between both variables, the control for corruption showed a bidirectional nexus with illicit financial flight. In addition, Gautier (2023) conducted a comparative research of macroeconomic and institutional drivers of capital flight between franc and non-franc zone economies. For the study's empirical analysis, the PMG estimation approach was adopted. The study estimates demonstrated that despite the persistence of capital flight in the zones, exchange rate, though positive, but insignificantly impacted capital migration in both zones after the COVID-17 period.

Furthermore, Abbas *et al.* (2024) tried to determine the regional factors that give rise to capital flight by applying the feasible generalised least squares (FGLS) technique. The study reported that exchange rate significantly aggravated capital outflows in East, Pacific, and South Asian countries. However, its effect in other regions such as SSA, Europe, and Central Asian economies was found to be insignificant. Also, Pradhan *et al.* (2024) examined the potential factors that give rise to capital flight in BRICS nations. The research implemented a GMM estimation technique for its analysis. Findings from the paper's estimation process showed that exchange rate depreciation alongside other macroeconomic variables are vital factors that promotes capital outflows in BRICS economies. Likewise, Xiao (2024) conducted a study that identified the triggers of capital flight in China. Particularly, the paper embarked on an elaborate evaluation of the scale and causes of capital migration from China. By using time series data analysis, the study concluded that the scale of capital flight in the country has been significantly impacted by changes in the effective exchange rate of real money balance.

2.2.2. Studies on institutional quality and capital flight

Asongu *et al.* (2021) tried to determine the connection between terrorism, capital outflows, and industrialisation in 36 African countries. Two estimation approaches including the GMM and quantile regressions (QR) GMM were used in the study. Their outcome supports the interaction between terrorism and capital flight which significantly impacts industrialisation in the African economies. Thus, they submitted that the adverse implications of the interaction between terrorism and capital flight is responsible for the falling level of industrialisation in the continent. Tarawalie and Jalloh (2021) assessed the drivers of capital flight in Sierra Leone. By employing the ARDL and Granger causality models as its estimation techniques, the research was able to demonstrate that high level of corruption exacerbated capital flight in the long run for Sierra Leone. Similarly, lagged corruption increased the level of capital flight for the country. However, the study found no causal relationship between corruption and capital flight.

Also, Uche and Effiom (2021) determine the likely effect of global economic policy uncertainties on capital flight in Nigeria. Empirically, the study employed the QARDL model. The findings of the paper revealed that a long-run nexus exist between global economic uncertainties and capital flight in Nigeria. In addition, the impact of global uncertainty is responsive to various quantiles of capital flight

distributions. Third, capital flight demonstrated robust proof of hysteresis in all quantiles. Therefore, they submitted that capital flight is a systemic problem as previous capital flight encourages further capital flight. Likewise, in the study by Abbah *et al.* (2021), the mediating role of leadership system in the relationship between capital flight and domestic investment was investigated for Nigeria. The study results were generated using the ARDL estimation approach. Empirically, the research revealed that the interaction between leadership system and capital flight had a significant and positive effect on domestic investment in Nigeria.

Also, Francky and Ngono (2022) investigated the association between capital flight, institutional quality, and domestic investment in African nations. The estimation approach adopted for the study was the GMM technique. The result from the study showed that while capital flight substantially depreciated the level of domestic investment in the continent, enhancing the institutional support will help to reduce the volume of capital from African economies. Similarly, Padil *et al.* (2022) assessed the direct impact of illicit financial flight and the quality of governance on economic prosperity. Also, the research determined the moderating effect of quality of governance on the economic implications of illicit capital flight. The study was conducted for ASEAN nations, and applied a partial least squares (PLS) estimation approach. Findings from the study revealed that quality of governance significantly moderated the association between international financial flow and economic growth by decelerating the effect of the former on the latter.

