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Cross-Border Financial Capital Inflow: an Analysis of Growth and Households Income Inequality in a Resource-Rich Economy

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CROSS-BORDER FINANCIAL CAPITAL INFLOW: AN ANALYSIS OF GROWTH AND HOUSEHOLDS INCOME INEQUALITY IN A RESOURCE-RICH ECONOMY

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Abstract

Nigeria is a resource-rich economy that generates substantial revenues from crude oil and other mineral resources. These endowments make the country an attractive destination for foreign investment and other forms of international capital inflows that are expected to stimulate economic growth and improve household welfare. This study examines the effects of cross-border financial capital inflows on economic growth and income inequality in Nigeria over the period 1970-2023. The analysis considers foreign direct investment, foreign portfolio investment, external debt, remittances, and official development assistance, while governance effectiveness is incorporated as an interaction variable. Using an Engle-Granger residual-based cointegration framework and the Augmented Dickey-Fuller unit root procedure, the study investigates the long-run relationship between international capital flows, gross domestic product, and income inequality. Findings reveal long-run equilibrium relationship between international capital inflows and economic growth. The study recommends strengthening institutional quality and promote policies that enhance the developmental impact of capital inflows.

KEYWORDS: Inequality, FDI, External debt, Remittances, Official Development Assistance

JEL CLASSIFICATION: O40 D63 H63 F24 F35

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Introduction

For decades until the groundbreaking seminal works of classical growth theorists, little was known of the critical inputs necessary for growth in national outputs. In their thoughtful exogenous growth context, Domar (1948), Lowe (1954), Swan (1956), Harrod (1959), Solow (1978, 1980, 1994, 2007) provided foundational insights on this issue. According to Solow neoclassical model, output growth is conditional on: labour, capital and technological progress. Of the three factor components, capital is profoundly paramount in discussing country growth conditions in Sub-Saharan Africa. National saving is the domain of capital to developing countries. But its optimal accumulation is often uncertain for financing growth sensitive investments. To augment the inadequacy, Nigeria and other Third World countries are outward looking. Bailliu (2000), Chami, Hakura and Montiel (2009), Aizenman, Jinjarak and Park (2011), Kose, Presad and Terrones (2008) form body of studies with empirical conclusion that foreign financing is growth enhancing. This is well-known drawing from the experience of a large number of developed economies (Kalemli-Ozcan, Reshef, Sørensen & Yosha, 2005). Keynesian and neoclassical economists advocate for domestic output growth induced from the external environment. However, Khan (1998) observes that developing countries face severe capital shortage, and, thus should therefore be open to foreign financial resources. This has dominated policy debates and continues to provoke discussions in the empirical papers especially if in reality external dependence for developmental resources is of greater importance in developing countries. The primary issue is that experience of large developed countries is fairly comparatively imaginary in Nigeria and relatively so in other regional neighbours. Eichengreen (2003, p. 13) provides useful commentaries on these two controversial perspectives. One aspect is that foreign capital is almost perfectly a growth engine assertively implying that influx of international capital can help the economy adjust to internal shocks. A second aspect is its responsibility for instability. The accumulation of debts and sudden stop of official assistance can make an economy more vulnerable to financial pressures from the world economy.

The most criticized tends to be official development assistance. Critics assertively argue that official development assistance (ODA) disbursement carries hidden political motive against donors' planned development rationale for acceptance making its face value intent typically imaginary. On the contrary, countries of Brazil, Colombia, Korea, and Thailand who are

incidentally early recipients of international transfers have grown rapidly several decades ago (Colaco *et al*. 1985). This is unlike in Nigeria.

However, growth in itself is a quantitative phenomenon to describe productive capacity of an economy. It is an intermediate property of the macroeconomy which might possess little economic history of advancing household wellbeing. An important policy question concerns the extent to which international capital inflows translate into improved household welfare and a more equitable distribution of income. In addition, what is output growth when single household income remains perennially less than average in industrial nations. in recent times Nigeria's simultaneous expansion in output along with growing government revenue are of no material essence in the midst of large inflation and policy-induced household poverty. This is attributable to fuel subsidy removal and the consequently amplifying shocks newly inaugurated government action generated since the spring of 2023. Thus, the present condition tends to question the usefulness of growing outputs amidst shrinking household standard of living. Kuznets (1955) produced strong discourse that took empirical assessment away from growth achieved through structural transformation that alters relative productivity of factors but to concentrate on minimizing evolution of inequality at rather global level. Contemporary contributions in this regard has shifted toward examining of causes and consequences of income inequality. Dabla-Norris et al. (2015) had produced perspective to global drivers of which trade and financial globalization are factors. Similarly, Polacko (2021) documents that income inequality is largely driven by a multitude of political choices. Accordingly, growing income inequality is one of the greatest challenges facing advanced economies today which is also significant in a country governed under institutional slacks like Nigeria. In all likelihood foreign financing could correctively push household income disparity to optimal equilibrium.

By the reason of the premise on the net effects of international financial inflows it has received lots of attention in developing countries. We focus on an aspect deserving more careful investigation: governance quality and random exogenous events occurring since the 1970s. To the best of our knowledge this has not been profoundly taken up as empirical task in existing studies. Latest shock worthy of consideration is the disruptive COVID-19 on global economy. COVID-19 and previous global and domestic shocks represent significant breakpoints that may create economic slowdowns potentially coinciding with further imbalance among households.

Deb et al. (2020), Murakami, Shimizutani and Yamada (2020), Yeyati and Valdes (2020) argue that the current shock could have a detrimental effect initiating a compulsory cutdown in development assistance. Others, including Salik (2019), Djiofack, Dudu and Zeufack (2020), Abiad et al. (2020), Noy, Doan, Ferrarini and Park (2020), Bolton et al. (2020), argue that COVID-19 could lead to substantial fiscal deficits to developing and emerging markets. The puzzling issue is whether the international environment will continue to be as supportive of development of poor countries living on private and official development assistance for most of or all their capital requirements.

