Migration and Youth Unemployment in Africa: Implications for the African Continental Free Trade Area

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Migration and Youth Unemployment in Africa: Implications for the African Continental Free Trade Area

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Abstract

This study explores the effect of intra-African migration on total unemployment and youth unemployment. It further distils the effect of intra-African migration on male and female youth unemployment and later employs a two-level estimation approach to determine gravity models of migration using Poisson pseudo maximum likelihood techniques and a 2-stage least squares approach, which is efficient in dealing with endogeneity bias. The results show that income per capita and population size of both origin and destination countries influence intra-African migration. Additionally, regional trade agreements are the main drivers of bilateral migration among African countries, suggesting that an Africa-wide trade agreement such as the African Continental Free Trade Area (AfCFTA) will stimulate migration. The results show a negative and statistically significant relationship between migration and youth as well as with overall unemployment in Africa. However, total unemployment tends to reduce faster than youth unemployment, suggesting that adults and experienced labour will benefit more from the employment opportunities created by the AfCFTA than the youth. In addition, the study finds that intra-African migration tends to reduce female youth unemployment than male youth unemployment.

Keywords: migration, unemployment, AfCFTA, 2SLS, Poisson pseudo maximum likelihood, Africa

JEL Codes: C51, J60, N37, R23

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1.   INTRODUCTION

High youth unemployment in Africa has attracted the attention of international development agencies, including the African Development Bank, the World Bank, and the United Nations. The African Development Bank (2016) reports that while 10–12 million youth enter the workforce in Africa each year, the continent only creates 3 million formal jobs annually. According to the International Labour Organization (ILO, 2023), more than 72 million African youth lack education, employment, or training (ILO 2023). Donkor (2021) noted that although globally, Africa has the lowest unemployment rate on paper among youth ages 15 to 24 (10.6 percent in 2021, according to the ILO, 2023), most of Africa's youth work informally, while many are underemployed. According to the World Bank, youths account for 60 percent of Africa's jobless population. The regional youth unemployment rate is 25 percent in North Africa and even greater in countries like Botswana, the Republic of Congo, Senegal, and South Africa (Ighohor 2017).

Despite multiple attempts to curtail the problem, individual African countries have had little success. As part of its Agenda 2063, the Africa Union (AU) established the African Continental Free Trade Area (AfCFTA) by an agreement adopted in March 2018. Its first objective is to create a single market for goods and services, facilitated by the free movement of people to deepen Africa's socio-economic integration. Notably, in a bid to ameliorate the overall and youth unemployment rates, the AfCFTA permits individuals in one African country to migrate to secure employment in another. To assess the development-enhancing potential of the agreement, this study examines the impact of intra-African migration on unemployment, particularly among youth.

Africa's low ranking on the global development scale has been of concern even to developed countries, as many of them are facing a high influx of economic immigrants from the continent. Many African countries experience high levels of poverty and inequality, low quality of life, and high levels of crime and other social vices. Meanwhile, Africa has the youngest population in the world—with a median age of 19.7 years and over 400 million people aged 15 to 35 years—[4] implying an ample and energetic workforce to catalyse its development process. However, a high unemployment level among this population is a clog in the wheel of this process.

The AfCFTA is arguably the world's largest free trade area by geography, bringing together the 55 AU countries and 8 Regional Economic Communities. The overall mandate of AfCFTA is to create a single continental market with a population of about 1.3 billion people and a combined gross domestic product (GDP) of approximately US$3.4 trillion. Many international development agencies have lent support to the AU's AfCFTA initiative, particularly based on its potential to increase overall employment in Africa and stimulate growth and development (UNECA, 2018; World Bank 2020). The UN (2021) noted that AfCFTA could potentially create more jobs and entrepreneurship opportunities for young African men and women. The World Bank (2020)

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[4] See: https://www.un.org/africarenewal/magazine/february-2023/afcfta-reaping-benefits-world%E2%80%99s-most-youth-and-women-friendly-trade-agreement. Accessed: December 6, 2023.

predicts that implementing it would increase employment opportunities and wages for unskilled workers and that agricultural employment would increase in 60 percent of countries. Meanwhile, The UN (2021) noted that policymakers and development agencies must take necessary steps to ensure the agreement achieves its full potential.

About 80 percent of immigrants in Africa are Africans; however, in terms of population ratio, Africa has a low level of intra-regional mobility, with an intra-African migration rate of only 14 immigrants per 1,000 inhabitants in 2015 (Gnimassoun 2020). This is far behind the European Union (EU), which had 39 European immigrants per 1,000 inhabitants in 2015. Many studies on youth unemployment in Africa ignore the effect of intra-African migration, which is increasing due to the implementation of AfCFTA (Mueller, Gray, and Hopping 2020; Agradi, Adom, and Vezzulli 2022; Olubusoye, Salisu, and Olofin. 2023; Moufakkir 2023; Ogbonna et al. 2023).

Meanwhile, Gnimassoun (2020) carefully interrogates the effect of intra-African trade and migration on income in Africa, concluding that intra-African migration has not been sufficiently compelling to generate a positive, significant, and robust impact on real per capita income. As employment precedes growth in the economic integration–growth transmission channel, intra-African migration may significantly impact youth unemployment. The present study fills the research gap in this area, contributing to prevailing literature in three related ways:

- It examines the potential of enhanced regional integration, indicated by the implementation of AfCFTA, to stimulate higher employment and reduce overall and youth unemployment in Africa.
- It estimates pseudo gravity-based and panel-based regression models over the period 1990–2020 and uses instrumental variable (IV) two-stage least squares (2SLS) and Poisson pseudo maximum likelihood (PPML) estimation techniques to capture the possible problems of endogeneity in migration-unemployment nexus, which earlier studies have ignored.
- It compares variation in the response of male and female youth unemployment to intra-African migration, appealing to global sensitivity to gender economics and the Sustainable Development Goals (SDGs) 2030 objective that both genders attain decent jobs in Africa. Foreshadowing the results of the present study, youth unemployment may respond more sternly than overall unemployment, as the movement of youth in the continent due to AfCFTA implementation would tend to be higher.

Following this introduction, this study is organized as follows. Section 2 presents a review of the prevailing literature, while Section 3 provides the background and stylized facts. Section 4 discusses data issues and methodology and Section 5 analyses the results. Section 6 concludes.

2.   LITERATURE REVIEW

Many studies find the effects of migration on youth unemployment to be positive (Bove and Elia 2017; Brunow, Nijkamp, and Poot 2015; Matiur Rahman and Caples 1991; Moody 2006). For example, when remittances are recorded above certain thresholds, the benefits spill over from credited residents to others without raising unemployment in the migrants' destinations (Djajić 1986; Longhi, Nijkamp, and Poot 2006; 2008). Samet (2013) notes that the initial "brain drain" attributed to the movement of human capital from source countries is often complemented by "brain gain," which represents the feedback effect of developmental exchange through foreign direct investments, international trade, remittances, and return of skilled migrants.

