

RESEARCH ARTICLE

Human Capital Flight in ECOWAS Subregion: The Heterogeneous Influences of Macroeconomic and Institutional Factors

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ABSTRACT

This study demonstrates a deep concern about the forces behind the recent upsurge of human capital flight in ECOWAS despite the crucial need for human capital in their development process. In five separate models, the heterogeneous impacts of macroeconomic and institutional variables on migration in ECOWAS are examined between 2009 and 2023 using a panel quantile approach with nonadditive fixed effects. The results explain that the impacts of the selected macroeconomic and institutional determinants of human capital flight are heterogeneous through the quantiles. Specifically, poor institutional qualities in terms of governance, corruption, freedom and accountability, and political stability are important sources of human capital flight. There are more robust indications that human capital flight increases as income and unemployment increase while it reduces with increased life expectancy. The study recommends stronger institutional frameworks to increase public confidence and reduce pessimism. Peaceful political transitions, equity, transparency, and effective governance can create more attractive economic opportunities to reduce the problem of unemployment and, ultimately, reduce human capital flight in ECOWAS.

1 | Introduction

Historically, cross-border migration occurs across regions and continents, and Africa is no exception. Environmental, economic, and social factors may induce this. Most migrants fall within the categories of the economically active population, which constitutes the labor force. While many skilled workers in developing countries prefer to migrate to developed nations (ILO, 2019), it has also been observed that unskilled workers from West Africa venture into Europe by crossing the Mediterranean Sea through the North African states (UNESCO 2018; Schöfberger and Rango 2020). While international migration may serve as a gain in the destination countries, it may lead to a loss of the labor force in the country of origin because it increases or decreases

the stock of human capital available. It is, therefore, not surprising that in contrast to the situation in most advanced countries, data from West Africa show that most of the labor force is being lost, leading to a brain drain (UNESCO 2018; OECD 2024). According to UNDESA (2020), the international migrant stock of West Africa increases by an average of 1.2 million every 5 years. While there are concerns about how this could affect national productivity, there is a deeper concern about the forces behind this move. To this end, this study aims to investigate the bases for human capital flight in West Africa. This is important because human capital is crucial for productivity (Mankiw et al. 1992); addressing the causes of human capital flight is necessary to prevent the continuous loss of potential human resources which should benefit West Africa in terms of output

growth, investment, human capital development, innovations, and poverty alleviation in this region.

The economics of migration is primarily built on the promise of better earnings or employment in other countries (Massey et al. 1993; Castelli 2018). Therefore, low income and unemployment are considered the push factors that compel individuals to leave their country of origin for other countries (Simpson 2022; Helbling and Morgenstern 2023). These economic factors may directly influence the decision to migrate, but the causes of human capital flight are beyond earnings and employment. It cuts across the overall utility derived from living in a geographical location. Beine et al. (2013), Bergh et al. (2015), Dinbabo and Nyasulu (2015), and Kwilinski et al. (2022) provide insight into how some institutional characteristics may directly or indirectly influence migration. The direct influence of institutional quality can be observed from the perspective of the institutional structure that forms policies, influences stability, and dictates the level of safety, wellbeing, and haven that can be experienced in an environment (Ponce 2016; International Monetary Fund, Research Department 2020). The indirect influence can be seen in how institutions influence pessimism or optimism through the structure of the economic environment and the macroeconomic indicators that potential migrants consider. A more positive macroeconomic environment will attract migration inflows. Therefore, the quality of institutional factors becomes a reason for migration because it sends signals of stability and opportunities to potential migrants (Beine et al. 2013; Bergh et al. 2015).

For example, government effectiveness influences government policies on welfare and taxation, which directly determine migration. Also, higher economic freedom and opportunities can be sustained by effective governance, less corrupt public and private sectors, and liberality. These translate to a high presence of economic security and prospects (Meierrieks and Renner 2017). In contrast, the presence of high uncertainty, high taxation, currency fluctuations, and ineffective legal frameworks coupled with fragile property rights, limited economic participation, and low economic development, as accompanied by low degrees of economic liberty, will discourage migration inflows (Egger and Radulescu 2009; Grogger and Hanson 2011). Since people believe that their migration decision is based on the potential economic returns they might earn in the future (Bergh et al. 2015), institutional qualities are capable of sending signals about the macroeconomic ambiance that can guarantee their expected returns. Therefore, the decisions to migrate reveal the interplay between economic and institutional factors that are responsible for regional imbalances.

1.1 | The West African Scenario

In the case of West Africa, about half of the population still lives in poverty, such that they earn less than 2 dollars a day (ILO 2020). In addition to low wage rates, high unemployment rates are prominent in most countries. The unemployment rate was about 4.4% across the region in 2009, while Cabo Verde has taken the lead so far with about a 12%–14% yearly unemployment rate in the last decade. Some of these countries have also experienced a wobbly political system that affected the structure of their institutions and economies. While Liberia and

Sierra Leone were recovering from civil war, there were coup attempts in some. For example, there were successful coups in Mali in 2020, Guinea in 2021, Burkina Faso in 2022, and more recently, Niger in 2023. This led to the withdrawal of Burkina Faso, Mali, and Niger from ECOWAS in 2024 as the efforts to intervene in the unconstitutional seizure of power failed. This has implications for the strength of ECOWAS and the withdrawn states in terms of reduced economic cooperation and competitiveness, trade disruption, and economic growth. Therefore, the complex interplay of these institutional and economic indicators will not only make a region unattractive to immigrants, but it can also drive emigrants. Consequently, the net migration rates of ECOWAS countries have been negative in recent years, as shown in Figure 1.

The general outlook of West Africa is one of an exodus that deprives the region of its potential labor because of the outflow of skilled labor (Flahaux & de Haas, Flahaux and De Haas 2016). For instance, in Nigeria, there was a mass exodus of workers, especially professionals and medical doctors, to other developed countries between 2019 and 2022. According to Kohnert (2007), over one-third of the scholarly and skilled labor force from Africa has relocated to advanced nations within the past 30 years. The outflow of professional expertise from Sub-Saharan Africa is greater than in most parts of the world (Lucas 2010). Yet, there is an increasing tendency for the expatriation of highly skilled professionals from Africa, particularly West Africa, to OECD countries (Hatton and Williamson 2003; Awumbila 2017). This raises a concern about an increasing brain drain in the region.

The various reasons for migration decisions in African countries identified in the literature include socioeconomic factors such as unavailability of jobs, poverty, political turmoil, civil wars, and other conflicts (Lucas 2010; Naude, Naudé 2010), family unification, or study opportunities (Bakewell & Jónsson, Bakewell and Jónsson 2011; Bakewell and Bonfiglio 2013). Specifically addressing the economic and institutional causes of migration in African countries, Gignarta et al. (2020) focus on the whole of Africa while generalizing the institutional qualities, while Lawan Ngoma and Wana Ismail (2013) and Arif (2020) only include some African countries in their generalized investigation of developing countries. Yet, these studies are silent on the impact of unemployment on migration. West Africa's institutional factors are peculiar to this region, and the previous studies have not provided answers to the causes of human capital flight in this region. It is important to look into this problem at a close range rather than relying on a general assessment of developing countries. This present study deviates from the previous studies by considering the peculiarity of West Africa and the distinct macroeconomic and institutional factors that characterize this region following the scenario described above.