Our research enters this debate by showing that specific structure of foreign financial inflows could have substantial solution implication by leveling household inequality outside traditional focus on raising national outputs. With the terrible global experience from COVID-19 there have been prolific writings advancing discussions on earnings and inequality among vulnerable households down to this day. Nguyen (2022) find that an extended month of lockdown reduced per capita income by 8.3% in Viet Nam. However, receipt of aid packages enabled households to increase their per capita income by 8.5%. Expectedly income disparity and general social inequality changed. Job losses induced by global recession altered income distribution. Bargain, Carrillo-Maldonado and Jara (2023) show that top earners were affected by the COVID-19 crisis compared to other segments of the population.

For commencement, we explore whether international capital inflows lead to significant growth in Nigeria. In particular, we create a dummy variable to detect random shocks corresponding to oil crisis, oil glut, deregulation, military coups, democratic returns, global economic meltdown and COVID-19. Going by COVID-19 implication to world economy, it enjoys numerous empirical and policy traction in different regions of the world (Oppel, 2022; Shahir et al., 2023; de Mahieu & Lastunen, 2023; Nichelatti, Jouste & Rattenhuber, 2024). Key research questions of current study are as follows: What are the ultimate effects of various international capital inflows on output level and to what extent does random distortionary shocks dummy produce changes in the midst of foreign capitals? To what extent does international capitals variables produce desirable changes on income inequality? To what extent does interaction of governance quality of a country with foreign capital resources resultantly diminishes income disparity among households? When income inequality interacts with governance effectiveness to what degree

does such interaction mitigates inequality in the presence of foreign capital resources? These are our central research questions to be addressed in this paper. In addition, we also try to base discussions on household welfare improvement using volatile oil price against capital inflow of foreign direct investments.

The remainder of the paper is organized as follows. In Section 2, we summarize the objectives and results of existing studies, and in Section 3 we provide detailed description of our model. In Section 4 we present the estimated results along with their associated economic consequences. Section 5 presents concluding remarks and possible policy suggestions.

2 Related Literature

International capital inflows can have multiplicity of variants. In the midst of the components are duplicated structures. To commence, a likely first step is to assume we are expressly dealing with financial inflows in a holistic manner as it is often seen in some prolific writings. A compact dimension is structuring international capital resources into: official and private. World Bank (1985) categorization classifies official sources to represent: (1) governments and non-governmental agencies (also recognized as bilateral lenders) (2) international organizations (multilateral lenders). The private sources comprise (1) commercial suppliers and manufacturers, which provide export credits for the purchase of their goods, (2) commercial banks, which provide export credits or cash loans, (3) other private investors, who invest in foreign companies in which they seek a lasting interest (direct investment) or purchase stocks or bonds issued by foreign enterprises or governments (portfolio investment). For a simple analytical and operational convenience another construct presented in Savvides (1992) converges as a summation of commercial and non-commercial foreign inflows. According to the author, Commercial inflows are disbursements from private creditors (from financial markets and suppliers) and Foreign Direct Investments (FDI). Noncommercial inflows include disbursement from official creditors and unrequited transfers (private and official).

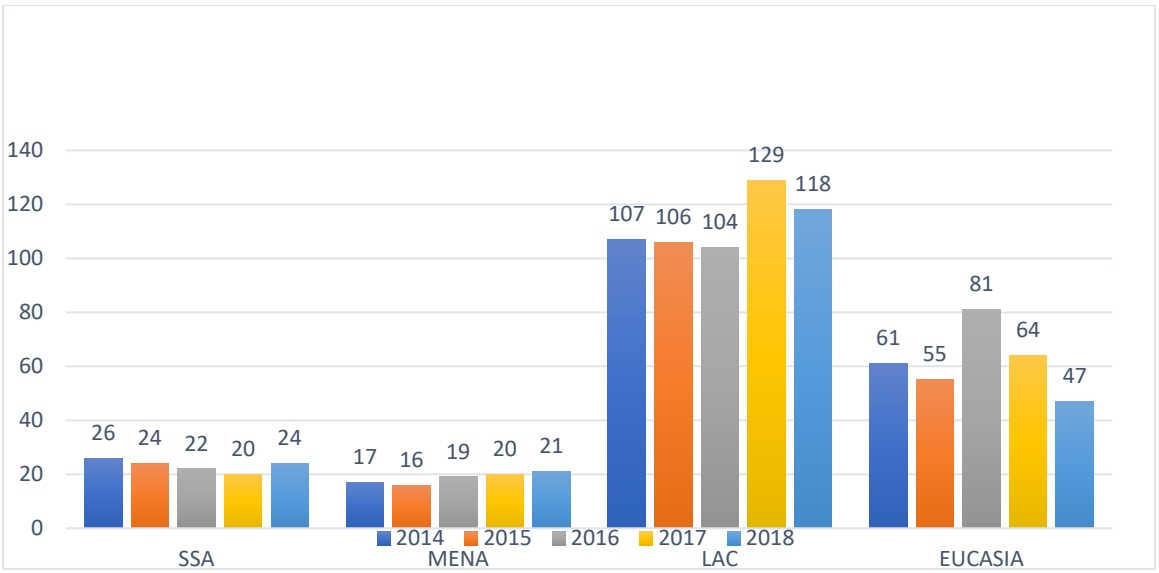
In our case, we define international financial flows as cross-border financial exchange moving from foreign private sector residents and their national governments to recipient economy who has obligation or unilateral transfers from donor institutions, multilateral agencies and governments made available through official concession or subject to conditional agreement for use. Thus, we conceptualize international capital flow as a combination of all forms of foreign

direct investments, external debts, foreign portfolio investments, workers remittances and Official Development Assistance.

