Determinants of Irregular Migration from West Africa to Europe

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DOI: https://doi.org/10.47772/IJRISS.2026.100300472

Received: 24 March 2026; Accepted: 30 March 2026; Published: 13 April 2026

ABSTRACT

Irregular migration from West Africa to Europe is a complex and pressing issue with far-reaching social, economic, and political consequences. Identifying the root causes of this phenomenon is critical to developing effective policies that can address the needs of sending and receiving countries. This study investigates the intricacies of irregular migration from West Africa to Europe and the determinants of these migration patterns by employing panel data and incorporating key migration theories. The data show a sharp increase in irregular migration to Italy in early 2017 as sea arrivals jumped by 48% when compared to the same period in 2016 and four of the top five source countries were all from West Africa. While West African nations were the primary sources of sea arrivals in 2017, there has been a notable shift towards Middle Eastern countries, particularly Syria, Tunisia, and Egypt in 2024. Empirical findings indicate that economic factors, particularly wage differentials between Europe and West Africa and domestic unemployment rates, are primary drivers of migration decisions. Corruption levels and demographic factors at home, such as age structure and education, are also important. While the allure of economic opportunities in Europe is a significant pull factor, push factors such as economic hardship and political instability in West African countries play a crucial role. The findings highlight the need for comprehensive policies addressing both origin and destination country challenges to effectively manage irregular migration flows.

Keywords: Irregular migration, West Africa, Europe, economic factors, push and pull factors, demographic factors, corruption.

INTRODUCTION

The phenomenon of labor migration is deeply ingrained in human history, with evidence of its existence since the earliest human societies. It involves the movement of people from one settlement to another within the same country or across countries in search of employment. Irregular migration refers to people entering or staying in a destination country without proper documentation (Ogu, 2017). This study delves into the specific issue of irregular migration, focusing on the movement of people from West Africa to the European Union (EU) across the Mediterranean Sea. This phenomenon, often referred to as the “back way” from West Africa to Europe via the Mediterranean, has recently been a huge course for concern. It is argued that a significant driver of this form of migration is the lack of economic opportunities in West Africa, particularly in agriculture, which employs a large portion of the workforce (Langana & Price, 2021). Driven by financial hardship, persistent unemployment, and a bleak outlook for the future, many people sought a brighter life in Europe. From a global perspective, approximately 3.6% of the world’s population, or an estimated 281 million individuals were international migrants in 2020 (McAuliffe & Triandafyllidou, 2022). Approximately 10% - 15% of the global migrant population is estimated to be undocumented (Stephen, et al., 2012).

While irregular migration is a global phenomenon, West Africa has experienced a marked intensification of such movements since the Arab Spring of 2011. This substantial outflow of young people to Europe exerts significant pressure on domestic labor markets. Studies show a considerable number of West Africans are present in Europe, with an estimated 800,000 registered migrants and a similar number of Nigerians living outside their country (De Haas, 2008) and (Obani & Odalonu, 2023). However, West African migration patterns are changing. While Europe remains a major destination (nearly 19% in the mid-2020s), North America has also seen a growing share (up to 10%) compared to the 1990s. Gambia, for example, has a surprisingly high number of migrants

into Europe despite having the smallest labor market in West Africa (Askholm, 2022). This highlights the complex factors at play beyond just the size of the labor market.

The number of irregular migrants taking terrifying routes has surged over the past decade. For example, irregular migrants' departures from Senegal to the Canary Islands skyrocketed sevenfold in 2020. Others brave the deadly Central Mediterranean route (Niger, Libya, and Italy) and the Sahara Desert – both claiming thousands of lives annually (Panizzon & Jurt, 2023). The search for better economic opportunities, political unrest, and social connections that provide crucial support during irregular migration journeys, and political unrest are some of the key drivers of irregular migration (Browne, 2015).

The EU views economic partnerships with African countries to create jobs and address the root causes of migration (Langana & Price, 2021). However, De Haas (2011) suggested that restrictive measures for regular migration haven't been effective. Moreover, limited visa access makes these dangerous routes the only option for many. West Africans can typically travel visa-free to only 30-70 countries, compared to 141-172 for Europeans. Visa fees and lengthy procedures further complicate mobility (Panizzon & Jurt, 2023).

This study explores the multifaceted issue of irregular migration from West Africa to Europe, examining the economic drivers, approaches, and the global context surrounding this phenomenon. West African policymakers are increasingly troubled by irregular migration, which disrupts social and economic stability. These issues motivate the main research question of this study: what drives people to undertake these journeys? This study aims to identify the root causes and understand how economic and political hardships compel people to migrate to Europe. In addition, it includes other potential determinants of migration based on economic theory. By doing so, it is built on the idea that push factors such as prolonged unemployment, wage differential, corruption, political uncertainty etc. are more likely to determine irregular migration decisions than others and therefore focus on the key role of these factors.

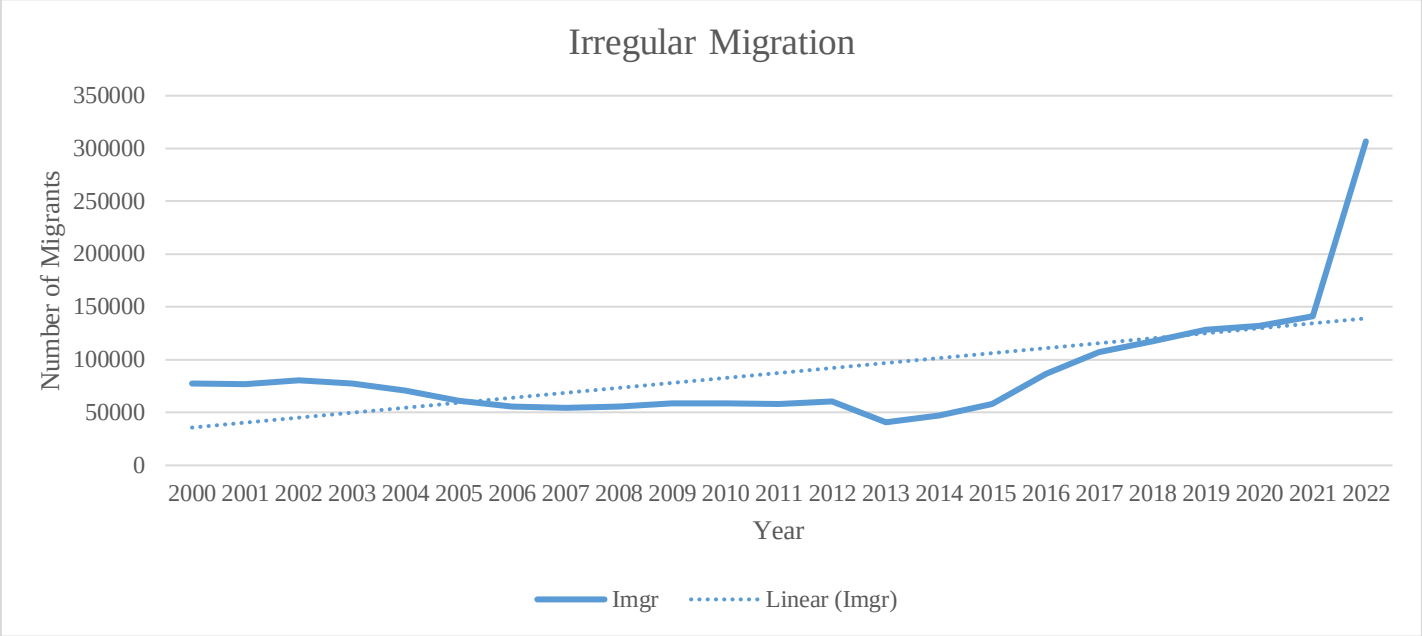
The following sections probe deeper into the spectacle of irregular migration from the Economic Community of West African States (ECOWAS) to the EU. Section 2 gives a contextual overview of irregular migration patterns from West Africa to Europe. Section 3 provides a comprehensive foundation by delineating the theoretical underpinning and thoroughly reviewing the existing research on the subject matter. Expanding on this foundation, Section 4 outlines the methodological approach adopted to investigate the primary factors influencing irregular migration patterns. Subsequently, Section 5 presents a detailed statistical analysis of the data, providing crucial insights into the research topic. The concluding section offers a comprehensive explanation for the surge in irregular migration from West Africa to Europe and discusses the policy implications of the research findings.

