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ARTICLE (REFEREED)

Informal Employment and Inequality: Implications for Migration in Sub-Saharan Africa

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Abstract

A sizable level of informal employment, often stemming from social disparities and limited economic opportunities, can have great implications for migration in Sub-Sahara Africa. Similarly, inequality, particularly unequal access to economic resources in the formal sector, can serve as a key driver for migration as people seek better opportunities. Therefore, this study investigates the individual impact of the size of informal employment and inequality on migration within the region by examining the individual effects of informal employment and inequality as well as their interactive effect on migration. Utilizing System GMM method of analysis, the study examined the data from 43 Sub-Saharan African countries from 2009 to 2022. The findings suggest that both informal employment and inequality positively influence migration flows in the region. Additionally, the analysis shows that the interaction between informal employment and inequality exerts a negative effect on migration flow.

Keywords

Informal Sector; Informal Employment; Migration; Inequality; System GMM

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Introduction

The informal sector, which consists of employment and productive activities operating outside an economy's legal and regulatory framework, is often associated with serious underlying socioeconomic issues such as poverty, inequality, and unemployment (Akande 2022; Portes & Haller 2005). This study focuses on informal employment that is prevalent in developing economies, often rooted in social disparities and constrained economic opportunities and thus in turn can significantly influence migration patterns. Inequality, particularly in unequal access to economic resources in the formal sector, frequently compels individuals to turn to the informal sector for survival. This disparity also serves as a key driver of migration, as individuals and households move to urban centers or other regions in search of better opportunities, with informal employment often becoming their primary means of livelihood in the absence of access to the formal economy. Although the existence of an interrelationship between informal employment and migration, and inequality and migration has been recognized separately in research endeavors, there are limited empirical studies explaining the causes and interconnectedness of the three phenomena (Toksöz 2020).

In sub-Saharan Africa (SSA), informal employment, particularly vulnerable employment, constitutes a significant portion of the labor market. Available data show that almost 85% of employment in SSA is within the informal sector (United Nations Development Programme (UNDP) & International Labour Organization (ILO) 2022). Workers in this sector often face significant vulnerabilities, including income instability, poor working conditions, and limited access to healthcare and other social services (Docquier, Müller, & Naval 2014). These conditions create an uncertain economic environment for a substantial population segment, further compounded by structural inequalities across various dimensions such as gender, age, and rural-urban divides. Informal employment, stemming from these social disparities and limited economic opportunities, can significantly increase the likelihood of migration, especially in developing economies (Villarreal & Blanchard 2013).

Inequality on the other hand can limit economic mobility and create barriers to formal employment, perpetuating the cycle of poverty and informality. Past research shows that inequality significantly impacts migration patterns (Bayoumi & Barkema 2019; Czaika 2013; Gould & Moav 2016; Laskienė et al. 2020). Migration within and across borders in SSA is often a response to these entrenched socio-economic disparities. Individuals and families migrate in search of better economic opportunities, improved living conditions, and greater socio-economic stability. According to McAuliffe and Triandafyllidou (2022), over 19 million African-born migrants were living in countries outside the region in 2020, compared to only 2 million people born outside the region living within it. This denotes a higher number of emigrants than immigrants in the region. Although migration is a complex phenomenon influenced by a range of push factors (leading to emigration) and pull factors (attracting immigrants) (Urbański 2022), available statistics show that migration in SSA is driven more by push factors. Economic push factors such as lack of employment, low standard of living, and inequality have been identified as the main motive for migration (Zanabazar et al. 2021).

The prevalence of informal employment and the high levels of inequality in SSA can create a cycle of socio-economic vulnerability. Many individuals, lacking access to formal employment opportunities, are compelled to engage in informal work, which often provides inadequate income and poor working conditions. This not only exacerbates poverty but also limits individuals' ability to improve their socio-economic status. Consequently, these conditions act as push factors, driving people to migrate in search of better opportunities and improved living conditions. Understanding how these factors may serve as push factors for international migration is crucial for achieving the United Nations (UN) Sustainable Development Goals (SDGs) 8 and 10, which focus on decent work and economic growth, and reducing inequality, respectively. This is particularly important for SSA countries, which are relatively behind in

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meeting the required SDG targets. According to Moyer and Hedden (2020), out of the 28 most vulnerable countries identified in their study that are yet to meet the SDG targets, 26 are in SSA. This underscores the significant challenges the region faces in achieving these goals by 2030.