2.1.1 Foreign Direct Investment Inflows Across Different Regions

Foreign direct investment is conceived as an integral aspect of private foreign capital. FDI is inseparable from Multinational Corporations (MNCs onward looking firms) who are the primary carriers. The identical nature of these concepts implies that the theory of FDI is certainly, a theory of MNCs. Early theoretical underpinning explaining the existence and influence of FDI explicitly centres on MNCs that are vastly applicable to international trade. Hymer (1960) laid essential theoretical foundation of FDI in the theory of firm-specific advantages. Vernon (1966) developed the product-life cycle. Other approaches have since emerged but rarely departed from connecting FDI to trade and ownership-based views. Dunning (1981), Dunning (1988), Dunning and Lundan (2008) created runner up theories of investment development path which is a dynamic approach within the so-called eclectic approach (OLI paradigm). The advancement found is the explanation of the narrative about FDI and growth. Quite surprising that a causal flow from FDI to growth is widely reported in existing empirics (see for instance, Ugochukwu, Okore & Onoh, 2013; Orji *et al*. 2015).

According to World Bank (2020) direct investment is a category of cross-border investment associated with a resident in one economy having control or a significant degree of influence on the management of an enterprise that is resident in another economy. As regard to the current research FDI is defined as any transnational corporation (TNC) capital investments in another economy through an enterprise with or without affiliates driven by controlling interest. The key sources of FDI are firms in the OECD countries. In the current decades with increasing economic sophistication local firms in developing countries have arrived in some neighboring economies to consequently create an outflow. Firms in the service sector have widen out taking investments to financial sectors round African economies (Central Bank of Lesotho, 2023). Foreign-owned subsidiaries of banks from Nigeria dominate the Gambia financial system (Central Bank of The Gambia, 2018). The net position has shown downward trend dropping to US$1, 997 in 2018 from US$4, 444 and US$3, 495 recorded in 2016 and 17 (World Bank, 2020p.105).



Source: Author's plot with data from International Debt Statistics 2020
Note: EUCASIA abbreviated means Europe and Central Asia (this is for convenience)

Figure 1: Foreign Direct Investment Distribution Across Regions

Multinational corporations (MNCs) are firms that control operations or assets in more than one country but with a common global headquarter. Thus, FDI in this study is conceptualized on the basis of guiding business motive of MNCs. These motives represent three dimensional-factors influencing the decision of a firm to carry-on capital to overseas markets. Perhaps the most prominent of the objectives could be satisfactorily articulated based on —market, efficiency and resource seeking views. First, Market-seeking FDI motivated by the need for greater revenue growth enters into the space of international expansion to service a need. The incoming heavy capital aids in gaining quick access into host country to conquer the market. Second, Efficiency-seeking FDI takes capital and locate production to countries with lower factor costs. Third, Resource-Seeking tends to direct FDI flows outside Europe and the United States. Nigeria, Algeria and Angola control substantial share of mineral deposits and other natural resources to attract foreign capital in the energy sector. Despite the level of available natural resources, Sub-Sahara Africa (SSA) and Middle-East and North Africa (MENA) attract less of the financial inflows. Among the current biggest beneficiaries of FDI is the Latin America and Caribbeans (LAC). The sum of US$24 billion entered SSA in 2018 compared to US$118 billion in LAC. Figure 1 indicates shows that FDI is heavily concentrated in few regions. Latin America and the Caribbeans attracts the highest value of FDI capital. The next region is the Eurasia while the least are Sub-Sahara Africa and Middle East and North Africa.

Furthermore, all forms of international capital variants are expected to help grow the economy with the ultimate positive impacts on local households. This is especially as it concerns mitigation of poverty. For instance, FDI assists countries in using its technology to improve outputs. The relationship between direct investment and growth builds on vast theoretical foundations. Host-country effect of FDI has given clue on empirical understanding of FDI and growth which could be theoretically impactful. UN (2003) shows that FDI has enormous potential to create jobs, raise productivity, enhance exports and transfer technology, foreign direct investment is a vital factor in the long-term economic development of the developing countries.

2.1.2 Foreign Debt Capital and Household

The size of foreign debt obligation (external debt used interchangeably) is usually large; but the question remains if debt support or reduces economic growth? likely response is that in the short-run higher level of borrowing could be a necessary but not sufficient condition for sustained growth. Panizza and Presbitero (2012) assert that important fiscal expansions that further raise the level of debt can decline growth in the long-run, and thus partly (or fully) negate positive effect of fiscal stimulus. Theoretical argument supporting external borrowing is that it increases a nation's access to resources for output growth support. In the midst of poor national savings, external debt supplements insufficient savings. Foreign debt obligations boosts countries capacity for long-term financing to invest in infrastructure, education, employment and health. Second, it can help economies to speed up adjustments to internal and external shocks.

In contrast, the positive implication is not widely accepted sparking more public-policy debates. External debts might be an extraordinary fiscal tool for growth and development, only to the extent it is sustainable. However, external debt is certainly risky if amassed recklessly. In the long run, increase in debt certainly declines growth through lower productivity. Some policy-makers and theorists seem to conclude by evidence of experiences in the Third World that debt is precarious in the long-run (Pattillo, Poirson & Ricci, 2011). Deadly repercussions from over indebtedness can set-in making debt growth detrimental. Krugman (1988); Sachs (1989) recognizes this condition to be debt overhang hypothesis. The discovery of debt overhang hypothesis shows lack of sustainability. Debt overhang theory shows that at a certain apex debt yields negative results to growth. Scanty empirical evidence covering Nigeria on debt overhang might be known. Savvides (1992) prominent contribution constitutes portion of systematic