Context Of Irregular Migration from Ecowas to the Eu

The migration of people from Africa to Europe has intensified in recent decades, with irregular migration emerging as a prominent trend. While such movement often involves labor, trade, or education, the contemporary surge of irregular migration from West Africa to Europe is a relatively new development. However, post-colonial Africa underwent significant economic and political transformations that might have laid the groundwork for this trend (Castles, et al., 2005). Economic Community of West African States (ECOWAS), a regional bloc comprising 15 countries, has experienced rapid population growth, urbanization, and economic challenges. High unemployment rates, particularly among youth, coupled with limited economic opportunities, have created a fertile ground for irregular migration. The recent political instability in some states, such as Mali, Niger, and Burkina Faso, has further exacerbated the situation.

Figure 1 below illustrates the trend in irregular migration from ECOWAS to Europe from 2000 to 2022. The number of irregular migrants experienced significant fluctuations throughout the period.

Figure 1: Irregular Migration from ECOWAS to Europe (2000-2022)



Source: Author's computation

Despite these fluctuations, there is a clear upward trend in irregular migration, particularly evident since 2013 A dramatic spike in irregular migration is observed in 2021 and afterwards, indicating a substantial increase in recent times. Such a complex and dynamic pattern of irregular migration between the two regions indicates that multiple factors may be influencing migration flows. The sharp increase in recent years warrants further investigation into the underlying causes of this trend.

Before the Arab Spring of 2011, economic disparities between West African nations and European countries constituted a primary catalyst for migration flows. This amplified perception of greater opportunities, fostered by various factors, has significantly driven the surge in irregular migration from West Africa. However, the political upheavals that followed significantly exacerbated this trend. The collapse of authoritarian regimes in North Africa created a power vacuum exploited by smuggling networks, facilitating the emergence of the central Mediterranean route as a primary conduit for migrants.

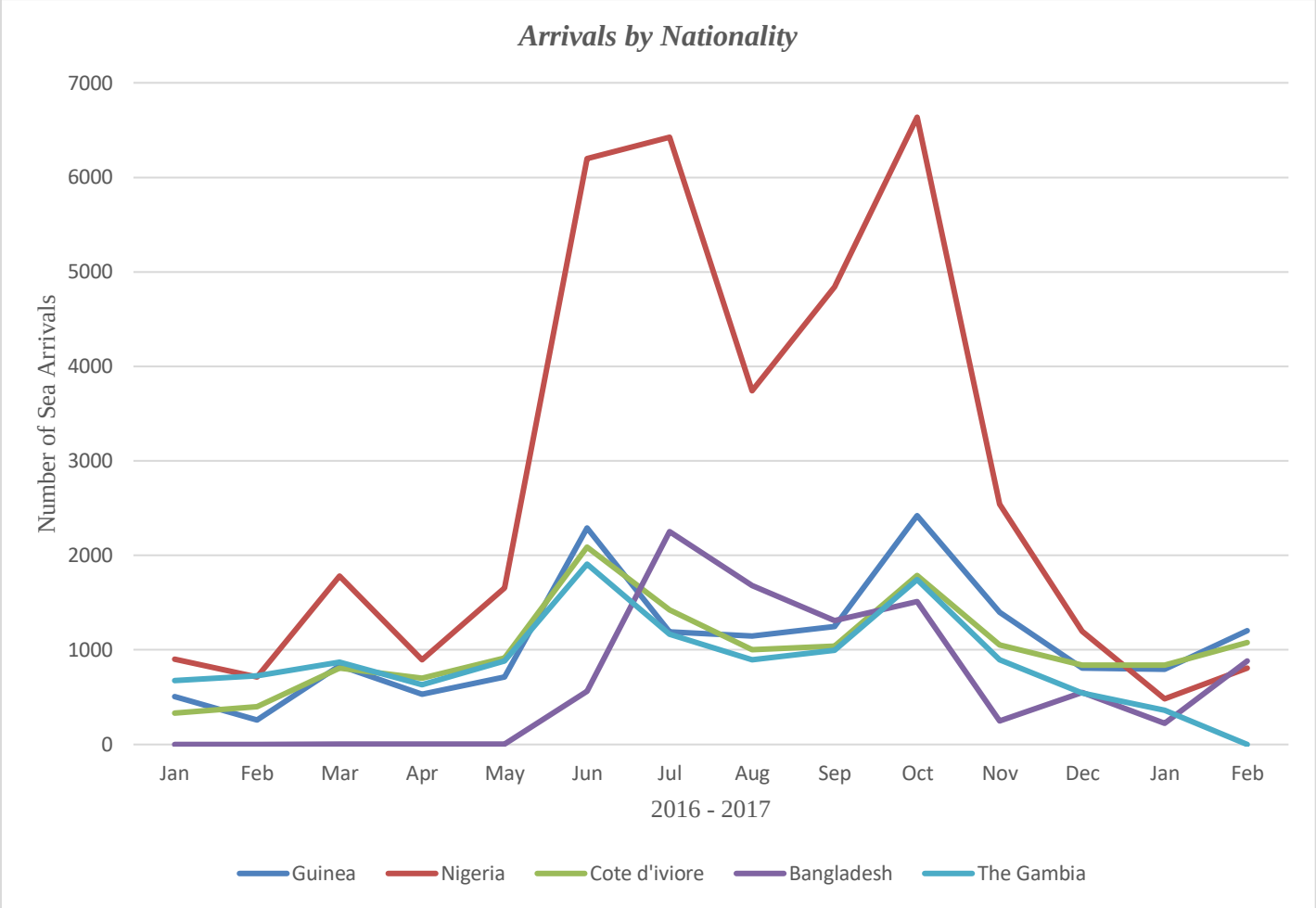
Migrants from West Africa typically embark on dangerous journeys through the Sahara Desert and the Mediterranean Sea to reach European shores. This route is controlled by smuggling networks that exploit vulnerable migrants for profit. The journey is fraught with dangers, including kidnapping, extortion, rape and death. According to the International Organization for Migration (IOM), in 2023 a staggering 2777 people lost their lives or went missing while attempting to cross the main migratory routes leading to Europe in 2022 alone. The human cost of irregular migration is immeasurable as countless lives have been lost at sea, with many others subjected to exploitation and abuse. The psychological trauma experienced by survivors is profound. Furthermore, the phenomenon has strained relations between countries of origin, transit, and destination, leading to policy tensions and challenges in managing migration flows.

