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The Paradox of Capital Flight in Resource-Rich Nigeria: Consequences for the Oil And Gas Sector (1981 – 2022)

[1]Adekanmbi, Adeleke Adeyinka, [2]Aiyedogbon O. John & [3]Aigbedion Marvelous I.
[1,2&3]Department of Economics,
Faculty of Social Sciences, Bingham University, Karu.

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Abstract

The global oil market is also shaped by several forces that impact the production and pricing of the commodity, or its output. The oil and gas sector is a capital-intensive sector but has suffered from capital flight. This study examines the impact of capital flight and its macroeconomic determinants on the oil and gas sector output in Nigeria from 1981 to 2022. Using the Autoregressive Distributed Lag (ARDL) Model, the research investigates the long-run and short-run effects of capital flight, external debt, exchange rate, inflation rate, interest rate, and tax revenue on the output of the oil and gas sector. The analysis is anchored on annual time series data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Development Indicators (WDI). The results of the ARDL bound test showed a significant F-statistic of 106.02, which rejects the null hypothesis of no co-integration, thus establishing a long-run equilibrium relationship between the oil and gas sector output and the macroeconomic variables. The ARDL model results revealed that in the short run, capital flight had a significant positive impact on oil and gas sector output, while external debt and exchange rates had negative impacts. Inflation rates and interest rates also exhibited mixed effects, with previous inflation showing a positive impact and current inflation a negative one. In the long run, capital flight maintained a significant positive effect on the sector's output, contrary to expectations from previous studies. Conversely, external debt, exchange rates, inflation, and tax revenue were found to negatively affect oil and gas sector output in the long run. Interest rates, however, had a positive long-run effect on the sector. The study concludes that capital flight, external debt, exchange rate, inflation rate, interest rate, and tax revenue play crucial roles in shaping the performance of Nigeria's oil and gas sector. It recommends policies aimed at controlling capital flight, managing external debt, stabilizing the exchange rate, and maintaining low inflation rates to enhance the productivity and sustainability of the oil and gas sector in Nigeria.

Keywords: *Capital Flight, The oil and gas sector output, ARDL Model and Error Correction Mechanism*

Corresponding Author: **Adekanmbi, Adeleke Adeyinka**

Background to the Study

The global oil market is a complex system acting on the world economy (Economou and Fattouh, 2021). It is driven by the supply and demand of crude oil and its refined petroleum products. Crude oil and other petroleum products are physical commodities with finite production and supply, accelerated consumption, and growing environmental rules (Edo et al, 2024). The market is also affected by the vagaries of geopolitics, technology, economic cycles and regulations concerning the environment. The global oil market is also shaped by several forces that impact the production and pricing of the commodity, or its output. The market is also affected by the vagaries of geopolitics, technology, economic cycles and regulations concerning the environment (Imsirovic, 2024). These forces include the states that produce oil, whether belonging to the Organisation of the Petroleum Exporting Countries (OPEC), such as Saudi Arabia, Kuwait, Nigeria and others, or non-OPEC producers like the United States and Russia (Popoola et al, 2024).

Since the discovery of oil in Nigeria in commercial quantity in 1956, the Nation has emerged as one of the largest oil producers in the world, with the oil and gas sector representing over 90% of the nation's total export revenues and the highest contributor to the GDP (Edo et al, 2024; Popoola et al, 2024). This over-reliance on oil and gas has shaped the Nation's economy, making it highly prone to global oil price volatility and external oil shock (Amuda et al, 2023). The oil and gas sector not only contributes significantly to the nation's income but also plays a key role in reducing the unemployment rate, technological advancement and infrastructural development (Ogbuagu, 2024). This reliance on oil and gas has also predisposed the economy to vulnerabilities when faced with financial shocks.

Meanwhile, since the late twentieth century, Nigeria has experienced significant capital flight (Ezu and Oranefo, 2023). This has led to substantial amounts of foreign direct investment and portfolio investment leaving Nigeria. Pradhan et al (2024) define Capital Flight as the large movement of capital from one country to another due to Economic shocks, political instability, and corruption. In developing economies, capital flight can have serious consequences. One immediate result is reduced domestic investment since capital that could otherwise have fuelled business activity and built economic capacity has left the country (Mekongo et al, 2023). It can also undermine prospects for economic growth, making it harder to improve infrastructure, services and broader standards of living (Mamun et al, 2023).

Capital flight can also have consequences for the country's currency (Faza and Badwan, 2023). A large withdrawal of capital suddenly may increase demand for foreign currencies, leading to a weakening or potential collapse in the value of the local one. That in turn, by raising inflation rates, would likely make imports more expensive and harm people's purchasing power. Furthermore, dwindling foreign exchange reserves as a result of capital flight will also reduce a government's ability to finance economic deficits and public debts, possibly precipitating a fiscal crisis (George, 2023). Indeed, foreign currency reserves serve as an important tactic for ensuring macroeconomic stability in developing countries. Their depletion might force governments to take unpopular austerity measures. Loss of capital can also undermine confidence among international investors for future investment in the country, creating a vicious circle of economic decline and instability (Nwokolo, 2023).

The oil and gas sector is a capital-intensive sector, where the exploration, production, infrastructural development and technological advancements rely heavily on both domestic and foreign investments (Abor et al, 2023). Capital outflow limits the availability of these essential funds, leading to underinvestment and stagnation within the sector. Low investment in the sector reduces the sector's capacity for innovation, and expansion of operations and improves competitiveness in the global market. Capital flight could also increase the costs of the fund as the supply of available capital diminishes, making it more expensive to finance oil and gas company's projects (Dordi et al, 2023). Crude Oil price volatility in the international market has been a major cause of the economic crisis in Nigeria since the nation depends on crude oil price per barrel to make the annual budget (Isah and Ekeocha, 2023). However, according to Beirne et al (2020), capital flight is at its peak during economic downtime and the global pandemic. The combined effect of this capital outflow has strained the nation's foreign reserves, reduced the availability of capital for domestic investment and negatively impacted economic growth (Leykun-Fisseha, (2022).

Additionally, the economic output in Nigeria is not only affected by capital flight but also by some macroeconomic determinants, which affect the overall stability of the economy. The macroeconomic environment of Nigeria is characterized by several other variables that affect its economic stability and steady growth. High core or food inflation rates have been a persistent challenge, reducing purchasing power and increasing the cost of living (Brewer et al, 2021). The exchange rate volatility, especially the persistent decline in the value of Naira, has made import goods more expensive and reduced the competitiveness of Nigerian export products (Akintomide, 2021). Tax revenue generation is another critical phenomenon which is associated with inefficiencies in the collection of tax and high tax rates affecting both private sector investments and government revenue (Effiong et al, 2020). External debt is another major concern in Nigeria, with significant portions of this debt profile denominated in foreign currencies, which has made debt servicing burdensome and restraining fiscal flexibility (Rashied, 2021). Additionally, the interest rate in Nigeria has been relatively high, increasing the cost of funds and also discouraging domestic investment and encouraging capital flight (Oladimeji et al, 2022).

Despite the significant contribution of the oil and gas sector to the National income, there is limited empirical research on the impact of capital flight and its macroeconomic determinants on the Oil and Gas Sector output. Previous studies have focused on the overall economic implications of capital flight, how it affects economic growth and development, levels of investments, and fiscal stability. However, the implications for the oil and gas sector, which is the cornerstone of the Nigerian economy have not been explored. Exploring these dynamics is key for policymakers to mitigate the adverse effects of capital flight and promote sustainable growth within the oil sector.