Uche *et al.* (2022) considered the relevance of geopolitical risk elements and economic policy volatilities in stimulating capital flight from South Africa. The study employed the ARDL and kernel regularised least squares (KRLS) models for its result derivation. Evidence from the study showed that economic policy variability and geopolitical risk exerted significant stimulating effect on capital flight only in the short-term for South Africa. Also, Kamupira (2022) tried to determine the association between capital flight, external debt and institutional quality in SADC economies. For its empirical analysis, the study employed the ARDL and Granger causality methods. Their findings showed that resource-endowed countries with relatively weak institutional quality significantly promotes capital flight in the SADC economies. Accordingly, the phenomenon resulted in the countries pilling-up debt to clear the loss of domestic saving related with capital outflows.

Furthermore, Okafor and Ede (2023) examined the role of institutional breakdown through rise in kidnapping which promotes capital flight in 67 developing

economies. The study employed the GMM estimation process and revealed that the growth of kidnapping encourages the rise of capital flight in these countries. However, the marginal variations demonstrated that the significant impact is constant exclusively in the sample of weak developing nations examined. Similarly, Peprah *et al.* (2023) assessed the moderating role of improved governance measures in the capital flight, tax income, and economic growth association in 28 SSA nations. By employing a dynamic panel estimation approach, the paper was able to conclude that the impacts of both capital flight and tax receipts were significantly moderated by enhanced governance measures. Also, Harboub and EL Abed (2024) researched on the nexus between capital controls, corruption, and capital flight in African economies. The study used the GMM estimation approach on panel data sourced from 14 African economies. Based on the study findings, the existence of capital controls does not mitigate capital flight, instead it motivates its rise. Consequently, the study submitted that perceived corruption levels significantly promote capital flight.

Likewise, Heydari *et al.* (2024) applied the GMM method in studying the determinants of capital flight in 24 developing countries. Their findings revealed that improved control over corruption and governance significantly encouraged the reduction in capital flight from the examined countries. Similarly, Khan *et al.* (2024) applied the GMM technique to identify the effect of terrorism and corruption on capital flight in South Asian economies. Evidence from the research showed that there is a robust positive relationship between corruption, terrorism, and capital migration in the South Asian countries. Bodjongo *et al.* (2024) examined the institutional and economic determinants of trade-related illicit financial flows in 120 developing and emerging economies. The study applied a panel correlated standard errors (PCSE) model for their empirical analysis. It was revealed by the paper that taming corruption will significantly reduce the level of trade-related illicit financial flows or misinvoicing of foreign trade transactions in the examined countries.

However, by applying the GMM method, Akinlo and Aderounmu (2024) investigated the moderating role of institutional quality in the capital flight-real sector relationship in 26 SSA countries. The outcome of their analysis showed that while no direct effect exists from capital flight to the real sector, institutional quality was unable to control the impact of capital flight on the industrial sector. In a related study, Akinlo (2024) used the 2-step GMM approach and assessed the moderating

role of institutions on the capital flight-economic growth relationship in 26 SSA countries. Specifically, the research showed that despite capital flight having a significant detrimental effect on the economy of the SSA countries, institutions have no significant mitigating role in the impact of capital flight on the economy of the SSA countries examined.

Also, Mawutor and Adjasi (2024) employed the 2-step GMM method and investigated the moderating role of political cycles on the nexus between fiscal policy and capital flight in 40 African economies. Findings from the paper revealed that political cycles significantly and positively aided capital flight. Hence, their result suggests that election periods and potentially government changes accelerated capital flight activities in the African countries. Furthermore, Ndoricimpa and Araral (2024) tried to determine factors that promote illicit capital flows in China-Africa trade. Specifically, the paper used the mechanisms of trade misinvoicing to achieve its objective. The panel data analysis demonstrated that corruption control robustly contributed to reducing export underinvoicing, while political stability lowers both import and export overinvoicing.