The synchronization of factor mobility, exchange rates, policies, and markets among countries are central to the concept of free trade zones, allowing for a monetary union or optimal currency area. Odeku and Rikhotso (2023) and Zwanbin (2023) suggest that Pan-Africanism informed the formation of AfCFTA more than the required underlying convergence. While AfCFTA holds a vast potential to improve the continent's economic outcomes, it is important to consider the interaction of salient variables within and between nations, including the mobility of labour and its impacts and the policies required for desired outcomes.

This prior argument leads to the essence of migration, which is to facilitate a single market for goods and services through free human movement. The AfCFTA also bears the same objective for deep economic integration. Geda and Yimer (2023) examine the possible effects using trade and gravity-based models. Certain results show that AfCFTA has limited effects on trade creation and diversion within Africa, while others show support. Both outcomes are anticipated to increase intra-African trade (exports) by roughly 19 percent above the average yearly value. Geda and Yimer (2023) conclude that the political success of AfCFTA should be combined with a comprehensive industrial strategy to create competitive offerings that drive value within and beyond the continent.

By exploring a similar context, Gnimassoun (2020) suggests that AfCFTA has not been pronounced enough to generate positive long-term effects on real per capita income in Africa. The study traces the dearth of discernible impact to the lack of natural or optimal congruity between countries set as trading partners. However, AfCFTA has a short-to-medium-term effect when factoring in inter-country migrations.

Massey (1988) argues that emigration is not strictly based on the differences in development levels between countries. Integrating business cycles, systems, culture, and employment structures could also kindle emigration. The study further submits that in the short run, immigration improves integration between economies and increases the likelihood of more arrivals. However, if left unchecked, this may skew income distribution, aggravate resource competition, and propel another

outmigration wave. However, in the long run, intense intra-country or inter-country migration helps attain stability and development, eventually slowing migration.

Seminal contributions by Lee (1966) on the push–pull theory provide the framework for understanding the individual's migration aspirations. The theory highlights that the developmental differences between a migrant's origin and destination influence the migrant's choice such that he or she is "pulled" to the destination with associated net benefits. According to Lee's paradigm, the decision is based on individual factors, interfering barriers, origin, and target area.

Todaro (1997) submits that the average migrant is rational and capable of evaluating the cost–benefit relationship associated with the decision. Thus, a migration plan with perceived net benefits serves as motivation. Todaro's theory emphasizes that migration rates that are higher than destination employment rates are likely to cause higher unemployment rates in migrants' destinations. Some strands of literature (Bove and Elia 2017; Ogbonna et al. 2023) are based on Romer's (1997) theory of exogenous growth, which opines that the mobility of skills and knowledge may facilitate economic growth based on technological changes.

Empirical studies have been conducted at both macro- and microeconomics perspectives. From the macroeconomic perspective, Ogbonna et al. (2023) model factors affecting unemployment in Africa by highlighting the roles of information and communication technology (ICT) and education, and revisiting the Phillips curve to demonstrate the effects of inflation, physical capital accumulation, corruption level, and economic growth on unemployment nexus. The study concludes that extended ICT coverage and deployment through education reduces Africa's unemployment levels, particularly among youth. Lower inflation and corruption levels, higher physical capital accumulation, and economic growth significantly reduce unemployment.

From a micro perspective, Deotti and Estrusch (2016) espouse that the concept of rural youth emigration in Sub-Saharan Africa and North Africa worsens rural livelihood. The authors conclude that creating on-farm and off-farm employment opportunities and improved food security can help ease the rural–urban migratory pressures. Mueller, Gray, and Hopping (2020) examine the effect of climate-induced migration on unemployment in Africa using household panel data from Botswana, Kenya, and Zambia and conclude that climate-induced shocks limit migration within the country. The authors further suggest that limitations to movement slow down urbanization and consequently employment. Macro evidence from Redlin (2023) suggests that the emigration from Middle Eastern and North African (MENA) to Organisation for Economic Co-operation (OECD) countries is based on the rising youth population, poor labour market conditions, and cohort pressures. The study recommends that MENA countries require urgent structural transformations to provide home-based opportunities.

Diving deep into the case of individual countries from the Nigerian perspective, Amare et al. (2021) combine light intensity data and the Living Standards Measurement Survey to explain factors affecting urban migration. The study finds that urban or economic growth encourages youth to migrate within the country, while women, educated household heads, livestock farmers, and large expanse landowners are less likely to migrate. It recommends tailored policymaking to effectively guide the rural–urban youth migration process.

While popular opinions are given to the labour market pressures exerted by migrants on their prospective destinations, Hall (2022) explains that youth migration represents a win–win solution for stakeholders by highlighting the deficit in the youth population in high-income economies which migration helps to mitigate and dampening the rise in youth and unemployed population in middle-to-low-income economies. The study further opines that migrant youths are agents of active change and development as they adapt and contribute better to digital transformations than migrants in other age groups, hold consistent work patterns for tax remits, and facilitate remittances in crises.

Okunade and Awosusi (2023) add that, due to a lack of adequate data, the benefit that migrants who are accompanied by several dependents provide to the destination country is not clear, though the trend does tend to trigger negative responses from residents who see it as an intrusion of space. Simply put, migration is optimal when it contributes significantly to developing destination areas. Regarding the EU, Lozej (2019) concludes that migration within the countries can amplify business cycles and help flatten the Philips curve in response to employment shocks.

Addressing the effect of diversity attributable to migration on economic growth, Bove and Elia (2017) conclude that fractionalization and polarization of destination areas positively contribute to real GDP per capita. Despite significant wage disparities, data indicates a low internal and international migration within and between European countries. However, Coniglio, De Arcangelis and Serlenga (2010) found that highly skilled clandestine migrants are more likely to return home than migrants with low or no skills. This result is due to constraints imposed by the irregular status on migrants' ability to fully use human capital in the destination country. However, Schuman (2021) finds that regardless of skill, emigration to OECD countries negatively impacts income per capita.

Concerning migration and income level, Jaumotte, Koloskova, and Saxena (2016) find that immigration improves the GDP of advanced economies through the labour productivity channel. Diodato, Hausmann, and Neffke (2023) and Kang and Kim (2018) submit that immigration from advanced to developing economies is more beneficial as migrants from advanced economies arrive with their greater skills and knowledge. However, using the Ramsey model, Parello and Ikhenaode (2021) relate that pro-immigration policies that promote community networking have differential effects on the welfare of natives and immigrants with moderation effects by the size of immigrants.

From the methodological perspective, Ogbonna et al. (2023) employ a generalized method of moments estimator (GMM). GMM allows the researcher to properly capture the variability in datasets with large cross-sections or countries (N) and small periods (T). The GMM is also appropriate for data with dynamic properties where current values or observations depend on realized observations. Gnimassoun (2020) adopted a gravity-based model with a staged least squares approach to account for endogeneity associated with inter-region migration and income.

Similarly, Jaumotte, Koloskova, and Saxena (2016) estimate the impact of migration on income levels in advanced economies using factors that tend to motivate migrants to move from their base countries as an instrumental variable. Given the issue of potential reverse causality and zeros in the dataset, this study follows the approach by Gnimassoun (2020), which was based on a two-level analysis involving the use of PPML in the first level and instrumental variable model of the 2SLS estimator in the second.

