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Auteurs

Hammed Adededji Adetokunbo, Blaise Gnimassoun, Anthony Simpasa

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jaoulgrammare@beta-cnrs.unistra.fr

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Intra-African immigration and Africa's external performance

Hammed Adededji Adetokunbo*, Blaise Gnimassoun†, Anthony Simpasa‡

Abstract

Contrary to popular belief, the majority of Africans who leave their country remain in Africa and contribute to shaping the economic performance of the continent. This paper investigates the effects of intra-African immigration on the current account in African countries over the past thirty years. To this end, we use a panel data approach and a gravity-based 2SLS estimation strategy to overcome the potential endogeneity bias. We find that intra-African immigration has a positive, strong and robust impact on the current account of African countries. In particular, intra-African immigration contributes to significantly improve the trade balance of African countries, including inside and outside the continent. Further investigations reveal that the strengthening of intra-African trade or the reduction of trade extroversion as well as the demographic vitality favoured by intra-African immigration are the mechanisms behind these results. Thus, full implementation of the African Union protocol on free movement of people between countries can deepen regional integration and help reduce structural current account deficits that countries face.

Keywords: international migration, current account, trade, Africa.
JEL classification: F14, F22, F32, O55.

*Africa Development Bank, Avenue Jean-Paul II, 01 BP 1387, Abidjan 01, Côte d'Ivoire, Email: h.amusa@afdb.org

†University of Lorraine, University of Strasbourg, BETA, CNRS, 67000, Strasbourg, France, Email: blaise.gnimassoun@univ-lorraine.fr

‡Africa Development Bank, Avenue Jean-Paul II, 01 BP 1387, Abidjan 01, Côte d'Ivoire, Email: a.simpasa@afdb.org

1 Introduction

International migration has been the focus of several studies in international macroeconomics in recent decades. Interest in this issue is linked to the significant increase in global migration, which rose by 83% between 1990 and 2020.[1] For Africa, international migration has doubled over the same period, with more than 40 million Africans now living outside their country of origin, 52% of whom reside within Africa. These intra- and extra-continental migrations have been the subject of several recent studies in political science and international macroeconomics.

Political science research mainly focuses on the factors that shape African migration dynamics (Flahaux & De Haas, 2016; Nshimbi & Moyo, 2017; Ani, Oyeweso, & Olawale, 2023), as well as on the reception conditions of migrants in destination countries (Harris et al., 2018; Gordon et al., 2020; Mutanda, 2022). Although studies on African migration dynamics provide a comprehensive view of the fundamentals behind intra-African migration, they often lack empirical foundations. On the other hand, studies on migrant reception provide valuable empirical evidence but tend to be country-focused, mainly on South Africa,[2] offering a less comprehensive view of the region as a whole.

The literature in international economics on African migration offers a more global perspective with a larger empirical dimension but mainly focuses on the consequences of emigration outside the continent. This literature documents the effects of African emigration from the perspective of brain drain (Clemens, 2007; Bhargava & Docquier, 2008; Coulibaly & Gnimassoun, 2024), or, conversely, brain gains (Gnimassoun & Anyanwu, 2019; Coulibaly & Omgba, 2021), or even remittances from migrants to their country of origin (Anyanwu & Erhijakpor, 2010; Singh, Haacker, Lee, & Le Goff, 2010; Konte, 2016).

However, macroeconomic studies on the impact of intra-African migration are fewer. Moreover, the link between intra-African migration and the external performance of African countries remains a gap in the literature, although the relationship between migration and trade is well documented in international economics (see for example, Hatzigeorgiou & Lodefalk, 2015). Indeed, intra-African migration can influence the external performance of African countries through several channels, including labour productivity, trade, and demographics (see section 2). For instance, Coulibaly, Gnimassoun, and Mignon (2020) show that migration improves the current accounts of destination countries, particularly in developing countries. Conversely, Coulibaly and Gnimassoun (2024) find that emigration from Africa, particularly the emigration of skilled labour, has a negative impact on the external balance of African countries due to a reduction in national savings that are not fully compensated by remittances. In a more recent study, Gnimassoun (2025) shows that intra-African immigration improves labour productivity in Africa.

This paper contributes to the literature on intra-African migration by studying the effects of intra-African immigration on the external performance of African countries,

[1] United Nations Department of Economic and Social Affairs, Population Division (2020). International Migrant Stock 2020.

[2] South Africa is the second largest host country for African migrants after Côte d'Ivoire and has been the scene of several anti-immigrant hostilities in recent decades.

with a particular focus on both intra-African and extra-African trade performances. Our paper contributes to the literature in several ways. First, it enhances our understanding of the structural current account deficits that characterize many African countries. Second, by examining the influence of intra-African immigration on the degree of trade extroversion in African countries, it provides insight into the role that regional migration plays in the African integration process. Finally, our paper explores the demographic dependency channel to explain the impact of intra-African immigration on the current account of African countries.

Empirically, we rely on a panel of non-overlapping 5-year average data covering 52 African countries over the period 1990-2019. Since immigration and the current account are likely to be influenced by the quality of institutions, which are difficult to capture through a single variable, we use the instrumental variables method to deal with potential endogeneity bias. More precisely, we resort to the gravity-based 2SLS strategy. The results show that intra-African immigration has a positive, significant and robust impact on the current account of African countries. In particular, intra-African immigration significantly contributes to improving the trade balance of African countries, both inside and outside the continent. By examining the underlying mechanisms, the results show that intra-African immigration promotes intra-African trade and improves the demographic vitality of host countries.

The rest of the paper is presented as follows. Section 2 sets out the relevance of the study and the analytical framework. The empirical methodology as well as the data are described in Section 3. Section 4 presents and discusses the empirical results. Additional investigations as well as sensitivity tests are provided in Section 5. Finally, section 6 concludes the paper.

2 Rationale and analytical framework

Many African countries with the exception of oil-producing countries, face structural current account deficits due to export of raw materials against importation of more expensive manufactured goods. This situation is aggravated by Africans' emigration outside the continent, which tends to reduce long-run national savings potential, especially where such migration involves the most skilled professionals (Coulibaly & Gnimassoun, 2024).

As a pillar of regional integration, intra-African immigration can enhance intra-African trade and reduce the exposure of African countries to external shocks. Several mechanisms could explain such a relationship. These include, inter alia, improvements in labour productivity and trade balance as well as stability of remittance flows. Since intra-African migration accounts for larger share of African migrants and mainly concerns active populations, it could contribute to the rejuvenation of the population of immigration countries in Africa and be a source of improved labour productivity (see Gnimassoun, 2025). Higher labour productivity could improve quality and competitiveness of export products from migrant receiving countries. This will in turn could contribute to increased exports within Africa and with the rest of the world and *ceteris paribus*, translate in improved trade balance.

Intra-Africa migration can also change the demographic profile of host countries. This has implications on level of national savings. According to the life-cycle theory, countries with a relatively larger economically dependent population (mainly young and old) should have higher national consumption and lower national savings, leading to a deterioration in the current account. By reducing the dependency ratio of the population, immigration contributes to improving national savings and the external balance (see Coulibaly et al., 2020). This mechanism could also work for intra-African immigration.

The analytical framework on the medium-term determinants of the current accounts is broader and relatively marked out. In particular, the empirical framework proposed by Chinn and Prasad (2003) is widely used with some marginal variations (see among others Gruber & Kamin, 2007; Lane & Milesi-Ferretti, 2012; Jin, 2012; Bhargava & Docquier, 2008; Coulibaly et al., 2020; Koomen & Wicht, 2022; Ascione & Schnetzer, 2022). Thus, in addition to immigration induced changes in the demographic structure, the dynamics of the current account is determined by other fundamental factors such as fiscal balance, net foreign assets, changes in terms of trade, level of financial development, economic growth rate, level of economic development and degree of openness to capital. The theoretical links between these fundamentals and the dynamics of the current account are well known in the literature.