Ali *et al.* (2024) tried to reveal the link between corruption and capital outflows in Pakistan. The estimation process applied in the study demonstrated that a significant positive effect of corruption on capital flight exist for the country. In contrast, Odionye *et al.* (2024) studied the different effects of capital flight and economic policy volatility on local investments in Nigeria. The study applied the quantile non-linear ARDL estimation method and showed that global and domestic policy uncertainty worsen the constraining impact of capital flight on domestic investment in Nigeria. Also, the causality result from the study revealed that a unidirectional impact flowed from economic policy uncertainty to capital flight for Nigeria.

However, Jeke *et al.* (2025) employed the GMM method in assessing the impact of illicit financial flows and financial liberalisation on African economies. The outcome of their analysis revealed that enhanced institutional quality reduces the level of capital outflows in the economies considered. They stressed the implication of their result to mean that when African countries have stable political space, capital flight from the continent will decline. In addition, Abille and Adjei (2025) used the PCSE technique and investigated how improved governance mediates between the foreign debt-capital flight relationship in 20 SSA countries. It was revealed by the study that the external indebtedness-capital flight nexus is short term rather

than a long term. Particularly, it was observed that the marginal improvement in governance significantly and positively impacted the foreign debt-capital flight association in the short-run.

2.2.3. Research gap

Evidence from the above review has shown that most studies in the exchange rate-capital flight, and institutional quality-capital flight nexus are mostly panel-based with few country-specific studies. Specifically, the few Nigerian focussed studies revealed conflicting results, probably due to the non-incorporation of the asymmetric behaviour of the naira exchange rate. This measurement gap is covered by this study. Second, it was found from the review that instead of acting as a main determinant of capital flight, institutional quality was mostly used to moderate the association between capital flight and the growth of different economies. This is also evident in the few empirical studies on Nigeria. Accordingly, this research will directly assess the effect of institutional quality on capital flight in Nigeria, thereby filling the existing empirical gap in the literature.

3. DATA AND METHODOLOGY

3.1. Data

This research applied secondary sources of data collected between 1991 and 2023 to evaluate the effect of institutional quality and exchange rate volatility on capital flight for Nigeria. Also, since it has been empirically established from the literature review that economic growth can significantly influence the relationship between capital flight, exchange rate volatility, and institutional quality; and to avoid overfitting and omitted variable bias issues in the study's modelling, economic growth will be used to moderate the main subject matter. Contained in Table 1 is the list of the variables, their unit of measurement, sources and symbols.

Table 1: Variables description

<i>Variable</i>	<i>Measurement</i>	<i>Sources</i>	<i>Symbol</i>
Real capital flight	Real values, Constant 2018 US dollar, million	PERI UMASS (2021)	KPF
Exchange rate	Naira equivalent.	World Bank World Development Indicators (2024)	EXCH
Gross domestic growth rate	Percentage	World Bank World Development Indicators (2024)	GDPR

Variable	Measurement	Sources	Symbol
Corruption	Index	World bank World Governance Index (2024)	COR
Government effectiveness	Index	World bank World Governance Index (2024)	GOVEF
Political violence	Index	World bank World Governance Index (2024)	POV

Source: Authors.

3.2. Model Specification

Several methods have been used in the literature to get just long-run parameters in multivariate studies with limited sample sizes. Among these estimators, the ordinary least squares (OLS), fully modified OLS (FMOLS), and dynamic OLS (DOLS) are prominent. Pedroni (2001) argued, however, that the OLS approach is vulnerable to serial correlation issues and second order asymptotic bias. Additionally, when working with limited sample observations, the approach is prone to provide bias estimates. However, the DOLS (Stock and Watson, 1993) are considered to be better estimators because they were created to address similar OLS shortcomings. Hence, to estimate the effect of exchange rate volatility and institutional quality on capital flight, the following equation guides the study:

$$IRKF_t = \beta_0 + \beta_1^+ EXCH_{t-i}^+ + \beta_1^- EXCH_{t-i}^- + \beta_2 COR_{t-i} + \beta_3 GOVEF_{t-i} + \beta_4 POV_{t-i} + \beta_5 GDPR_{t-i} + \varepsilon_t \quad (Equ. 1)$$