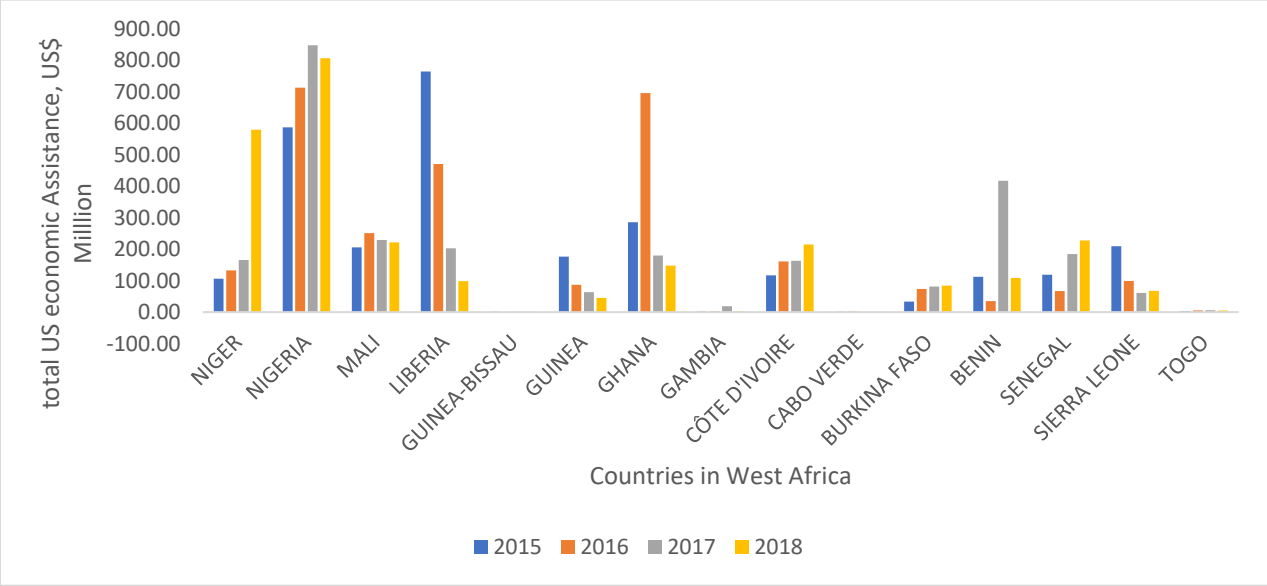
investigations that successfully popularized debt overhang to a wider audience. Latter empirical commentary and estimation beginning with Reinhart and Rogoff emphasize determining debt-threshold effect on growth. Exceptionally high debt is defined to be debt over 90% of GDP. Findings in advanced and emerging markets reveal that beyond certain threshold the negative correlation becomes strong when debt approaches 100 percent of GDP (Kumar & Woo, 2010; Checherita & Rother, 2010; Cecchetti, Mohanty & Zampolli, 2011). Many countries including Nigeria and Heavily Indebted Poor Countries (HIPC) (Afghanistan, Benin and São Tomé and Principe) experienced debt-induced stagnation in the 1980s. Currently Nigeria debt is still among the largest in West Africa (International Debt Statistics, 2020).

2.1.5 International Financial Inflows and Economy

In developing countries, it is necessary to perform reassessment of the effect of foreign capital on growth and quality of life among households. Whether economies are gaining or losing is a matter of data revelations. What is pervasive is that empirical literature does not have common grounds. Rather it presents complex and mixed picture about the relationship between inflows and specifically on growth. A generally held view supporting international capital flow economics is its necessity in growing the economy and improving domestic wealth. Its entry disrupts standing equilibrium of the economy. In India, Errunza (1986) indicates that foreign portfolio investment (FPI) entry would be beneficial in three special ways: (1) Development effect (2) Resource effect (3) the welfare effect. The view expressed in Pal (1998) points to the contrary that while the market may boost, the economy does not seem to be working in India. In their five Sub-Saharan African study, Adams and Klobodu (2017) find that foreign direct investment (FDI), aid, external debt, and workers remittances have different effects on economic growth in the long run. Specifically, FDI and foreign aid have significant positive effect in Gabon and Niger. Although ODA promotes growth in the two countries, it deters it in Ghana the same way as debt is negative in all countries. Whereas remittances are reported to have significant positive effect in Senegal.

Since COVID-19 migrant remittances enjoys wider fiscal accolades from excess labor supplying countries. According to Chami et al (2009) workers remittances (or migrant remittances) is the cash migrant workers send to their families back home. It is hard to estimate the size of global remittances with high precision. What is informational is that migrant repatriated cash resources

reached $596 billion in 2017, with $450 billion (75.56%) flowing to developing economies. The quantum of these wealth is sufficed to help low-middle income countries navigate through COVID-19 and sustain output. Early data shows that for many poor countries private remittances received from migrants abroad account for more than 10% of GDP (Hevia & Neumeyer, 2020). Remittances from abroad to households help several countries both directly and indirectly. Directly, remittance transfers target specific needs of recipient, consequently reducing poverty. Indirectly, remittances in the hands of poor households can fund housing, pay children education and health care and buy basic consumption goods. The consumption expenditure adds to the national income. Adams and Page (2003, 2005), Gupta, Pattillo and Wagh (2009) are cross-country studies that generally that confirms that remittances have reduced the share of poor people in the population. Thus, widening gaps in income inequality narrows when households have family members working abroad.



Source: Author

Figure 2. Official development assistance inflow into West African Countries

Official development assistance is a popular international financial transfer from wealthy economies. Even though ODA is useful it has also been a highly criticized notion. Nigeria is among list of beneficiaries of foreign assistance from OECD and at the same time a donor nation. From the figure 2 above, Nigeria has the highest US foreign assistance more than any other economy in the sub-region. This is followed by Liberia. Guinea-Bissau and Togo are the least assisted. As it is well known countries in early stages of development have greater need for

massive investment in social services and infrastructure. Longstanding empirical conclusion of Chenery and Strout (1966) asserts that foreign assistance has become a separate factor of production. Empirical finding of Izuka and Chetachukwu (2019) shows that ODA positively adds to output growth rate in Nigeria. Econometric model of Easterly, Levine, and Roodman (2003) reports no evidence showing that economic development is linked with foreign aid, even in countries with robust economic policies. Boone (1995) had earlier observed negative foreign development assistance on growth and investments.