3. BACKGROUND AND STYLIZED FACTS

Global unemployment and youth unemployment levels in Africa are some of the lowest in the world (World Bank 2023), ranging between 5 and 7 percent for the former and between 10 and 13 percent for the latter (see Figure 1). Some of the literature has contested this range. For example, Ogbonna et al. (2023) note that the definition of unemployed youth as a labour force between the ages of 15–24 might be underestimating the problem. The African Development Bank (2016) defines youth as a labour force between the ages of 18–35 and estimates youth unemployment as 31 percent, with an additional 19 percent described as inactive. Donkor (2021) supports this definition, noting that most youth considered as being employed under the World Bank statistics work informally, and many are underemployed or remain in poverty despite working due to low wages and lack of social safety net programmes.

The ILO's definition of youth unemployment (unemployed between the ages 15–24) is similar to that of the World Bank but presents higher estimates (figure 2). Youth unemployment in Northern Africa is consistently higher than overall youth unemployment across Africa, suggesting that average youth unemployment in Northern Africa is higher than in Sub-Saharan Africa. Moreover, while youth unemployment in Africa is consistently higher than the world average, youth unemployment in Sub-Saharan Africa only becomes higher than the world youth unemployment average after 2014.
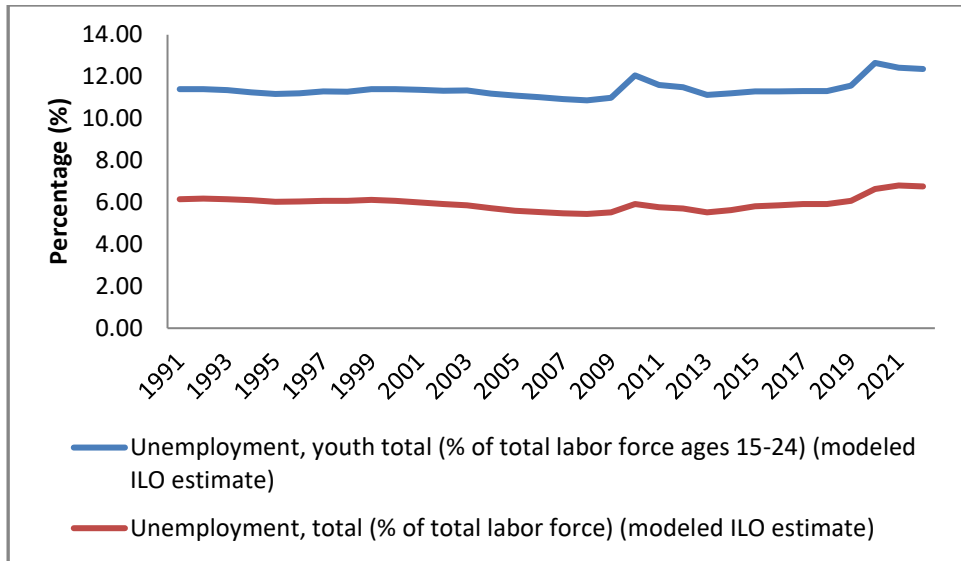
Figure 1: World Bank Data on Total and Youth Unemployment in Sub-Saharan Africa
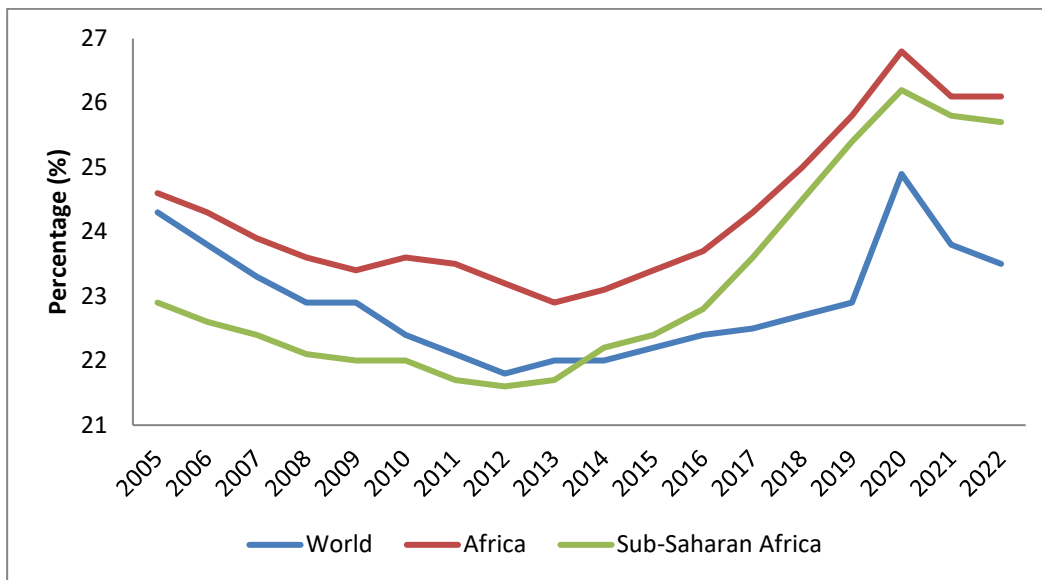
Figure 2: Africa, Sub-Saharan Africa, and World Youth Unemployment

Unemployment (youth and overall) in Africa peaked in 2020 and fell thereafter (figures 1 and 2), suggesting an increase in post-COVID-19 employment levels. This may be attributed to improvement in access to and use of ICT.

Figure 3 illustrates the intra-African migration per thousand population for the period 1990–2020 using the bilateral migration data for 54 African countries. The statistics were determined as the average number of immigrants and emigrants from and to African countries divided by the