Considering the role of the oil and gas sector, the negative impact of capital flight as well as the macroeconomic environment of Nigeria, this study fills the gaps by assessing the influence of capital flight and its macroeconomic determinants on the Oil and Gas sector output in Nigeria from 1981 to 2022. The research objectives are to determine the impact of capital flight on the

Oil and Gas sector output in Nigeria; determine the impact of External Debt on the Oil and Gas sector output in Nigeria; examine the impact of the Exchange rate on the Oil and Gas sector output in Nigeria; analyze the impact of the Inflation rate on the Oil and Gas sector output in Nigeria; ascertain the impact of interest rates on the Oil and Gas sector output in Nigeria; and to determine the impact of tax revenue on the Oil and Gas sector output in Nigeria

This research tested the following hypotheses:

Ho1: Capital flight has no significant impact on the Oil and Gas sector output in Nigeria.
Ho2: External debt has no significant impact on the Oil and Gas sector output in Nigeria.
Ho3: The exchange rate has no significant impact on the Oil and Gas sector output in Nigeria.
Ho4: The inflation rate has no significant impact on the Oil and Gas sector output in Nigeria.
Ho5: The interest rate has no significant impact on the Oil and Gas sector output in Nigeria.
Ho6: Tax revenue has no significant impact on the Oil and Gas sector output in Nigeria.

Literature Review

Conceptual Review

Capital Flight

Capital flight refers to a quick overall movement of capital (financial asset) out of a country to another country (Akinwale, 2020). Capital flight occurs mostly in developing economies where investors lose their confidence and are looking for a safer haven for their wealth (Mekongo et al, 2023). There are varieties of determinants of capital flight which may be economic, institutional and political factors (Pradhan et al, 2024). These factors include political instability, general unrest, corruption, terrorism, insurgency, denationalizing policies, fiscal policies, tax fraud, excessive devaluation of the currency of a country that operates in that country and the like. Capital flight has to be understood well otherwise, a country like Nigeria may not be able to know the impact of capital flight on her economy. In Nigeria, capital flight has been an important issue. Nigeria relies substantially on oil revenue, and it can easily fall victim to oil price volatility (Amewu et al, 2024). Ezu and Oranefo (2023) stated that corruption, political instability and economic mismanagement have periodically driven capital out of the country, with severe economic consequences. Industrial growth suffers because capital flows out. Little capital for investment growth means limited opportunities for innovation and weak economic progress and diversification (Ndikumana, 2023).

Determinants of Capital Flights

The determinant of capital flight (large-scale emigration of financial assets and capital from a country, because of economic or political instability, corruption or unfavourable financial policies, leading to the short-term or long-term transference of assets abroad) varies across nations. For Nigeria, the movement of capital outside the country is influenced by factors such as high inflation, exchange rate volatility, tax revenue, interest rates, external debt accumulation, terrorism, corruption, and political instability (Ezu and Oranefo, 2023; Akinlo

and Aderounmu, 2024). Inflation is another determinant of capital flight. High inflation can destroy the value of local currency and other locally grounded investment vehicles, draining capital out of the country and into more stable foreign economies. Inflation reduces the real return from middle-class savings, discouraging domestic investment and incentivizing capital flight (Chohan, 2024). Political uncertainty surrounding inflation increases as inflationary expectations escalate, exacerbating capital outflow.

Exchange rate fluctuations (especially the depreciation of the local currency (Naira), significantly impact capital flight. If the local currency depreciates, it can trigger investors to have a loss of confidence in the currency and transfer their assets to another country with a more stable variant (Wang and Lee, (2022). As empirical evidence has shown, an increase in exchange rate (depreciation) is positively associated with the enhancement of capital flight (Egbulonu and Bhattarai, 2020). Tax Revenue has also been identified as a determinant of capital flight from the tax depressing theory (Eluyela et al, 2020). The tax depressing theory states that capital flight hurts tax revenues because wealth held abroad cannot be taxed by tax authorities at home (Benjamin and Christian, 2020). High and erratic tax rates reduce the returns on domestic investment and thus increase the attractiveness of foreign investments. Volatility in tax policies increases the risk associated with investment at home, inducing capital flight into stable and predictable tax regimes abroad (Akeliwira, 2023).

The relationship between interest rates and capital flight is more complex than one might expect. On the one hand, a rise in domestic interest rates might increase inflows of foreign capital and reduce capital flight (Istikomah, et al, 2020). But high interest rates, if they're seen as an indication of an underlying economic instability, might promote capital flight (Badwan, 2021). In the case of Nigeria, a rise in the deposit rate of interest is often associated with a reduction in capital flight. This is because a rise in interest rates improves the returns on household savings and investments. External debt may have a positive and negative influence on capital flight. On the one hand, borrowing from abroad can supply the necessary funds for investment and development (Kong and Gallagher, 2021). On the other hand, external debt can rise to the point that the borrower's indebtedness worries investors about the capacity of the country to repay its obligation, leading to capital flight in the face of potential losses due to default or devaluation (Smith, 2021). Researchers have found that external debt hurts economic growth and investment, which then results in capital flight (Agyeman et al, 2022; Otieno et al, 2022; Badwan, 2021).

Oil and Gas Sector Output

Oil and gas sector output is the total production of crude oil, natural gas and petroleum products in a country (Ghoddusi, 2022). This sector is a key economic factor in Nigeria where it contributes about 9% of GDP and a good portion of government revenue and export earnings. The oil and gas industry contributes about 9 per cent to the country's GDP. It also represents more than 90% of the volume of total exports and over 80% of government income (Nwankwo and Iyeke, 2022). Nigeria is the biggest oil producer on the African continent and, with an approximately daily output of 2.5 million barrels, sixth in the world in crude oil production (Oyeranmi, 2020). It also has the biggest natural gas reserve in Africa and the

seventh largest globally. Nigeria's oil and gas sector is the major source of income and foreign exchange earnings, and therefore a priority area for analyzing the issues of capital flight. The state-owned Nigerian National Petroleum Corporation (NNPC) oversees more than 50% of oil and over 40% of gas supply. Despite its importance, the sector has not been able to refine the total capacity of supply — refineries continue to operate below the optimum capacity — and infrastructure improvements are still needed to reduce gas flaring and increase gas utilization.

Empirical Review

Over the years, several researchers have examined the impact of capital flight on the entire economy as an aggregate without dough tailing it towards any specific sector. One of such is Daasi (2024) who examined the impact of capital flight on Nigeria's economic growth from 1980 to 2021. Utilizing the autoregressive distributed lag (ARDL) regression model, the study finds that capital flight has a generally negative and statistically significant effect on economic growth. In the short term, ARDL estimates indicate that capital flight has a positive but insignificant impact on economic growth. Based on these results, the study recommends enhancing domestic investment by promoting local enterprises. Establishing a supportive business environment is particularly crucial. This study focused on the overall economy without considering individual sectors.

