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HETEROGENEOUS CAPITAL SOURCES AND LONG-TERM GROWTH IN SMALL OPEN ECONOMIES: EVIDENCE FROM ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)

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Abstract:
The heterogeneity of foreign capital sources has rekindled interest among researchers and policymakers in understanding their growth implications in small open economies. In this context, we provide new and valuable insights into how different sources of foreign capital contribute to economic growth in selected member countries (Ghana, Guinea, Liberia, Nigeria, Sierra Leone, Niger, Mali, Senegal, Cote d'Ivoire and Burkina Faso) of ECOWAS. Specifically, we employed the pooled mean group (PMG) estimator and the Hausman test to analyse panel data from the World Development Indicators of the World Bank and the International Monetary Fund (IMF) Financial Statistics. The findings revealed that FDI inflows are growth-enhancing. This indicates that FDI is a crucial source through which foreign capital amplifies GDP growth, thus reaffirming the need to maximise benefits, minimise risks, and promote sustainable growth. Similarly, the results showed that remittances and ODA inflows significantly bolstered annual GDP growth during the study period. This finding is not surprising given that remittances have been identified as a significant and stable flow of foreign capital, which directly supports households and stimulates consumption, thereby creating opportunities for economic growth. However, the results also showed that external debt hampers growth. The adverse effects of external debt on economic growth could be attributed to the growing challenge of debt servicing and principal repayments alongside poor

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institutional quality, including systemic corruption. Hence, we recommend that governments must ensure smart and targeted regional integration by fully implementing the ECOWAS protocols on the free flow of capital, including goods and services, to foster sustainable growth. Additionally, Central Banks and the West African Monetary Agency (WAMA) must synergise their efforts to reduce the cost of remittance transfers by providing low-cost and digital remittance channels for rapid and sustained growth in the ECOWAS region.

JEL: F30, F34, F35, F41, F43, O55

Keywords: capital inflows, long-term growth, FDI, remittances, ODA inflows, external debt and ECOWAS

1. Introduction

The inward flow of foreign capital into an economy is pivotal in shaping the growth trajectory, especially in developing economies. These inflows are often heterogeneous, as they originate from various sources, including foreign direct investment (FDI), portfolio investment, remittances, external borrowing, and other financial resources, which results in varying implications for the recipient economies in terms of opportunities they present and the challenges they pose. In developing economies, including the Economic Community of West African States (ECOWAS), international capital inflows are considered an important growth enabler. This follows the classical and neoclassical theoretical assumptions that the growth of the capital stock, whether funded by domestic savings or foreign investment, has the potential to increase output. According to the World Bank (2014) and the International Monetary Fund (IMF, 2016), international capital inflows are primarily intended to foster sustainable economic growth and financial resilience, especially in developing economies, by complementing domestic savings, improving resource allocation, building infrastructure and private sector development. For instance, FDI inflows, which have been identified as the dominant foreign capital in the West African sub-region, not only provide funds for investments but also managerial know-how and new technologies. Available statistics show that FDI inflows to West Africa in 2022 increased by 48% to US$14 billion [United Nations Conference on Trade and Development (UNCTAD), 2022].

Furthermore, Ali, Jehan & Sherbaz (2022) assert that remittances provide opportunities for growth and development in the recipient countries. This follows the assumptions of the New Economics of Labour Migration (NELM), which predicts that labour migration is critical for economic development in the migrants' home countries. It is believed that the short-term impact of remittances is in the form of poverty reduction, whereas the long-term impact includes improved education and healthcare as well as improvements in living standards. Similarly, it is also widely recognised in extant literature that the West African sub-region is home to foreign aid, including official

development assistance (ODA), technical cooperation grants, bilateral aid and sector-specific aid, among others. In particular, the role of ODA has been mixed across West African countries. The effectiveness of ODA in stimulating growth tends to be evident when it is targeted toward infrastructure, education, and health amid quality governance and strong institutions (Kitole, 2025; Chansombuth, 2023; Dreher & Langlotz, 2020). However, studies such as Bethencourt & Perera-Tallo (2025), Addi & Abubakar (2024) and Maruta, Banerjee & Cavoli (2020) raise concerns about the fungibility of aid, especially in countries and regions where institutional quality and its sub-dimensions are low.