For example, the assumption of twin deficits and the deviation from Ricardian equivalence explain the inclusion of the government budget balance in the dynamics of the current account. Indeed, in a world that moves away from the Ricardian equivalence, fiscal deficits are associated with deteriorations in the external balance, as in the finite horizon model of Blanchard (1985) Blanchard (1985), since the variations in private savings do not compensate for the increase in public debt (see Lane & Milesi-Ferretti, 2001).

Intertemporally, no cross-country relationship should exist between the current account and the stock of net foreign assets (NFA) in the long run. However, such a relationship is expected during the process of development of economies insofar as current account balances are perpetually non-zero. Indeed, for countries in equilibrium, the current account should theoretically be zero because interest payments on the NFA are supposed to offset the trade balance (Chinn & Prasad, 2003). Otherwise, countries experiencing an improvement in their holdings of foreign assets receive more income from foreign direct investment, which leads to an improvement in its current account.

Changes in the terms of trade are important for dynamics of the current account only because they capture the effects of changes in the prices of goods and services on world markets (Lane & Milesi-Ferretti, 2012). All things being equal, an improvement in the terms of trade should lead to an improvement in the current account.

The depth and sophistication of the financial system also determines the current account but the direction of the relationship between financial development and current account is a priori hypothetical (Chinn & Prasad, 2003; Chinn & Ito, 2007). Indeed, a developed financial system could be conducive to the mobilization of national savings and thus improve the current account. However, it could also reflect

lower borrowing constraints which should encourage investment (or reduce savings), resulting in a deterioration of the current account.

The rate of economic growth and income per capita also determine the dynamics of the current account. These indicators capture the strength of the convergence factors and the process of convergence of the countries. In their process of economic development, countries have a greater need for investment, mainly financed by external loans due to a dearth of domestic savings (Obstfeld & Rogoff, 1995). Thus, the less developed economies should improve their external balance as they develop. Higher GDP growth rate should therefore lower the current account while a higher per capita income level should improve it (Lane & Milesi-Ferretti, 2012).

In addition to demographic, macroeconomic and financial factors, the orientation of macroeconomic policies in terms of openness of the economy to the rest of the world could be crucial in determining the current account. In particular, the degree of openness to trade and capital controls reflects the choices of macroeconomic policies, including tariffs, which could influence the dynamics of the current account in the medium term. For example, a country's capacity to service its external debt could be reflected in its degree of openness to trade and its ability to generate foreign exchange earnings through exports. Moreover, while openness to foreign capital is often perceived as a positive indicator of a country's ability to manage its external balance, capital controls could indicate country's desire to prevent capital flight, particularly during period of heightened uncertainty or record of persistent current account deficits (Chinn & Prasad, 2003).

3 Methodology

3.1 Econometric model

Our econometric model is based on the analytical framework presented in Section 2 and mainly aims to study the impact of intra-African immigration on the current account of African countries. To this end, we consider the following panel data specification:

$$CA_{i,t} = \alpha + \rho IM^{Af}_{i,t-1} + \sum_{l} \delta_l Z^l_{i,t} + \theta_t + \vartheta r + \varepsilon_{i,t} \tag{1}$$

where i and t are the country and period indices, respectively. CA denotes the current account balance (expressed as a ratio to GDP). IM^{Af}, our explanatory variable of interest, is the intra-African immigration rate which, for a given African country, measures the stock of African immigrants as a percentage of the country's population. A lag of one period (5 years) is observed to consider the time needed (installation, adaptation, etc.) for migrants to be fully operational. Z^l are the control variables chosen based on evidence in the literature as stated in the analytical framework presented in Section 2. They include the relative fiscal balance as a percentage of GDP, the relative youth and age dependency ratios, the relative economic growth rate, the relative per capita income (indicator of the level of de-

velopment), the lagged net foreign assets as a percentage of GDP, a measure of the level of financial development, the change in the terms of trade, a measure of the level of openness to capital and a dummy variable for oil-producing countries.[3] θ_t is the time fixed effect (Time FE), ϑr is the region fixed effect (Region FE) and ε represents the error term.

Although country EFs are usually included in regressions of cross-country panel analysis to deal with unobserved heterogeneity, we estimate Equation 1 by pooled ordinary least squares (POLS) without including the country fixed effect in line with the literature (Chinn & Prasad, 2003; Lane & Milesi-Ferretti, 2012; Coulibaly et al., 2020). Indeed, the inclusion of country fixed effects is counterproductive in the analysis aimed at understanding the variation of current accounts in a context of panel data insofar as it removes economically significant parts of the analysis (Chinn and Prasad, 2003). In analyses such as the one conducted in this paper where country differences matter, the use of the POLS estimator rather than the FE estimator is strongly recommended. However, to control for some degree of heterogeneity, period and region fixed effects are alternatively or jointly included in complementary regressions.

3.2 Endogeneity and inclusion/exclusion restrictions

By estimating Equation (1) by OLS as is quite common in the literature (Lane & Milesi-Ferretti, 2012; Chinn, Eichengreen, & Ito, 2014; Koomen & Wicht, 2022), we are not immune to a possible endogeneity problem given the focus of our paper, namely, assessing impact of intra-African immigration on the current account of African countries. In particular, it cannot be ruled out that there is a potential simultaneity bias between intra-African immigration and the current account balance. Indeed, a country with good institutions (good governance) could be the destination of more foreign capital and international migrants. Given the difficulty of capturing different aspects of institutional quality through a single variable, it is likely that OLS regressions are subject to omitted variable bias. To overcome this potential endogeneity problem, we rely on the instrumental variables approach. In particular, we use the empirical two-step least squares (2SLS) strategy based on a gravity model. Originally developed by Frankel and Romer (1999) to identify the causal effect of international trade on income, this approach has recently been used in the literature on international migration with robust results (Ortega & Peri, 2014; Alesina, Harnoss, & Rapoport, 2016; Docquier, Lodigiani, Rapoport, & Schiff, 2016; Coulibaly et al., 2020; Coulibaly & Gnimassoun, 2024).

The gravity-based 2SLS approach consists of constructing an exogenous prediction of intra-African immigration from a pseudo-gravity regression in the first stage and using it as an instrument in the main equation in the second stage. Using a panel data approach with time-varying cross-country migrations, we consider the following pseudo-gravity model:

[3]Some variables are taken in relative terms in line with the literature (see for example Lane and Milesi-Ferretti, 2012) given the overall openness framework underlying the external balance. Thus, a relative variable Z for a given country i is calculated as the difference between Z_i and the weighted average of Z for its trading partners j, i.e. $Z_{i,rel} = Z_i - \sum_{j=1}^{N} \vartheta_j Z_j$, with N the total number of trading partners, ϑ_j the weight of partner j in the trade of country i and $\sum \vartheta_j = 1$.

$$IM_{ij,t}^{Af} = \beta_0 + \beta_1 IM_{ij,1960}^{Af} + \beta_2 lnDist_{ij} + \beta_3 Border_{ij} + \beta_4 ComL_{ij} + \beta_5 lnPOP_{j,t} + \beta_6 Conflict_{j,t} + \beta_7 CrDF_{j,t} + \beta_8 Tattack_{j,t} + \varphi_t + \lambda r + \mu_{ij,t} \quad (2)$$

where the dependent variable is $IM_(ij,t)^A f$, the bilateral immigration rate, i.e., the cumulative stock of migrants in country i from country j as a share of the population of country i. We distinguish two categories of explanatory variables in this model.