The central objective of this study is to test the impact of institutional qualities and macroeconomic factors on human capital flight in West Africa. Specifically, it examines the impacts of unemployment and income on human capital flight. It also examines the impacts of corruption, governance, freedom, and political stability on human capital flight. The following research questions are answered: (i) Are the macroeconomic factors of income and unemployment responsible for human capital flight in West Africa? (ii) Are institutional factors responsible for human

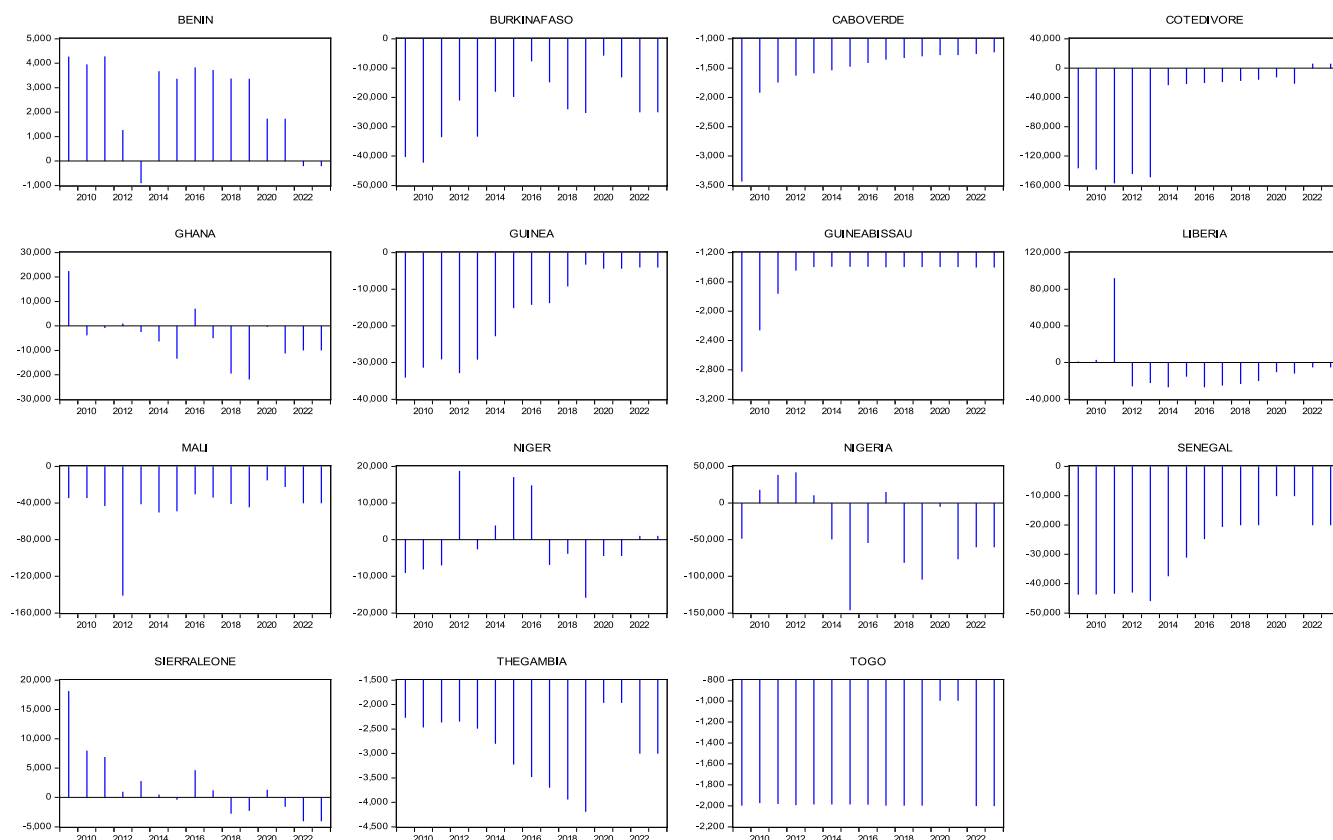


FIGURE 1 | Net migration in West Africa. *Source:* Authors' computation.

capital flight in West Africa? Providing answers to these questions from the perspective of West Africa will help ECOWAS focus on addressing the causes of brain drain highly associated with the transfer of human resources from this region to other countries (Docquier and Rapoport 2008). This important contribution to the literature addresses this as a joint challenge of the economic union of West Africa, having common characteristics in terms of economic and political structures.

This study is unique in several ways. First, the study focuses on the contemporary issue of brain drain that is symbolic of West Africa at this time. Unlike past studies, such as Gignarta et al. (2020), this study uses the most recent dataset from 2009 to 2023 to analyze the West African situation at a closer range. This time frame is significant because of the upsurge in global migration since 2010 (OECD 2024), and West Africa recorded a huge migration outflow during this period, most of which resulted in negative net migration, as seen in Figure 1. Second, human capital flight is proxied with net migration rather than focusing on labor mobility and labor migration, which is mostly seen in the literature. It incorporates all types of international migration recorded as total inward migration minus total outward migration. This helps us capture the human capital flows holistically, from the current and potential labor perspective. Third, rather than using wage differential or income gap, this study uses income per head, which is a better reflection of the standard of living. The study investigates the role of unemployment, which is an important macroeconomic issue for ECOWAS that was omitted in the previous studies on Africa. In addition to expenditure on education and remittances, which are often seen in literature, this study brings on the role of life expectancy as a development

indicator. Fourth, the institutional qualities of political stability, government effectiveness, corruption, and voice and accountability are very significant to ECOWAS. The impacts of these variables are assessed independently in separate models rather than the joint assessment done by Gignarta et al. (2020). This allows us to make more specific recommendations regarding each institutional quality. Fifth, the study employs the panel quantile regressions analysis, which allows us to estimate the heterogeneous impacts of the macroeconomic and institutional determinants of human capital flight at different quantile distributions (Powell and Wagner 2014). By this, we can identify the various responses of human capital flight to the macroeconomic and institutional determinants at the modest and extreme distributions. This also accounts for unobserved heterogeneity that may be present in the cross-sections so that the results are dependable (Koenker 2004). Finally, the study concludes that poor institutional indicators in terms of governance, freedom, corruption, and political stability, and economic indicators in terms of high income and unemployment rates are responsible for human capital flight in West Africa. Furthermore, low life expectancy, increased education, and remittances also encourage human capital flight. This study is a pointer to West Africa that the prevailing challenge of brain drain in West Africa can be significantly traced to poor institutional framework and an unattractive macroeconomic condition. This study recommends addressing the antibrain drain policies by improving the implied indicators.

The rest of this article is organized thus: extant literature is reviewed in Section 2, the theoretical framework, data, and method of estimation are explained in Section 3, and Section 4

presents the results and analysis of findings. Finally, the conclusion and policy implications are in Section 5.