In addition, the issue of foreign borrowings in the ECOWAS region has been a source of worry to policymakers when compared with the level of infrastructural development and growth viability in each of the member countries. It is expected that the foreign debt accumulation would provide the required capital for the countries to invest in critical infrastructure to foster sustainable growth. However, the experience of these countries has varied over time following the pronounced level of infrastructural deficits in the region, thus raising concerns about the effectiveness of the borrowed funds. Despite the historical openness of ECOWAS to foreign capital, there has been a lack of consensus on which of the forms of capital inflows stimulate growth in the region. In this light, we provide a more encompassing and updated empirical investigation of how different forms of capital inflows contributed to economic growth. This will help to identify the magnitude of contributions of each of the heterogeneous foreign capital sources and inform policy decisions for sustainable growth in the ECOWAS region. Following the introduction, the rest of the research is structured as follows: Section II is allocated to the related literature, while methodology and data sources are provided in Section III; results and discussion are elaborated in Section IV, and the conclusion and policy implications are embodied in Section V.

2. Related Literature

The neoclassical theory provides insights into how differences in the marginal productivity of capital (MPK) between countries drive capital mobility from the source to host countries. It follows the Solow-Swan growth model credited to Solow (1956) and Swan (1956), which assumes that capital is perfectly mobile. Thus, capital is believed to flow from countries where it is abundant and its returns are relatively low to countries where it is scarce and its returns are higher. Following the neoclassical assumptions, Prasad, Rajan, and Subramanian (2007) assert that capital is predicted to flow from nations with relatively high capital-to-labour ratios to those with relatively low ratios. Recent studies, including those by Githaiga & Kilong (2023) and Ali, Jehan & Sherbaz (2022), highlight the vital role that capital inflows play in driving economic development as they provide the necessary funding for education, training, and infrastructure. At its core, neoclassical growth theory suggests that capital inflows are crucial for economic growth, as they boost capital accumulation, improve technology transfer, and create

opportunities for efficiency gains. Following the widespread view that capital flows from capital-rich countries to capital-poor countries with rising returns, cross-border capital mobility is described as the financial counterpart of savings and investment decisions. Thus, the majority of the controversies surrounding capital flows in international macroeconomics have been well addressed with these models. Classic examples include the Lucas' (1990) paradox, the Feldstein-Horioka puzzle (see Feldstein & Horioka, 1980), and the recent discussion on global imbalances and the global savings glut (see Bernanke, 2005; Blanchard & Milesi-Ferretti, 2009).

Additionally, the Chenery & Bruno (1962) two-gap model and its extension by Chenery & Strout (1968) are founded on the assumption that inward movement of foreign capital provides the host economies with an opportunity to finance their savings and foreign exchange deficits. The model is derived from the Post-Keynesian growth models of closed economies of Harrod (1939) and Domar (1946). Therefore, it assumes that the emerging economies experience the savings-investment gap characterised by the Harrod-Domar model. In this light, foreign capital inflows are anticipated to provide room for bridging the gaps through the importation of capital goods. Empirically, mixed results have characterised the growth implications of capital inflows in developing economies, including the West African region. A range of econometric techniques, including time-series estimation for country-specific studies, panel data regressions for cross-country studies, and generalised method of moments (GMM) estimators to address the issues of endogeneity and omitted variable bias, have been employed by the researchers. For instance, FDI inflows have emerged as the most frequently investigated type of capital inflow, with the findings supporting a positive and significant contribution of net FDI inflows to economic growth in the ECOWAS region (see Dankyi *et al.*, 2022; Jirbo, Danladi & Atayi, 2022; Ozekhome, 2017).