The first category includes the bilateral immigration rate in 1960 ($IM_(ij,1960)^{Af}$), the weighted distance ($Dist_ij$) between the country of origin j and the country of destination i based on bilateral distances between the largest cities of the two countries, the sharing of a common border ($Border_ij$) captured by a dummy variable coded 1 when there is a common border between the two countries and the sharing of a common language ($ComL_ij$) taken into account through a dummy variable coded 1 when the two countries have at least 9% of their population speaking the same language. In this category of variables, the focus is on the bilateral variables that influence the bilateral immigration rate. Indeed, the bilateral immigration rate in 1960 (beginning of independence) is used to capture the attraction exerted by former migrants on contemporaries (diaspora network effect). The natural facilities associated with immigration between African countries are captured by geographic (distance and sharing a common border) and linguistic (sharing a common language) proximities. Note that all the variables in this category are time invariant.

The second category is composed of time-varying variables that are relative only to the country of origin whose interest is to reinforce the exclusion restriction condition. The variables likely to influence the bilateral immigration rate include the population of the country of origin ($Pop_(j,t)$), conflicts and wars in country of origin ($Conflict_(j,t)$), frequency of climate-related disasters in the country of origin ($CrDF_(j,t)$), the death rate due to terrorist attacks ($Tattack_(j,t)$). Indeed, an African country i is likely to receive more migrants from another African country j, demographically large (natural predisposition), facing wars and conflicts, terrorist attacks and climate-related disasters (forced immigration).

As in the previous model, equation 2 includes region (λr) and time (φ_t) fixed effects. $\mu_{ij,t}$ denotes the error term. Empirically, we estimate the gravity model in Equation (2) using the nonlinear Poisson pseudo-maximum likelihood (PPML) method. Compared to the OLS, the PPML estimator has the advantage of addressing issues related to zero-valued observations in the dependent variable and heteroscedasticity (Silva & Tenreyro, 2006). Specifically, we follow the procedure of Silva and Tenreyro (2010) to overcome the problem of identifying the PPML estimate with non-negative values of the dependent variable (bilateral immigration) and a large number of zeros on some regressors. After estimating the model, the predicted intra-African immigration rate is calculated for each destination country i and for each period t by adding the countries of origin j per period, i.e., $\widehat{IM}_{i,t}^{Af} = \sum_j \widehat{IM}_{ij,t}^{Af}$

3.3 Data

The empirical study covers 52 African countries for which data are available on our variables of interest — the current account and the intra-African immigration rate — over the period 1990-2019. Based on this sample, we construct a panel that contains non-overlapping 5-year averages of the data for each country. This procedure is quite common in the literature (see among others Chinn & Prasad, 2003; Lane & Milesi-Ferretti, 2012; Coulibaly et al., 2020) and has several advantages. First, the non-overlapping averages limit the bias associated with significant measurement errors in the data, even at an annual frequency, which particularly concern developing countries. Second, this procedure has the advantage of abstracting from short-term variations which are of less interest in the analysis of the medium-term dynamics of the current account (Chinn & Prasad, 2003). Finally, in the context of this study, the non-overlapping 5-year averages are relevant to remain consistent with the data on migration between African countries that are only available on a 5-year frequency.

The variables used in Equation (1) come from several sources. The dependent variable is the current account as a percentage of GDP and comes from the World Economic Outlook (WEO) database of the International Monetary Fund (IMF). The intra-African immigration rate, our explanatory variable of interest, for a given country, is the stock of African immigrants as a percentage of the country's population. Immigrants are assimilated to the foreign-born population, including refugees. Data on immigrant stocks by country are from the United Nations Global Migration Database. These data are available every 5 years from 1990 to 2020. Considering the lag of one period in Equation (1), only the data from 1990 to 2015 are considered in the regressions. Like the current account, the control variables are non-overlapping 5-year averages over the period 1990-2019, i.e., a time dimension of 6 observations per country. Data on the fiscal balance as a percentage of GDP are also from the WEO. The dependency ratios, i.e., populations aged 0 to 14 and 65 and over divided by the total population, as well as the terms of trade index and bank credit to the private sector as a percentage of GDP (a measure of the level of financial development) come from the World Bank's World Development Indicators (WDI) database. Real GDP growth rate and real GDP per capita in purchasing power parity are from the Penn World Table (PWT 10.01). Net foreign assets as a percentage of GDP and the de facto measure of openness to capital (sum of foreign assets and liabilities relative to GDP) come from the Lane and Milesi-Ferretti External Wealth of Nations Database. As indicated previously, demographic variables, fiscal balance (in % of GDP), GDP growth, real GDP per capita are considered in relative terms. Descriptive statistics on the variables in Equation (1) are presented in Table A1 in the appendix.

The variables in Equation (2) also come from a variety of sources. Data on bilateral immigrant stocks are from the United Nations Global Migration Database. They are expressed as a percentage of the population of the host country to obtain the bilateral immigration rate. Bilateral immigration in 1960 is obtained from the World Bank database on international migration. This database reports the stocks of bilateral migrants every 10 years over the period 1960-2000. The data on the distance, the population of the country of origin and the binary variables of sharing a common border and a common language come from the Gravity database of the

CEPII (*Centre d'études prospectives et d'information international*). The conflict variable comes from the Center for Systemic Peace and measures all types of major episodes of armed conflict. This is a conflict and war index coded from 0 (no episode of conflict or war) to 20 (most intense episode of conflict or war). Data on the frequency of climate-related disasters are obtained from the Emergency Events Database (EM-DAT) of the *Center for Research on the Epidemiology of Disasters (CRED)*. They cover high-impact disasters related to wildfire, storms, landslides, floods, extreme temperatures, drought, fog, wave action and glacial lake outburst. These are disasters that have killed ten or more people, affected one hundred (100) or more people, led to the declaration of a state of emergency and to call for international assistance. The number of fatalities per terrorist attack comes from the Global Terrorism Database. The death rate due to terrorism measures the number of people killed by terrorist attack per 100,000 inhabitants. Table A2 in the appendix reports the descriptive statistics on the variables in Equation (2).

4 Empirical results

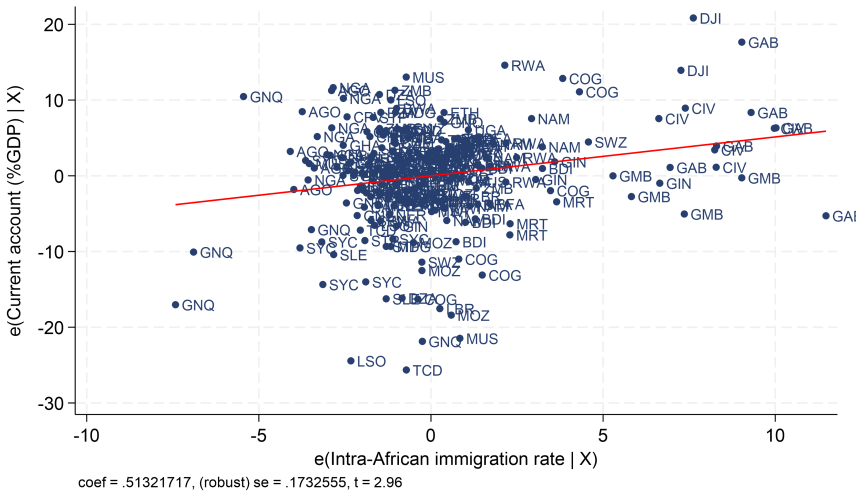
In this section, we present the results of the pooled OLS and 2SLS regressions in relation to Equation (1). However, we place more emphasis on the results of the pooled 2SLS regressions that address the potential simultaneity bias. The results of the first stage of this strategy are presented in the appendix where Table A3 shows the results of our "stage zero" gravity model and Figure A1 shows the correlation between the actual and predicted values of intra-African immigration.