Where:

$IRKF$ = log of real capital flight

$EXCH^+$ = Positive change in the exchange rate (currency depreciation)

$EXCH^-$ = Negative change in the exchange rate (currency appreciation)

COR = Control of corruption

$GOVEF$ = Government effectiveness

POV = Political violence/terrorism

$GDPR$ = Economic growth

Therefore, the DOLS presentation of the research's model is captured as follows:

$$\begin{aligned}
\Delta LRKF_t = & \alpha_0 + \alpha_1^+ EXCH_{t-i}^+ + \alpha_1^- EXCH_{t-i}^- + \alpha_2 COR_{t-i} + \alpha_3 GOVEF_{t-i} + \alpha_4 POV_{t-i} \\
& + \alpha_5 GDPG_{t-i} + \sum_{k=-k_i}^{k_i} \gamma_1^+ \Delta EXCH_{t-i}^+ + \sum_{k=-k_i}^{k_i} \gamma_1^- \Delta EXCH_{t-i}^- \\
& + \sum_{k=-k_i}^{k_i} \gamma_2 \Delta COR_{t-i} + \sum_{k=-k_i}^{k_i} \gamma_3 \Delta GOVEF_{t-i} + \sum_{k=-k_i}^{k_i} \gamma_4 \Delta POV_{t-i} \\
& + \sum_{k=-k_i}^{k_i} \gamma_5 \Delta GDPG_{t-i} + \varepsilon_t \quad (Equ. 2)
\end{aligned}$$

Where $-k_i$ and k_i represents the lags and leads, respectively, while the PDOLS estimator for every individual independent series is built up as:

$$\hat{\beta}_{EXCH^+DOLS} = I^{-1} \sum_{i=1}^I \hat{\beta}_{DOLS} \quad (Equ. 3)$$

$$\hat{\beta}_{EXCH^-DOLS} = I^{-1} \sum_{i=1}^I \hat{\beta}_{DOLS} \quad (Equ. 4)$$

$$\hat{\beta}_{CORDOLS} = I^{-1} \sum_{i=1}^I \hat{\beta}_{DOLS} \quad (Equ. 5)$$

$$\hat{\beta}_{GOVEFDOLS} = I^{-1} \sum_{i=1}^I \hat{\beta}_{DOLS} \quad (Equ. 6)$$

$$\hat{\beta}_{POVDOLS} = I^{-1} \sum_{i=1}^I \hat{\beta}_{DOLS} \quad (Equ. 7)$$

$$\hat{\beta}_{GDPDOLS} = I^{-1} \sum_{i=1}^I \hat{\beta}_{DOLS} \quad (Equ. 8)$$

Furthermore, a white heteroskedastic standard error framework is used in the development of the DOLS methods. Additionally, because the DOLS may regress an I(1) series on other I(1) or I(0) variables as well as leads and lags of the first differences of any I(1) variables, it is better suited to handle endogeneity or simultaneity bias in a model (Aladejare and Osagu, 2024).

4. RESULTS AND DISCUSSIONS

4.1. Descriptive statistics result

Table 2 summarises the descriptive statistics applied in this research. The estimate shown in the table indicates that the average capital flight for the studied period is about \$12.841 billion. This value suggests significant amount of capital that could have helped to advance the Nigerian economy supposed they had not been taken out. With a mean exchange rate of ₦158.84/\$1, Nigeria can be said to have had a relatively stable exchange rate within the period. In contrast, corruption perception index averaged -1.110, an indication of its pervasiveness within the study period. Similarly, government effectiveness and political violence have mean values of -0.989 and -1.660, suggesting that both institutional indicators have been very weak in the country. However, the average economic growth rate is 4.035% for the period. Considering the economic potentials of the country, this is considerably low.