Given this background, this study aims to explore the linkages between informal employment, inequality, and migration in SSA. Past studies have examined the interrelationship between informality and migration (Giambra & McKenzie 2021; Marjit & Mandal 2016; Srivastava 2022; Villarreal & Blanchard 2013), while others have explored the relationship between inequality and migration (Czaika 2013; Gould & Moav 2016; Hayduk 2020; Laskienė et al. 2020; McKenzie 2017; Plotnikova & Ulceluse 2022). However, aside from these studies being done in different contextual frameworks, results are inconclusive, with different studies showing varying findings depending on the socioeconomic context of the study. It is against this backdrop that this study seeks to examine the individual effects of informal employment and inequality on migration in addition to analyzing the moderating impact of inequality on the informal employment and migration nexus. Hence, compared with past studies that separately examined the implication of inequality and informality on migration flows, this study distinctively examines how the interaction of inequality and informality affect the migration flows. Utilizing System Generalised Method of Moment (GMM), the study employs data from 43 SSA economies spanning the period from 2009 to 2022 – based on data availability –, adopting Abel's (2018) migration flow data and using vulnerable employment as a proxy for informal employment.

Our study contributes to the field by conducting a robust analysis of inequality and informal employment in the same empirical context since both have been established in the literature to be socioeconomic vulnerabilities that have practical implications for migration (see Giambra & McKenzie 2021; Plotnikova & Ulceluse 2022). By exploring this interrelationship, the study seeks to shed light on the underlying factors driving migration and in so doing inform policies that can address the root causes of economic and social disparities. Ultimately, understanding these dynamics is crucial for developing comprehensive policy interventions aimed at promoting inclusive economic growth, reducing inequalities, and fostering sustainable development in SSA. The subsequent sections are divided as follows: The second section reviews the theoretical and empirical literature; the third presents the methodology, including the model specification, data, and method of analysis; the fourth discusses the findings; and the fifth section provides concluding comments and recommendations.

Literature Review

THEORETICAL REVIEW

A number of theories have been proposed to explain the linkages between informal employment, inequality, and migration. The neo-classical economic theory of migration posits that individuals make rational decisions to migrate based on cost-benefit calculations, with the primary motivation being to maximize expected income (de Haas 2021). This theory suggests that high levels of informal employment and inequality in developing regions like SSA may act as push factors, encouraging migration to areas with better economic opportunities and higher wages in the formal sector.

The new economics of labor migration (NELM) theory extends this perspective by considering migration decisions within the context of households or families rather than individuals (Stark & Bloom 1985). NELM posits that migration is a risk-diversification strategy employed by households to mitigate risks associated with market failures, such as those present in the informal sector, and to overcome liquidity constraints (Taylor 1999). In this view, informal employment and inequality may motivate households to send some members to migrate and secure alternative income sources, thereby reducing overall household vulnerability.

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The dual labor market theory (Piore 1979) provides another lens for understanding the relationship between informality and migration. This theory proposes that migration is driven by the demand for labor in developed economies, where there is a persistent need for workers in certain sectors, often characterized by low wages and poor working conditions like those in the informal sector. From this perspective, the prevalence of informal employment in SSA may be a precursor to migration, as individuals seek better opportunities abroad, even if it means taking on low-skilled jobs in the destination country.

Among the theories reviewed, in this study we adopt the neo-classical economic theory of migration due to its focus on income maximization and cost-benefit analysis as key drivers of migration. This theory corresponds with the economic realities of SSA, where high informal employment and wage disparities push individuals to migrate in search of better opportunities (de Haas 2021).

EMPIRICAL REVIEW

While the theoretical relationship between informal employment, inequality, and migration has been explored (de Haas 2021; Harris & Todaro 1970), empirical studies examining the interaction of these three factors remain scarce. This study addresses this gap by investigating the interplay between informal employment and inequality, and their combined impact on migration patterns. The literature review is consequently divided into three sections: one examining the relationship between informal employment and migration, and another focusing on the link between inequality and migration. We then summarize in the last section in order to synthesise the empirical findings and establish the novelty of the present study in literature.