population of the African country multiplied by 1,000. Seychelles has the highest intra-African migration, with about 180 per thousand population moving within African countries, followed by Gabon (167 migrants per thousand population) and Cote D'Ivoire (159 migrants per thousand population). The countries with the least intra-African migration include Tunisia, Algeria, and Nigeria (3, 6 and 10 migrants per thousand population) and Egypt, Madagascar, and Morocco (2 migrants per thousand population).
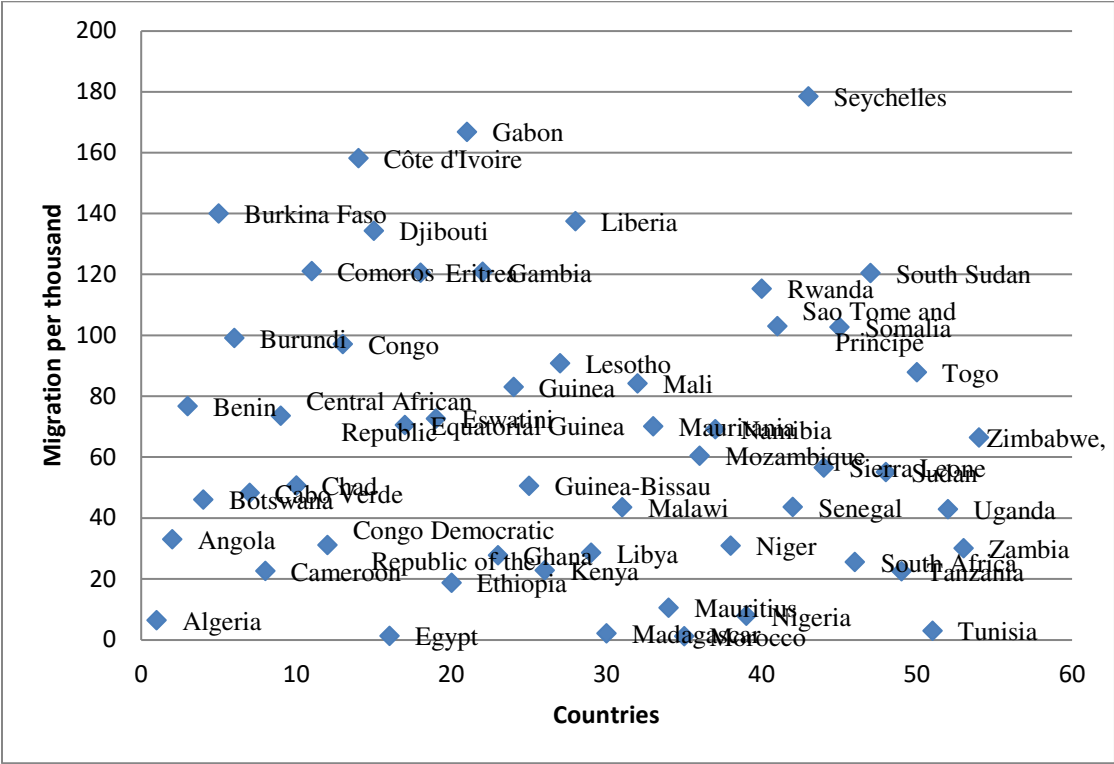
Sources: United Nations (2020); World Bank (2023).

Figure 3: Intra-African Migration per Thousand Population (1990–2020)

More than 75 percent (41/54) of African countries had less than 100 migrants per thousand population migrating inside the continent (table 1), implying that there are only about 10 percent of intra-African migrations. This is expected to increase with the implementation of the AfCFTA and cause a reduction in youth and overall unemployment. Hence, a negative relationship is hypothesized in the empirical analysis of the relationship between (youth and overall) unemployment and migration in Africa.

Table 1: Intra-African Migration per Thousand

GROUP	Mean	Max	Min.	Sum.	Std. Dev.	Obs.
[0, 50)	23.96117	48.23292	1.216112	551.1070	15.37076	23
[50, 100)	73.05487	99.12885	50.60440	1314.988	15.07354	18
[100, 150)	121.6114	140.0150	102.7527	1216.114	12.89870	10
[150, 200)	167.8408	178.4345	158.2401	503.5224	10.13378	3
All	66.40242	178.4345	1.216112	3585.731	46.44700	54

4   METHODOLOGY AND DATA ISSUES

4.1   Methodology

High levels of unemployment in a country may cause its citizens to migrate to another country, and a large influx of migrants to a particular country may perpetuate the cycle. This signifies the potential for bi-directional causality between migration and unemployment, which may result in endogeneity (Gnimassoun, 2020). Endogeneity can arise due to measurement errors, potential reverse, or bidirectional causality, as well as the omission of unobserved factors that can be correlated with the error term (Ehrhart et al. 2014; Beine and Parson 2015; Bovi and Elias 2017). This will render the ordinary least squares (OLS) model estimation biased and inconsistent. To avoid estimation bias due to potential endogeneity problems, the present study follows Gnimassoun (2020) by carrying out our empirical analysis in two stages. The first stage estimates the factors influencing migration within Africa, while the second estimates the impact of migration and other relevant factors on youth unemployment (and other unemployment categorizations) in Africa.

The present study uses the PPML in the first stage to estimate the gravity model for migration and in the second—using the 2SLS instrumental variable approach—to examine the impact of migration on youth (and various) unemployment in Africa. Santos Silva and Tenreyro (2006) identify the PPML model as an efficient way to deal with the zero trade flows in gravity models (Martínez-Zarzoso 2013; Alemayehu & Edris 2015; Geda & Yimer, 2019; Gnimassoun, 2020). Both approaches are suitable for correcting endogeneity problems and have several other features, such as correcting for possible omissions and errors in variables (Wooldridge 2010).

Based on its extensive consideration of geographical factors, the gravity model has usually been employed in estimating the drivers of bilateral migration between country i and country j. The model is specified as follows (Gnimassoun 2020):

$$\ln Migr_{ij} = \beta_0 + \beta_1 \ln YPC_i + \beta_2 \ln YPC_j + \beta_3 \ln Size_i + \beta_4 \ln Size_j$$
$$+ \beta_5 \ln Dist_{ij} + \beta_6 Llock_j + \beta_7 Colony_{ij} + \beta_8 Contig_{ij} \qquad (1)$$
$$+ \beta_9 Lang_{ij} + \beta_{10} Cur_{ij} + \beta_{11} RTA_{ij} + e_{ij}$$

where $Migr_{ij}$ is bilateral migration between African countries representing intra-African migration; YPC_i and YPC_j are income per capita for the origin and destination countries, respectively; and $Size_i$ and $Size_j$ are population size of the countries of origin and destination, respectively. Others are gravity and geographical factors. These include a dummy for distance ($Dist_{ij}$) between the origin and destination countries; a $Llock_j$ dummy for the landlocked destination country; a $Colony_{ij}$ dummy for origin and destination countries with a common colonial history; a $Contig_{ij}$ dummy for origin and destination countries that share the same border; $Lang_{ij}$ dummy for origin and destination countries that share a common official language; Cur_{ij} for origin and destination countries with a common currency; and RTA_{ij} for origin and destination countries that have a regional trade agreement. Although this model is usually specified and estimated with a cross-sectional regression model, an estimation using a panel regression model to examine the short to medium-term relationship between intra-African migration and its determinants (Gnimassoun 2020).

After estimating the gravity regression in equation (1), the explanatory variables of the model are aggravated over the destination countries j to obtain the predicted intra-African migration calculated as $Migr_{ij} = \sum_{i \neq j} exp(\Gamma_{Migr} Z_{ij})$, where Z_{ij} is the vector of explanatory variables and Γ_{Migr} is the vector of the parameters in equation (1). The predicted intra-African migration is then used as an instrument for migration in the 2SLS model for estimating migration and other factors as the determinants of youth unemployment in Africa.

The youth unemployment model is specified as below:
$$\ln YUempT_j = \beta_0 + \beta_1 \ln Migr_{ij} + \beta_2 BCyc_j + \beta_3 \ln CPI_j + \beta_4 CreditPSB_j$$
$$+ \beta_5 LabCom_j + \beta_6 RTA_{ij} + \beta_7 Cur_{ij} + \beta_8 Lang_{ij} + \beta_9 Contig_{ij} + \varepsilon_j \quad (2a)$$

Where $lnYUnempT_j$ is the youth unemployment rate of African countries that are destination countries for African migrants; $Migr_{ij}$ is intra-African migration; $BCyc_j$ is the business cycle of the destination countries calculated as the deviation of output from its potential using the Hodrick-Prescott filter approach; CPI_j is the consumer price index of the destination countries; $CreditPSB_j$ is credit to the private sector by banks in the destination countries; and $LabCom_j$ is labour compensation in the destination countries. Other factors are gravity model factors, including regional trade agreement (RTA), common currency (*Cur*), common official language (*Lang*), and common border (*Contig*).