Although preliminary, the results of the gravity model deserve some comments. These results are consistent with theoretical predictions and are interesting in many respects. The intra-African immigration rate is higher for a given country when the network of former immigrants (measured by the immigration rate in 1960) is significant and when this country has a linguistic proximity (common ethnic languages) or a common border with the migrant's country of origin. Geographical proximity is also a factor of increased intra-African immigration given the negative impact of distance. Concerning the specific influence of countries of origin, the results show that the immigration rate in a country is higher when the population of the country of origin is large or when the latter is affected by conflict and war. Climatic disasters in the country of origin also tend to accentuate the immigration rate for the host country with a significant coefficient when the regressions are controlled for time and region fixed effects. However, terrorist attacks do not seem to have a significant impact on the rate of intra-African immigration. Moreover, it seems, with regard to Figure A1, that the gravity model based on exogenous variables provides a very good prediction of the intra-African immigration rate. The slope coefficient is not significantly different from 1, a first indication of the good quality of the instruments we use in our identification strategy.

4.1 Effect of intra-African immigration on the current account

Figure 1 highlights an overall positive relationship between the intra-African immigration rate and the current account. The associated statistics (coefficient, standard deviation, t-stat) show that the conditional relationship between the two variables is not only positive but also significant.

Figure 1: Current account and intra-African immigration rate



Note. This graph is a residual scatterplot of current account versus intra-African immigration based on a panel OLS regression of Equation 1.

Table 1 shows the results of the pooled OLS and 2SLS regressions. For each method, several specifications are estimated depending on whether or not we introduce time and region fixed effects. These results show that intra-African immigration has a positive and significant impact on the current account whatever the method and the specification used. However, the impact seems more significant and twice as large with the gravity-based 2SLS approach which deals with the potential endogeneity bias between intra-African immigration and the current account. In other words, intra-African immigration contributes to significantly improve (at 1% statistical level) the external balance of African countries. To verify the relevance of gravity-based instruments, the Kleibergen and Paap (2006)'s rk Wald F-stat test rejects the null hypothesis of weak identification regardless of specification. The test statistic for weak identification is greater than the Stock and Yogo (2005)'s critical value at 10% max IV size (16.38). Our results are consistent with those of Coulibaly et al. (2020) who find that global migration improves the current account of destination countries. However, the coefficient associated with intra-African immigration is much higher than that estimated by these authors.

Regarding the control variables, the negative and statistically significant coefficient on relative economic growth rate is expected and confirms that households perceive high growth economic rates as persistent positive shocks. This induces larger investments, resulting in lower current accounts. Such empirical results are also highlighted by Afonso, Huart, Jalles, and Stanek (2022) and Coulibaly and Gnimas-

soun (2024), among others. The positive and significant relationship between net foreign assets and the current account is also consistent with the empirical literature (see Chinn & Prasad, 2003; Lane & Milesi-Ferretti, 2012; Gnimassoun, 2015; Coulibaly et al., 2020). Our results also show that countries that are more financially open tend to have lower external balance positions. In other words, these countries have relatively greater access to international capital which fuels larger current account deficits. Furthermore, oil-producing countries seem to record higher current accounts even if this result is only slightly significant (at 10%). For the other variables, the level of significance of the coefficients is relatively low and depends on the specification.

Table 1: Intra-African immigration and current account

Variables	OLS regressions				Gravity-based 2SLS regressions			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intra-AFR immigration rate	0.408**	0.500***	0.399**	0.492***	0.786***	0.915***	0.793***	0.933***
	(0.160)	(0.167)	(0.160)	(0.169)	(0.189)	(0.211)	(0.193)	(0.217)
Rel. fiscal balance	0.018	0.012	0.012	0.006	0.015	0.008	0.010	0.002
	(0.026)	(0.026)	(0.024)	(0.024)	(0.025)	(0.025)	(0.023)	(0.023)
Rel. economic growth	-0.721***	-0.712***	-0.751***	-0.739***	-0.679***	-0.666***	-0.705***	-0.688***
	(0.243)	(0.235)	(0.236)	(0.228)	(0.239)	(0.228)	(0.229)	(0.218)
Rel. dependency ratio, old	0.208	0.187	0.126	0.077	0.215	0.176	0.149	0.088
	(0.168)	(0.184)	(0.217)	(0.237)	(0.164)	(0.182)	(0.210)	(0.233)
Rel. dependency ratio, young	-0.005	0.033	-0.004	0.034	-0.015	0.037	-0.015	0.038
	(0.064)	(0.065)	(0.061)	(0.063)	(0.065)	(0.065)	(0.062)	(0.063)
Rel. per capita income	1.734*	1.209	1.885*	1.397	1.487*	0.898	1.628*	1.066
	(0.916)	(1.004)	(0.967)	(1.047)	(0.894)	(0.970)	(0.926)	(0.994)
Lagged NFA (% GDP)	0.021*	0.023**	0.021	0.023*	0.022**	0.024**	0.022*	0.024**
	(0.011)	(0.011)	(0.013)	(0.012)	(0.011)	(0.01)	(0.012)	(0.012)
Financial development	-0.010	-0.040	-0.009	-0.039	0.002	-0.036	0.004	-0.035
	(0.043)	(0.045)	(0.042)	(0.043)	(0.043)	(0.045)	(0.042)	(0.043)
TOT growth	0.387	0.421*	0.194	0.232	0.403*	0.441*	0.21	0.254
	(0.236)	(0.241)	(0.234)	(0.242)	(0.23)	(0.234)	(0.223)	(0.231)
Financial openness, LMF	-0.003**	-0.002	-0.002**	-0.002	-0.003**	-0.001	-0.002**	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade openness	-0.014	-0.004	-0.011	-0.002	-0.023	-0.011	-0.021	-0.01
	(0.028)	(0.029)	(0.031)	(0.031)	(0.026)	(0.026)	(0.028)	(0.027)
Dummy for oil exporters	4.106*	3.829*	3.717*	3.673*	4.085*	3.704*	3.758*	3.583
	(2.118)	(2.212)	(2.12)	(2.194)	(2.107)	(2.221)	(2.095)	(2.192)
Constant	2.500	3.360	0.880	1.303	1.552	2.672	0.080	0.847
	(3.599)	(3.429)	(3.614)	(3.534)	(3.52)	(3.271)	(3.493)	(3.353)
Observations	253	253	253	253	253	253	253	253
R-squared	0.369	0.385	0.396	0.411	0.352	0.367	0.378	0.390
Region FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes
K-P F-stat					286.8	281.4	274.8	266
SY 10% max IV size					16.38	16.38	16.38	16.38
SY 25% max IV size					5.53	5.53	5.53	5.53

Notes: The dependent variable is the current account (in % of GDP). Heteroskedasticity-robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% confidence level, respectively. In columns (1) to (4) as well as in columns (5) to (8), the regressions are respectively carried out without region and time fixed effects, with region fixed effects and without time fixed effects, without region fixed effects and with time fixed effects, and with region and time fixed effects. K-P F-stat is the rk Wald F-stat test of jointly weak identification Kleibergen and Paap (2006). SY 10% max IV size and SY 10% max IV size are the critical values under the i.i.d. assumption Stock and Yogo (2005).