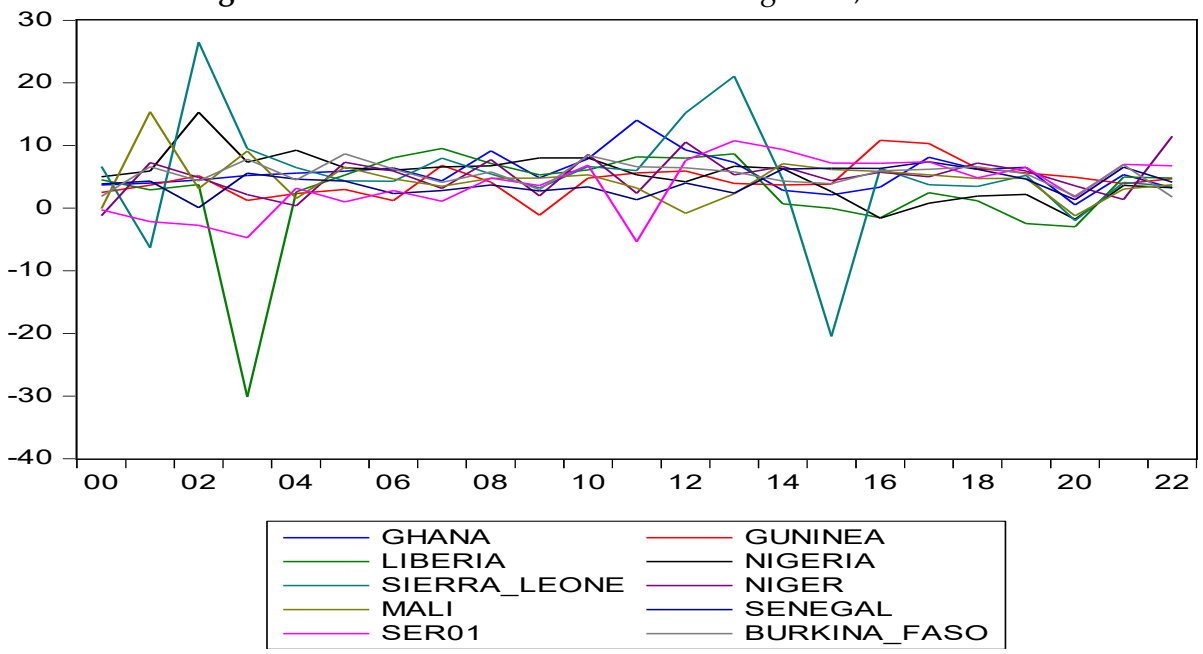
In particular, studies for Senegal and Ghana showed a positive growth implication of FDI (Touray, 2024; Ato-Mensah & Long, 2021; Tee, Larbi & Johnson, 2017), while net inflows of FDI were found to dampen growth in the Gambia, Nigeria and Côte d'Ivoire (Illo, Oladipo & Azu, 2025; Ajayi, 2024; Iritié & Tiémélé, 2023). Unlike FDI, portfolio investment flows have attracted comparatively less empirical attention in West Africa. Findings from some previous studies (Mlambo, 2022; Asamoah, Alagidede & Adu, 2021; Ndugbu, Otiwu & Uzowuru, 2021) showed that portfolio investments do not stimulate economic growth in Africa. This finding could be largely attributed to the poorly developed financial markets in many countries and their high susceptibility to external shocks and domestic volatility. As a significant source of foreign capital for many African countries, remittances have been identified in previous studies as growth-enhancing in Africa (see Ofori & Grechyna, 2021; John *et al.*, 2015; Tchekoumi & Nya, 2023; Amir & Amir, 2024). This could be linked to the critical role remittances play in financing consumption, education, healthcare and small-scale investment. However, the findings of the aid-growth nexus have been mixed across West African and other developing countries. Studies such as Azam & Feng (2022), Tang & Bundhoo (2022), and Rahnama, Fawaz & Gitting (2017) established that foreign foster growth in developing economies,

while other studies, including Kamguia *et al.* (2022); Tefera & Odhiambo (2022) and Jena & Sethi (2020) found evidence to support the adverse implications of aid on economic growth in developing economies, including Africa. The differences in the findings regarding aid effectiveness can be linked to the variety of economic, institutional, and structural factors, which aligns with the aid conditionality hypothesis.