2 | Literature Review

2.1 | Theoretical Literature

The motivation behind migration has been explained through migration theories. Ravenstein's laws of migration express that migration is due to economic causes, thus, migrants tend to move toward locations where their economic conditions can be improved (Lee 1966). In support of this, the migration system theory also considers migration from an economic development perspective, such that people move to more developed regions (De Haas 2010). It is on this premise that Lee's (1966) migration theory is explained from the perspectives of push and pull factors. The push factors are the factors that compel an individual to leave their origin country for other countries, while the pull factors are those that compel an individual to remain in a country of origin. Poverty, low income, joblessness, social unrest, environmental degradation, the quest for better education, and lack of essential amenities are among the push factors; the pull factors include a high standard of living, high income, security, freedom, prospects of securing jobs, and political stability, etc. These factors can be classified into economic, political, social, and environmental factors of migration (Khalid and Urbański 2021; Simpson 2022; Helbling and Morgenstern 2023; Ram et al. 2025; Patil et al. 2025). The Neo-classical theory and its extensions also explain migration from the perspective of the imbalance between labor demand and supply that creates wage differentials. Thus, people tend to migrate to regions with higher wages due to wage differences across geographical regions (Massey et al. 1993). The differences in factors that provide overall wellbeing across regions are the reasons for human migration.

2.2 | Macroeconomic Influences and Migration

The nexus between migration and macroeconomic factors analyzed in the literature validates the position that economic reasons are the primary factors of migration. These include economic freedom gap, public health expenditure, income inequality, real wages, income, inflation, and interest rates (Jennissen 2004; Dinbabo and Nyasulu 2015; Arif 2020; Barker and Bijak 2020; International Monetary Fund, Research Department 2020; Kwilinski et al. 2022; Bautista et al. 2024). More studies provide evidence that migration inflows increase with the increase in GDP per capita while they are discouraged by unemployment (Jennissen 2004; Dinbabo and Nyasulu 2015; Kwilinski et al. 2022; Malokani et al. 2022; Benček and Schneiderheinze 2024). However, other factors like inflation and real interest rates have a less pronounced impact on migration than the influence of income and unemployment (Dinbabo and Nyasulu 2015).

These macro-level influences are external to the individual, the household, or the community, while a higher level of education is the internal factor to an individual that increases migration (Arif 2020; Kaluarachchi and Jayathilaka 2024). This suggests that migration is more likely to occur among the educated and the unemployed; moreover, educated migrants are

more sensitive to other influencing factors. Sensitivity to wage differences significantly influences migration patterns and creates the difference in the level of migration between low- and high-skilled migrants (Ponce 2016; Cohen 2017; Özden et al. 2017; Abdulla 2020). As the income differential gaps increase, it creates more incentives to migrate, and countries with better incomes will attract more skilled labor (Simpson 2022). Hatton and Williamson (2003) provide evidence of this position with data from Sub-Saharan Africa. Therefore, while economic growth may signal better welfare and better opportunities, the response of immigrants to welfare and labor market policies also varies across countries, influencing the response of migration to wage and unemployment.

There are empirical findings related to the macroeconomic impacts of brain drain and migration, especially in terms of remittances resulting from an increase in the number of migrant workers (Beine et al. 2003; Docquier and Rapoport 2008; Osaretin and Eddy 2012; Adewumi et al. 2019; International Monetary Fund, Research Department 2020; Adeosun and Popogbe 2021; Lapid et al. 2022; Usman et al. 2022; Bautista et al. 2024). However, there is no unanimous agreement on how this will affect the equilibrium of the economy in the long run. Given that most migration takes place in the pursuit of better economic prospects (Grogger and Hanson 2011), the literature makes it clear that macroeconomic factors such as economic reforms or growth patterns are more likely to entice migrants to a particular country rather than resulting from immigration (Morawska 2007).

As observed by Milne (1993), migration moves in the same direction as the business cycle. The influence of macroeconomic variables in terms of potential growth, unemployment, and the business cycle is, therefore, the most critical economic determinant of migration from the human capital perspective (DaVanzo 1978; Milne 1993; Arslan et al. 2016; Lewis and Swannell 2018; Bautista et al. 2024). This offers insights into the roles of pessimism or optimism in migration patterns and indicates the link between economic prospects and human capital retention.

2.3 | Institutional Qualities and Migration

The growing strands of literature distinguish poor institutional factors as push factors of human migration patterns. For example, economic freedom is inversely related to human capital flight (Meierrieks and Renner 2017; Arif 2020; Gignarta et al. 2020). Corruption is also inversely correlated with migration because it discourages migration at higher levels (Poprawe 2015; Kwilinski et al. 2022; Bernini et al. 2024). Corruption has a positive impact on brain drain because it reduces the returns on education (Dimant et al. 2015), weakens property rights protection and wellbeing (Li et al. 2023), and either exacerbates income disparities or extends the poverty intensity (Gupta et al. 2002). Beine and Sekkat (2013), Lawan Ngoma and Wana Ismail (2013), Ariu et al. (2016), Kousar et al. (2020), and Simpson (2022) reveal poor governance as the push factor of migration, and thus good governance is a pull factor. This can be attributed to institutional self-interest and the absence of accountability that does not meet the needs of the people (Rowlands 1999). These explain why promoting institutional accountability and freedom creates

avenues for economic diversification and development that may retain human capital.

Lawan Ngoma and Wana Ismail (2013), Kwilinski et al. (2022), Malokani et al. (2022), and Simpson (2022) also identify political environment and political stability as the institutional factors influencing international migration. Ponce (2016) and International Monetary Fund, Research Department (2020) noted that conflict in the origin significantly increases out-migration regardless of migration type. These factors influence the serenity of the business environment and the survival chances of potential migrants if they remain in their locations. Other institutional factors that influence migration identified in the literature include public service efficiency, democracy, and checks and balances (Dinbabo and Nyasulu 2015; Afrif 2020). This evidence indicates that there can be a significant reduction in migration due to improvements in the institutional efficiency of the respective countries.

Corroboratively, the studies by Bertocchi and Strozzi (2008) and Bergh et al. (2015) found that migration plans or strategies are not easily reducible to the present time. This indicates that whether or not people wish to migrate is less of a factor in their present circumstances than in their future opportunities. This will then establish that institutional quality will enhance the current situation and the expected economic returns of an individual. Therefore, it means that people's decision to move from one country to another can be equally dependent on the institutions as it is dependent on the macroeconomy.

2.4 | Brain Drain as a Socioeconomic Challenge Within the ECOWAS Subregion

Brain drain in the ECOWAS region is determined by a myriad of factors, including economic, political, and social factors. Dauda (2018) points out that the scarcity of human capital in West Africa may have influenced the brain drain associated with the region. The most relevant causes of migration in this region are identified as poverty, unemployment, and political unrest as well as the desire to improve education (Adesote and Osunkoya 2018; Gignarta et al. 2020). Idemudia et al. (2020), Schöfberger and Rango (2020), and Ebeye and Lee (2023) suggest that the brain drain syndrome in West Africa is prevalent in the medical field. Ebeye and Lee (2023) identify the conditions of work and pay, few prospects for career advancement, low quality of life, and political instability as the factors inducing brain drain among physicians, while Schöfberger and Rango (2020) trace this to the COVID-19 pandemic crisis. However, African countries with fair economic prospects might be favored by migrant labor within the region; this is induced by the regional integration that encourages free movement (Osaretin and Eddy 2012).