Table 2: Descriptive statistics

	<i>RKF</i>	<i>EXCH</i>	<i>COR</i>	<i>GOVEF</i>	<i>POV</i>	<i>GDPR</i>
Mean	12841.55	158.840	-1.110	-0.989	-1.660	4.035
Skewness	0.967	0.787	0.842	1.680	0.839	0.507
Kurtosis	3.705	2.678	4.841	5.804	2.601	3.909
Jarque-Bera	5.823	3.553	8.563	26.339	4.087	2.546
Prob	0.054	0.169	0.014	0.000	0.130	0.280
Obs	33	33	33	33	33	33

Source: Authors.

4.2. Test for Multicollinearity

Captured in Table 3 is the correlation matrix for the variables, showing that the regressors are not highly correlated with each other. Hence, there is no multicollinearity challenge between the independent series adopted for the study.

Table 3: Correlation matrix

	<i>IRKF</i>	<i>EXCH</i>	<i>COR</i>	<i>GOVEF</i>	<i>POV</i>	<i>GDPR</i>
<i>IRKF</i>	1					
<i>EXCH</i>	0.471	1				
<i>COR</i>	0.005	-0.074	1			
<i>GOVEF</i>	-0.549	-0.386	0.434	1		
<i>POV</i>	-0.713	-0.555	0.165	0.438	1	
<i>GDPR</i>	0.288	-0.133	-0.175	0.001	-0.432	1

Source: Authors.

To further ascertain the severity of multicollinearity, the variance inflation factor (VIF) was employed and its result presented in Table 4. Hence, this study applied the VIF rule of thumb—stating that larger VIF value, particularly greater than 10 implies significant collinearity challenge between the regressors (Aladejare and Bobbo, 2024). Table 4 affirmed that multicollinearity between the independent variables is weak given that none of the VIF coefficient of the series and their mean value (2.11) exceeds 10.

Table 4: VIF test outcome

<i>Variable</i>	<i>VIF</i>	<i>1/VIF</i>
<i>APV</i>	2.41	0.414
<i>CORR</i>	2.17	0.462
<i>GOVEF</i>	2.10	0.476
<i>EXCH</i>	2.05	0.487
<i>GDPR</i>	1.82	0.549
Mean VIF	2.11	

Source: Authors.

4.3. Test for stationarity and cointegration

Establishing the degree of stationarity of the data being used is a crucial step before beginning any economic research (Aladejare and Dimnwobi, 2025b). Accordingly, the stationarity level of the variables utilised in the analysis was ascertained through the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root procedures. These test outcomes are represented in Tables 5. Evidence from the result shows that while COR and GDPR are level stationary, other variables are first difference series.

Table 5: Unit root test

<i>Variable</i>	<i>ADF Test</i>			<i>PP Test</i>			<i>Decision</i>
	<i>With Constant</i>	<i>With Constant & Trend</i>	<i>Without Constant & Trend</i>	<i>With Constant</i>	<i>With Constant & Trend</i>	<i>Without Constant & Trend</i>	
<i>IRKF</i>	-6.683 ^{c1}	-6.576 ^{c1}	-6.773 ^{c1}	-12.162 ^{c1}	-13.038 ^{c1}	-10.563 ^{c1}	I(1)
<i>EXCH</i>	-3.928 ^{c1}	-4.057 ^{b1}	-3.241 ^{c1}	-3.775 ^{c1}	-3.777 ^{b1}	-3.169 ^{c1}	I(1)
<i>COR</i>	-3.848 ^{c0}	-4.328 ^{b0}	-5.012 ^{c1}	-6.114 ^{c0}	-6.065 ^{c0}	-14.499 ^{c1}	I(0)
<i>GOVEF</i>	-16.535 ^{c1}	-16.254 ^{c1}	-16.812 ^{c1}	-5.506 ^{c0}	-6.506 ^{c0}	-20.733 ^{c1}	I(1)
<i>POV</i>	-8.499 ^{c1}	-2.850	-8.484 ^{c1}	-9.112 ^{c1}	-10.430 ^{c1}	-8.584 ^c	I(1)
<i>GDPR</i>	-2.967 ^{b0}	-7.887 ^{c1}	-1.759 ^{a0}	-2.943 ^{a0}	-16.221 ^{c1}	-1.71 ^{a0}	I(0)

Where a, b, and c are 10%, 5%, and 1% significance, respectively, 1 and 0 are first difference and level stationarity.