Informality and Migration

Villarreal and Blanchard (2013) investigated job characteristics, including informal employment, which is the subject of interest in the current study, in relation to international migration from Mexico to the United States. Survey data from the Mexican National Survey of Occupation and Employment was utilized to identify that individuals employed in informal jobs were more likely to migrate internationally compared to those in formal employment. This effect was particularly pronounced for individuals with low levels of education and those working in jobs with poor working conditions and low earnings. Hence, informal employment is concluded to exacerbate migration given the vulnerable nature of employment. This concurs with the study of Marjit and Mandal (2016) who developed a general equilibrium framework to analyze the impact of informal sector employment on migration and unemployment. Using data from developing countries, the study found that the presence of a large informal sector can lead to higher levels of migration, as individuals seek better opportunities in the formal sector, either domestically or internationally.

For Docquier and Iftikhar (2019), the focus of their analysis was on both the formal and informal labor markets using a two-sector model, examining the effect of brain drain on development and inequality in 33 SSA countries. The inclusion of inequality in the analysis and the selection of SSA as the scope of the study bears resemblance to the present study. But contrary to the current study, Docquier and Iftikhar (2019) used a search-and-matching setting that allowed them to endogenize the employment structure and the wage differentials between different skill groups in the same sector and between workers with identical skills employed in different sectors. Findings revealed that skilled emigration induces heterogeneous welfare losses for the low-skilled population. The size of these losses varies between 0.2 and 8% and is influenced by the parameters of the production and education technologies. Unlike our study, while Docquier and Iftikhar address both inequality and migration, its direct relevance to informal employment remains unclear.

Similarly, Viseth (2020) analyzed the effects of immigration on formal and informal labor markets in the selected SSA countries of Cameroon, Ghana, and South Africa using census and household survey data. The research explored how immigration influences employment rates, distribution between formal

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and informal sectors, and job types within these sectors in the context of Sub-Saharan Africa's segmented labor market. Findings revealed that the direction of impact depends on the complementarity between immigrant and native workers' skills. In countries where this complementarity is highest, immigration enhanced productivity in the short to medium term. Nevertheless, the study's limitation to three countries may not accurately represent the entire SSA region, potentially introducing bias in the results. In the study by Giambra and McKenzie (2021), a narrower perspective of informal employment compared to the current study was adopted by examining the relationship between the self-employment aspect of informality and migration. Nonetheless, the results are not markedly different as individuals engaged in informal self-employment are found to be more likely to migrate in line with the findings of authors like Marjit and Mandal (2016). This is potentially due to the precarious nature of informal work and the lack of social safety nets.

Furthermore, Srivastava (2022) explored the linkages between migration and informality with attention to the growing precarity of work in India. Drawing on qualitative data from migrant workers, the study highlighted how the lack of formal employment opportunities and the prevalence of informal work arrangements contribute to the vulnerabilities faced by migrants, leading to a cycle of precarious employment and further migration. While this study offers valuable qualitative insights, its focus on India, which may have different socio-economic dynamics compared to SSA, differentiates it from our study. In addition, the study does not directly address the role of inequality in shaping the relationship between informality and migration.

Inequality and Migration

Czaika (2013) examined the relationship between inequality and migration using a global sample of 200 countries. The study found that higher levels of inequality, measured by the Gini coefficient, were associated with higher emigration rates. The relevance of the research does not however extend to the peculiar context of SSA, where high levels of inequality are prevalent. The study also did not explicitly consider the role of informal employment or its interplay with inequality in shaping migration patterns, which is the thrust of the present study. The interplay among inequality, informality and migration, however, is of a complex nature as evidenced in Gould and Moav (2016). Here, the authors found that a nonlinear inverse 'U' relationship exists between unobservable skills ('residual wages') and emigration, particularly if unobservable skills are composed of both 'general' and 'country-specific' skills. In addition, emigration rates were discovered to increase with education when returns to education are higher abroad. However, the study's focus was on high-skilled migration, which may not be directly applicable to the context of informal employment and its implications for migration in SSA which is the crux of the present study.

Employing datasets at both the cross-country and micro levels, McKenzie (2017) reviewed findings from a decade of migration and development conferences, highlighting the complex relationship between poverty, inequality, and international migration. The review suggested that while poverty can drive migration, the relationship between inequality and migration is more nuanced. This further underscores the need for the current study to highlight this nuanced relationship, especially in the context of informal employment as evidence suggests that higher inequality can actually reduce migration due to liquidity constraints (McKenzie 2017). This runs contrary to studies like those of Czaika (2013) and Laskienė et al. (2020). The latter assessed the impact of income inequality on population migration in European countries by applying the methods of correlation and regression analysis, the results of which indicated that the impact of income inequality on migration differs within and between the EU Member State groups. Also, income inequality has a more significant impact on immigration than on emigration in all Member State groups. It is also noteworthy that income inequality causes emigration only in the states with medium income inequality rates. While this study provides insights into the relationship between inequality and migration in a

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developed region, it may not fully capture the dynamics in SSA, where factors such as informal employment and structural inequalities play a more significant role as expounded in this study.