2.5 | Summary of Literature and Research Gap

The literature shows that migration results from the combined effect of economic and institutional factors, yet the literature is not sufficiently extended to West Africa. While some focus on many developing countries, only Gignarta et al. (2020) may be close by focusing on Africa but did not differentiate the impact of those indicators, such as employment, political stability, and life

expectancy, which are now included in this study. As far as West Africa is concerned, some peculiarities may differentiate the results of this study from the general view of Africa. It is necessary to distinguish the impacts of the macroeconomic and institutional indicators, especially those that are West Africa's obvious points of struggle, and show how these qualities may influence human capital flight. Furthermore, Table 1 shows a summary of how this assessment was done for other countries, but this study deviates from the existing ones by assessing the heterogeneous influences of the determinants across different quantiles of migration by using the nonadditive panel quantile regression.

3 | Theoretical Framework, Data, and Methodology

3.1 | Theoretical Framework

Theoretical literature proves that the movement of people is influenced by inequalities in the levels of satisfaction they anticipate in the destination and origin countries. The neoclassical position explains the geographical differences in the supply and demand for human capital from the perspective of migration that causes disequilibrium in labor markets (Massey et al. 1994). Therefore, human capital flight can be reflected in the difference between emigration and immigration. When emigration is less than immigration over a long period, then there is human capital flight. According to the neoclassical theory, migration is caused by differences in wages and employment; for this reason, human capital tends to flow from poor to rich countries where it can earn higher returns for its skills (Massey et al. 1993). Therefore, income per head reflects the level of individual income in its countries. It is expected that human capital flight will decrease where per capita income increases, while countries will experience more outflow of human capital when per capita income reduces. Economic theory suggests that high unemployment has a high tendency to induce migration because it implies little or no cost for the unemployed; therefore, they are inclined to take the risks of relocation in search of jobs where opportunities are perceived to be higher (DaVanzo 1978). In addition, the uncertainty of job security will make those who should enter into the labor market relocate to where there are higher chances of securing a job (DaVanzo 1978). Therefore, human capital flight may be driven by high unemployment.

Institutional factors may, directly and indirectly, influence human capital flight through their impacts on macroeconomic factors. Corruption, governance, political stability, and freedom are important because they influence policies that dictate the welfare, business cycles, and macroeconomic environment. The level of corruption determines the effectiveness of policies and the degree of rule of law that protects the people. Control of corruption is a pull factor for migration (Simpson 2022; Bernini et al. 2024); thus, a high level of corruption will increase human capital flight. Good governance influences the political will to implement policies that promote entrepreneurship and improve the economy and the quality of life. This is critical because confidence in the government guarantees a conducive business environment, which translates to more opportunities. People will prefer to move toward a more responsible governance with minimal uncertainty. Hence, human capital is expected to flow in

TABLE 1 | Summary of literature review.

Author(s)	Scope	Determinants of migration	Methodology	Conclusion
Milne (1993)	Canada 1962–1990	Real GDP growth and Net migration rate.	Simple correlation analysis.	Real GDP growth → (+) net migration rate.
Lawan Ngoma and Wana Ismail (2013).	102 developing countries	Skilled migration rates, wage differentials, government effectiveness, domestic political instability, population size, and geographical distance.	Analytical approach.	Government effectiveness → (+) migration rates. Wage differential → (+) migration rates. [Wage differential] ² → (-) migration rates. Political instability → (-) migration rates.
Dinbabo and Nyasulu (2015).	South Africa. 1990–2012.	GDP per capita, employment rate, inflation rate, real interest rate, public education system, and public health expenditure.	OLS.	GDP per capita, employment rate → (+) out-migration.
Ponce (2016).	Global 1985–2005.	Wage differential (proxied by GDP differences), labor participation, colonial legacy, geographic distance, geographic contiguity, common language, and migrant network space.	Generalized estimating equations negative binomial (GEE-NB) regression.	Wage differential → (+) migration. Labor participation → migration (marginal but positive).
Lewis and Swannell (2018)	Destination nations—35 advanced countries Origin nations—160 countries. 1990–2013.	Migration rate, real GDP per capita, GDP per capita squared, expected growth, unemployment, real exchange rate, linguistic, historical, and geographic factors, etc.	Poisson Pseudo Maximum Likelihood (PPML) estimator.	Unemployment, GDP per capita → (+) migration outflows. Expected growth, GDP ² per capita → (-) migration outflows. GDP per capita, expected growth → (+) migration inflows. Unemployment → (-) migration inflows.
Arif (2020).	103 countries. 1990–2000.	Economic freedom gap, income gap, checks and balances gap, democracy gap, geographic distance, colonial link, common language, total migrant stock, etc.	Ordinary least square (OLS) and Poisson pseudo-maximum likelihood (PPML).	Economic freedom, checks and balances → (+) immigration. Economic factors → (+) out-migration. Political institutions → out-migration (insignificant).

(Continues)

TABLE 1 | (Continued)

Author(s)	Scope	Determinants of migration	Methodology	Conclusion
Gignarta et al. (2020).	44 African countries. 2000–2014.	Migration flow, real per capita GDP of African countries, real per capita GDP of destination countries, geographical distance, population, population of destination countries, colonial relationship, institutional quality index, and economic freedom index.	OLS, PPML.	Institutional quality → (–) migration outflow. Economic freedom → (–) migration outflow. {Economic freedom} ² → (+) migration outflow. Real per capita GDP → (+) migration outflow.
Kousar et al. (2020).	Pakistan. 1990–2018.	Brain drain, governance, standard of living, financial stability, social openness, and infrastructure.	ARDL	Governance → (–) brain drain.
Kwilinski et al. (2022).	EU and post-Soviet countries. 2000–2018.	Net migration, GDP per capita, GDP, GNI per capita, GNI unemployment rate, wages, income inequality, corruption control, political stability, absence of violence/terrorism, CO ₂ emissions, and material footprint per capita.	FMOLS, DOLS, and Dumitrescu-Harlin Causality Tests.	Unemployment → (–) migration. GDP per capita → (+) migration. Migration → unemployment. Political stability does not Granger cause migration.
Lapid et al. (2022)	Philippines 1990–2019.	Overseas workers, unemployment, remittances, and wage rate.	Simple linear regression.	Unemployment rate → (+, –) overseas workers. Wage rate and remittances → (+) overseas workers.
Malokani et al. (2022).	Pakistan business graduates. Primary data through questionnaire.	Economic instability, foreign job opportunities, and political instability.	Multiple regression in structural equation modeling (SEM).	Economic instability → (+) brain drain. Foreign job opportunities → (+) brain drain. Political instability → (+) brain drain.
Bautista et al. (2024).	Ecuador. 2000–2021.	International migration, unemployment, real GDP, real wage, and remittances.	VAR.	Unemployment → (+) international migration. GDP → (+) international migration. Unemployment → international migration. Migration → real GDP. Remittances ↔ international migration.