The influx of irregular migrants has prompted a range of responses from both West African countries and the EU. While some countries have adopted restrictive policies, others have focused on development assistance and border management cooperation. The EU's policies have oscillated between border control and development cooperation, with varying degrees of success (McAuliffe & Triandafyllidou, 2022). Moreover, diaspora members often provide information, advice, and financial assistance to prospective migrants, facilitating their journey. These social networks can both encourage and discourage migrants, depending on the experiences and narratives shared within the community (Massey, et al., 1993). While remittances can contribute to economic development and social welfare, they can also create dependency and reinforce migration as a coping mechanism (De Haas, 2007). The diaspora communities engage in advocacy and lobbying efforts to influence policies in

both their host and home countries. They can advocate for the rights of migrants, promote development initiatives, and contribute to shaping public discourse on migration.

Figures 2 and 3 present a monthly breakdown of the top five nationalities arriving in Italy by sea between 2016-2017 and 2023-2024, respectively. The data show a sharp increase in irregular migration to Italy in early 2017. Compared to the same period in 2016, sea arrivals jumped by 48%, with 13,439 people reaching Italy between January and February. This increase is likely due to seasonal trends, as winter typically sees fewer arrivals due to harsh weather conditions.

Figure 2**:** Top 5 Nationalities of Sea Arrivals in Italy by Month (2016-2017)

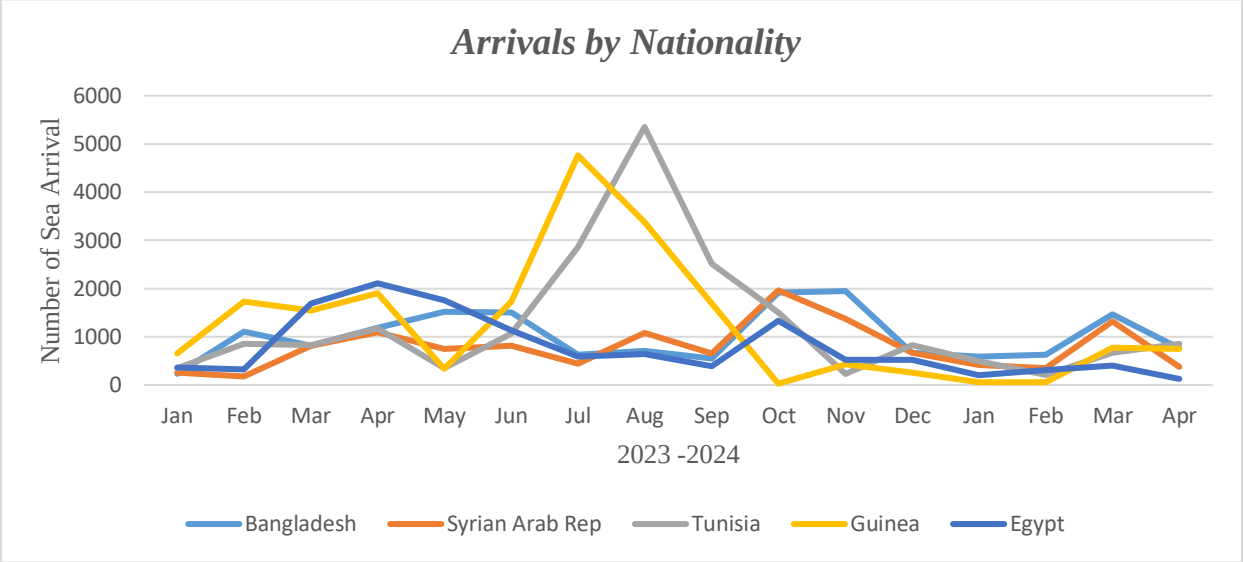


Source: data.unhcr.org/Mediterranean

Figure 2 shows year-long trends (2016-2017) in sea arrivals of migrants to Italy, categorized by their country of origin. Remarkably, four of the top five source countries are in West Africa. Nigeria stands out with the highest number of irregular migrants arriving in Italy by sea. Conversely, the remaining countries within the top five exhibited relatively consistent average monthly sea arrival numbers. Italy is becoming a popular destination for Nigerians, hosting the second-largest community (around 119,000) after the UK. A 2022 survey by the Mixed Migration Center (MMC), interviewed 195 Nigerians in Italy (aged 18-35) and found that violence, insecurity, and conflict were the primary reasons for leaving Nigeria (52%). Personal/family reasons (46%) and rights/freedoms violations (38%) were also significant factors. The education levels were varied: 42% had secondary or higher education, 41% had primary education, and 15% had none.

Figure 3 below presents the monthly arrivals by nationality in Italy over two years (2023-2024). The data focuses on the top five nationalities: Bangladesh, the Syrian Arab Republic, Tunisia, Guinea, and Egypt. There is clear seasonal arrival data for all nationalities. Arrivals peaked during summer (May to September) and declined during winter (November to February). This suggests that weather conditions might influence migration patterns.

Figure 3: Top 5 Nationalities of Sea Arrivals in Italy by Month (2023-2024)