According to the optimal currency area theory, higher migration between African countries due to greater economic integration, such as proposed by the AfCFTA, is expected to increase

productivity and employment in individual African countries and thereby reduce overall and youth unemployment in Africa. In addition, cyclical unemployment implies that variation in economic performance around its long-term potential can affect employment levels. As such, a negative relationship may be expected between the business cycle and unemployment, such that higher economic performance than expected will lead to lower unemployment and lower economic performance than expected, as may be experienced during a recession, will lead to higher unemployment.

Inflation also relates to unemployment through its direct relationship with production costs. High inflation is expected to increase production costs, resulting in low output and increased layoffs. More so, a negative relationship may be expected between credit to the private sector and unemployment since the availability of more credit will enable firms to increase hiring.

Labour compensation is also related, as the higher it is, the more attractive employment is for labourers, thereby reducing overall unemployment. This suggests a somewhat negative relationship between the two. The gravity model factors (RTA, common currency, common official language, and common border) stimulate economic and financial integration among countries yet may increase, reduce, or have no significant impact on unemployment. More importantly, these relationships suggest that an Africa-wide trade agreement (RTA), as proposed in the AfCFTA, will reduce its unemployment.

Additional contributions of this study involved an analysis of the effect of migration on total unemployment in Africa, as well as on male and female youth unemployment, using the following models:

$$\ln unempT_j = \beta_0 + \beta_1 \ln Migr_{ij} + \beta_2 BCyc_j + \beta_2 BCyc_j + \beta_3 \ln CPI_j + \beta_4 CreditPSB_j$$
$$+ \beta_5 LabCom + \beta_6 RTA_{ij} + \beta_7 Cur_{ij} + \beta_8 Lang_{ij} + \beta_8 Cont_{ij} + \varepsilon_j \tag{2b}$$

$$\ln YUnempM_j = \beta_0 + \beta_1 \ln Migr_{ij} + \beta_2 BCyc_j + \beta_2 BCyc_j + \beta_3 \ln CPI_j + \beta_4 CreditPSB_j$$
$$+ \beta_5 LabCom + \beta_6 RTA_{ij} + \beta_7 Cur_{ij} + \beta_8 Lang_{ij} + \beta_8 Cont_{ij} + \varepsilon_j \tag{2c}$$

$$\ln YUnempF_j = \beta_0 + \beta_1 \ln Migr_{ij} + \beta_2 BCyc_j + \beta_2 BCyc_j + \beta_3 \ln CPI_j + \beta_4 CreditPSB_j$$
$$+ \beta_5 LabCom + \beta_6 RTA_{ij} + \beta_7 Cur_{ij} + \beta_8 Lang_{ij} + \beta_8 Cont_{ij} + \varepsilon_j \tag{2d}$$

where equations 2b, 2c, and 2d estimate migration and other factors as determinants of total unemployment ($unempT$), male youth unemployment ($YUnempM$), and female youth unemployment ($YUnempF$), respectively. Other factors remain as described under equation 2a.

4.2   Data Issues

The study employs data from different sources, including unemployment data (total, youth, male youth, and female youth) from the World Development Indications (WDI) (World Bank 2023) and migration data from the Global Migration Database (United Nations 2020). Other relevant data are collected from the Penn World Tables (PWT version 10.1) (Feenstra, Inklaar, and Timmer 2015),

while data for gravity models for bilateral variables are from the CEPII (2023). Data on bilateral migration are available for each five years starting in 1990 and averaged over seven periods (1990, 1995, 2000, 2005, 2010, 2015, and 2020) to conduct a cross-sectional regression analysis explaining the long-term relationship between the dependent and independent variables.

Meanwhile, following Gnimassoun (2020), the study conducts panel regression analysis to explain the short to medium term relationship between the dependent and independent variables. The panel data modelling account for the individual effect of African countries that receive migrants from other African countries, by considering the country of destination effect (Appendix 1).

5   RESULTS AND DISCUSSION

This section presents the descriptive statistics for both cross-sectional and panel data, which are used to define the long-term and short-to-medium-term relationship, respectively (table 3). Migration data for Africa from CEPII (2023) produced 33 datasets for bilateral migration between African countries over the 7 periods mentioned above, defining the number of observations expressed in the table. Hence, while there are 33 observations for cross-sectional data, panel data has 231 observations (33 times 7).

On average, about 68,000 people migrate annually from one African country to another, ranging from 5 people migrating between Angola and Cote D'Ivoire in 1990 to about 1.4 million people migrating between Cote D'Ivoire and Burkina Faso in 2020. The average youth unemployment in Africa between 1990 and 2020 is 14.49 percent and the average total unemployment is 7.44 percent. Also, female youth unemployment in Africa is higher (15.35 percent) than male youth unemployment (14.03 percent). The minimum and maximum values of the business cycle suggest that output in Africa rose higher than its potential on average between 1990 and 2020. Bank credit to the private sector was about 13.5 million, while the share of labour compensation in GDP was about 0.516. Destination countries are higher in terms of size and GDP per capita than origin countries. The shortest distance between two African countries with official bilateral migration is 109 kilometres (between Benin and Nigeria), and the longest is 4,831 kilometres (between Angola and Cape Verde). Landlocked, colony, contingency, language, currency, and RTA are dummy variables; hence, they have only binary values, 0 and 1.

Table 4 presents the results of the gravity model for migration using PPML, as well as the ordinary least squares (OLS) result for robustness. There is also the result from cross-sectional and panel regressions to ascertain the long run and short- to medium-term relationships between intra-African migration and its determinants. Particularly, income per capita for both origin and destination countries influences intra-African migration, with the effect diminishing over the short- to long-term periods. The signs of the coefficient of the origin and destination countries' per capita income suggest that lower per capita income in the home country and higher per capita income in the destination country tend to increase bilateral migration among African countries. In addition,

there is a short- to medium- and long-term positive and statistically significant relationship between migration and the size of the destination countries. This suggests that an increase in the size of destination countries increases intra-African migration consistently from the short to the long run, while the increase in the population size of the origin countries reduces intra-African migration in the short run but has no significant impact in the long run. This may be justified as African migrants will want to migrate as a family, and an increase in population and family size will discourage migration.