Source: Authors.

Thus, since the PP and ADF unit root investigation confirmed the presence of level and first difference stationary variables, this further justifies the adoption of the DOLS technique for the study.

Furthermore, the Gregory-Hansen cointegration test was employed to examine the long-run nexus between EXCH, COR, GOVEF, POV, and GDPR in Nigeria. Table 6 presents the result, demonstrating that the test statistic's probability value exceeds the 0.01, 0.05, and 0.10 significance levels. Therefore, the H_0 hypothesis that the regressors are cointegrated and stable cannot be rejected.

Table 6: Cointegration test output

Equation: $LRKF = f(EXCH_{t-i}^+, EXCH_{t-i}^-, COR_{t-i}, GOVEF_{t-i}, POV_{t-i}, GDPR_{t-i})$					
	Lc statistic	Stochastic Trends (m)	Deterministic Trends (k)	Excluded Trends (p2)	Prob.
	0.120	6	0	0	>0.2
Null hypothesis: Variables are cointegrated and stable					

Source: Authors.

4.4. DOLS Outcomes

Demonstrated in Table 7 are the DOLS estimated outcomes, revealing that currency depreciation ($EXCH^+$) has a significant positive effect on capital flight in Nigeria. Specifically, a percentage rise in currency depreciation will produce a 0.025 percentage points increase in capital flight. However, currency appreciation ($EXCH^-$) has a significant negative effect on capital flight. A percentage increase in currency appreciation will lead to 0.611% decrease in capital flight.

On the other hand, corruption has an insignificant effect on capital flight as seen in Table 7, over the long term. Conversely, government effectiveness is shown to have a significant positive effect on capital flight in the long term. According to the result, the capital flight has the tendency to accelerate by 18.127 percentage points for every percentage increase in government effectiveness; and this association is statistically significant at 10% level. likewise, political violence has a significant positive effect on capital flight. Table 4.8 reveals that a percentage increase in political violence will promote capital flight by 7.060% in the long run. However, economic growth has an insignificant effect on capital flight.

Table 7: DOLS estimates

<i>Dependent Variable: IRKF</i>				
<i>Variables</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t- statistics</i>	<i>Prob.</i>
EXCH ⁺	0.025	0.003	8.177	0.001 ^c
EXCH ⁻	-0.611	0.122	-5.014	0.007 ^c
COR	5.648	3.787	1.412	0.231
GOVEF	18.127	6.647	2.727	0.053 ^a
POV	7.060	1.608	4.390	0.012 ^b
GDPR	0.196	0.118	1.662	0.172
<i>Intercept</i>	39.060	4.608	8.476	0.001 ^c

Note: a, b, and c are 10%, 5%, and 1% significance, respectively.

Source: Authors.

4.5. Toda-Yamamoto causality result

Presented in Table 8 is the Toda-Yamamoto causality output. Evidence from the table indicates that currency depreciation significantly Granger causes capital flight at 5% significance level. Likewise, currency appreciation significantly Granger cause capital flight at 10% significance level. Also, corruption is revealed to significantly Granger cause capital flight at 1% significance level. Similarly, government effectiveness significantly Granger cause capital flight at 1% significance level. In contrast, political violence showed insignificant Granger causality with capital flight. This decision is based on the insignificance of the Chi-square's probability value. Likewise, economic growth showed insignificant Granger causality with capital flight, based on the insignificant probability value of the relationship's Chi-square. Similarly, the joint causal effect of the variables is revealed to be statistically insignificant.

