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Migration out of poverty

The case of post-war migration in Mozambique

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Abstract: Internal migration plays an important role in the economic development of individuals, their families, and their country. This study describes Mozambique's most common migration patterns from 1992 until 2017 using data from three population censuses. We focus on the most important moves between regions, provinces, and rural and urban areas. Further, we document the characteristics of migrants to assess selection patterns. In the final step, we estimate the relationship between migration and multidimensional poverty by applying inverse probability weighted regression adjustment (IPWRA). We find that migration in Mozambique was very high, especially between rural areas, after the war ended as people returned from displacement. Still, it is very low in the most recent period. Recently, migration has been the main contributor to the urbanization of the greater Maputo area (capital city). Migrants appear to be positively selected on education, and are, on average, less likely to be poor.

Key words: migration, Mozambique, poverty, IPWRA

JEL classification: I32, O15, O55, R23

1   Introduction

Internal migration plays an important role in the economic development of individuals, their families, and their country. As part of the structural change of an economy, people (or the factor labour) move across regions to achieve higher productivity. The prevalence of internal migration can provide insights into the country's geographical economic integration and its drivers of economic growth. Furthermore, evidence suggests that it can often be associated with welfare gains for the migrants and their families, contributing to poverty reduction (for a review of the literature, see Lucas 2015). Yet, in many low-income countries, data constraints limit our understanding of internal migration, or the focus lies on international migration.

Mozambique is one of the poorest countries with, until recently, a strong record in poverty reduction. However, its gains have been unequal across regions and display a significant rural–urban gap (DEEF 2016; Egger et al. 2020). Looking at multidimensional poverty, a measure that captures more long-term welfare than consumption or income poverty, Mozambique's headcount has more than halved in urban areas, from 50 per cent in 1996/97 to 18 per cent in 2014/15, while the poverty rate in rural areas remained high at 72 per cent, from previously 95 per cent in 1996/97. Only one per cent of the population in the richest province, the capital city, is poor compared to 73 per cent in the poorest province (DEEF 2016). Also, measures of consumption inequality display a widening trend (Gradín and Tarp 2019). The country's population continues to be one of smallholder farmers (66 per cent) while contributing only 26 per cent to the economy's total value added and with a productivity of around half of that of an average worker (Cruz et al. 2020). Thus arise the questions: what is the prevalence of internal migration in Mozambique and how does it relate to the country's socio-economic development?

Migration in Mozambique has taken different shapes depending on the economic and political context of the country. The pre-independence period was mostly marked by the international supply of unskilled and semi-skilled labour to the mineral-extracting neighbouring country of South Africa to work in the gold mines and plantations, and the plantations in what is today Eswatini.

Internal migration in the early stages of colonialism was marked by adult male migration to port cities where they supplied their labour force to railways and shipments, with a smaller proportion providing services including house care. Changes in the economic structure which promoted light industrialization of the country brought changes in the labour migration with adult males coming together with their wives and children. In this way, the city's population structure changed to one like the remaining part of the country characterized by a larger basis of a young population and a narrow top of adult and elderly population.

The post-independence government tried to control rural-to-urban migration by investing in rural production and by forcing 'unemployed' people to resettle in the core rural areas. When the civil war started, the economy contracted and migration to major cities burst for security reasons.

At the end of the 16 years of war, an urban development bias against rural areas was exposed as rural infrastructure was destroyed by war and people who returned to their home areas had to restart their production from scratch. Decentralization became part of the peace agreement and the campaign of the 1994 elections aimed at paving the road for local development. Both tendencies influenced rural-to-urban migration simultaneously.

The present paper aims to document Mozambique's internal migration patterns from 1997 to 2017, the post-war period, drawing on data from three population censuses. It presents the migration rates among provinces and regions, and rural-to-urban migration. It also presents the migrants' profile concerning gender and education compared to non-migrants to analyse whether there is a specific selection into migration. Finally, we estimate the poverty probability by migrant status to answer whether internal moves have contributed to welfare improvements.