With more specific results from the United States, Hayduk (2020) examined the relationship between inequality and migration using a structural approach that foregrounds capitalist accumulation as central to the processes of migration and inequality. The study found that higher levels of inequality were associated with increased immigration, particularly for low-skilled migrants. While this study relates to the objective of the current study, its focus was on immigration rather than emigration, which is more pertinent to the context of SSA. Aligning with the previous study, Plotnikova and Ulceluse (2022) confirm that individuals with higher levels of inequality were more likely to migrate. The objective of the study was to investigate inequality as a driver of migration flows between 41 European countries using social network analysis. While this study provides a novel approach to understanding the relationship between inequality and migration, it does not explicitly consider the role of informal employment in the inequality-migration nexus like the present study which is also based on SSA which faces a triple jeopardy of the high-level of informal employment, inequality as well as migration.

Using a desk review, Muyonga et al. (2020) explored the linkages between migration and inequality in Africa. The findings reveal a significant connection between migration and inequality, often mediated by remittances. International migration was found to have a greater impact on inequality than internal migration, frequently amplifying disparities. But the study lacks direct focus on informal employment, a critical sector in SSA that serves as both a push and pull factor for migration. In another study employing the decomposition technique to assess wage inequality within and between immigrant and native groups, Dustmann et al. (2024) analyzed the relationship between immigration and inequality in the UK over 40 years using datasets from sources such as the UK Labour Force Survey (LFS). The findings show that immigration has had a minimal effect on overall wage inequality in the UK. Yet inequality within the immigrant group is consistently higher than among natives, marginally raising overall inequality. Immigration slightly depresses wages at the lower end of the income distribution while benefiting higher earners. The study's focus on a formal, structured labor market like the UK's differentiates it from the current study and limits its relevance to SSA, where informal employment dominates.

Synthesis of the Empirical Review

From the empirical review conducted, it is observed that the relationship between informal employment and migration produces inconsistent results, with three possible scenarios. While Villarreal and Blanchard (2013), Marjit and Mandal (2016) and Giambra and McKenzie (2021) report that informality drives migration, the opposite is the case with other studies such as Srivastava (2022). These differing results can be attributed to various factors as adduced by the literature – education (Villarreal & Blanchard 2013), skills complementarity (Viseth 2020), structural inequalities (Docquier & Iftikhar 2019), as well as regional disparities as shown by Srivastava (2022) and Viseth (2020). With regard to the inequality-migration nexus, a similar trend is noticeable with Hayduk (2020) and Plotnikova and Ulceluse (2022) revealing a positive relationship, McKenzie (2017) exhibiting a negative relationship, and studies like that done by Laskienė et al. (2020) reporting a differentiated impact of inequality on migration. These differing findings can be due to socio-economic contexts, the methodology employed as well as the period of study. This study therefore deviates from the previous studies where the impact of inequality and informality were investigated individually on migration. Our study is novel in its distinctive analysis of how the interaction of inequality and informality affect migration flow. In so doing, we conduct a robust analysis of inequality and informal employment in the same empirical context as both have been established in literature to be socioeconomic vulnerabilities that have practical implications for migration.

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Methodology

DATA SOURCES AND VARIABLE DESCRIPTION

This study utilizes panel data from 43 SSA economies (see Appendix I) spanning the period from 2009 to 2022. The scope of the study both in terms of the number of countries and period of study is informed by the availability of data. The migration flow data is obtained from Abel (2018), while the vulnerable employment rate is used as a proxy for informal employment, with data sourced from the International Labour Organization (ILO). Data on inequality, measured by the Gini coefficient, is retrieved from the Standard World Income Inequality Database (SWIID). To account for other factors that may influence migration flows, the study includes two control variables which are GDP per capita and resource endowment which are all obtained from the World Bank's World Development Indicators (WDI) database. The inclusion of GDP per capita is to control for the level of development that can influence migration flow, while resource endowment is included in the model because natural resource wealth can influence migration patterns, both domestic and international. Resource-rich regions typically offer higher wages and more favorable employment opportunities, thereby attracting labor from other areas. The detailed description, measurement, a priori expectations, as well as the justification of the variables are presented in Table 1.