Table 8: Causality output

<i>Dependent Variable: IRKF</i>			
<i>Variables</i>	<i>Chi-sq</i>	<i>Df</i>	<i>Prob.</i>
EXCH ⁺	9.017	2	0.011**
EXCH ⁻	4.686	2	0.096*
COR	11.195	2	0.004***
GOVEF	11.856	2	0.003***
POV	1.643	2	0.440
GDPR	2.764	2	0.251
All	15.500	12	0.215

Note: a, b, and c are 10%, 5%, and 1% significance, respectively.

Source: Authors.

4.6. Discussion of findings

Table 7 had revealed that currency depreciation has a significant positive relationship with capital flight. This outcome align with the findings by Ogbeide-Osaretin and Olotu (2020), Uche and Effiom (2021), and Abbas *et al.* (2024) for African economies. The implication of this result is that as the naira gets increasingly depreciated in value, it encourages the desire to hold wealth in foreign currency, hence, capital flight. Specifically, currency depreciation reduces the purchasing power of naira-quoted assets. Thus, wealthy individuals and investors will try to protect the actual value of their resources by converting into better reliable denominations such as US dollar, euro, and British pound, and foreign investments and properties. Also, when currency depreciation rises, investors may cut down on investing in domestic bonds, stocks, and real estate, diverting capital to safer foreign markets.

The reverse is valid with currency appreciation, has the naira gains value it boost confidence in holding wealth in naira-denominated assets, since assets in the country appreciate in value to foreign currency. Hence, the lower the desire to transfer capital abroad. Furthermore, with increase in currency appreciation, the higher investors' confidence in the local economy, thereby reducing individual and business challenge of currency-linked losses. By eroding currency depreciation with appreciation, business and individual capital are more likely to remain within the economy. Also, currency appreciation can reverse previous capital flight by encouraging investors to reinvest such capital in the domestic economy for more value.

Furthermore, despite the output in Table 7 revealing that corruption has no significant effect on capital flight, government effectiveness and political violence showed substantial positive effect on capital flight in Nigeria. Thus, the significance of institutional quality on capital flight agreed with empirical findings by Kossele and Mbai-Akem (2020), Tarawalie and Jalloh (2021), Otieno *et al.* (2021) for EAC member countries, Francky and Ngono (2022), and Okafor and Ede (2023) for different African countries. For government effectiveness, the positive relationship with capital flight is plausible. Despite the fact that improvement in governance effectiveness can promote trade and investment and encourage the integration of the domestic economy with global financial system, capital flight can still rise. The reasoning is that, corporations and elites within the economy may still find it easier to legally transfer funds to foreign accounts through acquisitions, investments, or profit repatriation. Thus, capital flight can legally be disguised as portfolio

investment or trade misinvoicing (under-quoting of export returns or over-quoting of import cost). The gains on these activities forms capital flight as they are kept in overseas accounts.

Similarly, the positive effect of political violence on capital flight is plausible because when there is instability from political crises, businesses and wealthy individuals tend to ship their capital abroad for safety against uncertainty in the economy. Both local and foreign investors tend to favour asset transfer abroad in the event of erupting or persistent political violence in a country. Accordingly, more capital flight is triggered from the domestic economy to perceived stable ones with good returns.

Also, the causal association between the variables as expressed in Table 8 shows that a bidirectional nexus exist between currency depreciation and capital flight. This implies that while currency depreciation can lead to more capital flight, the latter can also trigger more reduction in the value of the naira. As more capital increasingly finds their way out of the economy, more pressure is being exerted on the foreign currency into which such capital are being converted. Thus, the demand for the home currency falls against the foreign currency. This can also translate to fall in the home country's external reserve, resulting in the local currency losing its value (depreciation). However, the same is not true in the event of currency appreciation, as the latter actually discourages capital flight, with no reverse impact from capital flight.