Another empirical piece of evidence from Afghanistan by Wani (2024) examined the nature and prevalence of reverse capital flight by employing two methods i.e. direct approach and indirect (residual) approach. The outcome listed four main determinants for reverse capital. These include facilitating the whitening of black money (money laundering) which has been previously illegally flown out of the country; second, it allows import tax evasion and the realisation of unnecessary export rebates and refunds; third, it facilitates the avoidance and incidence of Non-Tariff Measures (NTMs) on imported goods; and finally, it allows for the concealment of investment in the underground economy. This study is mainly about reverse capital flight while the current research will explore the major cause of capital outflow in Nigeria and the potential impact on industrial growth in Nigeria.

A very recent study by Danladi et al (2024) investigated the effect of capital flight on macroeconomic performance in Nigeria for the period 1981 to 2019 with data sourced from the World Bank datasets. The study also ascertained the determinants of capital flight in Nigeria for the period. Analysing with error correction mechanism, results revealed that external debt in the current period and the first lag, external debt in the current period, foreign direct investment in the current period, current account balance in the current period, interest rate in the current period and reserves in the first lag are significant determinants of capital flight in Nigeria. Also, the study revealed that capital flight negatively affects economic growth and investment in Nigeria. The study fails to look at the impact of capital flight at the sector level.

The impact of macroeconomic indicators has also been explored by other researchers. Kolawole (2024) examined the implication of exchange rate changes on the financial performance of oil and gas companies in Nigeria captured with return on asset and

investment. The study adopted an expo facto research design and a positivist research approach. Correspondingly, the study adopted quantitative research approaches covering time series data spanning from 1994 to 2023. Both descriptive and inferential statistical analyses covering auto-regression distribution lag (ARDL) and error correction estimation were conducted. This study established that exchange rate changes have a statistically negative effect on the financial performance of oil and gas firms in Nigeria and should minimize their dependence on foreign currency earnings.

In another study by Orenuga and Oyedokun (2023), the effect of capital flight on Nigerian economic growth was examined. The study utilized the aggregate annual time series data obtained from the CBN Statistical Bulletins, NBS, IMF and World Bank and adopted an ex-post facto research design. The study utilized panel data estimation from the period 2002 to 2021. The result of the analysis revealed that capital flight has a negative relationship with economic growth in Nigeria. Basher et al (2023) provided an estimate of capital flight from selected emerging Asian nations and investigated the anti-growth phenomenon of capital flight using the aggregate annual time series data from 1981 to 2019. Capital flight was measured using the World Bank residual method with slight adjustments. ARDL model (autoregressive distributed lag) Bounds testing approach was used in investigating the effect of capital flight on the economic growth of Asian emerging countries. The results implicate capital flight as the indicator for slower economic growth in the emerging economies of Asia studied. This study has also validated the inhibiting nature of capital flight to economic growth.

Agyeman et al (2022), applying an augmented endogenous economic growth model to data from 2000 to 2015, investigated the extent to which capital flight affects the impact of external debt on economic growth in some sub-Saharan African nations. The analysis was done using the dynamic system GMM (generalized method of moments) model. The direct impact of both capital flight and external debt as well as their combined effect on economic growth was found to be negative and statistically significant. This study fails to compute the pre-estimation and postestimation test which is key to ascertaining the stationarity, reliability and stability of the results. Isibor et al (2022) examined the relationship between exchange rate fluctuations and Nigerian oil and gas sector performance with respect to achieving sustainable economic growth using Vector Autoregressive Model (VAR). The VAR result revealed that the nominal exchange rate (EXR(-1)) was positively significant with OILE while EXR(-1) was negatively significant with OILO. The study therefore recommended amongst others that more refineries should be built in Nigeria, so more products are extracted from crude oil and can be exported to boost revenue. In another study, Badwan, N. (2021), utilizing data from the annual aggregate time series from 2000 to 2020, examined the influence of Capital Flight on Economic Growth and Financial Stability in Palestine. Data on Capital Flight, Foreign Exchange Reserves, External Debt, and Real GDP were obtained and used in this study. The study carried out Johansen's co-integration and error correction mechanism. The evidence of the research results shows that there is a co-integration relationship between the research variables, and Capital Flight has harmed the Economic Growth of the Palestinian case.

Few studies have examined the impact of capital flight on some specific sector of the economy. For instance, Shaxson (2021) explore how capital flight affected the Oil and Gas Sector of Angola, particularly during its oil boom from 2002 to 2014. The research highlights that while Angola exported about $530 billion worth of oil, a large proportion of the revenue was funnelled overseas through capital flight, depriving the nation of crucial resources for development. The study reveals how capital flight—facilitated by illicit financial flows, trade misinvoicing, and international intermediaries—diverted significant portions of Angola's oil revenues into foreign accounts controlled by a small elite. Through an analysis of Angola's balance of payments data and case studies, the paper illustrates how foreign actors and weak domestic governance contributed to the mismanagement of oil wealth. The paper also explores the broader implications of capital flight for economic instability, underdevelopment, and the failure to diversify Angola's economy. It emphasizes the need for international regulatory reform to curtail financial leakages from resource-rich countries like Angola.

Onakoya and Agunbiade (2020) assessed the impact of the Nigerian oil sector performance on the macroeconomic variables between 1980 and 2017 in light of this overdependence. The Toda Yamamoto modified Wald's test was employed to know the direction of causality. The Impulse Response Function together with other post-estimation tests was also used. The result showed a uni-causality direction from oil revenue in the direction of all the macroeconomic variables. It also revealed a significant positive long-run relationship between the oil sector and both GDP and unemployment. The inflation, exchange rate and interest rate were however inversely associated with the oil sector output. The study recommended that the government of Nigeria take diversification more seriously, besides investing in refinery acquisition and management.

George-Anokwuru and Bosco (2020) examined the effect of interest rates on the industrial sector in Nigeria from 1980 to 2018. The data for the study were sourced from the Central Bank of Nigeria (CBN) statistical bulletin and the Autoregressive Distributed Lag model was used as the main analytical tool. The ARDL Bounds test revealed the existence of a long-run relationship among the variables. The result further revealed the existence of a positive relationship between interest rate and industrial output both in the long run and short run. The rate of inflation was negatively related to industrial output, but the relationship was not significant in both the short run and the long run. Therefore, the study recommended among others that the apex monetary institution - the Central Bank of Nigeria should ensure that the rate of interest will encourage investors to borrow to start to do businesses or to expand their businesses.

Methodology

This study employs a quantitative research design, utilizing time series data to analyse the impact of capital flight and its macroeconomic determinants on the oil and gas sector output in Nigeria. The design is descriptive and explanatory, aiming to identify relationships and causality among the variables. Data will be collected from various reputable sources, including the CBN statistical bulletins, World Development Indicators (WDI), International Financial Statistics (IFS), and the Nigerian Bureau of Statistics (NBS). The capital flight (CFB) data will

be computed following World Bank (1985) and Erbe (1985) from World Bank Development Indicator Metrics. Data on Inflation (INF), Exchange rate (EXR), Tax revenue (TAXR), Interest rate (INT), External debt (EXDD), Oli and Gas Sector Output (MSO) and data were sourced from the CBN Annual Statistical Bulletins and Nigerian Bureau of Statistics (NBS).