2.3 Standing Empirical Research

Mitigating the gap in household size of income several strategic approaches have been known in literature (Ehilegbu, 2022; Suleiman, Ehilegbu & Ifeosame, 2025). It is nevertheless evident that international capital flows have several implications for different constituents. This study adds to the growing literature on the economic consequences of massive capital movement across economies. For a start, handful of causal evidence linking official development assistance and remittances to income inequality are known. For instance, Pal *et al.* (2022) explore the impact of remittance inflows on economic growth, unemployment, and income inequality for high-, low-, and middle-income countries from 1991 to 2020. The study concludes that remittances foster growth in low and middle income countries but also in high income economies. In addition, remittance inflow across all countries mitigates income inequality. Chauvet *et al* (2019) construct panel of 142 countries to analyze relationship between income volatility and inequality and the conditional role played by aid and remittances to conclude that income volatility has an adverse impact on inequality, and that the poorest people are the most exposed to these fluctuations.

COVID-19 presents interesting empirical case study. Köhler, Bhorat and Hill (2023) apply difference-in-differences research design to research policy response to job losses during COVID-19 in South Africa. The study concludes that wage subsidies can be particularly useful during periods of large, transient shocks. Chong, Gradstein and Calderon (2009) cross-country regression examine the effect of foreign aid on income inequality and poverty reduction for the period 1971–2002. The study finds weak evidence suggesting that foreign aid is conducive to the improvement of the distribution of income when the quality of institutions is taken into account.

Bisong, Ahairwe and Njoroge (2020) present insightful African discussion paper that stresses on the importance of filling the development financing gaps that have been expanded due to shrinking remittances and highlights immediate solution to the short run effect of the COVID-19 pandemic. The discussion concludes that COVID-19 is exogenous global shock affecting various socio-economic and political consequences for rich and poor countries alike and remittances inclusive. Bailliu (2000) examines the relationship between private capital flows and economic growth using dynamic panel data econometric for a sample of 40 developing countries from 1975–95. The paper is written to contribute to the debate over the desirability of restriction-free capital mobility for developing countries by investigating the role of private capital flows in the determination of economic growth. The study establishes that capital inflows foster higher growth in output, above and beyond any effects on the investment rate.

Existing studies have largely examined the growth effects of foreign capital inflows. However, limited attention has been given to the combined role of governance effectiveness and major macroeconomic shocks in shaping the relationship between cross-border capital inflows, economic growth, and income inequality in Nigeria.

3 Data and Empirical Specifications

Data on individual variables are available in different databases. Thus, this empirical analysis draws on four main sources of data. Gini is extracted from UNU-WIDER's World Income Inequality Database (WIID). Data on ODA, export, GDP, Remittances, Governance quality proxied by governance effectiveness are accessible in WDI of the World Bank. Some aspects of FDI and FPI are sourced from Central Bank of Nigeria, International Monetary Fund and World Bank WDI. Table 1 presents summary of variables and data sources.

Table 1: Sources of Data

Determinants of Foreign Capital	Definition	Data Sources
Official Development Assistance	Official development assistance (ODA) is defined by the OECD Development Assistance Committee (DAC) as government aid that promotes and specifically targets the economic development and welfare of	World Bank WDI database

	developing countries. The DAC adopted ODA as the "gold standard" of foreign aid in 1969 and it remains the main source of financing for development aid.	
Export	Market value of all goods and services exchanged between residents of trade friendly countries	World Bank WDI database
Foreign Direct Investments	A form of cross-border investment where resident in one economy seek to obtain lasting interest in firms operating in a different economy through physical presence.	World Bank WDI database International Monetary Fund Central Bank of Nigeria
Foreign Portfolio Investments	Diversification of risk through financial assets as bond investment where residents in a country do not seek to obtain lasting interest in firm operating in foreign market. They include net flows through cross-border public and publicly guaranteed and private nonguaranteed bond issues	World Bank WDI database International Monetary Fund Central Bank of Nigeria
Country gini index	Measure of overall inequality between 0 to 100 where 0 is perfect equality.	UNU-WIDER's World Income Inequality Database (WIID)
Worker remittances	Transfer of earnings of workers living as foreign residents to home country	World Bank WDI database
Governance quality	Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's score on the aggregate indicator, in units of a standard normal	World Bank WDI database

	distribution, ranging from approximately -2.5 to 2.5.	

Our country-year observations in the database runs from 1970 to 2023. Unlike in previous empirical studies on foreign capital structural components and their usefulness in dynamic panels, we employ Engle-Granger cointegration framework that adopts single equation model to test long run equilibrating relationship between international capital movements and response variables. Engle-Granger is an alternative to system equation cointegration approach. Johansen (1988), Johansen and Juselius (1990) provide earlier statistical analysis on cointegration by developing system of equations. Our acceptance of Engle-Granger (EG) is based on the asymptotic properties of residual-based tests for cointegration. EG involves procedures formulated to detect presence of unit root in the economic series residuals found in the levels of the series (Phillips & Ouliaries, 1988). Engle-Granger (1987) recommends augmented Dickey-Fuller (ADF).

An Augmented Dickey-Fuller (ADF) test is employed to determine the stationarity properties of each series and to identify the presence of unit roots. A variable is considered stationary when the absolute value of the ADF test statistic exceeds the corresponding critical value, leading to rejection of the null hypothesis of a unit root. In the ADF test, the null hypothesis is accepted when the series has a unit root unless there is strong evidence negating it according to classical hypothesis. The ADF test statistics is compared against 1%, 5%, and 10% critical values. For a variable to be stationary the ADF t-statistic in absolute value must be larger than the corresponding critical values reported in MacKinnon (1991). Classical ADF unit root test takes the following specification:

$$\Delta y_t = \beta \mathrm{D}_t + \emptyset y_{t-1} + \sum_{p=1}^{p} \psi_j \, \Delta y_{t-p} + \varepsilon_t \qquad (3.1)$$