3. Stylised Facts on Growth Trajectories in the selected Countries in the ECOWAS region

The trajectories of annual GDP growth in the selected member countries of ECOWAS between 2000 and 2022 are presented in Figure 1.

Figure 1: Time series trends of annual GDP growth, 2000 – 2022



Source: Authors' compilation based on data from World Development Indicators of the World Bank

The time series trends of annual GDP growth showed that the selected ECOWAS countries witnessed moderate but volatile growth rates between 2000 and 2022. The volatility in the growth rates could be attributed to the fluctuations in commodity prices, poor macroeconomic management, and global financial crises. The time series trend showed that Sierra Leone experienced a very high volatility in annual GDP growth, which fluctuated between a positive all-time high growth of 26.52% in 2002 and a negative growth of 20.49% in 2015. The sharp rebound in Sierra Leone's growth in 2022 is closely linked to the end of the country's civil war, which is characterised by post-war reconstruction efforts and inflows of donor aid and foreign investments. Nigeria also witnessed very high GDP growth of 8.01% in 2010, which could be attributed to the country's recovery from the global financial crisis and surge in crude oil prices. The growth trajectory also showed that Liberia witnessed the worst growth outlook with a negative growth of 30.15% in 2003. This could be attributed to the dampening effect of

the Second Liberian Civil War (1999-2003), which distorted economic activities, including trade and foreign capital inflows, while causing a serious humanitarian crisis due to widespread population displacement. However, the time series trends showed that other selected countries in the sample tend to exhibit similar growth patterns, which is largely explained by their identical commodity exports, intra-regional trade relationships and common institutional challenges.

4. Methodology

4.1 Data Description and Sources

In this research, we utilised panel data that combines both time series and cross-sectional elements from a sample of ten (10) countries in the ECOWAS region. The time series data includes annual GDP growth, FDI inflows, remittances, net ODA inflows, and external debt stock. In particular, the annual GDP describes the sum of final output of goods and services produced by both the public and private sectors. It is measured by the annual percentage growth rate of GDP at market prices based on constant local currency in each country in the sample. Furthermore, FDI inflows define the total of equity capital, reinvested earnings, and other long-term capital reflected in the balance of payments. We measure FDI by net inflows from foreign investors divided by GDP. Remittances and net ODA inflows are measured as personal remittances received as a percentage of GDP and net ODA received as a percentage of GNI, respectively. However, we used external debt stocks as a percentage of GNI to capture external debt for each of the selected countries. All the datasets for this study are sourced from the World Development Indicators of the World Bank and the IMF Financial Statistics.

4.2 Model Specification

Building on the works of Dankyi *et al.* (2022) and Jirbo, Danladi & Atayi (2022), we expanded the growth model by taking into account the heterogeneous sources of foreign capital. The motivation for this improvement is to provide a more encompassing and updated empirical investigation of how different forms of capital inflows contributed to economic growth in the aggregate sample of the selected countries in the ECOWAS region. Thus, the functional form of the model is provided as:

$$AGP = f(FDI, REM, ODA, EXD) \quad (1)$$

Where:
AGP = annual GDP growth,
FDI = FDI inflows,
REM = remittances,
ODA = net ODA inflows, and
EXD = external debt stock.