4.2 The trade balance channel

Since the trade balance is the main component of the current account of African countries, it appears important to examine how it reacts to intra-African immigration. Indeed, if intra-African immigration improves labour productivity in African

countries (Gnimassoun, 2025), it could contribute to increasing exports and improving the trade balance. Table 2 reports the results of the impact of intra-African immigration on the trade balance[4] with both the OLS estimator and the 2SLS estimator. Once again, four specifications are considered for each estimator. These results show that intra-African immigration has a positive and significant impact (at 1%) on the trade balance whatever the specification and estimator used. As with the current account, the impact of intra-African immigration is twice as large on the trade balance with the gravity-based 2SLS estimator. Even more interesting, the impact of intra-African immigration seems quantitatively twice as important on the trade balance as on the current account balance. This shows that the trade channel is decisive in the impact of intra-African immigration on the current account. As before, the null hypothesis of weak identification is strongly rejected regardless of the specification.

Several control variables appear significant in explaining the dynamics of the trade balance. In particular, an improvement in the fiscal balance and relative per capita income has a positive effect on the trade balance while an increase in the old age dependency ratio reduces the current account. Indeed, high-spending countries tend to import more and are more likely to record trade deficits. In the same way, a higher old age dependency ratio is a source of higher consumption, lower productivity and poor export performance. However, the most developed countries are more efficient in exporting and tend to generate trade surpluses. The results also clearly show that oil-producing countries record significantly larger trade surpluses than others.

To better understand the trade channel, we disaggregate the trade balance of African countries into intra-African and extra-African trade balance. Disaggregated trade balance data come from UNCTAD statistics. Table 3 shows the results of the effect of intra-African immigration on intra-African and extra-African trade balances. Only the results of the 2SLS regressions are reported. These results show that the impact of intra-African immigration is positive and significant on both the intra-African trade balance and the extra-African trade balance. The coefficients are significant at 1% for the intra-African trade balance regardless of the specification. Thus, African countries with the highest intra-African immigration rates have the best trade performance both within the African continent and abroad. This is probably due to the productivity-increasing effect of intra-African immigration. In fact, immigration mainly concerns active populations who move towards economically prosperous sectors in which they are relatively more productive. Therefore, regional immigrants are key players in the production and exports of African countries. The results also show that although oil-producing countries have better trade balances, it is only outside Africa that they record this performance, the export of crude oil being essentially extroverted.

4.3 Intra-African immigration and external exposure

As the trade of African countries outside the continent mainly involves the export of raw materials and the import of manufactured products, most of Africa's trade deficits are with the rest of the world. Indeed, over the period 2016-2022 for example,

[4]Data on trade balance come from the World Bank's WDI database.

Table 2: Intra-African immigration and trade balance

Variables	OLS regressions				Gravity-based 2SLS regressions			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intra-AFR immigration rate	0.913***	0.915***	0.861***	0.866***	1.754***	2.023***	1.637***	1.951***
	(0.213)	(0.217)	(0.198)	(0.205)	(0.308)	(0.329)	(0.298)	(0.335)
Rel. fiscal balance	0.709**	0.699**	0.692**	0.700**	0.634**	0.606**	0.614**	0.601**
	(0.305)	(0.296)	(0.302)	(0.290)	(0.299)	(0.294)	(0.292)	(0.286)
Rel. economic growth	-0.472*	-0.402	-0.527*	-0.455	-0.384	-0.322	-0.447	-0.379
	(0.273)	(0.284)	(0.283)	(0.297)	(0.271)	(0.284)	(0.273)	(0.290)
Rel. dependency ratio, old	-0.725***	-0.494*	-1.112***	-0.876**	-0.721***	-0.512*	-1.078***	-0.820**
	(0.269)	(0.262)	(0.425)	(0.410)	(0.265)	(0.272)	(0.403)	(0.404)
Rel. dependency ratio, young	0.042	0.045	0.051	0.053	0.021	0.058	0.030	0.067
	(0.093)	(0.093)	(0.088)	(0.088)	(0.092)	(0.093)	(0.087)	(0.087)
Rel. per capita income	4.065***	4.986**	4.333***	5.252***	3.544**	4.114**	3.860***	4.414**
	(1.443)	(1.976)	(1.423)	(1.920)	(1.474)	(1.969)	(1.459)	(1.932)
Lagged NFA (% GDP)	0.007	0.010	0.010	0.011	0.009	0.014	0.012	0.015
	(0.007)	(0.009)	(0.008)	(0.011)	(0.007)	(0.009)	(0.008)	(0.010)
Financial development	0.010	0.039	0.011	0.040	0.035	0.047	0.033	0.048
	(0.061)	(0.071)	(0.057)	(0.067)	(0.061)	(0.070)	(0.056)	(0.065)
TOT growth	0.008	-0.079	-0.112	-0.203	0.057	-0.009	-0.073	-0.142
	(0.348)	(0.361)	(0.391)	(0.401)	(0.347)	(0.366)	(0.372)	(0.387)
Financial openness, LMF	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade openness	-0.026	-0.033	-0.006	-0.019	-0.048	-0.052	-0.028	-0.040
	(0.033)	(0.035)	(0.031)	(0.034)	(0.031)	(0.032)	(0.030)	(0.031)
Dummy for oil exporters	13.785***	10.726***	12.128***	9.775***	13.864***	10.639***	12.342***	9.865***
	(2.770)	(3.071)	(2.957)	(3.124)	(2.781)	(3.279)	(2.911)	(3.280)
Constant	-11.592**	-6.384	-16.567***	-12.468**	-13.728***	-8.134	-18.075***	-13.316**
	(5.307)	(5.528)	(5.735)	(6.256)	(5.029)	(5.037)	(5.288)	(5.570)
Observations	230	230	230	230	230	230	230	230
R-squared	0.482	0.507	0.514	0.536	0.447	0.453	0.485	0.484
Region FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes
K-P F-stat					257.7	244.4	243.8	229
SY 10% max IV size					16.38	16.38	16.38	16.38
SY 25% max IV size					5.530	5.530	5.530	5.530

Notes: The dependent variable is the trade balance (as % of GDP). Heteroskedasticity-robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% confidence level, respectively. In columns (1) to (4) as well as in columns (5) to (8), the regressions are respectively carried out without region and time fixed effects, with region fixed effects and without time fixed effects, without region fixed effects and with time fixed effects, and with region and time fixed effects. K-P F-stat is the rk Wald F-stat test of jointly weak identification Kleibergen and Paap (2006). SY 10% max IV size and SY 10% max IV size are the critical values under the i.i.d. assumption Stock and Yogo (2005).

extra-African exports are made up of 81% raw materials while imports are made up of 66% manufactured goods.[5] At the intra-African level, trade between countries is made up of 55% raw materials and 45% manufactured goods. In other words, Africa's external trade is more unbalanced in structure than intra-African trade and is indeed more deficit prone. If intra-African immigration improves the trade balance of African countries, it is probably because it reduces the external exposure of these countries and strengthens intra-African trade. We test this hypothesis by studying the effect of intra-African immigration on the relative share of extra-African trade.

Table 4 shows the results of this investigation. In the first four columns, the dependent variable is the share of extra-African trade in the total trade of countries while in the last four columns the ratio of extra-African trade to intra-African trade represents the dependent variable. These latter regressions aim to capture the effect of intra-African immigration on the magnitude of extra/intra-African trade imbal-

[5]These data come from UNCTAD statistics.