(Continues)

TABLE 1 | (Continued)

Author(s)	Scope	Determinants of migration	Methodology	Conclusion
Benček and Schneiderheinze (2024).	198 origin countries and 16 OECD countries as destination countries. 1980–2014.	Economic growth, migration flows, and population.	Panel fixed effects model	Economic growth → (–) emmigration.
Bernini et al. (2024).	European countries. 2008–2018	Bilateral migration flows, corruption, GDP per capita, inflation rates, geographical distance, language, religion, currency, etc.	Vector gravity model.	Corruption → (–) migration flows. GDP per capita → (+) migration flows.
Kaluarachchi and Jayathilaka (2024).	Sri Lanka. 1986–2022.	Migration, GDP per capita income (GDPPCI), economic growth (EG), unemployment, and higher education.	Vector Error Correlation model (VECM), VAR, and Granger Causality.	GDP per capita income, economic growth → (–) migration. Unemployment, higher education → (+) migration.

Note: → indicates the direction of the influence; + indicates a positive effect; – indicates a negative effect; ↔ indicates a mutual causal relationship.

the same direction as good governance. The pull and push theory of migration also suggests that people are inclined to move toward a politically stable environment because this determines the level of uncertainty that affects their welfare (Simpson 2022). Lawan Ngoma and Wana Ismail (2013), Kwilinski et al. (2022), and Malokani et al. (2022) show in their examples how corruption control, government effectiveness, and political instability are important institutional variables to consider while investigating brain drain in developing countries. Furthermore, Hatton and Williamson (2011) emphasize the need to capture political events in migration causes; therefore, itemized political events in West Africa, such as civil wars and coup d'état, make it important to include the impact of political stability in this study. Freedom and accountability affect the choice of leadership, which dictates policies that affect economic institutions. According to Arif (2020), people are attracted to destinations where liberality prevails. Their freedom and property rights are protected, and there are more competitive markets and economic opportunities in such places. Therefore, we expect human capital flight to be less where freedom is higher.

Economic theories describe education as a socioeconomic catalyst for human capital development that empowers an individual to perceive an improved quality of life in a geographical location (Stark and Bloom 1985; Williams 2009). Education will increase the chances of better employment and higher wages outside the home country. In this light, increased education is expected to increase human capital flight. Remittances are migration benefits that boost the incentive to migrate, especially in countries with weaker currencies (Bodvarsson et al. 2015; Handler 2018). A positive relationship is, therefore, expected between human capital flight and remittances. Finally, the theoretical explanation for the positive relationship between life expectancy and human capital accumulation is based on the traditional notion

that increasing longevity is an incentive to acquire better skills (Hazan 2009; Vu 2023). This is because returns on investment in skills may be received for a longer period than if life expectancy were shorter (Hazan 2009). It implies that skilled labor supply will relocate to places where they can enjoy the rewards for their skills for a longer period.

3.2 | Data and Variables

Annual frequency data from 2009 to 2023 are analyzed for 15 West African countries. These countries were members of the Economic Community of West African States (ECOWAS) as of 2023 (see Appendix A for the list of countries). Human capital flight is measured by net migration (as seen in Docquier and Rapoport 2012; Adeosun and Popogbe 2021); this reflects the level of labor gains or losses within the period, such that positive figures indicate gains and negative figures indicate losses. Table 2 presents a detailed description and sources of the data used. By their definition, data on the institutional variables can capture the other institutional qualities that are not included. GDP per capita is used in the logarithm form to minimize dimensional differences in the results.

The base model equation for this study is expressed as:

$$NM = f(\log PCGDP, UNEMP, REM, EE, LE) \quad (1)$$

$$\text{Model A: } NM = a_0 + b_1 \log PCGDP_{i,t} + b_2 UNEMP_{i,t} + b_3 REM_{i,t} + b_4 EE_{i,t} + b_5 LE_{i,t} \quad (2)$$

This model tests the macroeconomic influences on human capital flight. Since the institutional variables have similar characteristics, we expect them to be highly correlated. For

TABLE 2 | Variables specification and measurement.

Proxies and A priori expectation	Variable/specification	Definition	Measurement	Source
Human capital flight (dependent variable)	Net migration (NM)	The number of immigrants minus the number of emigrants, including citizens and noncitizens.	Positive values imply more immigrants than emigrants, negative values imply more emigrants than immigrants.	WDI
Macroeconomic indicators				
Income+	Per capita GDP (PCGDP)	Constant Annual GDP divided by midyear population.	2015 U.S. dollars	WDI
Unemployment	Unemployment (UNEMP)	The share of the labor force that is without work but willing to be gainfully employed.	The percentage of unemployed labor force as modeled by ILO estimate.	WDI
Institutional indicators				
Corruption control+	Control of corruption (CC)	The perceptions of the extent to which public power is exercised for private gain.	Percentile rank indicates the country's rank among all countries covered by the aggregate indicator. 0 implies the lowest rank, and 100 implies the highest rank.	WGI
Governance+	Government effectiveness (GE)	The perceptions of the quality of public and civil services and the degree of their independence from political influences. The quality of the government's commitment to policy implementation.	Percentile rank indicates the country's rank among all countries covered by the aggregate indicator. 0 implies the lowest rank, and 100 implies the highest rank.	WGI
Freedom+	Voice and accountability (VA)	The perceptions about leadership selection, democracy, and freedom.	Percentile rank indicates the country's rank among all countries covered by the aggregate indicator. 0 implies the lowest rank, and 100 implies the highest rank.	WGI
Political stability+	Political stability and absence of violence/terrorism (PS)	The perceptions of political uncertainty or politically motivated violence and terrorism.	Percentile rank indicates the country's rank among all countries covered by the aggregate indicator. 0 implies the lowest rank, and 100 implies the highest rank.	WGI
Control variables				
Education–	Expenditure on education (EE)	This includes current expenditures on education such as wages and salaries, minus equipment capital in investments and buildings.	Percentage of GNI	WDI
Remittances–	Remittances (REM)	Personal remittances received including personal transfers and workers' compensation made or received by resident households to or from nonresident households.	Percentage of GDP	WDI
Life expectancy+	Life expectancy (LE)	This indicates the number of years a person would live given the prevailing patterns of mortality at the time of birth were to stay.	Years	WDI

this reason, each one is tested in a separate model while accounting for the relevant control variables. This leads to four additional models, as follows:

$$NM = f(\log PCGDP, UNEMP, REM, EE, GE) \quad (3)$$

$$\text{Model B: } NM = a_0 + b_1 \log PCGDP_{i,t} + b_2 UNEMP_{i,t} + b_3 REM_{i,t} + b_4 EE_{i,t} + b_5 GE_{i,t} \quad (4)$$

$$NM = f(\log PCGDP, UNEMP, REM, EE, CC) \quad (5)$$

$$\text{Model C: } NM = a_0 + b_1 \log PCGDP_{i,t} + b_2 UNEMP_{i,t} + b_3 REM_{i,t} + b_4 EE_{i,t} + b_5 CC_{i,t} \quad (6)$$

$$NM = f(\log PCGDP, UNEMP, REM, EE, VA) \quad (7)$$

$$\text{Model D: } NM = a_0 + b_1 \log PCGDP_{i,t} + b_2 UNEMP_{i,t} + b_3 REM_{i,t} + b_4 EE_{i,t} + b_5 VA_{i,t} \quad (8)$$

$$NM = f(\log PCGDP, UNEMP, REM, EE, PS) \quad (9)$$

$$\text{Model E: } NM = a_0 + b_1 \log PCGDP_{i,t} + b_2 UNEMP_{i,t} + b_3 REM_{i,t} + b_4 EE_{i,t} + b_5 PS_{i,t} \quad (10)$$

In Models B, C, D, and E, the impact of government effectiveness, corruption control, voice and accountability, and political stability on migration is tested, respectively.