The specification of the panel autoregressive distributed lag (PARDL) model with p and q lags is as follows:

$$\Delta AGP_{it} = \lambda_i\left[AGP_{i,t-1} - \beta_{0i} - \beta_{1i}x_{i,t-1}\right] + \sum_{j=1}^{p}\alpha_{ij}\Delta AGP_{i,t-j} + \sum_{j=0}^{q}\varphi_{ij}\Delta x_{i,t-j} + \mu_i + \nu_{it} \quad (2)$$

Where:
β_{0i} = heterogeneous constant parameter,
λ_i = error correction coefficient,
β_{1i} = heterogeneous slope parameters,
$x_{i,t}$ = vector of regressors,
$\alpha_{ij}\ and\ \varphi_{ij}$ = short and long run parameters,
p and q = optimal lag orders,
Δ = first difference operator,
i = cross-sectional units (the 10 countries in the sample),
t = ime dimensions (1990-2022),
u_i = individual effects, and
v_{it} = remainder disturbance term.

4.3 Data Analysis Techniques

We utilised Pesaran & Smith's (1995) Mean Group (MG) estimator alongside the Pooled Mean Group (PMG) estimator introduced by Pesaran, Shin, & Smith (1999) to estimate the PARDL model. The MG estimator is flexible, given that it allows short-run coefficients, error correction terms and intercepts to vary across different groups (Fazli & Abbasi, 2018). In contrast, the PMG estimator allows differences only in the short-run coefficients and the intercept, while the long-run coefficients are the same across groups. The PMG provides a balanced approach for estimating heterogeneous panel data. Since both PMG and MG include lags of the dependent and independent variables, they yield reliable coefficients, even in the presence of endogeneity within the models. We also performed descriptive analysis of each of the series to examine how each of them is distributed during the study period. In addition, we applied the panel unit root test proposed by Im, Pesaran & Shin (IPS, 2003), as well as Kao's (1999) panel cointegration test, to check for stationarity and long-term relationships among the variables. These tests are important for mitigating any spurious results and grasping the long-term dynamic interactions between the variables. The choice of the IPS panel unit root followed its compatibility for economic and financial panel datasets, as it allows for heterogeneity in the autoregressive coefficients across cross-sections. Similarly, Kao's (1999) test method assumes homogeneity in the cointegrating vectors across cross-sections by extending the Engle-Granger (EG) two-step methodology to the panel datasets context. Earlier studies (Narayan & Smyth, 2008; Huang *et al.*, 2008; Chang & Caudill, 2005) have applied the IPS panel unit root and Kao cointegration tests for economic research.

5. Results and Discussion

We begin with the descriptive analysis of each of the series using the basic statistics, which is followed by the pre-estimation tests, including the panel unit root and cointegration tests, and the estimation of the PARDL model. The results and discussion of the findings are presented accordingly.

Table 1: Summary of the descriptive statistics

Variable	Observation	Mean	Std. dev.	Minimum value	Maximum value
AGP	230	4.599	4.677	-30.14	26.52
FDI	230	4.815	11.971	-20.49	103.34
REM	230	3.969	4.007	.0389	21.809
ODA	230	9.930	9.675	.24	79.53
EXD	230	63.19	81.986	4.95	610.45

Source: STATA 17 output.

The results also showed that the annual GDP growth averaged 4.599%. It fluctuated between a minimum negative growth of 30.14 % and a maximum positive growth of 26.52%, with a standard deviation of 4.677, indicating the observations for the annual GDP do not cluster around the mean. This finding attests to varying growth trajectories across the sampled 10 countries in the ECOWAS region. The findings also revealed that FDI averaged 4.815%, with a minimum negative level of 20.49% and a maximum value of 103.34%. The standard deviation is 11.971, which is higher than the mean, indicating that the FDI observations varied quite a bit from the average value. Additionally, remittance inflows averaged 3.969%, with minimum and maximum values of 0.0389% and 21.809%, respectively. On the other hand, ODA had an average of 9.930%, but the standard deviation suggested that the ODA observations were quite divergent from the mean. The data also showed that the external debt stock averaged 63.19% of GDP during the study period, highlighting the significant indebtedness of the countries involved. Again, the descriptive statistics indicate that the external debt stock ranged from a minimum of 4.95% to a maximum of 610.45%. Furthermore, the observations for external debt stock did not cluster around the mean, as evidenced by the standard deviation being greater than the mean score. This variability could be linked to the changing nature of external debt stocks across the selected countries.