Table 3: Intra-African immigration and disaggregated trade balance, gravity-based 2SLS regressions

Variables	Intra-African trade balance				Extra-African trade balance			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intra-AFR immigration rate	1.437***	1.142***	1.242***	1.061***	0.750*	1.384***	0.900**	1.473***
	(0.400)	(0.370)	(0.356)	(0.345)	(0.409)	(0.426)	(0.404)	(0.420)
Rel. fiscal balance	-0.305*	-0.197	-0.365**	-0.188*	0.603	0.403	0.659	0.409
	(0.159)	(0.126)	(0.146)	(0.111)	(0.464)	(0.443)	(0.474)	(0.448)
Rel. economic growth	0.143	-0.012	0.065	-0.025	0.190	0.357	0.277	0.402
	(0.117)	(0.074)	(0.108)	(0.071)	(0.261)	(0.278)	(0.265)	(0.281)
Rel. dependency ratio, old	-1.266***	-0.335	-1.831***	-0.604	1.290***	0.551*	1.686***	0.777*
	(0.345)	(0.227)	(0.479)	(0.408)	(0.264)	(0.313)	(0.351)	(0.406)
Rel. dependency ratio, young	0.032	0.110*	0.027	0.108*	0.219*	0.212**	0.236**	0.232**
	(0.082)	(0.065)	(0.075)	(0.065)	(0.115)	(0.107)	(0.110)	(0.105)
Rel. per capita income	-2.316*	1.134	-2.170	1.110	6.590***	2.822	6.475***	2.828
	(1.363)	(1.426)	(1.363)	(1.410)	(1.855)	(2.042)	(1.858)	(2.056)
Lagged NFA (% GDP)	0.002	0.003	0.007	0.006	0.009	0.015*	0.009	0.017*
	(0.005)	(0.006)	(0.006)	(0.007)	(0.009)	(0.009)	(0.010)	(0.009)
Financial development	0.125**	0.217***	0.120**	0.219***	-0.177*	-0.299***	-0.164*	-0.293***
	(0.060)	(0.068)	(0.055)	(0.064)	(0.096)	(0.084)	(0.096)	(0.084)
TOT growth	-0.066	-0.148	-0.194	-0.227	-0.112	-0.022	-0.165	-0.114
	(0.280)	(0.225)	(0.293)	(0.254)	(0.539)	(0.510)	(0.568)	(0.550)
Financial openness, LMF	0.001*	-0.002**	0.001*	-0.002**	-0.002**	0.001	-0.002**	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade openness	-0.030	-0.003	-0.003	0.008	-0.039	-0.056	-0.054	-0.059
	(0.054)	(0.052)	(0.055)	(0.053)	(0.058)	(0.056)	(0.062)	(0.060)
Dummy for oil exporters	2.210	0.677	0.218	0.103	25.803***	22.779***	27.078***	23.068***
	(2.338)	(2.344)	(2.491)	(2.306)	(3.762)	(3.645)	(4.042)	(3.794)
Constant	-30.382***	-13.153**	-31.928***	-14.820**	16.397**	6.101	14.635*	4.699
	(7.400)	(5.113)	(7.791)	(6.104)	(7.937)	(6.630)	(8.130)	(7.119)
Observations	225	225	225	225	225	225	225	225
R-squared	0.215	0.474	0.268	0.488	0.517	0.593	0.526	0.598
Region FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes
K-P F-stat	255	259	247.1	247	255	259	247.1	247
SY 10% max IV size	16.38	16.38	16.38	16.38	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530	5.530	5.530	5.530	5.530

Notes: In the first four columns, the dependent variable is the intra-African trade balance (in % of GDP) while in the last four the dependent variable is the extra-African trade balance (in % of GDP). Heteroskedasticity-robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% confidence level, respectively. In columns (1) to (4) as well as in columns (5) to (8), the regressions are respectively carried out without region and time fixed effects, with region fixed effects and without time fixed effects, without region fixed effects and with time fixed effects, and with region and time fixed effects. K-P F-stat is the rk Wald F-stat test of jointly weak identification Kleibergen and Paap (2006). SY 10% max IV size and SY 10% max IV size are the critical values under the i.i.d. assumption Stock and Yogo (2005).

ance of countries. All the explanatory variables considered above are included in the regressions with the exception of trade openness since the dependent variables are measures of relative trade openness. It appears from these regressions, in particular from the results in the first four columns, that intra-African immigration significantly reduces the relative share of extra-African trade. It thus significantly increases that of intra-African trade. The last four regressions also show that intra-African immigration significantly reduces the gap between extra-African trade and intra-African trade. All the coefficients are significant at 1% regardless of the specification. In other words, intra-African immigration contributes to deepening trade integration in Africa and reduces the degree of trade extroversion of African countries. This is arguably one of the key explanations for the positive effect that intra-African immigration has on the current account. Regarding the control variables, it clearly established that oil-exporting countries have the highest degree of trade extroversion, which is an expected result.

Table 4: Intra-African immigration and degree of external trade exposure, gravity-based 2SLS regressions

Variables	Extra-African trade share				Ratio extra/intra-African trade			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intra-AFR immigration rate	-0.004	-0.009***	-0.008***	-0.012***	-0.762***	-0.813***	-0.955***	-0.977***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.170)	(0.208)	(0.193)	(0.226)
Rel. fiscal balance	-0.002	-0.000	-0.002	-0.000	-0.158	-0.112	-0.160	-0.081
	(0.002)	(0.001)	(0.002)	(0.002)	(0.149)	(0.144)	(0.142)	(0.137)
Rel. economic growth	-0.000	-0.002	-0.002	-0.003**	-0.239	-0.267*	-0.304*	-0.304**
	(0.002)	(0.002)	(0.002)	(0.001)	(0.158)	(0.143)	(0.167)	(0.152)
Rel. dependency ratio, old	-0.023***	-0.009***	-0.042***	-0.027***	-0.216	0.279	-1.007***	-0.515*
	(0.003)	(0.003)	(0.003)	(0.004)	(0.251)	(0.307)	(0.227)	(0.303)
Rel. dependency ratio, young	-0.001	-0.001	-0.002**	-0.002**	-0.050	0.005	-0.100	-0.047
	(0.001)	(0.001)	(0.001)	(0.001)	(0.087)	(0.081)	(0.077)	(0.075)
Rel. per capita income	-0.025	0.019	-0.018	0.021	0.570	1.518	0.831	1.541
	(0.018)	(0.015)	(0.016)	(0.014)	(1.018)	(1.115)	(1.037)	(1.131)
Lagged NFA (% GDP)	-0.000	-0.000	-0.000	-0.000	-0.026*	-0.024	-0.021	-0.021
	(0.000)	(0.000)	(0.000)	(0.000)	(0.015)	(0.015)	(0.013)	(0.014)
Financial development	0.001	0.002***	0.001	0.002***	0.076	0.076	0.058	0.065
	(0.001)	(0.001)	(0.001)	(0.001)	(0.065)	(0.060)	(0.060)	(0.057)
TOT growth	0.001	0.000	0.001	0.001	0.290	0.295	0.374	0.391
	(0.004)	(0.003)	(0.004)	(0.003)	(0.277)	(0.251)	(0.259)	(0.243)
Financial openness, LMF	0.000***	-0.000	0.000***	0.000	0.001	0.000	0.001	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)
Dummy for oil exporters	0.157***	0.136***	0.108***	0.115***	13.720***	13.425***	11.532***	12.469***
	(0.025)	(0.020)	(0.025)	(0.021)	(3.356)	(2.950)	(3.080)	(2.867)
Constant	0.451***	0.750***	0.501***	0.694***	6.503*	19.313***	9.996***	18.119***
	(0.079)	(0.060)	(0.072)	(0.062)	(3.410)	(4.458)	(3.497)	(4.646)
Observations	225	225	225	225	225	225	225	225
R-squared	0.392	0.593	0.576	0.686	0.248	0.326	0.341	0.377
Region FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes
K-P F-stat	228.4	249.6	238.8	250.7	228.4	249.6	238.8	250.7
SY 10% max IV size	16.38	16.38	16.38	16.38	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530	5.530	5.530	5.530	5.530

Notes: In the first four columns, the dependent variable is the share (in %) of extra-African trade in total trade while in the last four the dependent variable is the ratio of extra-African trade to intra-African trade. Heteroskedasticity-robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% confidence level, respectively. In columns (1) to (4) as well as in columns (5) to (8), the regressions are respectively carried out without region and time fixed effects, with region fixed effects and without time fixed effects, without region fixed effects and with time fixed effects, and with region and time fixed effects. K-P F-stat is the rk Wald F-stat test of jointly weak identification Kleibergen and Paap (2006). SY 10% max IV size and SY 10% max IV size are the critical values under the i.i.d. assumption Stock and Yogo (2005).