Table 1: Data Sources

Variable	Abbreviation	Unit	Source
Oil and Gas Sector Output	OGSR	₦' Billion	CBN Statistical Bulletin 2022
Tax revenue	TAXR	₦' Billion	CBN Statistical Bulletin 2022
External Debt	EXDD	$' Billion	World Bank Development Indicators (WDI)
Exchange Rate	EXR	₦/$	World Bank Development Indicators (WDI)
Interest Rate	INT	%	World Bank Development Indicators (WDI)
Inflation Rate	INF	%	World Bank Development Indicators (WDI)
Capital Flight	CFB	$' Billion	Computed from World Bank Development Indicators (WDI)

Source: Author's Compilation (2024)

Estimating Capital Flight

Over the years, several researchers have developed different techniques for measuring capital flight. These include the balance of payment Account approach, residual methods (World Bank and Erbe and Morgan Guaranty Trust), bank deposit method, Dooley Approach Method and Hot Money Approach.

Table 2: Notations of Estimating Capital Flight

A	Current Account Balance
B	Net Foreign Direct Investment
C	Private Short-term Capital Outflows
D	Portfolio Investment
E	Foreign Assets of the Banking System
F	Changes in Reserves
G	Errors and Omissions
H	Changes in External Debt
I	IMF Credit
J	Travel Credits
K	Reinvested Income from FDI
L	Other Investment
M	Counterpart items

Methods	Capital Flight Estimates
World Bank Method	= (H + B + A + F)
Erbe Method	= (H + B + A + F)
Morgan	= (H + B + A + E + F)
Cline	= (H + B + A + F) - (J + K + L)
Duwendag	= (H + B + A + F + G + I + M)

Source: Lessard and Williamson (1987)

For this research, the World Bank Method of estimating Capital Flight was adopted as follows:

$$CFB_t = \Delta EXDD_t + FDI_t + CAB_t + \Delta EXRES_t$$

Where:

CFB_t = Capital Flight measured by the World Bank approach in period t

$\Delta EXDD_t$ = Changes in External Debt$\Delta EXDD_t = EXDD_t - EXDD_{t-1}$

FDI = Net Foreign Direct Investment

CAB= Current Account Balance

$\Delta EXRES$ = Change in Reserve

$\Delta EXRES = EXRES_t - EXRES_{t-1}$

Positive CFB_t Values indicate capital flight, while negative values indicate capital re-flows.

Theoretical Framework

Following the Endogenous Growth Theory of Solow and Swan, the output of an economy depends on capital accumulation (K), labour productivity (L) and technological progress (Villanueva et al, 2021). The theory is an economic model of long-run economic growth which is also related to the Oil and Gas sector's output. It attempts to explain long-run economic growth by looking at capital accumulation, labour or population growth, and productivity increases largely driven by technological progress. Mathematically, the endogenous growth model is a non-linear system consisting of a single ordinary differential equation that models the evolution of the per capita stock of capital. Due to its particularly attractive mathematical characteristics, Solow–Swan proved to be a convenient starting point for various extensions. Similar to the Cobb–Douglas production function, the model is specified as:

$$Y_t = K_t^{\alpha}(A_t L_t)^{1-\alpha}$$

Where Y is the output, K is the capital accumulation, A is the labour-augmented technology, L is the labour and AL is the effective labour. Also, t denotes time, $0 < \alpha < 1$ is the elasticity of output with respect to capital, and Y represents total output.

Based on the above theory, this study shall model the relationship between industrial output and capital flight and the macroeconomic determinants such as Inflation, exchange rate, external debt, and Tax Revenue.

The implicit form of the model is specified as:

$$OGSR = f(CFB, INF, EXR, TAX, INT, EXDD)$$

Where OGSR is the oil and gas sector output, CFB is the capital flight, INF is the Inflation rate, EXR represents the Exchange rate, TAXR represents Tax revenue, INT is the Interest rate and EDD is the external debt.

Oil and Gas Sector ARDL Model Specification

The dependent variable OGS_t represents the output or performance measure of the oil and gas sector at time t.

$$\Delta OGSR_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \Delta OGSR_{t-1} + \sum_{j=0}^{q_1} \beta_{1j} \Delta CF_{t-j} + \sum_{k=0}^{q_2} \beta_{2k} \Delta INF_{t-k} + \sum_{m=0}^{q_3} \beta_{3m} \Delta \mathrm{EXR}_{t-l} + \sum_{n=0}^{q_4} \beta_{4n} \Delta TAX_{t-n} + \sum_{o=0}^{q_5} \beta_{5o} \Delta \mathrm{INT}_{t-o} + \sum_{p=0}^{q_6} \beta_{6p} \Delta \mathrm{ED}_{t-p} + \phi_1 OGS_{t-1} + \phi_2 CF_{t-1} + \phi_3 INF_{t-1} + \phi_4 EXR_{t-1} + \phi_5 TAX_{t-1} + \phi_6 INT_{t-1} + \phi_7 ED_{t-1} + \lambda EC_{t-1} + \varepsilon_t$$

where: Δ represents the First difference operator, OGS_t represents the Output of the oil and gas sector at time t, CF_t represents the Capital flight at time t, INF_t represents the Inflation rate at time t, EXR_t represents the Exchange rate at time t, TAX_t represents the Tax revenue at time t, INT_t represents the Interest rate at time t, ED_t represents the External debt at time t, α_0 represents the Intercept.

Also, α_i is the Coefficients of the lagged dependent variable. $\beta_{1j}, \beta_{2k}, \beta_{3m}, \beta_{4n}, \beta_{5o}, \beta_{6p}, \beta_{7q}$ are the short-run coefficients of the independent variables. $\phi_1, \phi_2, \phi_3, \phi_4, \phi_5, \phi_6, \phi_7$ are the long-run coefficients of the independent variables. λ is the coefficient of the error correction term EC_{t-1}. ε_t is the error term. EC_{t-1} is the error correction term lagged by one time period, representing the speed of adjustment back to the long-run equilibrium

Data Analysis

Table 3: Descriptive Statistic of the Variables

	OGSR	CFB	EXDD	EXR	INF	INT	TAXR
Mean	6583.173	4.750	37.089	115.741	18.947	17.324	407.239
Median	6473.646	2.111	32.735	115.255	12.942	16.922	268.790
Maximum	9294.051	46.117	98.335	425.981	72.836	31.650	989.098
Minimum	4052.978	-14.732	11.446	0.610	5.388	8.917	112.948
Std. Dev.	1458.800	12.557	19.923	119.141	16.455	4.817	251.519
Skewness	0.137	1.027	1.610	1.021	1.877	0.357	0.736
Kurtosis	2.101	4.349	5.122	3.221	5.437	3.601	2.060
Jarque-Bera	1.545	10.568	26.020	7.388	35.058	1.527	5.334
Probability	0.462	0.005	0.000	0.025	0.000	0.466	0.069
Observations	42	42	42	42	42	42	42

Source: Author's Computation using EViews 10 (2024)

Table 3 presents the descriptive analysis of the variables used in the estimation. As observed from the table, the mean, median, standard deviation, skewness and kurtosis were analysed as well as the Jarque-Bera Statistic The mean value of the Oil and Gas sector output (OGSR) Capital flight (CFB) External Debt (EXDD), Exchange rate (EXR) Inflation rate (INF), Interest rate (INT) and Tax Revenue (TAXR) are 6583.173, 4.750, 37.089,115.741, 18.947,

17.324 and 407.239 respectively. The standard deviation is 1458.8, 12.557, 19.923, 119.141,16.455, 4.817 and 251.519 for Oil and Gas sector output (OGSR), Capital flight (CFB) External Debt (EXDD), the Exchange rate (EXR), Inflation rate (INF), Interest rate (INT) and Tax Revenue (TAXR) respectively. The result of the Jarque-Bera Statistic shows that only the error terms of the oil and gas sector output, interest rate and tax revenue are normally distributed.