MODEL SPECIFICATION

Based on the theoretical foundations of Harris & Todaro (1970) that explains migration as a response to the existence of unequal opportunities across developed and underdeveloped sectors, the study specifies a model of migration to examine how informal employment and inequality can explain the international flow of migration flows across SSA countries. The general form of the model can be specified as follows:

$$Migration_{it} = \beta_0 + \beta_1 IE_{it} + \beta_2 INEQ_{it} + \beta_3 (IE \times INEQ)_{it} + \beta_4 PGDP_{it} + \beta_5 RE_{it} + \varepsilon_{it}$$

where $Migration_{it}$ is the net migration flow. The term $_{it}$ is the measure of informal employment (vulnerable employment rate), $INEQ_{it}$ is the measure of inequality (Gini coefficient) $PGDP_{it}$ is per capita GDP and RE represents Resource Endowment. The term ε_{it} is the error term.

The interaction term $(IE \times INEQ)_{it}$ captures the moderating effect of inequality on the relationship between informal employment and migration flows. The coefficients β1 and β2 measure the direct, individual effects of informal employment and inequality on migration flows, respectively, while β3 measures the moderating effect of inequality.

METHOD OF DATA ESTIMATION

This study employs the system Generalised Method of the Moment (system GMM) as the main estimation technique to address potential endogeneity concerns using STATA 16. System GMM is a reliable method for estimating panel data that deals with endogeneity by utilizing internal instruments generated from the data (Ullah et al. 2018). It effectively manages situations when there is unobserved heterogeneity, biases in dynamic panel data, and concerns of simultaneity. System GMM enhances the efficiency and consistency of estimations by integrating difference and level equations. It also employs the estimates of fixed and random effects versions of Driscoll-Kraay standard error techniques to estimate the model mainly for robustness check and for the fact that it is an estimation technique that is robust to serial correlation, heteroskedasticity and cross-sectional dependence (Jimoh & Chua 2023). The Hausman test was conducted to determine the appropriate model specification.

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Table 1. Variable Definition

Variables	Description	Measurement	A priori expectations	Justification
Migration flow	This is the dependent variable representing international migration flows	This is measured using Abel [2018] international migration flows (units)	Not applicable	Migration flows, influenced by informal employment and inequality, are key to understanding Sub-Saharan Africa's socio-economic dynamics (Abel 2018).
Informal Employment	Key explanatory variable representing informal employment	Vulnerable employment rate (%) from ILO	Positive	Informal employment is widespread in SSA, acting as a coping mechanism while increasing vulnerabilities and influencing migration (ILO 2018; Villarreal & Blanchard 2013).
Inequality	Key explanatory variable that represents income inequality within SSA countries	Gini-disposable income (%)	Positive/ Negative	Inequality fuels migration by creating economic gaps and limiting opportunities (Czaika 2013; McKenzie 2017), with the Gini coefficient commonly measuring income disparity
Resource endowment	This represents natural resource abundance	Natural resource rents (% of GDP)	Positive/ Negative	Resource endowment shapes migration by affecting local opportunities; resource-rich areas attract migrants, while resource-poor regions may drive migration (Hao & He 2022; Viseth 2020).
GDP per capita	This represents economic development	GDP per capita (constant 2015 US$)	Negative	Economic development drives migration, with people moving from less-developed to more-developed areas for better opportunities (Clemens 2020; Lanati & Thiele 2024).

Source: Authors' construct (2024)

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Results

The Summary statistics in Table 2 offer the description of the variables associated with migration flows (MIG) in the SSA region, informal employment (IE), income inequality (INEQ), GDP per capita (PGDP), and resource endowment (RE). The average value for MIG is 93,785.9 with a standard deviation of 144,484.3, suggesting a substantial amount of variation in migration movements among the data. The significant variation between 341 and 755,428 further emphasizes the discrepancies in migration rates within the SSA region. This implies that certain regions undergo remarkably large levels of migration, while others have minimal levels of migration flows. The mean of IE is 64.70538, indicating that a significant proportion of the workers are typically employed in the informal sector. The high standard deviation of 22.75326 and the wide range from 9.909765 to 93.99118 indicate significant differences in informal employment rates, which suggest variable degrees of economic formalization and labor market circumstances across different areas of the region.