Table 3: Descriptive Statistics

	Cross-sectional data					Panel data				
Variable	**Mean**	**Std. dev.**	**Min**	**Max**	**N**	**Mean**	**Std. dev.**	**Min**	**Max**	**N**
Migr	68,405.7	217,956.1	9.57	1,203,965.1	33	68,405.7	218,734.1	5.0	1,400,000	231
UnempT	7.44	6.42	1.30	20.47	33	7.44	6.49	0.83	22.52	231
YUempyT	14.49	13.22	2.38	47.32	33	14.49	13.31	0.99	52.24	231
YUnempF	15.35	15.07	2.35	63.04	33	15.35	15.19	0.63	71.65	231
YUnempM	14.03	12.45	2.30	39.98	33	14.03	12.56	1.23	43.57	231
Buscyc	0	4.59	-2.58	14.06	33	0	4.53	-2.94	14.54	231
CPI	88.08	12.55	42.21	118.16	33	88.08	63.19	0.00	464.14	231
CreditPSB	13.58	6.76	2.98	40.71	33	13.58	9.37	0.64	67.87	231
LabCom	0.51	0.15	0.20	0.81	33	0.52	0.15	0.16	0.81	231
Gdpcap_o	0.96	0.51	0.32	1.90	33	0.96	0.81	0.13	4.22	231
Gdpcap_d	1.53	1.87	0.32	8.42	33	1.54	2.04	0.13	12.37	231
Size_o	0.96	0.51	0.32	1.90	33	0.96	0.81	0.13	4.21	231
Size_d	1.53	1.87	0.32	8.42	33	1.54	2.04	0.13	12.37	231
Dist	1,344.38	1,071.2	110.7	4,831	33	1,344.4	1,057.6	109.0	4,831	231
Landlocked	0.12	0.33	0	1	33	0.12	0.32	0	1	231
Colony	0.48	0.51	0	1	33	0.48	0.50	0	1	231
Contig	0.45	0.51	0	1	33	0.46	0.49	0	1	231
Lang	0.57	0.50	0	1	33	0.57	0.49	0	1	231
Cur	0.54	0.51	0	1	33	0.54	0.49	0	1	231
RTA	0.61	0.49	0	1	33	0.61	0.49	0	1	231

Source: Authors' elaboration.

The results show that distance between two African countries and particular specificities such as being landlocked, speaking a common language, or sharing the same border does not significantly impact bilateral migration. However, using common currency and belonging to the same RTA has a short- to medium-term significant impact on intra-African migration. While the negative sign of currency suggests that common currency will reduce bilateral migration in Africa, a positive sign of RTA suggests that belonging to the same RTA will increase intra-African migration. This implies that the AfCFTA could potentially increase intra-African migration. The outcome of the second

stage of analysis demonstrates that, whether this increase is trade-induced or not, migration will lead to a reduction in youth and overall unemployment.

Table 5 presents the results of the effect of migration and other relevant factors on youth unemployment and total unemployment using a 2SLS estimator. This meets the first and the second objectives of this study, which are to determine the effect of migration on youth unemployment and compare the effect of migration on youth unemployment with total unemployment. The study presents the cross-sectional and panel regression results to determine the long run and short- to medium-term effects, respectively. The results show a negative and statistically significant relationship between migration and youth unemployment, suggesting that the higher the migration, the lower the youth unemployment in Africa. Considering the relative size of the short- to medium-term and long-term coefficients in the panel and cross-sectional regression results, respectively, the outcomes suggest that the effect of migration on youth unemployment tends to increase over time.

The result is like the observation under the migration-total unemployment nexus. In this situation, the effect of migration on total unemployment in Africa is negative and statistically significant in the short to medium term and long-term, with the coefficient being lower under the panel regression (0.0778) than under the cross-sectional regression (0.214), suggesting that the effect of migration on youth unemployment tends to increase over time. This implies that with the implementation of AfCFTA and encouragement of intra-African migration, youth unemployment and overall unemployment in Africa will reduce over time. Meanwhile, the magnitude of the coefficient of total unemployment is consistently higher than that of youth unemployment under the panel and cross-sectional regression, suggesting that total unemployment reduces faster than youth unemployment. This implies that adults and experienced labour will benefit more from the employment opportunities created by the AfCFTA agreement than the youth.

Further results explain the effect of other determinants on youth unemployment. For instance, there is evidence that Africa suffers from cyclical unemployment, which affects youth and overall unemployment. The business cycle's negative and statistically significant effect on youth and overall unemployment shows that youth and total unemployment reduce when output is higher than expected and increase when output is lower due to economic uncertainties. This tends to confirm the results of Ogbonna et al. (2023), which expressed that higher output reduces youth unemployment in Africa.

Further result shows that inflation has a statistically significant positive effect on youth and overall unemployment in Africa. This suggests that low output demand due to high inflation is another source of youth and unemployment in Africa. However, while the effect of inflation on total unemployment is not statistically significant in the long run, it is significant in both the short-to-medium and long-term for youth unemployment. This implies that youths mostly suffer

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unemployment as the African economy adjusts to structural economic imbalances due to excess supply and demand deficiency. This appears to contradict the results by Ogbonna et al. (2023), which expressed a negative relationship between the inflation rate and youth unemployment in Africa.

Table 4: Results of Gravity Model for Migration

Variable	Cross-sectional regression		Panel regression	
	OLS	PPML	OLS	PPML
LnGDPPC_o	1.036	0.121*	0.827***	0.101***
	(0.933)	(0.0701)	(0.252)	(0.0265)
LnGDPPC_d	-1.362*	-0.158**	-0.963***	-0.113***
	(0.660)	(0.0625)	(0.185)	(0.0218)
LnSize_o	-1.306	-0.159	-1.059**	-0.127***
	(1.309)	(0.126)	(0.429)	(0.0488)
LnSize_d	0.597	0.0714**	0.477***	0.0578***
	(0.365)	(0.0335)	(0.118)	(0.0147)
LnDist	-0.0343	-0.00563	-0.0227	-0.00989
	(0.904)	(0.0804)	(0.302)	(0.0326)
Landlock	-0.643	-0.0756	-0.142	-0.0204
	(1.595)	(0.158)	(0.523)	(0.0577)
Colony	1.839	0.247	1.547**	0.223*
	(1.874)	(0.308)	(0.623)	(0.122)
Contig	0.627	0.0654	0.694*	0.0752
	(1.182)	(0.117)	(0.396)	(0.0459)
Lang	0.945	0.0948	1.050*	0.104
	(1.633)	(0.259)	(0.549)	(0.104)
Cur	-1.452	-0.183	-1.179**	-0.151**
	(1.564)	(0.159)	(0.467)	(0.0640)
RTA	0.0922	0.00676	0.836**	0.0977**
	(1.138)	(0.0871)	(0.378)	(0.0397)
Constant	14.35	2.878**	-114.3***	-12.08**
	(14.19)	(1.208)	(42.34)	(4.892)
Observations	33	33	231	231
R-squared	0.520	0.524	0.490	0.495
Country_d effect	Yes	Yes	Yes	Yes
Year effect	No	No	Yes	Yes
F-test	1.805		16.02	
Prob > F	0.117		0.000	
LogL	-63.95	-71.60	-471.4	-510.3

Source: Authors' elaboration

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Total and Youth Unemployment