Table 4: Correlation Analysis of the Sampled Variables

	OGSR	CFB	EXDD	EXR	INF	INT	TAXR
OGSR	1.000						
CFB	0.450	1.000					
EXDD	-0.117	0.038	1.000				
EXR	0.084	0.185	0.877	1.000			
INF	-0.212	-0.150	-0.057	-0.290	1.000		
INT	0.472	0.082	-0.039	-0.148	0.369	1.000	
TAXR	0.309	0.207	0.489	0.719	-0.321	-0.100	1.000

Source: Author's Computation using EViews 10 (2024)

Table 4 presents the result of the Pair-wise Correlation between Oil and Gas sector output (OGSR) Capital flight (CFB), External Debt (EXDD), Exchange rate (EXR) Inflation rate (INF), Interest rate (INT) and Tax Revenue (TAXR). The result revealed that the Oil and Gas sector output has a negative correlation with external debt and inflation rates while it has a positive relationship with capital flight, exchange rate, interest rate and tax revenue.

Table 5: Unit Root Test Result (ADF Test)

Variable	ADF Statistic at Level	ADF Statistic at 1 Difference	Critical value	Status
OGSR		-6.029***	-4.205	I(1)
CFB	-4.092***		-2.623	I(0)
EXDD		-4.960***	-4.205	I(1)
EXR		-4.936***	-4.205	I(1)
INF	-4.130**		-3.527	I(0)
INT		-2.690*	-2.609	I(1)
TAXR		-6.442***	-4.205	I(1)

*** implies significant at 1%, ** implies significant at 5% and * implies significant at 10%,

Source: Author's Computation using EViews 10 (2024)

Table 5 presents the stationary test of the ADF test results. The results show that all the variables are stationary at the level or the first difference. The Oil and Gas sector output (OGSR) is stationary at first difference with ADF statistic of -6.029 which is significant at 1% level. Also, capital flight (CFB) is stationary at a level with an ADF statistic of -4.092 and significant at 1%. The external debt (EXDD) has an ADF statistic of -4.960 and it is stationary at first difference and significant at 1%. The exchange rate (EXR) is stationary at first difference with ADF statistic of -4.936 which is also significant at 1%. The ADF statistic for inflation rate (INF) is -4.130 and stationary at a level with a 5% level of significance. The

interest rate was stationary at first difference with ADF statistic of -2.690 which is significant at 10% level. The tax revenue is also stationary at first difference with an ADF statistic of -6.442 and significant at 1% level.

Overall, the unit root test revealed that capital flight and inflation rate were stationary at level while the oil and gas sector output, external debt, exchange rate, interest rate and tax revenue were stationary at first difference. These variables are of mixed order of integration i.e. I(0) and I (1) and satisfied the basic assumption of the ARDL cointegration bound testing as specified by Pesaran et al (2001).

Table 6: ARDL F-Bounds Test Result

Null Hypothesis: No levels relationship				
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	106.0203	10%	2.33	3.25
k	6	5%	2.63	3.62
		2.50%	2.9	3.94
		1%	3.27	4.39

Source: Author's Computation using EViews 10 (2024)

Table 6 presents the result of the cointegration analysis using the Autoregressive Distributed Lagged (ARDL) Bound Co-Integration approach. The model result shows that the F-statistic derived from the ARDL bound test is 106.02 which is greater than the critical values at 1%, 2.5%, 5% and 10% level of significance respectively. Thus, the null hypothesis of no co-integration relationship is rejected, implying that a long-run co-integrating relationship is established among the variables. Therefore, it shows that there is a long-run equilibrium relationship between the Oil and Gas sector output (OGSR), Capital flight (CFB), External Debt (EXDD), Exchange rate (EXR), Inflation rate (INF), Interest rate (INT) and Tax Revenue (TAXR).

Table 7: ARDL Short-run, Long-run and Error Correction Regression Model Results

Dependent Variable: OGSR				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	8184.9820	130.0077	62.9577	0.0003
D(OGSR(-1))	0.1967	0.0152	12.9245	0.0059
D(OGSR(-2))	-0.1721	0.0129	-13.3118	0.0056
D(OGSR(-3))	-0.2265	0.0101	-22.4895	0.0020
D(CFB)	45.6228	0.7030	64.9002	0.0002
D(CFB(-1))	-28.4936	0.9664	-29.4828	0.0011
D(CFB(-2))	-21.5649	0.6678	-32.2932	0.0010
D(CFB(-3))	-15.1336	0.7822	-19.3479	0.0027
D(EXDD)	-42.2911	1.3034	-32.4468	0.0009
D(EXDD(-1))	20.4763	1.3699	14.9478	0.0044
D(EXDD(-2))	85.6533	1.5388	55.6610	0.0003
D(EXDD(-3))	74.2560	2.3684	31.3523	0.0010
D(EXR)	-19.2891	0.3719	-51.8633	0.0004
D(EXR(-1))	-20.6198	0.4981	-41.3951	0.0006
D(EXR(-2))	-14.7837	0.5929	-24.9341	0.0016
D(EXR(-3))	-11.5802	0.4757	-24.3453	0.0017
D(INF)	-21.1895	0.3809	-55.6277	0.0003
D(INF(-1))	19.5008	0.6285	31.0297	0.0010
D(INF(-2))	11.6203	0.4595	25.2910	0.0016
D(INF(-3))	-6.9240	0.4938	-14.0216	0.0050
D(INT)	-0.1445	1.8036	-0.0801	0.9435
D(INT(-1))	-200.9389	3.9943	-50.3068	0.0004
D(INT(-2))	-56.6979	2.9357	-19.3130	0.0027
D(INT(-3))	32.7279	1.9974	16.3850	0.0037
D(TAXR)	-0.2621	0.0365	-7.1745	0.0189
D(TAXR(-1))	9.9629	0.1985	50.1876	0.0004
D(TAXR(-2))	7.2066	0.1531	47.0742	0.0005
D(TAXR(-3))	3.1869	0.1151	27.6932	0.0013
CointEq(-1)*	-1.9720	0.0319	-61.7797	0.0003
R-squared	0.9997			
Adjusted R-squared	0.9986			
F-statistic	978.1509			
Prob(F-statistic)	0.0000			
Durbin-Watson stat	2.7560			
LONG RUN ESTIMATES				
CFB	59.22574	5.098182	11.61703	0.007
EXDD	-22.36961	3.581872	-6.245228	0.025
EXR	-6.302464	0.586548	-10.745	0.009
INF	-31.57355	2.085105	-15.14242	0.004
INT	138.4128	8.77428	15.77483	0.004
TAXR	-5.612395	0.206264	-27.20979	0.001

*** implies significant at 1%, ** implies significant at 5% and * implies significant at 10%

Source: Author's Computation with EViews (2024)

Table 7 presents the ARDL Short-run, Long-run and Error Correction Regression Model Results where the Dependent Variable is the Oil and Gas Sector Output (OGSR). From the result, the F-statistic is 978.15 which is significant with a probability value of 0.0000, which indicates that the model is well-fitted and that there is a long-run equilibrium relationship between the Oil and Gas Sector Output (OGSR) and the independent variables - Capital flight (CFB) External Debt (EXDD), Exchange rate (EXR) Inflation rate (INF), Interest rate (INT)

and Tax Revenue (TAXR). The R-square value is 0.9997 and the adjusted R-square is 0.9986 which reveals that about 99% of the variation in Oil and Gas Sector Output (OGSR) is being accounted for by Capital flight (CFB), External Debt (EXDD), the Exchange rate (EXR), Inflation rate (INF), Interest rate (INT) and Tax Revenue (TAXR).