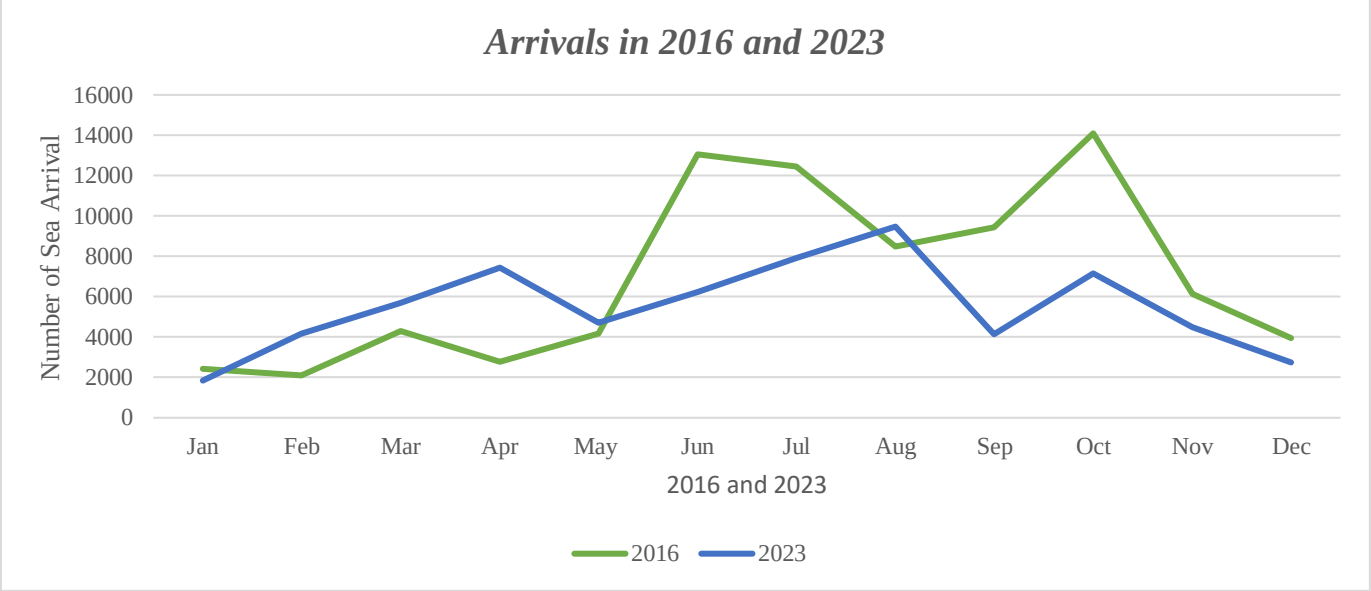


Source: data.unhcr.org/Mediterranean

While the Syrian Arab Republic and Bangladesh show relatively consistent arrival trends, Tunisia, Guinea, and Egypt exhibit more varied patterns. Tunisia, for instance, experiences significant peaks and troughs throughout the year.

Similarly, an analysis of sea arrivals in Italy between 2016 and 2023 shown in Figure 4 reveals a significant shift in top nationalities. While West African nations were the primary sources of sea arrivals in 2017, there has been a notable shift towards Middle Eastern countries particularly Syria, Tunisia, and Egypt in 2024.[1] Interestingly, Bangladesh and Guinea have maintained their position within the top five arrival nationalities across both periods, suggesting consistent migration patterns from these countries. The surge in arrivals from the Middle Eastern countries could be linked to the ongoing political instability in the region.

Figure 4: Sea Arrivals in Italy (2016 and 2023)



Source: data.unhcr.org/Mediterranean

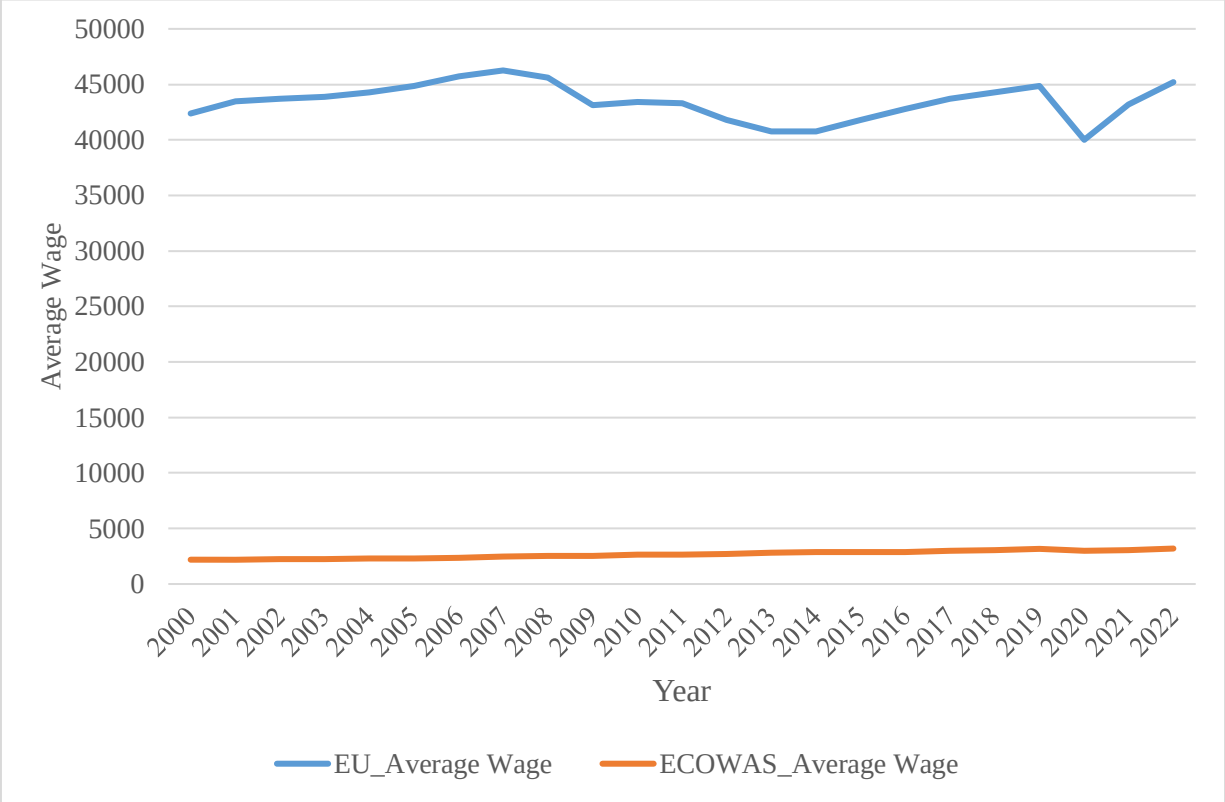
[1] The change in top arrival nationalities between the periods analyzed doesn't necessarily indicate a decline in arrivals from West African countries.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume X Issue III March 2026

Figure 4 above depicts a comparative analysis of sea arrivals between 2016 and 2023. Both periods exhibit a clear seasonal pattern, with arrivals peaking during the summer months (June to August) and declining during the winter. While both years show fluctuations, there's a general upward trend in arrivals, particularly noticeable from the latter part of 2016 onwards. The year 2023 witnessed a substantial increase in arrivals compared to 2016, especially during the peaking months of July and August. The graph indicates a growing trend in sea arrivals over the analyzed period. The seasonal pattern suggests that factors such as weather conditions might influence migration flows. The significant increase in arrivals in 2023 warrants further investigation into potential causes such as changes in economic conditions, political instability, or policy shifts.

Figure 5 illustrates the average wage trends in the EU and ECOWAS regions from 2000 to 2022. The distance between the two lines shows a significant and persistent wage differential, rising more in recent years.