Variables	Cross-sectional regression		Panel regression	
	UnempT	YUnempT	UnempT	YUnempT
Migration	-0.214***	-0.202**	-0.0778***	-0.0591***
	(0.0779)	(0.0789)	(0.0208)	(0.0227)
Buscyc	-0.0866***	-0.0867***	-0.0735***	-0.0698***
	(0.0253)	(0.0256)	(0.0104)	(0.0113)
Inflation	1.025	1.689**	0.0681***	0.0708***
	(0.818)	(0.828)	(0.0226)	(0.0247)
CreditPSB	-0.173	-0.398	-0.0669	-0.0491
	(0.350)	(0.354)	(0.0785)	(0.0858)
LabComp	-0.0756	0.242	-0.299**	-0.192
	(0.444)	(0.450)	(0.146)	(0.160)
RTA	-0.00712	-0.0693	-0.237**	-0.314***
	(0.268)	(0.272)	(0.107)	(0.116)
Cur	-0.749**	-0.970***	-0.796***	-1.058***
	(0.292)	(0.296)	(0.126)	(0.138)
Lang	0.887**	1.053***	0.660***	0.714***
	(0.358)	(0.362)	(0.139)	(0.152)
Contig	0.285	0.318	0.182*	0.230**
	(0.239)	(0.242)	(0.0972)	(0.106)
Constant	-0.868	-2.482	2.100***	2.722***
	(3.199)	(3.241)	(0.265)	(0.289)
Observations	33	33	198	198
R-squared	0.465	0.511	0.470	0.465
Country_d effect	Yes	Yes	Yes	Yes
Year effect	No	No	No	No

Source: Authors' elaboration

Notes: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

In addition, the results indicate a negative relationship between labour compensation and youth unemployment in short-to-medium-term periods, suggesting that the higher the labour compensation, the lower the youth unemployment rate, which implies that labour is sensitive to wage changes. However, this effect is significant for total unemployment but not youth unemployment, implying that while experienced labour re-enter the workforce when the wage rate is considered reasonable, youth—in their desperation to find work—accept employment without considering the rate. To protect youth from exploitation by unscrupulous employers, it is important to set a common minimum wage under AfCFTA and review it from time to time.

As RTAs and currency have negative and statistically significant impacts on youth and overall unemployment in Africa, it is important to stabilize through trade integration and common

currency policies. However, while this result holds from short-to-medium to long-term periods for currency, it only holds in short-to-medium periods for RTA. This suggests that the potential of higher trade integration to reduce youth and overall unemployment in Africa decreases over time, while the potential of the common currency is consistent. Common language and common border are other significant factors influencing youth and overall unemployment in Africa.

Table 6: Total and Youth Unemployment (Female and Male)

VARIABLES	Cross-sectional regression		Panel regression	
	YUnempF	YUnempM	YUnempF	YUnempM
Migration	-0.216***	-0.191**	-0.0604**	-0.0577***
	(0.0837)	(0.0766)	(0.0246)	(0.0223)
Buscyc	-0.0900***	-0.0861***	-0.0772***	-0.0695***
	(0.0272)	(0.0249)	(0.0122)	(0.0111)
Inflation	1.868**	1.529*	0.0785***	0.0633***
	(0.878)	(0.805)	(0.0267)	(0.0243)
CreditPSB	-0.322	-0.452	0.0327	-0.116
	(0.376)	(0.344)	(0.0928)	(0.0843)
LabComp	0.198	0.284	-0.311*	-0.0836
	(0.477)	(0.437)	(0.173)	(0.157)
RTA	-0.0176	-0.118	-0.284**	-0.350***
	(0.288)	(0.264)	(0.126)	(0.114)
Cur	-0.965***	-0.985***	-1.041***	-1.087***
	(0.314)	(0.287)	(0.149)	(0.135)
Lang	1.054***	1.050***	0.701***	0.726***
	(0.384)	(0.352)	(0.164)	(0.149)
Contig	0.306	0.333	0.187	0.269***
	(0.256)	(0.235)	(0.115)	(0.104)
Constant	-3.385	-1.682	2.436***	2.968***
	(3.436)	(3.149)	(0.313)	(0.284)
Observations	33	33	198	198
R-squared	0.490	0.528	0.453	0.473
Country_d effect	Yes	Yes	Yes	Yes
Year effect	No	No	No	No

Source: Authors' elaboration

Notes: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Another objective of this study is to examine the variation in male and female youth unemployment responses to common underlying determinants (table 6). The results confirm that migration has a negative relationship with youth or overall unemployment, as a negative relationship exists between migration and male or female youth unemployment in the short-to-medium and long term. However, it further shows, considering the magnitudes of female and male responses to migration change, that migration has higher impacts on female than male youth unemployment, both in the short-to-medium term (as indicated by the panel results) and in the long term (as indicated by the cross-sectional results). While increasing intra-African migration will reduce both male and female youth unemployment, the reduction will be greater for females. This implies that more female youth migrate within Africa than male youth.

The result for the business cycle is also consistent with the main result, implying its robustness. Specifically, the business cycle negatively impacts both male and female youth unemployment under the panel and cross-sectional regression. This shows that positive productivity shock or higher productivity than expected reduces both male and female youth unemployment in short-to-medium and long-term periods. As for migration, however, the magnitude of the business cycle effect on female youth unemployment is higher than that of male youth unemployment. This suggests that higher productivity shock, as may be triggered with the AfCFTA implementation, will reduce female youth unemployment more than it will for their male counterpart. More so, inflation positively affects both male and female youth unemployment. Similarly, female youth unemployment appears to reduce more with inflation than male youth unemployment.

Labour compensation is largely insignificant for male youth unemployment in the short-to-medium and long term; however, it is still of some weak significance in the short-to-medium term for male youth unemployment. This suggests that money tends to attract more female youth to work than male. Bank credit to the private sector remains insignificant, as under the total youth and overall unemployment analysis. The results on gravity-related variables are robust as the results are largely like evidence from the total youth and overall unemployment in Africa earlier discussed. RTA and currency negatively and statistically significantly impact male and female unemployment in Africa, which implies that adopting trade integration and common currency reduces male and female youth unemployment. However, while this result holds from short-to-medium to long-term periods for currency, it only holds in short-to-medium periods for RTAs.

In addition, the response of male and female youth unemployment to changes in currency is almost symmetric, suggesting that male and female youth unemployment respond similarly to the use of common currency in Africa. The effect of RTA is also negative and significant, particularly in the short-to-medium-term period. The response of male youth unemployment is, however, higher than that of female youth unemployment, suggesting that male youth tend to gain more employment than female youth from RTA. This would imply that implementing the AfCFTA would generate more employment for male youth than female youth and that a common language significantly

affects both. This is like the result of contingency in the short-to-medium term period (in panel regression result). Hence, a common language and common border tend to increase male and female youth unemployment in Africa, as these factors make countries seemingly homogeneous, limiting the employment potential of firms interested in maintaining diversity.

6.1 CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Africa is endowed with ample human and material resources spread across different regions, but obstacles around trading and interaction among countries have hindered the efficient utilisation of these resources for the common benefit of its people. Evidence from Europe has shown that regional economic integration can facilitate overall regional economic development.[5] Considering this, the AU established the AfCFTA by an agreement adopted in March 2018. Its first objective is to create a single market for goods and services facilitated by the movement of people, to deepen economic integration. Youth unemployment is an endemic problem and has exposed African countries to various socio-economic and political vices. While many studies have examined the potential of certain factors to solve this problem, they have paid limited attention to migration. Thus, there are limited studies on the potential effect of intra-African migration on youth unemployment, although this migration could enhance skill transfers, increase labour market access, and reduce frictional unemployment through expansion in the market for productive activities.