3.3 | Methodology

We use the panel quantile regression method to estimate the impact of the explanatory variables on the different levels of net migration. This is because the effects of macroeconomic and institutional influences on human capital flight can be different across quantiles. The panel quantile regression reveals the different effects that occur across the distributions of the dependent variable (Powell and Wagner 2014). The contracted forms of Equations (2), (4), (6), (8), and (10) can, therefore, be presented in a general form following Arellano and Bonhomme (2011) and Canay (2011):

$$Y_{it} = X'_{it}\beta(U_{it}) + \alpha_i + \sigma\epsilon_{it} \quad (11)$$

where Y_{it} indicates the dependent variable measured by net migration. X'_{it} represents the vector of all the explanatory variables specified in the model. A constant term is included in X_{it} , this implies that $X'_{it} = (1; X^s_{it})$ with $X^s_{it} \in \mathbb{R}^{k-1}$, where $t = 1, \dots, T$ $I = 1, \dots, n$. $(Y_{it}; X_{it}) \in \mathbb{R} * \mathbb{R}^k$ are the representatives of time and individual indexes, respectively. $(U_{it}; \alpha_i) \in \mathbb{R} * \mathbb{R}$ represent the unobservable variables.

To perform this estimation, the preliminary analysis required is performed using the Hausman test (Hausman 1978). This helps us to determine whether the fixed effects (FE) will be a better estimator or the random effects (RE) is more important. Based

on the critical assumption that the error component of the regression model is $E(u_{it}/x_{it}) = 0$ (Baltagi and Baltagi 2008), the Hausman test has a null hypothesis of: $E(u_{it}/x_{it}) = 0$. If this null hypothesis is rejected, it implies that the FE model is a more consistent estimator, otherwise, the RE will be applied.

However, whether fixed or RE are estimated, the results will show all the estimates that represent the additive FE. This implies that the estimates will be related to explanatory variables and the constant term. That is

$$Y_{it} = X'_{it}\beta(U_{it}) + \alpha_i\gamma(U_{it}) \quad (12)$$

where α_i is the additive term, $\beta(U)$ and $\gamma(U)$ represent the non-parametric functions, and U_{it} is the rank of the error term ϵ_{it} , such that $U_{it}|X_{i1}; X_{i2}; \dots; X_{iT}; \alpha_i \sim U(0, 1)$. α_i indicates the gap between $Y_{it} - \alpha_i$, but this estimation could be biased where $Y_{it} - \alpha_i$ is large.

The new approach proposed by Graham et al. (2015) and Powell (2022) permits the model specification without clearly distinguishing a fixed coefficient illustrating the individual effects. In this case, the individual effects are specified as an integral component of each explanatory variable. The nonadditive approach can be expressed as:

$$Y_{it} = X'_{it}\beta(U_{it}^*); \text{ where } U_{it}^* \sim U(0, 1) \text{ and } U_{it}^* = f(\alpha_i; U_{it}) \quad (13)$$

$$U_{it}^*|Z_i \sim U_{it}^*|Z_i \quad (14)$$

where U_{it}^* is the nonseparable disturbance term that may serve as a function of several unobserved disturbance terms and summarizes them into ranks (Powell 2022).

Based on this approach, we estimate Equations (2), (4), (5), (8), and (10) using the special case of a generalized quantile estimator, *qregpd* codes in STATA, which are estimated using Markov Chain Monte Carlo methods (Arellano and Bonhomme 2011).

4 | Empirical Results

4.1 | Preliminary Tests

The analysis of empirical results proceeds with the description of statistics for the panel of ECOWAS countries as presented in Table 3. These descriptive statistics show the absence of normality in the distribution of most variables. Given that net migration exhibits a negatively skewed distribution, we cannot assume that the error terms are normally distributed, but the quantile regression provides a more reliable estimation than the OLS in such cases. The quantile regression procedure remains valid irrespective of the stationarity properties of the variable, but the Hausman test is performed to determine the choice of estimation technique. The Hausman test performed for each model shows $p < 1\%$. These pretests imply the rejection of the null hypothesis that the RE estimation is more appropriate, leading us to adopt the FE as the more appropriate method for the nonadditive quantile regression estimation.

TABLE 3 | Descriptive statistics.

Variables	Mean	Median	Maximum	Minimum	Skewness	Kurtosis	Jarque-Bera
NM	−14,958.920	−3936.000	91,983.000	−156,846.000	−2.361	11.675	914.578*
LPCGDP	6.909	6.623	8.216	6.038	0.756	2.299	26.009*
UNEMP	4.128	3.340	14.660	0.320	1.654	5.711	171.485*
CC	33.070	29.520	82.380	1.900	0.774	3.176	22.768*
GE	24.473	22.280	66.190	1.900	0.731	2.543	22.012*
VA	39.891	37.560	79.130	8.870	0.623	2.895	14.669*
PS	30.568	31.132	81.132	1.415	0.488	2.654	10.038*
LE	60.547	59.674	76.593	50.712	1.222	5.115	97.931*
EE	3.553	3.660	8.160	0.850	−0.081	3.214	0.674
REM	5.908	5.018	27.160	0.160	1.378	5.182	115.831*

* $p < 0.01$.

4.2 | Nonadditive Panel Quantile Regression

The results of the panel quantile regression presented in Table 4 explain the heterogeneous impact of macroeconomic and various institutional variables on human capital flight in different models. Model A focuses on the macroeconomic impacts and the control variable; this model also serves as the base regression. The effects of each institutional variable are later shown in four separate models—B, C, D, and E.

The effects of per capita GDP and unemployment on net migration are heterogeneous and significant at all quantiles. Both reduce net migration in the lower- and mid-quantile but increase migration at the upper quantile. The magnitudes of the negative impact in the lower quantiles are larger than the magnitude of the positive effect on 75% of the migration data. The negative effects are more substantial, and this leads to the conclusion that human capital flight increases in response to an increase in income and unemployment rate. This is corroborated by the results obtained from Lewis and Swannell (2018) and Kaluarachchi and Jayathilaka (2024) that migration outflows are higher with higher GDP per capita. This is also in line with the position by Milne (1993) that human capital flight responds to the business cycle and the findings of Dinbabo and Nyasulu (2015) and Lewis and Swannell (2018) that out-migration is due to a high rate of unemployment. The effects of the control variables—remittances and expenditure on education—are negative across quantiles. This shows that human capital flight is largely encouraged by high remittances received from abroad and increased human development. Furthermore, life expectancy has a heterogeneous impact on migration such that migration increases when life expectancy is high at lower quantiles, but the effect is negative at the highest quantile. With more substantial effects at the lower quantiles, we can conclude that higher life expectancy prevents human capital flight in West Africa. This result also validates the hypothesis that longevity is essential in the accumulation of human capital (Hazan 2009; Vu 2023).