Figure 5: Wage Differential between ECOWAS and EU (2000 - 2022)



Source: World Bank, WDI

The average wage in the EU demonstrates a general upward trend with fluctuations indicating periods of growth and stagnation. In contrast, the average wage in ECOWAS remains relatively flat throughout the period, suggesting limited wage growth in the region. The persistent wage disparity between the EU and ECOWAS highlights a significant economic imbalance. This divergence likely contributes to the motivation for migration from ECOWAS to the EU, as individuals seek better economic opportunities in the higher-wage region.

The stark contrast in average wage levels between the EU and ECOWAS gets support from the core tenets of neoclassical economic migration theory. This theory posits that individuals are from regions of low wages to areas offering higher remuneration in pursuit of economic betterment. The widening gap between the two regions, as depicted in Figure 5 serves as a compelling illustration of this principle in action. The substantial disparity in average wages between the EU and ECOWAS aligns with the theory, potentially explaining the prevalence of irregular migration between the two regions. The EU with its developed economies, robust social welfare systems, and democratic institutions, represents a significant pull factor for migrants from West Africa. The perception of abundant job opportunities, higher wages, and better living standards in Europe has fueled aspirations for migration. This perception has often been reinforced by media portrayal and social networks, eventually contributing to the growing number of people willing to undertake the perilous journey to Europe.

LITERATURE REVIEW

This section provides a theoretical review and previous empirical evidence on the determinants of irregular migration.

Theoretical Considerations

A comprehensive understanding of the complex factors driving irregular migration requires an approach incorporating key migration theories (Ogu, 2017). First, the Neo-Classical theory of migration explains migration based on economic motives, with the wage differentials across the origin and destination country as the impetus. Generally, workers seek to optimize their skills and labor return by migrating from low-wage to high-wage countries. This theory provides a compelling explanation for irregular migration patterns between Africa and Europe and is consistent with the wage differential patterns observed in Figure 5. The substantial wage disparity between ECOWAS and the EU serves as a primary push for West African youth to seek greater economic opportunities abroad.

Second, the Human Capital Theory suggests that migration decisions are influenced by a combination of socio-demographic and economic factors (Ogu, 2017). The theory predicts that migration decreases with age, while it increases with the level of education. Given the youthful population in Africa, this theory could explain one of the reasons for the high level of irregular migration. However, the level of education might not be positively related to irregular migration in most countries in West Africa. This is because young skilled West African migrants are more likely to obtain proper documentation to migrate legally. Furthermore, the relationship between age and irregular migration might not be necessarily linear across time.

Third, the New Economic Theory of Migration and the Push and Pull Theory of Migration proclaim that the decision to migrate is not entirely an individual decision but a household decision (Ogu, 2017). This supports the view that many consider migration as social insurance in that poor households are keen on guiding some household members to Europe regardless of the means.

The Push and Pull Theory of Migration describes migration decisions as a cost-benefit analysis situation. When people migrate, they are often driven by a combination of forces. Push factors are like negative pressures in their home countries, pushing them to leave. On the other hand, pull factors are like magnets attracting them to a new place. These might be opportunities to reunite with family, access better healthcare and education, or enjoy a higher standard of living. However, Browne (2015) indicated that the push and pull factors of migration in North Africa can be separated into two types (proximate and root causes). Violence, economic hardships, and the loss of a family member can be considered “proximate causes”, while the “root causes” could be factors like political instability, economic uncertainty, and prolonged unemployment (Browne, 2015).

Finally, the Network Theory of Migration posits that pre-existing social connections significantly influence migration patterns. These networks serve as conduits for information dissemination, facilitating migration by providing knowledge about the journey and potential opportunities in the destination country.

A holistic understanding of the complex factors driving irregular migration from West Africa to Europe necessitates a multiple-theoretical approach. Hence, no single theory can comprehensively explain this phenomenon in isolation; rather a combination of perspectives is required to elucidate the underlying determinants.

Drawing upon different migration theories summarized above this study examines several factors influencing irregular migration from Africa to the EU. The study analyzes the income level of the country of origin measured using the GDP per capita and the wage differential between ECOWAS and the EU. This captures the income gap driving migration as predicted by the Neoclassical Theory and Push & Pull Theory. The demographic decomposition, particularly age structure and educational attainment, of origin countries, is examined through the lens of the Human Capital Theory to understand its influence on migration decisions. The corruption index, unemployment rate, labor force participation rate, and population growth are all examined as potential push and pull factors influencing migration choices. By analyzing these variables, this study identifies key determinants

and controls on which specific migration theories are more relevant in the context of West African migration to the EU.

Review of Empirical Studies

Anaraki and Lloyd (2024) employ panel data to measure the economic and political elasticities of migration between Africa and the EU. The study established that political factors like corruption, militarization, and violence are more pertinent to determining migration than economic factors. Their study was unique in that it revealed a hierarchy of the factors that determine migration from Africa to the EU. The hierarchy was a chronological order of how relevant these factors are in determining migration. The results indicated that push factors in the country of origin are more important in explaining migration than pull factors in the EU. Based on this evidence, this study examines key push factors influencing migration from West Africa to the EU, including wage differential, prolonged unemployment in the home country, the death of a family member, level of education, etc.

Garver-Affeldt (2021) analyzed over 2000 migrants from West Africa and found economic hardship to be the primary driver of migration (i.e., responsible for 83% of those who migrated). However, the reasons vary across countries. For example, in Mali insecurity and violence pushed 33% to leave, while social connections (family/friends abroad) motivated 54% across the region. This highlights the complex interplay of economic, political, and social factors driving irregular migration.

Bah & Batista (2020) examined the willingness of Gambian youths to migrate illegally and revealed that the availability of information on the possibility of dying on the route increases the likelihood of migration. This finding may suggest that there are harder conditions pushing migrants regardless of the peril of not making it to their intended destination. Similarly, Mbaye (2014) surveyed Senegalese residents of Dakar and revealed a troubling trend: potential migrants were willing to face a significant risk of death during their journeys to Europe. Using qualitative and quantitative data collected through chain-referral sampling, Adesanya et al. (2023) identified new threats associated with crossing the Sahara Desert. Most importantly, the study highlighted that migrants would rather endure hardship than remain safe in their home countries, suggesting that West African countries must consider irregular migration as a key policy concern if not a regional disaster already (Bah, et al., 2023).

Battisti et al. (2014) argued that immigrants are more likely to accept lower wages, yet harder jobs than natives of equivalent skillset. Given their irregular status, immigrants are predominantly concentrated in the informal economy. However, these low-paying jobs in the EU are financially more rewarding and have better working conditions than the purportedly middle-paying jobs in West Africa. Therefore, serving as a pull factor in driving the decision to migrate to the EU irregularly. Similarly, Constant (2014) found that immigrants positively impact native labor hours supplied in the labor market in Italy. Low-skilled immigrant women provided household services which enabled high-skilled natives to supply more hours of work thereby increasing household income and productivity. A study by Restelli (2023) found that household income is negatively related to irregular migration but positively to regular migration. These findings suggest that EU countries might benefit from irregular migration through cheap labor. As a result, they might not be interested in implementing robust policies against irregular migration. In contrast, West African governments can reduce irregular migration by creating policies that boost income levels.