5 The demographics channel and sensitivity tests

5.1 The demographics channel

One of the key arguments of this study is that immigration contributes to economic vitality of countries by reducing the dependency ratio. Given the important role of demographic changes on the dynamics of current accounts, we examine the influence of intra-African immigration on the relative share of economically dependent population and the relative share of working-age population. The control variables are the relative growth rate of the population, the relative per capita income, the level of financial development and the fertility rate. As in Tables 3 and **??**, the focus is on the results of the 2SLS regressions.

The results of the regressions of the impact of intra-African immigration on the demographic structure of the countries are reported in Table 5. They show that intra-African immigration reduces the rate of economically dependent population

and increases the share of active population.[6] These results are statistically significant at 1% regardless of the specification. They thus confirm the fact that intra-African migration contributes to the demographic and economic vitality of the countries of destination. These results are consistent with those of Koomen and Wicht (2022) who find nonlinear effects between demography and the current account. More specifically, they show that a relatively larger proportion of young populations is negatively correlated with the current account while a larger proportion of the working-age population is positively correlated with the current account. Since intra-African immigration contributes to reducing the relative share of the young population and increasing the relative share of the working-age population, it therefore improves the current account.

The control variables also have a differentiated effect on the population dependency ratio and the labour force. Countries with relatively greater population growth have a higher demographic dependency ratio and a relatively lower labour force. This is also the case for countries with the highest fertility rates. However, financial development is negatively correlated with the population dependency ratio and positively correlated with the active population. In other words, countries with a more developed financial sector are those with a lower population dependency ratio and a larger young population. For all these gravity-based 2SLS regressions, the null hypothesis of weak identification is strongly rejected even when considering the most demanding critical values of Stock and Yogo (2005).

Table 5: Intra-African immigration and demographic change in Africa, gravity-based 2SLS regressions

Variables	Rel. dependency ratio				Rel. labour force			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intra-AFR immigration rate	-0.653***	-0.682***	-0.631***	-0.612***	0.253***	0.244***	0.243***	0.225***
	(0.134)	(0.148)	(0.118)	(0.142)	(0.047)	(0.054)	(0.044)	(0.052)
Rel. population growth	8.260***	8.402***	7.941***	9.386***	-0.763*	-1.340**	-0.838*	-1.791***
	(1.452)	(1.999)	(1.405)	(1.944)	(0.437)	(0.587)	(0.451)	(0.577)
Rel. per capita income	-2.328***	-2.205***	-0.980	-0.712	0.441*	0.520*	0.224	0.272
	(0.670)	(0.836)	(0.798)	(0.967)	(0.246)	(0.285)	(0.281)	(0.316)
Financial development	-0.155***	-0.135***	-0.139***	-0.133***	0.066***	0.064***	0.062***	0.063***
	(0.031)	(0.034)	(0.033)	(0.036)	(0.012)	(0.012)	(0.013)	(0.013)
Fertility rate	6.812***	6.483***	8.138***	8.137***	-2.083***	-2.023***	-2.301***	-2.302***
	(0.537)	(0.544)	(0.584)	(0.643)	(0.182)	(0.181)	(0.205)	(0.215)
Constant	2.093	-0.161	-6.617**	-8.906***	-0.254	1.146	1.455	2.977***
	(2.520)	(2.653)	(2.890)	(3.047)	(0.874)	(0.965)	(1.033)	(1.110)
Observations	284	284	284	284	284	284	284	284
R-squared	0.758	0.765	0.789	0.795	0.736	0.747	0.751	0.764
Region FE	No	Yes	No	Yes	No	Yes	No	Yes
Time FE	No	No	Yes	Yes	No	No	Yes	Yes
K-P F-stat	159	160.7	156.2	159.8	159	160.7	156.2	159.8
SY 10% max IV size	16.38	16.38	16.38	16.38	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530	5.530	5.530	5.530	5.530

Notes: In the first four columns, the dependent variable is the relative dependency ratio (young and old) while in the last four the dependent variable is the relative share of working-age population. Heteroskedasticity-robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% confidence level, respectively. In columns (1) to (4) as well as in columns (5) to (8), the regressions are respectively carried out without region and time fixed effects, with region fixed effects and without time fixed effects, without region fixed effects and with time fixed effects, and with region and time fixed effects. K-P F-stat is the rk Wald F-stat test of jointly weak identification Kleibergen and Paap (2006). SY 10% max IV size and SY 10% max IV size are the critical values under the i.i.d. assumption Stock and Yogo (2005).

[6]By disaggregating the dependency ratio into young and old dependency ratios, we observe that intra-African immigration reduces both categories of population dependency ratio. But it further reduces the youth dependency ratio (see Table A4 in the appendix).

5.2 Sensitivity tests

In the previous regressions, our explanatory variable of interest is the gross immigration rate. If intra-African immigration has a positive impact on the current account, it is possible that intra-African emigration produces the opposite effect which neutralizes that of intra-African immigration. In this context, it may be interesting to test the sensitivity of the previous results by considering instead of the gross immigration rate and the net immigration rate as in Coulibaly et al. (2020). The latter is defined, for a given country, by the difference between the stock of immigrants and the stock of emigrants divided by the total population of the country. Given our 2SLS strategy, the instrument used in this section is also the difference between the immigration rate and the emigration rate, both estimated from the gravity model.

Table 6 reports the results of our sensitivity test. The latter relates to the previous results in Tables 1 to 3. For the sake of word limits, only the 2SLS regressions with region and period fixed effects are highlighted.[7] In the first and second columns, the dependent variables are respectively the current account and the trade balance as a ratio of GDP. In the last two columns, the trade balance is disaggregated into intra-African and extra-African trade balances respectively. These results reveal that net intra-African immigration has a positive and significant impact (at 1% statistical level) on the current account. On the disaggregated trade balance, intra-African immigration has a quantitatively and qualitatively greater impact on the intra-African trade balance than on the extra-African trade balance. Overall, the coefficients associated with net intra-African immigration are smaller than those for gross intra-African immigration. The strong statistical significance of these coefficients confirms the robustness of our main results, in particular the positive impact of African immigration on the external performance of African countries. As in previous regressions, the instruments used in the 2SLS strategy seem relevant with regard to the test statistics for weak identification.

6 Conclusion

African migration is characterized by a dominant regional component although a growing share of Africans emigrate outside the continent. Since international migration generally involves the working population, it tends to influence the demographic structure of countries by increasing the ratio of the working population while reducing the ratio of economically dependent population in destination countries. Furthermore, when the labour market is able to absorb immigrants, they contribute to improving productivity and production in the host countries. As a country's current account dynamics depends on its demographic structure and production capacity, immigration is likely to influence the current account.

In this paper we study the effects of intra-African immigration on the external performance of African countries, both inside Africa and outside Africa. To this end, we rely on a panel of non-overlapping 5-year average data for a sample of 52 African countries over the period 1990-2019. Methodologically, we use the gravity-based

[7] Other results are available upon request to the authors.