The income inequality (INEQ) in the SSA region is characterized by a mean of 37.38032 and a standard deviation of 9.448016, indicating a moderate to high level of inequality. The disparity in income distribution is evident from the smallest value of 22.6 and the largest value of 58.5. The GDP per capita, with an average of 2,294.807 and a standard deviation of 2,570.474, indicates significant economic disparities, as the range of GDP per capita spans from 262.1848 to 13,740.84. This indicates a significant disparity between the most affluent and the most impoverished districts within the SSA region. The resource endowment (RE) has a mean of 11.04943 and a standard deviation of 10.0446, suggesting significant variation in the availability of resources. Some countries have very little resources, with values as low as 0.00236, while others are abundantly rich, reaching values as high as 61.03471.

Table 2. Descriptive Analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
MIG	601	93785.9	144484.3	341	755428
IE	602	64.70538	22.75326	9.909765	93.99118
INEQ	602	37.38032	9.448016	22.6	58.5
PGDP	598	2294.807	2570.474	262.1848	13740.84
RE	602	11.04943	10.0446	0.00236	61.03471

Source: Authors' construct (2024)

The pairwise correlation matrix in Table 3 shows the relationship between the variables used in this study (MIG, IE, INEQ, PGDP per capita, and RE) in the SSA region. The correlation coefficient between MIG and IE is 0.0312, indicating a positive relationship between the two variables. The correlation coefficient between MIG and INEQ is 0.1067. This suggests a weak positive association, indicating a slight inclination for higher migration flows in regions with higher income inequality. The relationship between GDP per capita (PGDP) and migration (MIG) is positive (0.0096) which suggests that the level of economic output per person does not have a major relationship with migration flows in the SSA. Notably, there is a significant positive relationship (0.7182, p=0.0000) between IE and PGDP, indicating that regions with higher GDP per capita also tend to have higher levels of informal sector employment. This phenomenon could be indicative of underlying economic conditions, wherein even wealthier countries in SSA substantially depend on the informal sector. The correlation coefficient between INEQ and PGDP is 0.2803 (p=0.0000), suggesting a moderate positive significant relationship between the two variables. This means

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that income inequality tends to be slightly higher in countries with higher economic output. The correlation between RE and MIG is weakly positive (0.1193, p=0.0034), while the connection between RE and PGDP is moderate (0.2242, p=0.0000). This indicates that countries with abundant resources tend to have slightly greater levels of migration and economic production.

Table 3. Correlation Analysis

	MIG	INFEMP	INCINEQ	GDPpc	RE
MIG	1				
IE	0.0312 (0.4453)	1			
INEQ	0.1067 (0.0088)	0.143 (0.0004)	1		
PGDP	0.0096 (0.8157)	0.7182 (0.0000)	0.2803 (0.0000)	1	
RE	0.1193 (0.0034)	0.068 (0.0957)	0.0606 (0.1375)	0.2242 (0.0000)	1

Note: P-values are presented below each correlation coefficients

Source: Authors' construct (2024)

According to Hoyos and Sarafidis (2006), cross-sectional dependence (CSD) is often peculiar to fixed and random effect models with constant T (time) and large N (cross-sections). Given the possibility of the presence of cross-sectional dependence in our model, we employed three different cross-sectional dependence tests by Pesaran (2004), Frees (1995) and Friedman (1937). All three CSD test statistics in Table 4 show that CSD is not present in the series used in this study. This is evident from the insignificance of the p-values. The insignificance of the p-values invariably means the null hypothesis of no CSD is not rejected. However, due to the potential panel issues in panel data analysis such as autocorrelation, heteroskedasticity, CSD and endogeneity, this study used the fixed and random effects version of Driscroll-Kraay (D-K) Standard error estimates which is robust to the issues except for endogeneity. The Hausman test was used to determine the preferred model between fixed and random D-K models. The AR(2) which is also known as Arellano-Bond test is used to test for second-order serial correlation most especially in dynamic panels such as system GMM. The p-value of the statistic suggests that there is no evidence of second-order serial correlation in the differenced residual. The Hansen statistic was used in this study to test

Table 4. Cross-Sectional Dependence Tests

Test Statistics	Average absolute value of the off-diagonal elements	P-Values
Pesaran	0.417	0.2028
Friedman		0.8792
Frees		0.3826

Note: The p-values are compared with 0.05 critical values

Source: Authors' construct (2024)

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the validity of the instrument used in the GMM model. Since the p-value of the Hansen test is larger than the significant level (0.05), we fail to reject the null hypothesis, which means that the instrument used is valid and not correlated with the error term. Therefore, this study settles for the estimates of the GMM in Table 5 while the estimates of Driscroll-Kraay serve as the robustness check as suggested by the Hausman test result.