The short-run result and the Error Correction Term (ECT) show the 1-period lag Error Correction Term has a value of -1.97 indicating that it is negative and statistically significant with a probability value of 0.00 at 1% level of significance. This means that if there is any disequilibrium in the Oil and Gas Sector model, the high magnitude of the coefficient implied that it would take the fastest average speed of over 100% to restore or adjust the system back to equilibrium from the short run to the long run.

The short-run coefficient and probability values of each variable revealed that the previous value of Capital Flight has a negative impact on the oil and gas sector output while it has a current positive impact on the Oil and Gas Sector Output. Also, the external debt has had a previous negative impact on the Oil and Gas Sector Output and current negative impact. The exchange rate has both current and previous negative impact on the Oil and Gas Sector Output. The inflation rate has a current negative impact on the Oil and Gas Sector Output and a previous positive impact. Interest rate has no current significant impact on the Oil and Gas Sector Output but significant negative impact in the previous periods. The tax revenue has a significant negative impact on the Oil and Gas Sector Output in the current period and a positive impact in the previous periods.

In the long run, all the dependent variables significantly affect the Oil and Gas Sector Output. The capital flight has a coefficient of 59.226 and it is significant at 1% level of significance. This implies that capital flight has a positive long-run effect on the Oil and Gas Sector Output contrary to the negative impact reported by most studies. The coefficient of external debt is -22.367 and it is significant at 5% level. This implies that external debt negatively impacts the Oil and Gas Sector Output. The exchange rate has a coefficient of -6.302 and it is significant at 1% level. This implies that the higher the exchange rate, the lower the Oil and Gas Sector Output. Also, inflation has a coefficient of -31.57355 and it is significant at 1% level. This implies that the higher the inflation rate, the lower the Oil and Gas Sector Output. The inflation has a coefficient of 138.41 and it is significant at 1% level. This implies that the higher the interest rate the higher the Oil and Gas Sector Output. Lastly, the coefficient of tax revenue is -5.612395 and it is significant at 1%. The means that tax revenue has a negative impact on the Oil and Gas Sector Output in the long run.

Table 8: Hypotheses Testing of ARDL Results

Hypothesis	Variable	Tcal	Ttab	Decision Rule	Remarks
Ho: β1 = 0 Ha:β1 > 0	CFB	11.617	2.024	Tcal>Ttab, Reject Ho Tcal<Ttab, Accept Ho	Ho Rejected
Ho: β2 = 0 Ha: β2 > 0	EXDD	6.245	2.024	Tcal>Ttab, Reject Ho Tcal<Ttab, Accept Ho	Ho Rejected
Ho: β3 = 0 Ha: β3 > 0	EXR	10.745	2.024	Tcal>Ttab, Reject Ho Tcal<Ttab, Accept Ho	Ho Rejected
Ho: β4 = 0 Ha: β4 > 0	INF	15.142	2.024	Tcal>Ttab, Reject Ho Tcal<Ttab, Accept Ho	Ho Rejected
Ho: β5 = 0 Ha: β5 > 0	INT	15.775	2.024	Tcal>Ttab, Reject Ho Tcal<Ttab, Accept Ho	Ho Rejected
Ho: β6 = 0 Ha: β6 > 0	TAXR	27.210	2.024	Tcal>Ttab, Reject Ho Tcal<Ttab, Accept Ho	Ho Rejected

Tcal is the calculated T-Statistic, Ttab is the tabulated T-Statistic (Theoretical T-Statistics) and the decision rule is based on 5% level of significance. While the Degree of Freedom is set as (N-K) = 36. (Gujarati and Sangeetha, 2007)

Source: Author's Computation, using EViews 10 (2024)

Table 8 presents the results of the hypothesis of the ARDL ECM Regression for the research on the impact of capital flight and its macroeconomic determinants on the oil and gas sector output in Nigeria. The Hypothesis $\mathbf{H_{o1}}$, Capital flight has no significant impact on the the oil and gas sector output in Nigeria, was rejected at the 5% level of significance given that the value of the Calculated T-statistic (Tcal) of 11.617 is greater than the value of the tabulated T-statistic (Ttab) of 2.024. This implies that capital flight has a positive and significant impact on the oil and gas sector output in Nigeria in the long run. Also, hypothesis **Ho2,** External debt has no significant impact on the oil and gas sector output in Nigeria, was rejected at a 5% level of significance given that the value of the calculated T-Statistics (Tcal) of 6.245 is greater than the value of the table T-Statistics (Ttab) of 2.024. This implies that External debt has a negative and significant impact on the oil and gas sector output in Nigeria.

The **Ho3,** the exchange rate has no significant impact on the the oil and gas sector output in Nigeria, was reject at the 5% level of significance given that the value of the Calculated T-statistic (Tcal) of 10.745 is greater than the value of the tabulated T-statistic (Ttab) of 2.024. This implies that the exchange rate has a negative and significant impact the oil and gas sector output in Nigeria in the long run. The **Ho4,** the inflation rate has no significant impact on the the oil and gas sector output in Nigeria, was rejected at a 5% level of significance given that the value of the calculated T-Statistics (Tcal) of 15.142 is greater than the value of the table T-Statistics (Ttab) of 2.024. This implies that, in the long run, the inflation rate has a negative and significant impact on the oil and gas sector output in Nigeria.

Furthermore, the **Ho5**, the interest rate has no significant impact on the oil and gas sector output in Nigeria, was rejected at a 5% level of significance given that the value of the calculated T-Statistics (Tcal) of 15.775 is greater than the value of the table T-Statistics (Ttab) of 2.024. This implies that the interest rate has a positive and significant impact on the oil and

gas sector output in Nigeria. Finally, the **Ho6** which states that Tax revenue has no significant impact on the oil and gas sector output in Nigeria was also rejected 5% level of significance given that the value of the calculated T-Statistics (Tcal) of 27.210 is greater than the value of the table T-Statistics (Ttab) of 2.024. This implies that the tax revenue has a negative and significant impact on the oil and gas sector output in Nigeria.