In addition, weak institutional quality in terms of corruption and governance ineffectiveness can be exploited for capital flight. When the motive and the means for shipping capital out of the economy are not scrutinised, they tend to easily bypass normal financial oversight, thereby causing capital flight. For instance, corrupt individuals may embezzle public funds and swiftly transfer to off-shore accounts to prevent detection. Also, weak institutions encourage collaboration between corrupt officials and national or foreign companies to divert funds in foreign accounts with tight-to-detect banking secrecy (Yakubu and Aladejare, 2024). Such collaboration may be in form of over-bloated contract figures and awarding of under-performing projects. The proceeds from such deals may be saved in foreign accounts by the collaborating corporate organisations on-behalf of the corrupt public officials.

5. CONCLUSIONS AND RECOMMENDATIONS

This study looked at how exchange rate volatility and institutional quality determined capital flight from Nigeria between 1991 and 2023. The research applied the DOLS

estimation and the Toda-Yamamoto Granger causality techniques. Hence, the research showed that exchange rate volatility significantly triggers capital flight in the long term for Nigeria. This phenomenon is due to the empirical affirmation that increase in currency depreciation motivates more capital outflow from Nigeria. However, currency appreciation substantially reduces capital flight from Nigeria, since a strong currency encourages more capital retention within the economy. However, while corruption has an insignificant effect, governance effectiveness and political violence substantially promote more capital flight from Nigeria. Thus, implying that weak institutions play significant role in the growth of capital flight from Nigeria. Furthermore, a substantial causal relationship between exchange rate volatility, institutional quality, and capital flight existed in Nigeria. Particularly, while a bidirectional nexus exist between currency depreciation and capital flight, a unidirectional impact from currency appreciation to capital flight was validated. Similarly, a unidirectional causal association exist from corruption and government effectiveness to capital flight in Nigeria.

Thus, the study recommends that given the significant effect of exchange rate volatility on capital flight in the long term, the adoption of a floating exchange rate by the government is in the right direction, however, its implementation needs to be properly managed by the monetary authority. This process will demand the CBN to promptly intervene in the foreign exchange market when needed, specifically to smooth excessive short-term fluctuations without committing to a strict rate. Also, the country's external reserve needs to be properly managed and increased by the CBN. This process will afford the CBN the ability to respond efficiently during speculative attacks, lowering the urge for capital flight. Liquidity buffers in terms of currency swap with other Central Banks can be explored to tackle sudden depreciation pressures.

Furthermore, to curb the significance of weak institutions in promoting capital flight, first, fiscal governance needs to be improved. There should be transparency in the budgeting process, ensuring tax administration are seamless and effective, and proper monitoring public spending to reduce leakages that incentivise capital flight. There is need to enhance the e-governance system in the country to reduce discretionary abuse and reestablish trust in governance. Political interference in the administration of the CBN, judiciary and audit establishments should be reduced to signal stability to local and foreign investors. Also, the government should promote fair elections, encourage more political participation, and uphold institutional

monitoring that eliminates political disenfranchisement. Improvement in social investment schemes is needed to reduce the challenges of youth unemployment, inequality and poverty which are primary cause of political unrest.

On the causal relationship between the variables, policy synergy between the monetary and fiscal authority is required. A predictable macroeconomic environment will promote confidence in the naira, and diminish perceived risk of saving assets in the domestic economy. In addition, policy uncertainty should be eliminated by ensuring that there is a clear and open channel of policy communication. This move will guarantee that individuals and businesses well understand the policy direction of the CBN and government to combat speculative behaviours that can activate capital flight. Also, public accountability mechanism through the open government data and whistle-blower policies, and civil society engagement in tracking capital flows should be intensified.

However, this study is constrained to federal government evaluation. Consequently, the assessment of capital flight at the sub-national levels was not achievable due to unavailability of data, especially on capital flight and institutional quality at state levels. Hence, subsequent research may explore the aforesaid limitation by conducting a robust examination of the relationship at the Federal and State government levels. Such study will help to enrich the literature further on the relationship between the variables in Nigeria.

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