In Table 5, the coefficient of *lnMIG* lag shows that migration flow is persistent over time in the SSA. This is evident in the sign of 0.8 which is positive and significant. It implies that current migration flows in SSA are an increasing function of the past migration flow. A percentage increase in informal employment increases migration flows in the SSA by 1.27 percent. This finding aligns with the studies by Marjit and Mandal (2016) and Villarreal and Blanchard (2013). Individuals' economic needs and livelihood plans in the region can justify the favorable impact of informal employment on migration inside SSA. In many SSA nations, the legal labor market is constrained and unable to accommodate the rising workforce, prompting many to seek employment in the informal economy. High levels of informal employment can suggest a lack of steady, formal job options as well as rigid regulation processes (Akande et al. 2021), pushing people to migrate for better economic opportunities, whether within their own country or across borders. Migration, then, becomes a coping technique to avoid unemployment, underemployment, or low salaries characteristic of the informal sector, as migrants seek places with more vigorous economic activities or better employment conditions, even if still within the informal sector.

The coefficient of income inequality in Table 5 shows that it has a positive effect on migration flows. A percentage increase in income inequality increases migration flows by 0.73 percent. However, the standard error of income inequality suggests that it does not significantly influence migration flows in SSA. This contradicts the findings of Hayduk (2020), Plotnikova and Ulceluse (2022) and Dustmann et al. (2024) which show that inequality significantly influences the decision of people to migrate to another country. A good justification for this is that income inequality alone may not be the main reason why people decide to migrate. Moreover, local coping strategies and informal support networks can potentially offer enough resilience to endure economic discrepancies, hence reducing the motivation to migrate.

The coefficients of the two control variables (PGDP and RE) used in this study produced a positive association between these variables and migration flows in the SSA. A percentage increase in GDP per capita and resource endowment increases migration flows by 0.04 and 1.02, respectively. This implies that countries with higher GDP per capita attract individuals from countries with lower GDP per capita for better employment opportunities and access to basic necessities of life. This result is similar to that of several authors (Lanati and Thiele 2024; Clemens 2020; Istudor et.al. 2020) who found GDP to have a positive effect on migration. In addition, countries with abundant resources attract not only individuals but also firms from different countries, hence, boosting the migration flows. The result of the positive effect of RE on migration is contrary to Hao & He (2022) who found that resource endowment deters longer-distance migration but encourages internal migration.

Turning to the moderation of informal employment and income inequality in Table 5, the coefficient for the interaction term indicates that the combined effect of informal employment and income inequality has a negative and significant impact on migration flows in the region. Specifically, a one percent increase in the interaction term, representing the moderation of informal employment by income inequality, results in a 1.12 percent decrease in migration flows. This finding suggests that as income inequality moderates the relationship between informal employment and migration, the propensity for individuals engaged in informal work to migrate decreases. This trend aligns with the neo-classical economic theory of migration and the empirical study of de Haas (2021). This could also be due to several factors, including increased barriers to migration or the intensification of economic hardships that restrict mobility options for those in the informal sector. The significant negative coefficient underscores the importance of considering the joint effects of economic conditions on migration patterns, rather than examining these factors in isolation.

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Table 5. The Estimates of Driscoll-Kraay Fixed and Random Effects and System Generalized Method of the Moment

Variables	Driscoll-Kraay (FE)	Driscoll-Kraay (RE)	System GMM
lnMIG L(-1)			.8818*** (.0129)
lnIE	2.2518* (.9118)	.3350** (.0243)	1.2730** (.0965)
lnINEQ	1.08704*** (.2887)	1.0554** (.4696)	.7368 (.9199)
lnPGDP	.65626** (.1994)	1.1596*** (.0435)	.0413*** (.0090)
lnRE	.5716*** (.0407)	.0572** (.0056)	1.0202** (.0320)
lnIE_lnINEQ	-.8145** (.0094)	-0.4412 (.2216)	-1.1275*** (.0784)
Cons.	13.6594*** (3.0837)	13.482*** (1.061)	9.3608*** (3.0230)
R^2	0.43	0.13	
Number of Obs.	597	597	555
Hausman Prob>chi2	0.0030		
Hansen, p-value			0.264
AR(2), p value			0.783