While previous research has highlighted the significance of political factors (corruption, militarization, and violence) in migration decisions, this study underscores the important roles of economic and socio-demographic factors. Although some studies have inconsistent results regarding the relative importance of these factors across countries, it is evident that they play a crucial role in shaping migration patterns. Additionally, access to information emerges as a key determinant, influencing individuals' decisions to migrate. This study contributes to the existing literature by examining the specific impact of wage gap, agriculture, education levels, labor force participation, and age structure on irregular migration. Therefore, it provides a comprehensive analysis of the determinants of irregular migration from West Africa to Europe. By examining a wide range of factors, the study offers valuable insights into the complex dynamics driving migration flows. By addressing these knowledge

gaps and providing valuable insights, this study contributes to a better understanding of irregular migration and informs efforts to manage it effectively.

METHODOLOGY

This section delves into the methodological underpinning of the study, providing a detailed exposition of the data employed, the analytical technique utilized, and a subsequent interpretation of the empirical findings.

Data

The study employed a panel dataset encompassing all member states of the Economics Community of West African States (ECOWAS) over a twenty-three-year period, spanning from 2000 to 2022. Data were sourced from the World Bank's World Development Indicators and supplemented with estimates from the International Labor Organization (ILO). Statistical analyses were conducted using the Stata software package.

Model Specification

Previous studies have consistently identified economic, social, and political conditions within origin countries as fundamental factors inducing irregular migration patterns. Building upon the above theories and a framework established by Anaraki and Lloyd (2024), this study constructs the following model to examine these determinants in detail.

$$Irmg_{i} = \beta_0 + \beta_1 wgd_{i} + \beta_2 popGr_{i} + \beta_3 unempl_{i} + \beta_4 LFP_{i} + \beta_5 crpindex_{i} + \beta_6 Age_{i} + \beta_7 ledu_{i} + \beta agri_{8i} + \varepsilon_{i} \quad \ldots\ldots\ldots\ldots (1)$$

Table 1 provides a detailed description and operationalization of these variables. Equation (1) posits a linear relationship between irregular migration and independent variables, including wage differential, population growth, unemployment rate, labor force participation rate, corruption perception index, age, education level, and agriculture/GDP ratio.

Table 1: Description of Variables

S/N	Variable	Description	Measurement	Source
1	Irregular Migration (Irmg)	flow of irregular migrants from West Africa to Europe	Refugee population by country or territory of asylum	WDI database
2	Wage Differential (wgd)	The wage differential between ECOWAS and the EU.	The difference in GDP per capita between the two regions.	WDI database.
3	Population Growth (popGr)	Annual population growth rate	Annual growth rate of the population of a country.	United Nations Population Division, Eurostat, National Statistical Offices etc.
4	Unemployment Rate (Uempl)	the share of the labor force that is without work but available for and seeking employment	Share of the labor force actively seeking work.	ILO Modelled Estimates and Projections database (ILOEST)

5	Labor Force Participation rate (LFP)	proportion of the population ages 15 and older that is economically active	Total number of people who supply labor.	ILO Modelled Estimates and Projections database (ILOEST)
6	Corruption Index (crpindex)	perceptions of the extent to which public power is exercised for private gain	The country's rank among all countries, with 0 corresponding to the lowest rank, and 100 to the highest rank.	The Worldwide Governance Indicators
7	Age Structure (Age)	Population ages 15-64 (% of total population)	The economically active as a share of the total population.	United Nations Population Division. World Population Prospects: 2022 Revision
8	Education Level (ledu)	The level of education of the population of the country.	School enrollment, primary (% gross)	UNESCO Institute for Statistics (UIS)
9	Agriculture (agri)	Agriculture's contribution to the GDP	The net output of agriculture as a percentage of GDP	World Bank national accounts data, and OECD National Accounts data files

Estimation Techniques

To examine the dynamic nature of irregular migration patterns, this study adopted a panel data technique for the analysis. Panel data, also known as longitudinal data, is a dataset in which the behaviour of the same entities is observed across time. This type of data allows the control for unobserved variables or variables that change across time but are static across countries and accounts for individual heterogeneity. Panel data has an advantage over cross-sections in that it gives flexibility in modelling differences in behaviour across countries. Equation (2) below lays the fundamental framework for panel data discussion.

$$Irmg_{i} = \beta X_{i} + \alpha Z_{i} + \varepsilon_{i} \quad \ldots\ldots\ldots\ldots (2)$$

For i = 1, 2 … N and t = 1, 2 … T, where N represents the ECOWAS member states, and T is the period of study. X_{i} Contains all the regressors except the constant terms, capturing a vector of controlled variables. The heterogeneity, or individual effect, Z_{i} contains a constant term and a set of country-specific variables that may be observed or unobserved but constant over time. Furthermore, if Z_{i} is observed for all countries then the entire model can be appropriate by least squares (Amo, et al., 2024). Based on these possibilities the fixed and random effects approaches should be considered.

The fixed effects approach controls for unobserved, time-invariant characteristics of each country. While the random effects approach assumes that the unobserved country effects are random and unrelated to the independent variables. Essentially, the fixed effects models treat the intercept for each country as a unique, constant value, while the random effects model allows the intercept to vary randomly across countries. However, both approaches assume the relationship between variables is constant over time (Kádárová, et al., 2023). Relatively, random effects are useful in determining the overall average effect of the model while fixed effects will capture the impact of changes in the independent variables on irregular migration across countries (Greene, 2003). From equation (2) above, if Z_{i} is unobserved but correlated with X_{i} then the least squares estimator (β) is biased and inconsistent due to omitted variables. Under such circumstances, equation (3) can be used.

$$Irmg_{i} = \beta X_{i} + \alpha_{i} + \varepsilon_{i} \quad \ldots\ldots\ldots (3)$$

where $\alpha_i = \alpha Z_i$ and embodies all the observable effects and specifies an estimable conditional mean. Here the fixed effects approach takes α_i to be a country-specific constant term in the regression model. On the other hand, if the unobserved individual heterogeneity (Z_i) is uncorrelated with the dynamic independent variables(X_i), then the random effects are best suited.

$Irmg_i = \beta X_i + \alpha + u_i + \varepsilon_i$……. (4)

Equation (4) is a linear model with compound disturbance that may be consistently, albeit inefficiently, estimated by least squares. The random effects approach specifies that u_i is a country-specific random element similar to ε_i except that for each country there is but a single draw that enters the regression identically in each period.

The choice between fixed effects and random effects depends on the nature of the data set and an empirical question. However, the Hausman test is one of the tests that can be used to determine which of the two best fits the data. It tests whether the unique errors (U_{it}) are correlated to the regressors.