Table 9: ARDL Post-estimation Tests

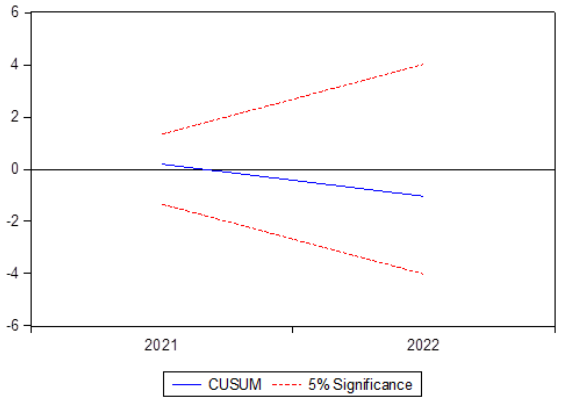
Test	Statistic	Statistic	Statistic
Heteroskedasticity Test: Breusch-Pagan-Godfrey	F-statistic	0.306041	0.950
Breusch-Godfrey Serial Correlation LM Test:	F-statistic	2.375677	0.3664
Normality Test	Jarque-Bera Statistic	11.287	0.004
Linearity Test: Ramsey RESET Test	F-statistic	0.333171	0.6667

Source: Author's Computation using EViews 10 (2024**)**

Table 9 presents the results of the various post-estimation tests carried out on the model of the impact of capital flight and its macroeconomic determinants on the Oil and Gas Sector output in Nigeria. The test for Heteroskedasticity has an F-statistic of 0.306041 and a probability value of 0.950. A p-value greater than 0.05 indicates that the variables are free from the problem of Heteroskedasticity. Also, the Breusch-Godfrey Serial Correlation LM Test has an F-statistic of 2.375677 and a probability value of 0.36664. The p-value greater than 0.05 indicates that the model is free from the problem of serial correlation.

The normality test has a Jarque-Bera statistic value of 11.287 and the probability value of 0.004 revealed that the model of the impact of capital flight and it's macroeconomic determinants on the Oil and Gas Sector output in Nigeria is not normally distributed. The linearity test is performed to check for linearity specifications (about the regressors of higher order) of the regression model. The Linearity Test (Ramsey RESET Test) has an F-statistic of 0.333171 and a probability value of 0.6667 which is greater than 0.05 implying that the regressors have no higher order in its specification. Overall, based on the computed statistics and their probability values, we may accept the null hypothesis of no autocorrelation, homoskedasticity and linearity

Figure 1: Stability Test



Source: Author's Computation with Eviews-10 (2024)

To determine the stability of the estimated coefficients of the impact of capital flight and its macroeconomic determinants on the oil and gas sector output in Nigeria, the cumulative sum of recursive (CUSUM) developed by Brown, Durbin and Evans (1975), was adopted as seen in Figure 1. The recursive plots do not cross the 5% critical lines, implying that over the entire sample period of investigation, the stability of the estimated coefficients exists, so that the regression coefficients are reliable and suitable for policymaking.

Conclusion and Recommendations

The analysis reveals a significant long-run relationship between the oil and gas sector output (OGSR) and the macroeconomic variables studied: capital flight (CFB), external debt (EXDD), exchange rate (EXR), inflation rate (INF), interest rate (INT), and tax revenue (TAXR). The ARDL model shows that these variables explain 99% of the variation in the oil and gas sector output. Specifically, capital flight positively impacts the sector in both the short and long run, contradicting most prior studies. Conversely, external debt and exchange rate exhibit negative effects, indicating that higher debt burdens and exchange rate volatility hinder sector growth. Inflation and tax revenue also have a negative impact, showing that higher costs of goods and government taxation reduce sector output. Interest rate, however, has a positive long-run effect, suggesting that favourable credit conditions can boost sector performance.

The study therefore makes the following recommendations:

1. The policy makers should initiate policies that will encourage reverse capital flight to Nigeria as well as domestic investments in the oil and gas sector.
2. The Debt Management Office (DMO) should promote more prudent external debt management practices, especially investment in productivity-enhancing projects, particularly in the oil and gas sector, and renegotiate debt terms to reduce interest burdens.
3. The Central Bank of Nigeria (CBN) should keep the exchange rate stable with economic diversification and lowering dependence on oil revenues, giving the non-oil economy greater resilience against the volatility of the global oil price.
4. Lower the cost-push pressures on the oil and gas sector, by securing better inflation-targeting policies from the Central Bank of Nigeria (CBN), and keeping inflation moderate.
5. The interest rate should be kept moderate to encourage domestic investment in the oil and gas sector of the economy.
6. The Federal Inland Revenue Service (FIRS) should adopt a policy that reduces the tax burden on oil and gas operations to increase sector output.

References

Abor, J. Y., Abugre, J. A., Donkor, G. N. A., & Karimu, A. (2023). The future of the oil and gas Industry in emerging and developing countries, In *Sustainability Management in the Oil and Gas Industry* (280-293). Routledge.

Agyeman, G., Sakyi, D., & Oteng-Abayie, E. F. (2022). External debt and economic growth in selected sub-Saharan African countries: The role of capital flight, *Research in Globalization*, *5*, 100091.

Akeliwira, G. A. (2023). Economic and political risk aversions to Illicit financial flows: A rethink of the Portfolio choice factors, *Pan African Journal of Governance and Development (PJGD)*, *4*(1), 110-136.

Akinlo, T., & Aderounmu, B. O. (2024). Capital flight, institutional quality and real sector in sub-Saharan African countries. *Journal of Money Laundering Control*, (ahead-of-print).

Akintomide, A. A. (2021). Exchange rate reforms and export price competitiveness in Nigeria (2008–2020), *International Journal of Economics, Business and Management Research*, *5*(9), 87-103.

Akinwale, S. O. (2020). Capital flight and economic development: evidence from Nigeria, *Manag Econ Res J*, *6*(2).

Amewu, G., Addae-Ankrah, K., Nsor-Ambala, R., & Abor, J. Y. (2024). How does taxation of oil and gas hold up in commodity price volatility?. In *Taxation and Management of Natural Resources in Africa* (325-346). Cham: Springer Nature Switzerland.

Amuda, Y. J., Hassan, S., & Subramaniam, U. (2023). Comparative review of energy, crude oil, and natural gas for exchange markets in Nigeria, India and Bangladesh, *Energies*, *16*(7), 3151.

Basher, S., Mamun, A., Bal, H., Hoque, N., & Uddin, M. (2023). Does capital flight tone down economic growth? Evidence from emerging Asia, *Journal of Financial Economic Policy*, *15*(4/5), 444-484.

Beirne, J., Renzhi, N., Sugandi, E. A., & Volz, U. (2020). *Financial market and capital flow dynamics during the COVID-19 pandemic*.

Benjamin, E. O., & Christian, M. N. (2020). Impact of capital flight and money laundering on developing economies: Need for Multilateral Cooperation in Nigeria's Quest for Repatriation of looted funds, *INSOR Publ.*, *6*(1), 1-12.

Brewer, M., Corlett, A., Handscomb, K., & Tomlinson, D. (2021). *The living standards outlook 2021.* Resolution Foundation.

Chohan, U. W. (2024). *Writings at CASS (2018*-23), Volume 2: National Economy.

Daasi, G. L. (2024). *Illicit financial flow*, capital flight and nigeria's economic growth performance.

Danladi, D., Falaye, M. H., & Oyinemi, F. Y. (2024). *Does capital flight affect macroeconomic performance in Nigeria*?.

Dordi, T., Weber, O., Rhodes, E., & McPherson, M. (2023). A voice for change? Capital markets as a key leverage point in Canada's fossil fuel industry, *Energy Research & Social Science*, *103*, 103189.

Economou, A., & Fattouh, B. (2021). OPEC at 60: The world with and without OPEC, *OPEC Energy Review*, *45*(1), 3-28.