The heterogeneous effects of the institutional variables on net migration are also significant across the quantiles. These

effects are positive throughout the quantiles in each model. Therefore, human capital flight decreases when government effectiveness, freedom and accountability, corruption control, and political stability increase. Unlike Kwilinski et al. (2022) who did not find a causal relationship between political stability and migration, earlier studies by Lawan Ngoma and Wana Ismail (2013), Kousar et al. (2020), and Malokani et al. (2022) validate these results to confirm that political stability and government effectiveness have a significant positive impact on migration and a negative impact on brain drain. The evidence that corruption drives human capital flight is also corroborated by Li et al. (2023); with this, Arif's (2020) position that freedom attracts human capital is supported. People will be attracted to places where their rights are protected so that they can earn a fair reward for their factors.

Generally, the results show both positive and negative impacts of the macroeconomic determinants on net migration while the institutional determinants are consistently positive. The general conclusion of the results is depicted in Figure 2.

4.3 | Implications for ECOWAS Countries

Given the in-depth analysis of the findings of this study, it is empirically evident that the varied socioeconomic factors are significantly responsible for human capital flight. Given the socioeconomic challenges of West African countries, the results from this study suggest that migration seemingly becomes a viable option for the ECOWAS labor force, and this could result in brain drain.

Having revealed that more income induces significant human capital flight in West Africa, this suggests two factors: First, the increasing income may translate to increasing financial capacity to migrate so that the people can easily respond to other pull factors. Second, the high per capita income may not be evenly distributed, so there is a huge inequality gap. In any case, this scenario suggests a perceived low welfare despite the increasing national income leading to a loss in the labor force to regions

TABLE 4 | Panel quantile regression.

(A)		Hausman Test: χ^2 Statistic			15.687365*	
Quantiles	LPCGDP	Unemp	Rem	EE	LE	
25th	-28,438.34* (895.3924)	-514.5763* (172.6635)	-1123.813* (61.28517)	-7921.879* (144.4718)	5570.006* (175.6891)	
50th	-8098.575* (258.8795)	-492.0414* (62.4560)	-445.1507* (34.4828)	-2512.937* (176.5705)	1856.331* (43.0742)	
75th	4478.471* (33.1047)	446.0746* (43.9556)	-6.369731* (8.2246)	-455.4072* (45.2881)	-782.7225* (37.5855)	
(B)		Hausman Test: χ^2 Statistic			18.492274*	
Quantiles	LPCGDP	Unemp	Rem	EE	GE	
25th	-20,508.28* (511.9909)	1470.949* (100.1937)	138.6334* (33.1156)	-4990.401* (367.4705)	1045.191* (56.4109)	
50th	-4309.842* (173.8687)	873.7366* (45.01379)	-371.5784* (17.5153)	-1828.485* (75.5530)	181.5381* (9.2080)	
75th	230.7212 (734.9028)	-577.8692* (100.6447)	37.82506 (46.4795)	-932.6829* (141.5151)	131.1368* (16.9606)	
(C)		Hausman Test: χ^2 Statistic			15.563242*	
Quantiles	LPCGDP	Unemp	Rem	EE	CC	
25th	-6813.493* (293.9341)	1553.31* (67.9499)	-1144.509* (31.1569)	-133.2106 (124.2744)	300.4448* (14.3116)	
50th	4906.626* (614.3789)	-7.142329 (65.5850)	-91.9331** (46.5542)	-851.4268* (208.3478)	13.4046*** (7.7416)	
75th	9718.329* (1128.561)	-634.9528* (89.53863)	1518.258* (192.7038)	-3919.778* (331.4279)	123.1026* (9.0094)	
(D)		Hausman Test: χ^2 Statistic			31.671458*	
Quantiles	LPCGDP	Unemp	Rem	EE	VA	
25th	-23,751.68* (1563.562)	314.8528 (541.0045)	-1173.731* (146.8004)	-2591.91* (675.6609)	863.8447* (76.76938)	
50th	-12,502.22* (153.8151)	1273.531* (35.8729)	-406.4002* (25.0391)	-2958.76* (63.45502)	454.8621* (6.4061)	
75th	-2794.127* (59.442)	34.15149* (11.2658)	-129.1292* (19.7842)	-513.3552* (76.26843)	117.1376* (2.9357)	
(E)		Hausman Test: χ^2 Statistic			40.547752*	
Quantiles	LPCGDP	Unemp	Rem	EE	PS	
25th	-5250.656** (2452.175)	-497.5615* (60.5982)	-651.5283* (57.96649)	1815.719** (864.0308)	293.4305** (146.7947)	
50th	-1930.737* (172.0151)	-713.3591* (45.68929)	-706.4068* (24.61232)	-1200.545* (108.6837)	733.7788* (10.29983)	
75th	-2422.623* (894.9563)	-502.2121* (119.5914)	-371.895* (30.51447)	-488.0491* (75.79094)	168.7628* (17.79447)	

Note: Standard errors are in parentheses. *, **, and *** indicate p values at 1%, 5%, and 10%, respectively.

with better welfare. This can cause low productivity and hinder innovation and economic growth in the subregion. Furthermore, this can also lead to widening economic disparities such that, as these countries experience significant outflows of human

capital, the economic gaps continue to widen when compared to those that attract skilled professionals. Such economic inequality will become a vicious cycle that keeps ECOWAS perpetually at the low-income level.

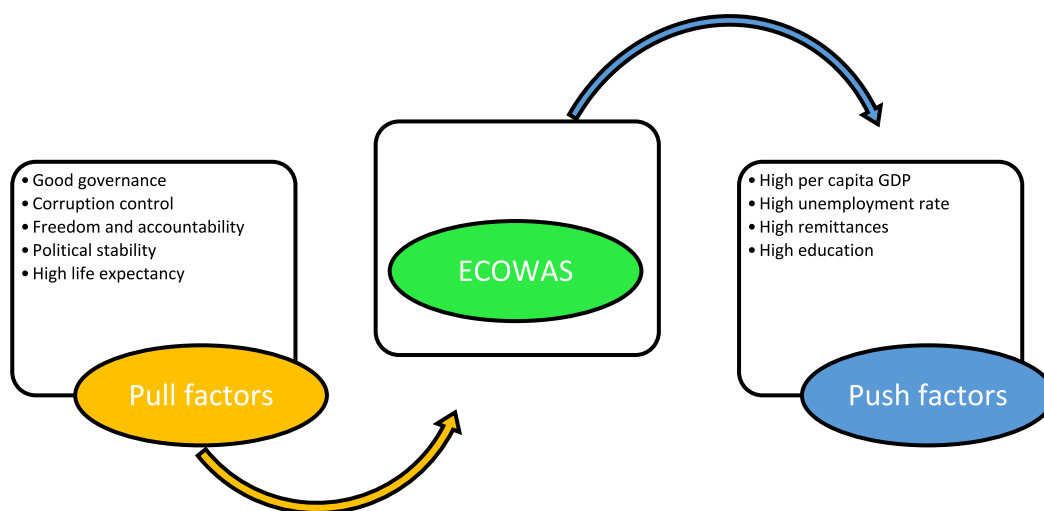


FIGURE 2 | Pull factors versus push factors of human capital in ECOWAS subregion.