Notes: Instrument variables are the first difference of IE, Ineq, gdppc, RE, and lnIE_ineq. AR(2) is the p-value for the second-order serial correlation; the Hansen p-value was used to test the relevance of the instruments in GMM and the Hausman test was used to determine the preferred model between fixed and random Driscroll-Kraay models.
Source: Authors' construct (2024)

Discussion, Conclusion and Policy Recommendations

The determinants of migration flows have been widely debated among researchers, particularly in developing regions like SSA, which experiences higher migration flows compared to more developed regions. Previous studies have often focused on either inequality or informal employment as individual factors affecting migration flows, without exploring the interaction between these two variables. This study addresses this gap by examining how inequality moderates the effect of informal employment on migration in SSA from 2009 to 2022.

The findings of this study indicate that informal employment positively influences migration flows in the region, suggesting that individuals engaged in informal work are more likely to migrate in search of better opportunities. While inequality alone was found to have a positive but statistically insignificant effect on migration, its interaction with informal employment revealed a more complex dynamic. Specifically, the moderation effect of inequality on informal employment indicates that as inequality increases, the impact of informal employment on migration flows decreases. This suggests that higher levels of inequality may reduce the migration propensity of individuals in informal employment, potentially due to increased barriers to

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mobility or a lack of resources needed to migrate. Inequality can worsen the economic situation of those in the informal sectors thereby limiting their ability to pursue greener pastures.

These results emphasize the importance of considering the combined effects of economic factors such as informal employment and inequality when analyzing migration patterns in SSA. Additionally, these nuanced dynamics help to elucidate the mixed findings in previous studies as expounded in the empirical review section. Different contextual frameworks may have varying prominent factors, or be affected by different levels of inequality and informality, thereby tilting the outcome of the study. Our result therefore stresses the importance of considering informality and inequality in the same study context as well as assessing their moderating impacts, as this study has established that they wield significant joint implications for migration flows which do not necessarily conform with their individual effects. The other control variables, per capita GDP and resource endowment, indicated a positive relationship with migration patterns, implying that an increase in per capita GDP and resource endowment increases the flow of migration in the region.

Based on the findings, the recommendation is that policy development should focus on ways to address both informal employment and income inequality to manage migration flows in SSA effectively. Governments and policymakers should prioritize efforts to formalize the informal sector by creating more formal employment opportunities and incentivizing businesses to transition from informal to formal operations. Incentives could include providing support for small and medium-sized enterprises, improving access to finance, and simplifying regulatory frameworks to encourage formalization. Additionally, comprehensive social welfare programs should be developed to support individuals in the informal sector, including healthcare, education, and social protection measures, which can help reduce the vulnerabilities that drive migration.

To address income inequality, policy development should aim to redistribute wealth more equitably and improve access to resources for marginalized groups (Dabla-Norris et al. 2015; Plotnikova & Ulcelse 2022). This could include progressive taxation, increased investment in public services, and targeted interventions to enhance the economic capabilities of those in the informal sector. Furthermore, regional cooperation is crucial in addressing migration flows, as coordinated policies can more effectively manage cross-border migration and its underlying economic drivers. By addressing the combined effects of informal employment and inequality, these policy measures can help enhance the wellbeing of those in the informal sector, thereby creating a more inclusive and resilient economy and reducing the push factors that can lead to migration in the region. Finally, future study can further explore the links that exist between inequality, informality and migration in the context of the different regional blocs and trade agreements in Africa, to understand the role of coordinated policies in shaping migration patterns.

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APPENDIX I

List of Countries

Serial No.	Country	Serial No.	Country
1	Angola	26	Madagascar
2	Benin	27	Mali
3	Botswana	28	Mauritania
4	Burkina Faso	29	Mauritius
5	Burundi	30	Morocco
6	Cape Verde	31	Mozambique
7	Cameroon	32	Namibia
8	Central African Republic	33	Niger
9	Chad	34	Nigeria
10	Comoros	35	Rwanda
11	Democratic Republic of the Congo	36	Senegal
12	Republic of the Congo	37	Sierra Leone
13	Côte d'Ivoire	38	South Africa
14	Djibouti	39	Sudan
15	Egypt	40	Togo
16	Equatorial Guinea	41	Uganda
17	Ethiopia	42	Zambia
18	Gabon	43	Zimbabwe
19	Gambia		
20	Ghana		
21	Guinea		
22	Guinea-Bissau		
23	Kenya		
24	Lesotho		
25	Libya		

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