Edo, G. I., Samuel, P. O., Jikah, A. N., Ekokotu, H. A., Ugbune, U., Oghroro, E. E. A., & Owheruo, J. O. (2024). Petroleum discovery, utilization and processing in the World and Nigeria: A comprehensive literature review. *Sustainable Chemical Engineering*, 191-215.

Effiong, S. A., Udoayang, J. O., & Adesola, F. A. (2020). Tax rates and economic growth: A conjugal bioscopy. *International Journal of Scientific & Technology Research. 9 (08). ISSN: 2277-8616. www. ijstr. org*.

Egbulonu, A., & Bhattarai, K. (2020). Determinants of capital flight: new panel evidence from Sub-Saharan Africa (SSA), *Journal of Development Economics and Finance*, *1*(2), 255-287.

Eluyela, D. F., Bassey, I., Oladipo, A. O., Adegboyegun, A. E., Ademola, A., & Madugba, J. (2020). Impact of capital flight on tax revenue in Nigeria: a co-integration approach. *Research in World Economy*, *11*(5), 141-151.

Ezu, G., & Oranefo, P. I. (2023). Effect of capital flight on foreign investment in Nigeria, *International Journal of Novel Research in Marketing Management and Economics*, *10*(1), 43-52.

Faza, M., & Badwan, N. (2023). The risk of capital flight on economic growth and national solvency: An empirical evidence from Palestine, *Asian Journal of Economics, Business and Accounting*, *23*(7), 28-48.

George, A. S. (2023). Causes and Consequences of Pakistan's Economic Crisis. *Partners Universal International Innovation Journal*, *1*(5), 1-20.

George-Anokwuru, C. C., & Bosco, I. (2020). Influence of interest rate on industrial output in Nigeria, *Journal of Economics and Management Sciences*, *3*(2), 21-p21.

Ghoddusi, H., Moghaddam, H., & Wirl, F. (2022). Going downstream–an economical option for oil and gas exporting countries?. *Energy Policy*, *161*, 112487.

Imsirovic, A. (2024). International Oil Markets in the Age of Climate Change, *Springer Books*.

Isah, K. O., & Ekeocha, P. (2023). Modelling exchange rate volatility in turbulent periods: The role of oil prices in Nigeria. *Scientific African*, *19*, e01520.

Isibor, A. A., Kehinde, A. A., Felicia, O. O., Tolulope, A. F., Victoria, A. A., & Mercy, U. E. (2022). Achieving sustained performance in the Nigerian oil and gas sector despite exchange rate fluctuations: A VAR approach. *International Journal of Energy Economics and Policy*, *12*(3), 341-351.

Istikomah, N., Suhendra, I., & Anwar, C. J. (2020). On capital flight from the ASEAN-8 countries: A panel data estimation. *The Journal of Asian Finance, Economics and Business*, *7*(12), 43-52.

Kolawole, O. A. (2024*). Exchange rate changes and financial performance of oil and gas companies in Niger*ia (1994–2023). https://www.lgjdxcn.asia/ 18 (5), 2024283-295

Kong, B., & Gallagher, K. P. (2021). Inadequate demand and reluctant supply: The limits of Chinese official development finance for foreign renewable power, *Energy Research & Social Science*, *71*, 101838.

Lessard, D. R., & Williamson, J. (1987). *Capital flight and third world debt.*

Leykun, F. F. (2022). Effect of capital flight on domestic investment: Evidence from Africa, *Cogent Economics & Finance*, *10*(1), 2105975.

Mamun, A., Bal, H., Basher, S., Uddin, M. M., Hoque, N., & Uddin, M. N. (2023). Growth effects of currency misalignment and capital flight in Turkey, *Bulletin of Monetary Economics and Banking*, *26*(2), 168-210.

Mekongo, C. B., Ondoa, H. A., & Kenkouo, G. A. (2023). Reducing capital flight in Africa. *Journal of Economic Integration*, *38*(2), 186-218.

Ndikumana, L. (2023). *Capital flight from natural resource-dependent African countries: Updated Estimates and Analysis for the Cases of Cameroon, Ghana, and Zambia, 1970-2021*. PERI Working Paper 582 (August).

Nwankwo, E., & Iyeke, S. (2022). Analysing the impact of oil and gas local content laws on engineering development and the GDP of Nigeria, *Energy Policy*, *163*, 112836.

Nwokolo, S. C., Singh, R., Khan, S., Kumar, A., & Luthra, S. (2023). Global investment and development in Africa. In *Africa's Path to Net-Zero: Exploring Scenarios for a Sustainable Energy Transition* (15-58). Cham: Springer Nature Switzerland.

Ogbuagu, G. O. (2024). Impact of crude oil price fluctuations on economic growth in Nigeria, *British International Journal of Applied Economics, Finance and Accounting*, *8*(5), 34-52.

Oladimeji, J. A., Adebayo, O., & Ohiaeri, N. (2022). The growth impact of capital flight in Nigeria. *International Journal of Social Science and Economic Research*, *7*(3), 694-715.

Onakoya, A. B., & Agunbiade, O. (2020). Oil sector performance and Nigerian macroeconomic variables. *International Journal of Economics, Management and Accounting*, *28*(1), 35-62.

Oyedokun, G. E., & Orenuga, B. (2023). Effect of financial stability on Nigerian economic growth: An empirical investigation, *Technology*, *29*(11s), 467-479.

Oyeranmi, O. S. (2020). Crisis and reform in the Nigerian oil industry, 1999-2015. *NIU Journal of Social Sciences*, *6*(1), 275-288.

Popoola, O. M., Mutai, N. C., Dervishaj, V., Nguyen, C. M., Kumari, S., & Bhatia, G. (2024). Exploring the impact of oil revenue on Nigeria's economic growth: A non-linear autoregressive distributed lag model. *OPEC Energy Review*.

Pradhan, A. K., Bhujabal, P., & Sethi, N. (2024). Capital flight from BRICS nations: Does every cloud have a silver lining?. *Heliyon*, *10*(2).

Rashied, M. (2021). *Is Egypt on a sustainable path of debt repayment: Evidence from IMF framework and fiscal reaction function*, The American University in Cairo (Egypt).

Shaxson, N. (2021). *Oil and capital flight: The case of Angola*. Amherst, MA: Political. Ben-

Taher, H. A. (2024). The macroeconomic effect of oil sector crisis in Libya, *Studies in Business and Economics*, *27*(1), 22-43.

Smith, G. (2021). *Where credit is Due: How Africa's debt can be a benefit, Not a burden*, Oxford University Press.

Villanueva, D. S. (2021). Capital and growth, *Bulletin of Monetary Economics and Banking*, *24*(2), 285-312.

Wang, K. M., & Lee, Y. M. (2022). Is gold a safe haven for exchange rate risks? An empirical study of major currency countries, *Journal of Multinational Financial Management*, *63*, 100705.

Wang, K. M., & Lee, Y. M. (2022). Is gold a safe haven for exchange rate risks? An empirical study of major currency countries, *Journal of Multinational Financial Management*, *63*, 100705.

Wani, N. U. H. (2024). Incidence of reverse capital flight to Afghanistan: An empirical examination. In *Policy Solutions for Economic Growth in a Developing Country: Perspectives on Afghanistan's Trade and Development* (131-154). Emerald Publishing Limited.