Table 2: Kao cointegration test results

Variables: AGP, FDI, REM, ODA, EXD		
Ho: No cointegration Number of panels = 10		
Ha: All panels are cointegrated Number of periods = 21		
Test method	**Statistic**	**p-value**
Modified Dickey-Fuller t	-8.5266***	0.0000
Dickey-Fuller t	-9.7036***	0.0000
Augmented Dickey-Fuller t	-6.0111***	0.0000
Unadjusted modified Dickey-Fuller t	-17.0575***	0.0000
Unadjusted Dickey-Fuller t	-11.5435***	0.0000

Note: *** p<0.01, ** p<0.05, * p<0.1 denote significant at 1%, 5% and l0% level respectively
Source: STATA 17 output.

As observed from the results, all five test methods supported the rejection of the null hypothesis at the 5% level. This is because the probability values of the test statistics are greater than 0.05. In other words, the alternative hypothesis is that all panels are cointegrated**.** This finding suggests that annual GDP growth has a long-run relationship with capital inflows. The evidence of a long-run relationship between capital inflows and annual GDP growth is consistent with the findings of Slesman, Baharumshah & Wohar (2015), Adusah-Poku *et al.* (2016), and Abdouli & Omri (2021), who reported that capital inflow is cointegrated with economic growth. This finding indicates that the inflows of foreign capital can be relied upon to predict long-term changes in economic growth in the ECOWAS region.

Table 3: Summary of PARDL results

Dependent variable: AGP		
Variables	**MG**	**PMG**
Ec	-0.814***	-0.7631***
	(0.196)	(0.1785)
D.FDI	0.596*	0.17046***
	(0.333)	(0.0622)
D.REM	0.640	0.28447
	(0.402)	(0.1656)
D.ODA	0.134	0.0474*
	(0.138)	(0.0254)
D.EXD	-0.0611***	-0.14289**
	(0.0225)	(0.0653)
FDI	-0.281	0.31658***
	(0.231)	(0.0846)
REM	0.0476	0.4820***
	(0.681)	(0.1527)
ODA	-0.239	0.03701***
	(0.203)	(0.0083)
EXD	-0.0338	-0.81872**
	(0.0299)	(0.36055)
Constant	6.271***	0.36623***
	(2.387)	(0.0889)

Hausman test results		
chi2(4)	3.82	
Prob > chi2	0.7149	
Observations	220	220

Note: *** p<0.01, ** p<0.05, * p<0.1 denote significant at 1%, 5% and l0% level respectively
Source: Regression output from using STATA 17