Table 6: Impact of net intra-African immigration rate, gravity-based 2SLS regressions

Variables	(1)	(2)	(3)	(4)
	CA	TB	Intra-AFR TB	Extra-AFR TB
Net Intra-AFR immigration rate	0.668***	1.721***	1.973***	0.673*
	(0.198)	(0.376)	(0.542)	(0.387)
Rel. fiscal balance	0.003	0.485	-0.176	0.456
	(0.024)	(0.315)	(0.159)	(0.430)
Rel. economic growth	-0.640**	-0.075	0.320	0.390
	(0.254)	(0.451)	(0.240)	(0.281)
Rel. dependency ratio, old	0.307	-0.036	0.079	0.978**
	(0.222)	(0.387)	(0.438)	(0.382)
Rel. dependency ratio, young	-0.036	-0.121	-0.083	0.143
	(0.080)	(0.126)	(0.131)	(0.112)
Rel. per capita income	1.215	4.196**	0.658	3.313*
	(0.987)	(1.939)	(1.739)	(1.916)
Lagged NFA (% GDP)	0.018	0.006	-0.007	0.010
	(0.011)	(0.010)	(0.007)	(0.008)
Financial development	-0.073*	-0.049	0.124*	-0.334***
	(0.043)	(0.064)	(0.068)	(0.084)
TOT growth	0.362*	0.160	0.136	-0.028
	(0.217)	(0.398)	(0.376)	(0.534)
Financial openness, LMF	-0.001	-0.001	-0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Trade openness	-0.005	-0.037	-0.008	-0.043
	(0.025)	(0.033)	(0.046)	(0.062)
Dummy for oil exporters	2.699	9.376***	-3.302	22.256***
	(2.002)	(2.890)	(2.878)	(3.807)
Constant	6.651*	2.669	0.299	11.559*
	(3.650)	(6.323)	(7.488)	(6.810)
Observations	253	230	225	225
R-squared	0.399	0.430	0.167	0.636
Region FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
K-P F-stat	132	119.7	121.6	121.6
SW F-stat	132	119.7	121.6	121.6
SY 10% max IV size	16.38	16.38	16.38	16.38
SY 25% max IV size	5.530	5.530	5.530	5.530

Notes: In columns (1) to (4), the dependent variables are respectively the current account (in % of GDP), the trade balance (in % of GDP), the intra-African trade balance (in % of GDP) and the extra-African trade balance (in % of GDP). Heteroskedasticity-robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% confidence level, respectively. In columns (1) to (4) as well as in columns (5) to (8), the regressions are respectively carried out without region and time fixed effects, with region fixed effects and without time fixed effects, without region fixed effects and with time fixed effects, and with region and time fixed effects. K-P F-stat is the rk Wald F-stat test of jointly weak identification Kleibergen and Paap (2006). SY 10% max IV size and SY 10% max IV size are the critical values under the i.i.d. assumption Stock and Yogo (2005).

2SLS strategy to address the endogeneity problem and explore several mechanisms underlying the relationship between intra-African immigration and external performance. Furthermore, we perform several sensitivity tests including changes in specification or explanatory variable of interest.

Several interesting results emerge from this study. First, intra-African immigration has a positive, significant and robust impact on the current account and trade balance in Africa. In other words, African countries that welcome more African immigrants significantly improve their external performance. Second, intra-African immigration improves both the intra-African trade balance and the extra-African trade balance. This is an important result knowing that most of the current account deficits of African countries come from extra-African trade. Third, we show that reducing trade extroversion and strengthening intra-African trade is one of the mechanisms supporting these results. Finally, we establish that even in Africa, immigration contributes to significantly increasing the demographic vitality of host coun-

tries; which represents another mechanism explaining the impact of intra-African immigration on the current account.

From these results, it appears that strengthening migration between African countries is not only necessary for the consolidation of African integration but it is also necessary to reduce the structural current account deficits of the countries and the resulting immense need for financing. Therefore, policies aimed at encouraging the mobility of people between African countries must be strongly supported. An interesting avenue would be the elimination of the need for a visa to travel between African countries.

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Appendix

Table A-1: Descriptive statistics for the gravity model

Variables	Obs.	Mean	SD	Min	Max
Intra-AFR immigration rate	19,557	0.05	0.39	0.00	17.14
Intra-AFR immigration rate, 1960	18,928	0.06	0.44	0.00	11.49
Ln distance	18,934	7.95	0.89	1.39	9.18
Ln population, origin	19,557	15.71	1.58	11.15	19.12
Common border	18,934	0.07	0.26	0.00	1.00
Common ethnical language	18,934	0.32	0.47	0.00	1.00
Conflicts/wars, origin	18,497	0.66	1.51	0.00	7.00
Climate related disasters freq., origin	19,292	2.03	2.71	0.00	18.00
Terrorist attack fatality rate, origin	19,663	31.13	114.33	0.00	1,112.68

Table A-2: Descriptive statistics for regressions

Variables	Obs.	Mean	SD	Min	Max
Current account (% GDP)	306	-4.15	9.56	-68.98	38.57
Trade balance (% GDP)	274	-8.13	15.00	-63.47	41.86
Intra-AFR trade balance (% GDP)	254	-4.62	11.48	-76.97	50.22
Extra-AFR trade balance (% GDP)	254	-3.78	19.45	-65.34	77.64
Extra-AFR trade share	260	0.78	0.17	0.15	0.99
Relative extra-AFR trade share	260	8.99	13.26	0.18	132.43
Intra-AFR immigration rate	312	2.77	3.46	0.01	19.86
Rel. fiscal balance	275	-0.92	20.60	-328.94	36.78
Rel. economic growth	298	0.91	4.81	-14.53	52.33
Rel. population growth	312	0.20	0.39	-1.57	1.13
Rel. dependency ratio, old	311	-10.16	3.72	-21.61	-1.41
Rel. dependency ratio, young	311	38.21	14.57	-5.56	67.80
Rel. per capita income	294	-2.22	0.92	-4.25	0.24
Lagged NFA (% GDP)	311	-54.29	135.22	-1,340.38	970.42
Financial development	294	18.73	16.64	0.70	95.67
TOT growth	294	0.25	1.96	-7.34	8.13
Financial openness, LMF	311	189.90	580.06	33.96	7,151.36

Table A-3: Results of pseudo-gravity regressions ("zero-stage")

	(1)	(2)	(3)	(4)
Intra-AFR immigration rate, 1960	0.325***	0.292***	0.324***	0.291***
	(0.015)	(0.016)	(0.015)	(0.016)
Ln distance	-0.583***	-0.519***	-0.589***	-0.526***
	(0.023)	(0.024)	(0.023)	(0.024)
Ln population, origin	0.094***	0.062	0.116***	0.092**
	(0.035)	(0.038)	(0.035)	(0.038)
Common border	2.273***	2.335***	2.256***	2.314***
	(0.096)	(0.095)	(0.095)	(0.093)
Common ethnical language	0.516***	0.577***	0.529***	0.591***
	(0.086)	(0.083)	(0.084)	(0.081)
Conflicts/wars, origin	0.267***	0.287***	0.252***	0.270***
	(0.021)	(0.026)	(0.020)	(0.025)
Climate related disasters freq., origin	-0.002	0.015	0.012	0.032**
	(0.012)	(0.013)	(0.012)	(0.013)
Terrorist attack fatality rate, origin	-0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-1.699***	-3.122***	-1.826***	-3.368***
	(0.541)	(0.617)	(0.544)	(0.621)
Observations	17,438	17,438	17,438	17,438
R-squared	0.574	0.565	0.586	0.573
Region FE	No	Yes	No	Yes
Time FE	No	No	Yes	Yes

Figure A-1: Correlation between actual and predicted value of intra-African immigration