Where is sector of deterministic terms (constant, trend). The lagged difference terms, , is used to approximate the ARMA structure of the errors to correct for higher- order correlation, and the value of is set so that the error is serially uncorrelated. It is an iid error term for t=1, …, $\mathrm{T}\mathrm{D}_t p \, \Delta y_{t-p} p \varepsilon_t$. Since by ADF estimation, we obtain the order of integration of each series we rely on conventional approach in performing further analysis. At a uniform first order

integration, we proceed with estimation of cointegration to determine equilibrium level of the variables in a single equation framework. Thus, this study employs Engle-Granger residual-based test of cointegration by first estimating an Ordinary Least Square (OLS) model. In general, an OLS time-series model to generate residuals is specified as follows in a growth equation:

$$Y_t = \beta_0 + \beta_1 X_t + \varepsilon_t \quad (3.2)$$

Where represents gross domestic product; denotes parameters corresponding to a set of explanatory variables, . Equation (3.2) generates the residuals for long run equilibrating testing. Residuals are traditionally expected to be stationary depicting linear combination of explanatory variables. Engle and Granger (1987) suggest that two unrelated stationarity series converge in the residuals, hence, its usage. In contrast to (3.2), gini index substitutes the growth dependent variable while the new model incorporates dummy variable which takes value equal to 1 for shock episode, but 0 if otherwise.$Y_t \beta_1 X_t$

$$GINI_t = \beta_0 + \beta_1 X_t + \beta_2 ShockDUMMY_t + \varepsilon_t \quad (3.3)$$

Where specification parameters are as already explained. Economic interpretation of parameters requires consideration of two extreme values quantifying inequality in rationalizing if any coefficient has a wrong sign to know the precise role it plays. For instance, it is our premise that negative a priori suggests compliance with expectation. A negative sign tends to therefore suggest a slowdown in the size of income inequality and it is judged to possess the right sign. It is to the contrary if the parameter estimate is positive, hence, this implies a factor worsening the current condition. However, we further improve the gini index model results by initiating complementary identification strategy by constructing new specification using gini index as dependent variable but with governance effectiveness interacting with a battery of regressors. It is generally expected that effective governance that effective governance reduces social disparities among household. It is well established that correlation does not imply causation (Panizza & Presbitero, 2014). Positive correlation of foreign capitals could be a matter of third factor where the estimated anticipated economic effects are consolidated by governance variable. The link between international capitals and income inequality could be driven by the fact that by political will policymakers can implement effective mitigation policies that narrow inequality. More precisely, we replicate the modelling approach in the equation below:

$$GINI_t = \beta_0 + \beta_1 X_t * Goveffectiveness + \varepsilon_t (3.4)$$

Where other parameters are as already established; denotes governance effectiveness. Similarly, we estimate long run cointegration in gini index regression from result in the equation (3.4). A cointegration specification of international capital and household income inequality is particularly appealing with respect to governance quality which should have curative effects on inequality at most in the long run if not in the interim.$Goveffectiveness$.

4 Estimated Results and Economic Consequences

Table 2: Augmented Dickey-Fuller stationarity test and Structural breaks in economic series

	Levels	**Δ 1st difference**	**Order of Integration**
	1% 5% 10% ADF	**1% 5% 10% ADF**	
Unit root without structural break adjustment			
Foreign direct investment	-4.1409 -3.4970 -3.17760 -7.67490	-4.1446 -3.4987 -3.1786 -12.5333	I(1)
External debt	-4.1409 -3.4969 -3.17758 -0.07876	-4.1446 -3.49869 -3.1786 -5.41080	I(1)
Official Dev. Assistance	-4.14458 -3.49869 -3.178578 -5.00527	-4.14847 -3.5005 -3.17962 -7.30516	I(1)
Export	-4.1409 -3.4970 -3.17760 -2.23990	-4.1446 -3.4987 -3.1786 -6.80830	I(1)
Remittances	-4.14085 -3.49696 -3.177579 -1.783292	-4.144584 -3.49869 -3.1786 -6.12990	I(1)
Foreign portfolio investment	-4.140858 -3.49696 -3.177579 -3.018915	-4.14458 -3.49869 -3.17857 -6.44860	I(1)
Gross domestic product	-4.9491 -4.4436 -4.19363 -3.63156	-4.144584 -3.49869 -3.1786 -5.55890	I(1)
Unit root with break test			
Foreign direct investment	-4.9491 -4.4436 -4.1936 -25251.1	-4.1446 -3.4987 -3.1786 -12.5333	I(1)
External debt	-4.9491 -4.4436 -4.19360 -2.3666	-5.3476 -4.8600 -4.6073 -7.3919	I(1)
Official Dev. Assistance	-4.9491 -4.4436 -4.19363 -8.5306	-4.9491 -4.4436 -4.1936 -9.08205	I(1)
Export	-4.9491 -4.4436 -4.1936 -3.87170	-4.1446 -3.4987 -3.1786 -6.8083	I(1)
Remittances	-4.94913 -4.44365 -4.19363 -12.61769	-4.14458 -3.49869 -3.17858 -6.1299	I(1)
Foreign portfolio investment	-4.94913 -4.443649 -4.193627 -9.42949	-4.94913 -4.443649 -4.1936 -12.4919	I(1)
Gross domestic product	-4.94913 -4.44365 -4.193627 -3.63156	-4.94913 -4.443649 -4.19362 -6.35436	I(1)

Based on the autoregressive lagged model representations illustrated in the first difference tabular column, Δ denotes the first difference of the variables. Stationarity test reported presence of unit root in the level for each series in the presence of structural break, however, the exception is seen in FDI and ODA whose ADF test statistic of 7.67490 and 5.00527 exceeds all corresponding test critical values. Similarly, all series produced results that reject the null hypothesis of a unit root. When adjusted for structural break the table shows that all control variable and gross domestic product are integrated of the first order. Thus, setting the stage for a long-run equilibrating relationship. We have evaluated specifications with the final model of Engle-Granger selected based on econometric rationale (economic relevance and model fit).