The Hausman test result was employed in deciding the results between MG and PMG. As observed from the results, the chi-square statistic (3.82) has a probability value of 0.7149, which is greater than 0.05. This finding indicates that the Hausman test results is not statistically significant, thus providing the basis for accepting the null hypothesis that the PMG results are appropriate and consistent for explaining the effects of capital inflows on annual GDP growth. It is evident from the PMG results that the error correction coefficient (-0.7631) is negative and statistically significant at the 5% level. This is impressive as it indicates that the disequilibrium in the system can be corrected to the long-run equilibrium position at a speed of 76.31%. This finding suggests that the adjustment to the equilibrium would likely occur in less than two years. The PMG results showed that FDI inflows significantly increased annual GDP growth in both the long and short run. The significant contribution of FDI to annual GDP growth is in tandem with the findings of Dankyi *et al.* (2022) Jirbo, Danladi & Atayi (2022); Hobbs, Paparas & AboElsoud (2021) and Asafo-Agyei & Kodongo (2022), who reported that FDI is an important enabler of economic growth in recipient countries. This indicates that FDI is an important source through which foreign capital magnifies GDP growth, thus reaffirming the need to maximise benefits, minimise risks, and ensure inclusive growth.
In a related finding, remittance inflow has a positive and significant effect on annual GDP growth. This finding indicates that inflows of remittances have the potential to bolster economic growth and, in so doing, create opportunities for economic development in the ECOWAS region. The significant positive contribution of remittances to GDP growth corroborates the findings of Nyasha & Odhiambo (2022), Adjei *et al.* (2020), and Bezabh & Kumar (2020), who found that inflows of remittances are good for economic growth. Again, the effect of ODA on annual GDP growth is positive and significant in the long run. This suggests that ODA is effective in promoting economic growth in the long run as it contributes meaningfully to the GDP growth of the selected countries in the ECOWAS region. This finding also attests to the critical role played by foreign loans in providing the resources required to bolster growth. It also aligns with the findings of Nchofoung *et al.* (2022), Dong & Fan (2020), Tefera & Odhiambo (2022) and Yahyaoui & Bouchoucha (2021), who established that aid inflows to Africa significantly increased economic growth and sectoral employment growth. However, it was found from the results that external debt has a negative effect on annual GDP growth. This finding is significant at the 5% level, indicating that external debt is not growth-enhancing. It is also contrary to the *a priori* expectation, but highlights the fact that the growth in external debt has not translated to economic growth. This is consistent with the findings of Didia & Ayokunle (2020) and Edo, Osadolor & Dading (2020), who reported that external debt

adversely affected economic growth in Africa. The adverse implications of external debt on economic growth could be attributed to the growing challenge of debt servicing and principal repayments alongside poor institutional quality, including systemic corruption, which undermines investment in critical infrastructure to foster economic growth.

6. Conclusion and Policy Insights

This study has deepened the understanding of the direction and magnitude of the relationship between capital inflows and economic growth in selected countries in the ECOWAS region. In particular, we explored the heterogeneous sources of foreign capital, including FDI, remittances, ODA, and external debt stock and how they shaped annual GDP growth. The findings showed that FDI inflows are growth-enhancing. This highlights the pivotal role of FDI in promoting industrial expansion, infrastructural development, managerial know-how and transfer of new technologies in Africa, including the ECOWAS region. Thus, policymakers should improve the ease of doing business and regulatory frameworks to increase FDI inflows for rapid economic growth. The governments must also ensure smart and targeted regional integration by ensuring full implementation of the ECOWAS protocols on the free flow of capital, including goods and services, to create a larger, unified market for sustainable economic growth. The results showed that remittances and ODA inflows significantly increased annual GDP growth during the study period. This finding is not surprising given that remittances have been identified as a significant and stable flow of foreign income that directly supports households and stimulates consumption and creates opportunities for economic prosperity. It also highlights the effectiveness of ODA in fostering investments in critical sectors and reducing structural barriers to sustainable growth. Thus, Central Banks and the West African Monetary Agency (WAMA) must synergise their efforts to reduce the cost of remittance transfer by providing low-cost and digital remittance channels for rapid and sustained GDP growth in the ECOWAS region. However, the results showed that external debt is growth-retarding. This finding suggests that external debt inflows tend to create economic burdens that outweigh the intended and desired benefits due to poor debt management, systemic corruption and excessive borrowing from both bilateral and multilateral sources. The governments of the member countries of the ECOWAS should prioritise concessional and productive external borrowing with low interest and long-term tenure for financing infrastructure, education, and health investments to drive long-term economic growth. Efforts must be made by the ECOWAS member countries to leverage the debt sustainability analysis (DSA) tools of the World Bank and IMF to guide borrowing decisions and prevent unsustainable debt accumulation.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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