To fill the gap, this study investigates these effects and draws empirical implications for the newly implemented AfCFTA. To do so, first, it compares variations in total and youth unemployment response to intra-African migration, allowing for a deeper understanding of the dynamics between youth and adult employment/unemployment in the labour market. Second, it compares variations in the response of male and female youth unemployment to intra-African migration, helping to determine whether AfCFTA and the enhanced migration it portends would potentially provide more employment to females than males, or vice versa. Third, the study employs a two-level approach involving the estimation of (i) the gravity model for migration determinants using PPML techniques, which is efficient in dealing with the possible presence of zeros, and (ii) the unemployment models using a TSLS approach, which is efficient in dealing with endogeneity bias. Migration data from CEPII (2023) produced 33 datasets for bilateral migration between African countries for each five years starting in 1990: 1990, 1995, 2000, 2005, 2010, 2015, and 2020.

The preliminary analysis reveals that youth unemployment in Africa is consistently higher than the world average; in Sub-Saharan Africa, it only becomes higher after 2014. It further shows that more than 75 percent of countries had less than 100 per thousand population migrating within Africa, implying that there are only about 10 percent of intra-African migrations. This is expected to increase with the full implementation of AfCFTA and cause a reduction in youth and overall

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[5] Relevant groups are the European Free Trade Area and the European Economic Area. These arrangements have benefitted their members, although the number of members has fluctuated from time to time.

unemployment in Africa. The empirical results of this study are divided into two: (i) determinants of migration and (ii) impact of migration and other relevant factors on youth unemployment. On the one hand, income per capita and size for both origin and destination countries influence intra-African migration. Also, distance between two African countries and particular specificities such as being landlocked, speaking a common language, or sharing the same border do not significantly impact bilateral migration within Africa. However, using common currency and belonging to the same regional trade area has a short-to-medium-term significant impact on intra-African migration, implying that the AfCFTA can have a significant impact.

On the other hand, the results show a negative and statistically significant relationship between migration and youth and overall unemployment, suggesting that the higher the migration, the lower the youth unemployment in Africa. Considering the size of the coefficients, total unemployment tends to reduce faster than youth unemployment, implying that adults and experienced labour will benefit more from the employment opportunities created by the AfCFTA agreement than the youth. Further results reveal that the business cycle has a negative and statistically significant effect on youth and overall unemployment, showing that both reduce when output is higher than expected and increase when output is lower than expected due to economic uncertainties. This suggests there is evidence of cyclical unemployment in Africa.

Moreover, inflation on the continent has a statistically significant positive effect on youth unemployment and overall unemployment. However, while the result shows that the effect of inflation on total unemployment is not statistically significant in the long run, it is significant in both the short-to-medium and long term for youth unemployment. This implies that youths mostly suffer unemployment as the African economy adjusts to structural economic imbalances due to excess supply and demand deficiency. There is also evidence of a negative relationship between labour compensation and youth unemployment in short-to-medium-term periods. However, while this effect is significant for total unemployment, it is not for youth unemployment. This may suggest that while experienced labour re-enter the workforce when the wage rate is reasonable, youth often accept jobs without due consideration of wage rate out of desperation. It is important to set a common minimum wage under AfCFTA and review it from time to time to protect youth from exploitation.

On the distinction between female and male youth unemployment, the result shows evidence that migration has a higher impact on females than males, both in the short-to-medium term (as indicated by the panel results) and in the long term (as indicated by the cross-sectional results). This shows that while increasing intra-African migration will reduce both male and female youth unemployment, the reduction will be greater for females. Also, the business cycle has a negative significant impact on both male and female youth unemployment. As for migration, however, the magnitude of the business cycle effect on female youth unemployment is higher than that of their

male counterparts, suggesting that a higher productivity shock in Africa induce female than male unemployment.

Meanwhile, the effect of an RTA is negative and significant, particularly in the short-to-medium-term period. The response of male youth unemployment to an RTA is, however, higher than that of female youth unemployment, suggesting that male youth gain more employment than female youth from this type of agreement. This would imply that implementing AfCFTA would generate more employment for male youth than female youth. Based on these findings, the AfCFTA member nations are encouraged to fully adapt to regulations on free mobility of people within Africa.

According, the AfCFTA can potentially increase intra-African migration.
a) Migration induced by AfCFTA would reduce youth unemployment in Africa.
b) Intra-African migration tends to reduce female youth unemployment than male youth unemployment.
c) Common minimum wage under AfCFTA needs to be set and reviewed from time to time to protect youth from exploitation due to market imperfections.
d) AfCFTA would generate employment for both male and female youth.

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Appendix I: Definition and Measurement of Variables

Variable	Description	Source
Migr	Bilateral migrant stock among African countries	United Nations Global Migration Database
uempT	Unemployment total (percent of the total labour force) (modelled ILO estimate)	WDI (2023)
YUempT	Unemployment youth total (percent of the total labour force ages 15–24) (modelled ILO estimate)	WDI (2023)
YUempF	Unemployment, youth female (percent of the female labour force ages 15–24) (modelled ILO estimate)	WDI (2023)
YUempM	Unemployment, youth male (percent of male labour force ages 15–24) (modelled ILO estimate)	WDI (2023)
YPC	GDP per capita of the destination country in constant 2010 US$.	WDI (2023)
Size	Measured by population	WDI (2023)
BCyc	Business cycle data is computed as the deviation of GDP in purchasing power parity from its potential using the HP filter approach.	PWT (10.01)
CPI	Consumer Price Index (2010 = 100)	WDI (2023)
CreditPSB	Credit to private sector by banks	WDI (2023)
LabCom	Share of labour compensation in GDP at current national prices	PWT (10.01)
Llock	Dummy variable = 1 if country i or country j is(are) landlock and zero otherwise	CEPII database
Colony	Dummy variable = 1 if country i and country j have a common colonial history and zero; otherwise	CEPII database
Language	Dummy variable = 1 if country i and country j have the same official language and zero otherwise	CEPII database
Currency	Dummy variable = 1 if country i and country j have common currency and zero otherwise	CEPII database
Time	Dummy variable = 1 if country i and country j are in the same time zone and zero otherwise	CEPII database

Colony	Dummy variable = 1 if country i and country j have a common colonial master and zero otherwise	CEPII database
Contiguity	Dummy variable = 1 if country i and country j share a common border and zero otherwise	CEPII database
Distance	Physical distance in kilometers between the main city in country i and the main city in country j	CEPII database
ECOWAS membership when both reporter and partner are members	Dummy variable = 1 if country i and country j are both members of ECOWAS and zero otherwise	CEPII database
COMESA membership when both trading countries are members	Dummy variable = 1 if country i and country j are both members of COMESA and zero otherwise	CEPII database
EAC membership when both trading countries are members	Dummy variable = 1 if country i and country j are both members of EAC and zero otherwise	CEPII database
SADC membership when both trading countries are members	Dummy variable = 1 if country i and country j are both members of SADC and zero otherwise	CEPII database