4.1 Growth Regression and international capital Analysis

Table 3: Cointegration Test - Engle-Granger

	Value	Probability
Engle-Granger tau-statistic	-5.107866	0.0833
Engle-Granger z-statistic	-149.5648	0.0000

The findings in Table 3 is a long run equilibrium test. Engle-Granger Z-statistic rejects the null hypothesis that series are not cointegrated. This is confirmed by probability statistics of 0.0000 which is less than 0.05 level of significance. The chosen model incorporates variables such as gross domestic product, export, FDI, foreign portfolio investments, ODA and remittances. This is an indication of existence of long run relationship between GDP and international capital variables. But as it is already shown, estimation from EG regression supports the hypothesis that international capital variants and growth have long run relationship in the economy. Awad (2021) had previously made similar claims in 21 low-income sub-Saharan African countries.

Table 4: Gross Domestic Product Regression

Dependent variable: GDP

	Coefficient (Model 1)	Coefficient (Model 2)
Variable		
Export	1.094677 [0.1346]	1.154655 [0.1261]
External debt	1.041967 [0.0340]	1.026636 [0.0383]
Foreign direct investment	14.80995 [0.8304]	16.86531 [0.8090]
Foreign portfolio investment	-9516264 [0.0493]	-9819761 [0.0471]
Official development assistance	-9.287650 [0.1208]	-9.068942 [0.1375]
Remittances	14.63045 [0.0000]	14.52568 [0.0000]
Shock Dummy	-	0.000055 [0.7901]
Adj- R^2	0.889509	0.887006

[ ] depicts *p*-value significant at 1%, 5%, 10%; Note: model 2 differs due to presence of dummy variable on random shocks.

Table 4 summarizes the different economic theoretical signs with corresponding hypothetical probability test. Evidently, and as it is usual in several economic and financial data, the control variables: international capitals introduced both statistical and theoretical ambiguities to which GDP responds given their marginal variations. Individual result points to the hypothesis that foreign capital variants exhibit different economic implications such that certain normative economic expectation is violated. Model 1 coefficient shows that exports and FDI have weak positive economic effects on GDP which partially conforms to expected sign but contradicts

Rehman and Ahmad (2016). This could be linked to the fact that FDI promoting multinational corporations take and repatriate benefits that almost equates to value of resources generated by their capital. This could signal economic leakage that burdens GDP of Nigeria. The development could also mirror dismal performance of the non-oil sector FDI and low production of export commodities in that sector. Central Bank of Nigeria (2015) had raised similar concern as it affected current account balance of the external sector. Foreign portfolio investment and ODA produced negative coefficients, however, the decline in GDP tends to be more from foreign portfolio investments. This could be explained by increased repatriation of income and dividends by non-residents. This form of investment is often associated with high rate of volatility (*p*-value of 0.0493). It reduces GDP by approximately 9516264 billion Naira. The results also suggest remittances have extremely large positive growth effects on GDP by approximately 14.63045 billion Naira. The positive and highly significant coefficient of remittances suggests that migrant transfers constitute an important source of growth-enhancing external finance for Nigeria. Unlike debt and portfolio flows, remittances do not create repayment obligations and therefore provide more stable support for domestic economic activity. Our evidence indicates that growth facilitating workers remittances from abroad is a capital that takes nothing out of home country of nonresidents. Negative ODA conforms to World Bank (1978) claim that poor countries depending on official assistance for most of their capital requirements seriously hampered their growth. Despite the size of ODA Nigeria is among those whose ODA beneficial consequences for outputs development could not be equated to expectation. Incorporating shock variable expressed as dummy, It is worth noting that across previous specifications with dummy the results show limited differences. First, the dummy effects almost appear to be entirely neutral to GDP. Second, economic signs of component international capital variables remained the same.

4.2 Gini Index Regression for Reducing Income Inequality

Table 5 summarizes a multiple comparative tabular presentation of cointegration equation results whose relationships do not extend into the long run (Engle-Granger z-statistic accepts null statistics of no cointegration of series). There is observed minor differences between model 2 and model 1 without shock dummy. Assessment of both models comparatively shows that presence of dummy depicting shocks in model 2 marginally subdued contribution of each variable to changes in gini. For instance, export tends to drop to 0.2480% from 0.251% in the absence of shocks. Just as shock dummy has a coefficient of 0.2597% (*p*-value 0.8460), its degree of

influence on international capital variables is relatively weak even at 10% level of significance. It is also evident that foreign portfolio investment on income inequality is positive and statistically insignificant in both models. Thus, export and portfolio investment tend to expand size of inequality which violates expectation. This aligns with Fosu (2011) resource curse problem reported on Nigeria being a potential danger for all resource sufficient developing countries. Income inequality tends to be expanded because export and foreign portfolio failed to exert downward pressure on inequality from 100 as perfect state of inequality towards 0 degree. Nigeria export proceeds seem not to be favourably utilized to bring desired household developmental changes. Specifically, foreign exchange from Nigeria oil rich export and abundant non-oil trades are prone to shocks in form of oil glut or unfavourable oil and non-oil price movements. It is a constrain on resources availability which might widen inequality. On the other hand, it might not necessarily reflect issue of export earnings inadequacy but problem of intentional use of substantial revenues from natural-resource wealth. Foreign portfolio is a volatile nonresident investment and may not possess inequality mitigating properties. Furthermore, the result demonstrates a significant negative influence of development assistance on gini at 1%, 5% and 10%. Like external debts, FDI and remittances exert similar negative anticipatory influence on gini. These are proven to initiate helpful changes in economic history of countries and household living standards (Chorn & Siek, 2017; Mowlaei, 2018). An increase in official development assistance by 1% decreases gini by 2.211% despite domestic and local shocks momentum on Nigeria economy.