ANALYSIS OF RESULTS

Descriptive Statistics

The descriptive statistics reported in Table 2 offer a preliminary overview of key variables potentially influencing irregular migration patterns from West Africa to Europe. Here is a breakdown of the key variables. The average annual flow of irregular migrants has a mean of 87,490 people, with a high standard deviation of 54,590. This indicates a large variation in migration flows across the countries and periods. The wage difference between West Africa and Europe, measured by the difference in GDP per capita between the two regions, has a mean of US$43,328, with a standard deviation of US$2,308. The average annual population growth rate in ECOWAS states is 2.65% and it has a standard deviation of 0.68, suggesting some variation in growth rates across the countries. The unemployment rate in ECOWAS averages 4.57%, with a standard deviation of 3.14. The unemployment rate varies considerably across the countries, ranging from a minimum of 0.32% to a maximum of 14.59%. The proportion of the working-age population that is actively participating in the labor force averages 63.80%, with a standard deviation of 8.14. The corruption index captures the perceived level of corruption in West African countries. The lower the score, the higher the perceived corruption. The average corruption index is 32.02, with a high standard deviation of 19.11, indicating significant variation in corruption levels across countries.

Table 2: Descriptive Statistics

variable	Mean	Standard Deviation	Min	Max
Irregular Migration	87489.98	54590.63	40808.22	306751.3
Wage Differential	43328.56	2308.401	36686.58	47838.34
Population Growth	2.652143	.676698	.7997085	5.785413
Unemployment	4.568301	3.135385	.32	14.588
Labor Force Participation Rate	63.79501	8.13713	45.49	79.52
Corruption Index	32.0233	19.10884	.5291005	84.04256
Age Structure	53.73463	3.356279	48.39708	68.27006
Education	89.11215	20.37336	31.84692	151.7263
Agriculture	27.61558	13.70006	4.437361	79.04236

Source: author’s computation

The average level of education in West Africa, measured by the primary school enrolment ratio, is 89.11%. There is a standard deviation of 20.37%, indicating a large variation in educational attainment across countries. The average share of agriculture in the economies of the West African countries has a mean value of 27.62%, with a standard deviation of 13.70. the share of agriculture varies considerably across the countries, ranging from a minimum of 4.44% to a maximum of 79.04%.

By analysing these descriptive statistics, we can start to understand the potential relationships between various factors and irregular migration from West Africa to Europe. For instance, we might expect higher irregular migration from countries with high unemployment rates, low wages compared to Europe, and lower levels of education.

RESULTS AND DISCUSSIONS

Hausman Test

The large chi-square value (153.69) and the associated p-value (0.000) indicate a strong rejection of the null hypothesis that the difference in coefficients between the fixed and random effects models is not systematic. This suggests that the fixed effects model is more appropriate for the given data. The result of the Hausman test implies that there are unobserved country-specific factors that significantly influence irregular migration and that these factors are correlated with the independent variables. The fixed effects model, which controls for these unobserved effects, is preferred over the random effects model. As the fixed effects model is the more suitable approach for analyzing the determinants of irregular migration in this specific case, the rest of the section reports the fixed effects results However, the random effects results are also reported in the Appendix for the sake of completeness.

Fixed Effects

Table 3 reports the fixed effects model results. A positive statistically significant coefficient indicates that a higher wage differential between the origin and destination countries increases irregular migration. This supports the neoclassical economic theory of migration. Higher unemployment rates in the country of origin are linked to increased irregular migration. This aligns with the notion that economic hardship is a push factor for migration. The negative coefficient, though statistically significant, might be counterintuitive regarding population growth. The analysis indicates that countries with higher population growth rates may experience lower levels of irregular migration. Additionally, a larger proportion of the population in the labor force reduces migratory tendencies.

Table 3: Fixed Effect

Irregular Immigration	coefficient	Std. err.	z	p>|z|	[95% conf. interval]	
Wage difference	7.852386	1.388387	5.66	0.000	5.118323	10.58645
unemployment	-8325.387	2023.815	-4.11	0.000	-12310.76	-4340.015
Population growth	-49848.84	10038.99	-4.97	0.000	-69617.99	-30079.69
Labor Force Participation	-7692.196	1381.43	-5.57	0.000	-10412.56	-4971.833
Corruption Index	1507.779	372.7108	4.05	0.000	773.8226	2241.735
Age Structure	4885.827	1758.64	2.78	0.006	1422.647	8349.007
Education	-346.7863	289.0119	-1.20	0.231	-915.9193	222.3468
Agriculture	1814.481	655.0201	2.77	0.006	524.5907	3104.371
_cons	78163.2	181011.3	0.43	0.666	-278291	434617.3