Having observed that the response of human capital flight to an increase in the unemployment rate is diverse, the more significant negative effects across the other quantiles imply that the high unemployment rate is a significant push factor of migration. This suggests the underutilization of human resources that pushes human capital out to places where their skills are better recognized and rewarded. As noted in the previous section, a large number of the West African population already live in poverty, such that they earn less than two dollars a day due to high unemployment and underemployment. This will undoubtedly lead to more out-migration to other climes perceived as offering employment opportunities and better remuneration that matches the level of skills.

This study shows that human capital flight reduces with stronger institutional characteristics. Our results reveal that human capital flight reduces as freedom increases in West Africa. Voice and accountability translate to people's ability to make choices that affect their well-being. This is also connected to the role of education. The literates who know their rights are more inclined to find the right location where they can exercise their freedom than the illiterates. However, the more educated are the highly skilled in the labor force who usually have property rights to protect. How their choices affect their entrepreneurship and rewards for their factors of production is important to them. Therefore, if people perceive that they have the right to influence leadership choices and policies that affect them, they will be encouraged to remain in West Africa.

Government effectiveness is a major determinant of the macroeconomic environment. With good governance, improved public service delivery, and less discrimination, people are not keen to migrate. As earlier noted, good governance influences the political will to implement policies that promote entrepreneurship and improve the economy as well as quality of life. This is critical for the West African states because confidence in the government guarantees a conducive political and business environment, which translates to more economic opportunities.

Corruption reduces economic opportunities, misappropriates rewards for factors, and reduces property rights protection.

This also affects other institutional qualities in a negative way because institutions cannot function effectively where there is corruption. For example, political instability may linger in West Africa, and conflict resolution may be difficult to achieve if corruption is not controlled. Since other institutional factors are pull factors, we can infer that high-level corruption drives human capital flight by weakening West African institutions and development prospects.

From the results, political stability also serves as a major pull factor; therefore, political instability is a push factor. Juxtaposing this result with the recent happenings of social tensions, military coup d'état in the region, and the revealed negative net migration figures, it is clear that political instability has been a major driver of human capital flight in ECOWAS. This affects not just out-migration but also the macroeconomic and institutional arrangements necessary for growth and development.

Finally, the peculiar feature of this study is the positive relationship between net migration and life expectancy, suggesting that human capital flight is less when life expectancy is high. This explains the quest for survival in the decision to migrate. The large volume of remittances to West Africa may be beneficial, but it serves as an incentive to migrate. This suggests that people will prefer to move into places with stronger and stable currencies than their home country. Therefore, if the currencies of West African countries are weak and unstable, human capital flight will persist. The negative impact of education on migration is a pointer that education informs people of their rights and provides the opportunity to recognize better indicators. In this light, it shows people where they can be better off, and from these results, West Africa is less perceived as one of such places. As people perceive the need to find a place where their survival chances are higher, they prefer regions with favorable macroeconomic and institutional settings that guarantee equal opportunities, so they are likely to watch out for socioeconomic indicators.

The theoretical implication of this study stems from Ravenstein's laws of migration. This study implies that human capital is sensitive to the overall utility derived from place and thus will move

toward locations that they perceive will provide better welfare (Lee 1966). Therefore, as long as people perceive better economic conditions in other places, they will prefer to offer their factor of production in such places. However, if wage differentials and other socioeconomic gaps are eliminated, cross-border migration has no basis, and human capital flight can be reduced. This can be achieved with a strong policy framework that reduces economic imbalances. In this way, institutions can mediate the migration process.

The general implication of these results is that when people can afford the cost of migration as their income increases, they may respond to the negative signals of the business cycle, poor governance, level of liberality, and political instability accordingly. Thus, higher income will not serve as a pull factor, as seen in studies on other countries, but will serve as a push factor.

5 | Conclusion

Data from West African countries show that the region has suffered from brain drain in recent times, and this has adverse effects on the development of this region. This study examines macroeconomic and institutional causes of human capital flight in ECOWAS between 2009 and 2023. The study adopts the panel quantile approach with nonadditive FE to analyze the heterogeneous impacts of macroeconomic and institutional variables on migration. The results explain that the effects of these variables on net migration are heterogeneous. This study shows that institutional factors are the main incentive for human capital retention, while macroeconomic factors of income and unemployment encourage people to leave ECOWAS countries. Low life expectancy, increased education, and remittances are also causes of human capital flight. The practical implication is that West African countries must improve the institutional quantities and address income differential and unemployment problems. This can be achieved by ensuring that the institutional frameworks are harmonized by transparency and accountability for a competitive business environment.

Given the policy implications of the findings from this study, the recommendations are itemized as follows:

1. The ECOWAS leadership must, as a matter of priority, continue to strengthen institutions to build public confidence through transparency and accountability. When people can trust the outcomes of policies, it will reduce pessimism and increase economic security. Then, increasing income may reduce human capital flight.
2. Establish practicable policies that will create ideal rewards for factors of production. Deliberate efforts must be put forward to support innovation. This could involve improving and upgrading critical infrastructure, offering competitive salaries, and fostering a stable economic environment.
3. More efforts should focus on job creation through economic diversification, investment in key sectors, and support for entrepreneurship to retain skilled workers and reduce unemployment. In addition, it is important to create a system

that supports innovation and provides opportunities for skilled workers to expand their creativity.

4. The remittances received from having a large migrant stock abroad may be used to close the inequality. This can be effectively linked to the development of other productive capacities in the region.
5. Facilities for the basic needs necessary for survival must be improved to increase life expectancy. These include improved healthcare, food security, safety, and education.
6. Effective control of corruption is essential in running a system that attracts business development. However, less bureaucratic processes and strategic policies that emphasize transparency and economic freedom must be designed to mitigate the effects of corruption control and human capital flight.
7. It is important to establish systems for monitoring government performance and providing public feedback through constructive criticism to enhance accountability. The ECOWAS region will be more attractive to foreign investors and skilled individuals if they perceive that they have equal economic opportunities and their concerns can be received by public officers.
8. Finally, political stability should be prioritized through conflict resolution, inclusive governance, and peaceful transitions of power to create a conducive economic environment. Ensure that all segments of the population feel represented and included in the political process to help reduce tensions and foster a sense of belonging. Developing frameworks for managing political crises effectively can also help mitigate the impacts of instability.

6 | Direction for Future Studies

Brain drain in West Africa is a complex process, yet the literature on brain drain is still insufficient. While its effect on the region is still worth researching in diverse ways, it is more important to assess its many and emerging causes, such as environmental factors, regulatory quality, rule of law, entrepreneurship, and so on. This study has shown that income increases brain drain in West Africa, but there is a need to examine further whether there will be a turning point to this effect.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Appendix A

List of Countries

1. Benin
2. Burkina Faso
3. Cabo Verde
4. Cote d' Ivore
5. Ghana
6. Guinea
7. Guinea Bissau
8. Liberia
9. Mali
10. Niger
11. Nigeria
12. Senegal
13. Sierra Leone
14. The Gambia
15. Togo