Table 5: Country Gini Index Regression and Engle-Granger Cointegration

Dependent	Gini index	Gini with dummy	Gini index*governance effectiveness
Variable: gini	Coefficient	Coefficient	Coefficient
	(Model 1)	(**Model 2)**	**(Model 3)**
Variable			
Export (log)	0.251277 [0.6306]	0.248033 [0.6344]	
External debt (log)	-2.865867 [0.0110]	-2.931133 [0.0093]	
Foreign direct investment (log)	-0.058267 [0.7391]	-0.067037 [0.7003]	
Foreign portfolio investment (log)	0.324318 [0.6128]	0.312768 [0.6215]	
Official development assistance (log)	-2.285047 [0.0367]	-2.211379 [0.0416]	
Remittances (log)	-0.147114 [0.8422]	-0.148685[0.8393]	
Shock dummy	-	0.259750 [0.8460]	
Export*governance			-2.394213 [0.1439]
External debt*governance			2.572341 [0.0081]
Foreign direct investments*governance			1.358898 [0.0222]
Foreign portfolio investment*governance			0.680553 [0.3760]
Official development assistance*governance			2.619524 [0.0161]
Remittances*governance			-2.789813 [0.2862]
Adj-R^2	0.765053	0.756632	0.757031
	Value	**Probability**	
Engle-Granger tau-statistic	-3.977651	0.3319	
Engle-Granger z-statistic	53.12326	0.9999	

[ ] depicts *p*-value significant at 1%, 5%, 10%

Note: Model 3 is a regression involving interaction of governance effectiveness with various international capital variants on Nigeria gini index

As sensitivity analysis, interaction takes place in the third model. When this is done, it is striking to note that interactions across specifications introduced variations in the elasticity of gini index to international sources of capital inflows. First, EG result could not establish cointegration. It could not confirm evidence of long run relationship. A normative expectation is that governance imposes cushioning effects on aggressively skewed income inequality among help-seeking rural and urban households. Export and worker remittances quite fortunately produced useful implications of which the gini index seems to be pushed in the direction of decline from 100 to 0. Migrant remittances have shown its countercyclical property especially in countries in protracted conflicts, they turn out to be economic lifeline of the poor. World bank studies shows that it lowers poverty in several countries —Uganda, Ghana and Bangladesh. Though these are not significant, but conform to *a priori* expectation. Export and remittances are contributory factors for human development which relatively redistribution capacity of governance effectiveness. Both measures could not produce strong evidence even at 10% significant level. It means that

institutional capacity of the government still left income to be relatively concentrated in the hands of either the wealthy or upper class. This result highlights the importance of income shares that spread evenly across human populations. However, the rest of international capital sources of external debts, FDI, FPI and ODA produced adverse evidence because of positive signs. This indicates aggravation in inequality. Adverse in this regard is positive coefficients but to a greater degree found in external debts, FDI and ODA which appear to raise rather than decline gini index. Castells-Quintana, Gradín, and Royuela (2025) summarize this experience inspiring a conclusion that expanded income inequality is detrimental to human development. Evidently, governance effectiveness is weak where it ought to be robust especially in the redistribution of benefits from external debt proceeds and constructive use of ODA according to terms and condition. However, the Engle-Granger cointegration test reported and validated null of no unit root proving the absence of long run cointegration among all the variables.

5 Conclusion and Policy Recommendations

This study has investigated economic usefulness of international capital inflows on key quantitative and qualitative parameters in the economy comprising of growth and moderating importance of income inequality. The main expectation of host country to any form of foreign capital resources is investment in the economy and by extension human social quality. Shocks from macro-financial domestic and external environmental sources have marginal reflections on GDP. These features focused on shedding lights on associated crucial empirical questions initially raised. We find a long run relationship between international capital and growth. However, finding in gini regression lacks cointegration with international capitals, thus, the net benefits of moderated inequality do not extend beyond the short run. Findings show that despite the inclusion of random shock dummy baseline results are almost identical. Growth regression confirms that external debts, constant inflow in remittances made extraordinarily large contributions to GDP. However, foreign direct investments also made vital contributions by yielding modest increase in size of national outputs. This is a source of concern of which government agencies should start considering tactics and cunning approaches multinational enterprises repatriate extremely large profits to home countries. Huge repatriation and exorbitant purchase of equipment reflects leakages that reduces domestic investments and outputs. Government can insist that procurement of premium grade and hi-tech equipment should entail collective involvement of both its own department and procurement unit of companies to

eliminate tricks of hiding under equipment purchase to drain Nigeria economy of values embedded in outputs. We observe that exports revenue flowing to trade-oriented Nigeria did not resultantly expand gross domestic product to a substantial magnitude. Rather worker remittances have the greatest advantage in support national outputs. Diversification of export base of the economy is key, but first fiscal spendings on purchase of exotic commodities should be dropped especially among governmental authorities. Having a share in global value chain could be helpful by funding technological advancement in industrial sector. Government commitment is extremely necessary if it begins with planned revival of moribund investment in steel and other key taxpayers financed corporations. Conversely, foreign portfolio investments and official development assistance tend to be negatively correlated with GDP of which foreign portfolio has greater declining effects.

In the gini equation interaction of governance with cross border capital has shown not to be relevant across every foreign capital inflow variant. But the result of the interaction does suggest that domestic dimensions of governance effectiveness play important role. Our results and perhaps preliminary findings elsewhere indicate that gains from the interaction could be sizeable and positively impactful on inequality through various scopes of international capital. The influence of governance might be minimal considering its short data interval. This is a limitation to finding. Specifically, governance effectiveness influentially supports in minimization of income inequality by a limited degree through manipulations of exports and remittances. The outcome is to a significant degree. Remittances prove to be a ‘magical’ solution that meaningfully mitigate household income imbalance. Despite governance effectiveness purported usefulness, external debts, FDI and ODA seemingly magnify household income inequality. Then executive constraints are at work. A proposal is suggested here: The country can do better using external debts proceeds and official development assistance if it upgrades its institutional quality by having ‘good institutions and governance’ that ensures that government fulfills all conditions attached to development assistance. Executive cabinet should consider investing debts in projects that do not project elitists social class. For instance, spending billions of dollars on airport renovation and government officers residence. Agriculture through the ministry should attract more funding. Some proceeds can be deployed for revitalization of critical government corporations that employs people like the defunct Nigeria Airways. The lawmaking institutions

of Nigeria should help in cautioning the executives on the need for prudence with foreign resources.

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