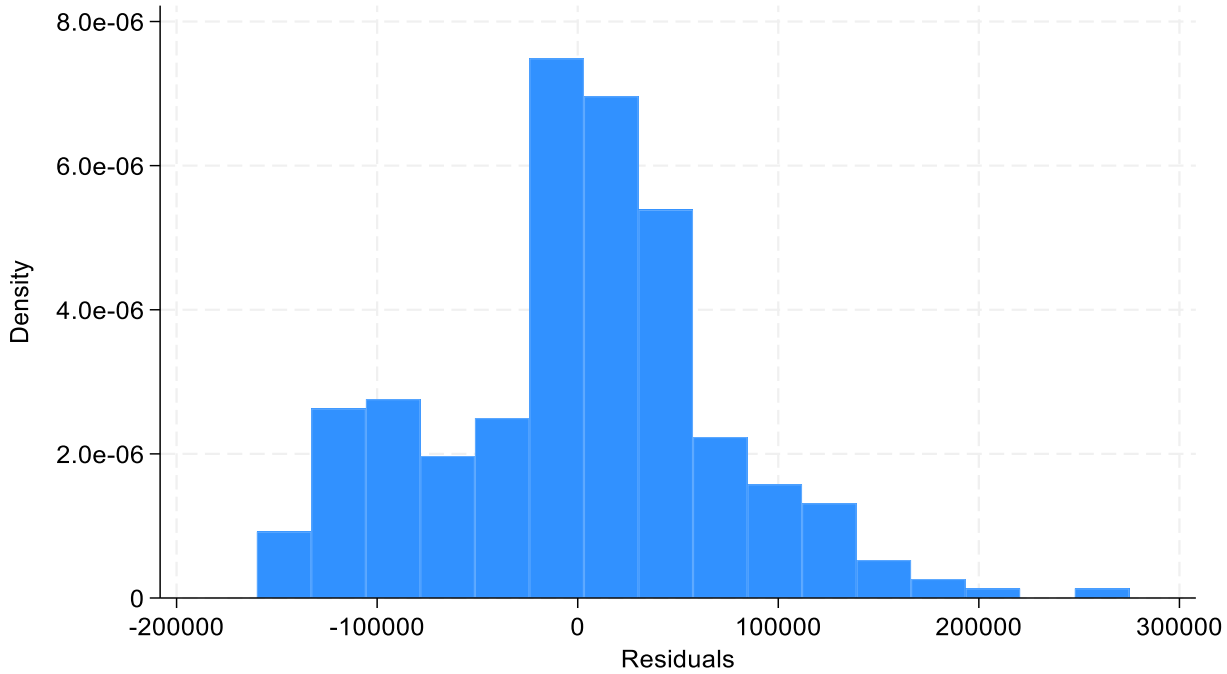
Source: Author's computation

Furthermore, the analysis that corruption practices may facilitate migration by creating opportunities for smugglers and undermining governmental oversight. While the relationship between education levels and irregular migration is insignificant. Contradictory to education, the coefficient for agriculture is positive and statistically significant, indicating that the share of agriculture in the economy significantly raises irregular migration in this model. Despite agriculture's significance in many developing countries, the labor-intensive nature of traditional agricultural practices in West Africa can limit the appeal to younger generations. The allure of urban opportunities and the potential for higher earnings in other sectors may contribute to a preference for non-agricultural pursuits, potentially driving irregular migration. Consequently, countries with more agrarian-based economy might exhibit higher levels of irregular migration. Furthermore, the R-squared of 0.4198 signifies that approximately 42% of the variability in irregular migration rates across time within each country can be attributed to the independent variables. This suggests that the model has a relatively strong explanatory power for the within-country fluctuations in irregular migration patterns.

Normality Test

The analysis indicates that the residuals from the regression model exhibit a symmetric distribution, as evidenced by the non-significant skewness coefficient (p-value = 0.3290). Additionally, the data demonstrate a mesukurtic distribution, with a kurtosis coefficient of 0.1170, suggesting that the tails of the distribution are neither excessively thick nor thin. The joint test further reinforces the conclusion of normality, with a non-significant p-value of 0.1798. These findings collectively suggest that the residuals are likely normally distributed, a crucial assumption for the validity of the statistical inferences. However, the Shapiro-Wilk test indicates that the data might deviate from a normal distribution. The test statistic of 0.97756, while relatively close to 1, is accompanied by a p-value of 0.00022, which is significantly less than the significance level of 0.05. This suggests that the residuals from the regression analysis might exhibit non-normality, potentially affecting the validity of the statistical inference. Furthermore, Figure 6 illustrates the residual distribution from the regression analysis. While exhibiting a general central tendency, the distribution displays slight deviations from normality, characterized by a rightward skew and leptokurtic tendencies. These deviations suggest the presence of outliers or influential observations that may be affecting the overall shape of the distribution. Consequently, the normality of the residuals might be compromised, potentially impacting the validity of statistical inferences derived from the model.

Figure 6: Histogram Residuals



Source: Author's computation

Robustness Checks

To assess the robustness of the findings, a log-log specification of the fixed effect model was estimated. Interestingly, the results from both the level-level and log-log models aligned closely, reinforcing the initial findings. The results show that for every 1% increase in the wage differential irregular migration is expected to increase by 2.86%, holding other factors constant. A 1% increase in the share of agriculture in the economy is associated with a 0.61% increase in irregular migration. This suggests that countries with larger agricultural sectors tend to have higher irregular migration rates. This positive relationship might be attributed to the allure of the modern sector among the youth, which is driven by technological advancement. Meanwhile, increasing the level of education is necessary for curbing the effect of irregular migration, as a 1% increase in education level is associated with a 0.33% decrease in irregular migration. However, this effect is not statistically significant at 5%. Moreover, corruption in the country of origin encourages irregular migration. Holding all other factors constant, a 1% increase in the corruption index is associated with a 0.26% increase in irregular migration.

Table 4: Fixed Effect (Log Model)

Irregular Immigration	coefficient	Std. err.	z	p>|z|	[95% conf. interval]	
Log Wage difference	2.862214	.5143565	5.56	0.000	1.849324	3.875104
Log unemployment	-.313609	.0667832	-4.70	0.000	-.445121	-.182097
Log Population growth	-1.290047	.2406322	-5.36	0.000	-1.763909	-.8161855
Log Labor Force Participation	-4.153548	.7719369	-5.38	0.000	-5.673675	-2.633421
Log Corruption Index	.2626781	.0640005	4.10	0.000	.1366459	.3887103
Log Agriculture	.6144555	.1591592	3.86	0.000	.3010332	.9278779
Log Education	-.3271817	.197418	-1.66	0.099	-.7159446	-.0615813
Log Age	3.854644	.9295345	4.15	0.000	2.02417	5.685119
_cons	-17.13905	8.131815	-2.11	0.036	-33.15252	-1.125571

Source: Author's computation

The analysis reveals that wage differentials and the agricultural sector are significant determinants of irregular migration. A higher wage gap between the origin and destination countries is associated with increased migration, while countries with larger agricultural sectors tend to have higher migration rates. The result also suggests that corruption is a facilitating factor for irregular migration, while the impact of education is less prominent.

CONCLUSION AND POLICY IMPLICATIONS

The analysis underscores the complex interplay of economic, social and political factors driving irregular migration from West Africa to Europe. Economic disparities, as evidenced by significant wage differentials between the two regions, emerge as a primary incentive for this phenomenon. Unemployment rates in West African countries significantly influence migration decisions, highlighting the role of economic hardship as a key push factor. Additionally, the study reveals a positive association between corruption levels and irregular migration, suggesting that weak governance and institutional deficiencies facilitate these movements.

Furthermore, the results from the log-log model reveal that wage differentials, agriculture, and corruption emerge as the primary determinants of irregular migration in the West African region. Among these factors, wage differentials between West Africa and Europe exhibit the strongest predictive power, with higher differentials significantly associated with increased migration. Additionally, the agricultural sector's share of the economy demonstrates that countries with a more agrarian focus may experience higher migration rates. Corruption, characterized by its prevalence in the origin countries, is another significant driver of irregular migration, facilitating these movements through its detrimental effect on governance and institutions. While education is anticipated to have mitigating effect on irregular migration, the empirical evidence in this specific model is inconclusive. It is important to acknowledge that the relative significance of these factors may vary across different countries and periods, necessitating further research to comprehensively understand their evolving influence on migration patterns. The findings of this study are largely consistent with the tenets of neoclassical economic theory, which posits that economic disparities between regions are a primary driver of migration.

Therefore, the findings of the study underscore the need for comprehensive policies to address irregular migration from West Africa to Europe. The EU should expand legal migration channels and support development initiatives in West Africa, while ECOWAS countries should focus on economic growth, education, and good governance. Collaborative efforts between the two regions are essential for effective migration management, human rights promotion, and sustainable development. However, it is crucial to acknowledge that the migration process is influenced by a multitude of factors beyond those examined in this study. Social networks, family reunification and political instability are among the other elements shaping migration patterns. Furthermore, the dynamics of irregular migration are constantly evolving, necessitating ongoing research and policy adjustments. Ultimately, addressing irregular migration requires a comprehensive approach that tackles both push and pull factors. Economic development, job creation, and good governance in West African countries are essential to reduce the incentives for migration. Simultaneously, European countries need to implement policies that promote integration and address the root causes of the problem.

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