We find that internal migration was very common immediately after the war as displaced people returned home or moved into the cities, leaving the war-torn rural areas behind. In the following two decades, migration appeared to be marked by urbanization of the greater Maputo area around the capital city and by movements to economically thriving areas, and relatively more migrants being better educated than non-migrants (positive selection). However, the overall rates declined from 20 per cent in 1997 to only 4 per cent in 2017. Lastly, we document that migrants are relatively better off at their destination than non-migrants, especially urban-to-rural migrants.

The paper is structured as follows. Next, we review the international economic literature on internal migration in developing countries. Section 3 introduces the data and definitions, before Section 4 presents the results. We conclude in Section 5.

2   Literature review

The development economics literature has been interested in internal migration in its function within the structural change of an economy. Starting from the Harris-Todaro two-sector development model (Harris and Todaro 1970), rural–urban migration occurs as part of the development process. The model predicts that migration will occur until the expected returns to labour in rural areas are equivalent to the expected returns to labour in urban areas, accounting for the probability of employment in each sector. The underlying assumption is also one of productivity gaps between the agricultural and non-agricultural sector. Development economists used to think that with structural change, these gaps would decline as labour moves across sectors. Thus, with more development, rural–urban gaps in living standards and productivity should reduce and poverty decline. However, the data suggest no such automatic mechanism. We discuss how internal migration can contribute to poverty reduction from a micro and a macro perspective. From the micro perspective, one considers the selective sorting of migrants and local market frictions as drivers or inhibitors of poverty-reducing migration. The macro perspective looks at the role of migration for urbanization with and without growth and what the role of different sizes of urban centres is in this process.

At a micro level, economists think that individuals migrate if they expect higher returns to their skills or have a better chance to realize their expected returns (Sjaastad 1962). Households can consider migration a form of income diversification (Stark and Bloom 1985). Lagakos (2020) reviews the evidence and identifies three main explanations for the persistence of rural–urban gaps strongly related to the micro perspective. These are the selective sorting of migrants into urban areas, preferences for non-monetary amenities of rural areas, and finally, information, financial, and land market frictions.

Indeed, strong evidence exists that the urban or non-agricultural population is better educated and that rural–urban migrants sort on migration (Young 2013; Gollin et al. 2014; Porzio and Santangelo 2019). However, wage gaps between rural/urban or agricultural/non-agriculture are not fully explained by sorting. Cross-sectional gaps are much smaller when controlling for individual fixed effects, meaning that for the individual migrant, the gain from moving is much smaller than the

observed average gaps (Bryan and Morten 2019). Yet, the selection on observables is not the only factor. Unobservable factors, as well as migration costs, can play a role, and it might be that costs are higher for those who could realize higher returns. Furthermore, not every migration spell is to find the best opportunity, but often also by 'force', such as job loss, so some migrants do not gain from moving.

Another aspect of selective sorting would be individual preferences for certain local amenities (Moretti 2011). Possibly, individuals have an idiosyncratic taste for urban or rural areas and certain amenities. Some evidence points out that the availability of local public services might influence migration sorting decisions (Aguayo-Téllez et al. 2010; Grogger and Hanson 2011; Fafchamps and Shilpi 2013), but the evidence remains scarce, especially for low-income countries, and does not systematically point at a preference for rural areas, which could explain the persistence of rural–urban gaps.

Market frictions might explain some of the persisting gaps. There exists some evidence that information about actual returns to migration is scarce or wrong, thus leading to lower or less successful migration spells (Egger 2021). Financial constraints, such as a lack of savings or credit to finance the move, cannot explain relatively low migration rates in some contexts. It seems that rural households prefer rural areas and only choose migration if desperately needed. Thus, migration subsidies are practically like an insurance for households vulnerable to shocks, which in turn points to a lack of functioning insurance markets (Bryan et al. 2014). Land titles have influenced migration decisions, for example, in historical Russia (Chernina et al. 2014), Mexico (de Janvry et al. 2015), and Ethiopia (de Brauw and Mueller 2012). One mechanism is that if households feel they risk losing their land if they or their household head migrate, migration rates will be lower than they could be. Alternatively, land titles can be used as collateral to finance migration. Yet another channel is that secure property rights can incentivize agricultural investments and thus reduce migration because working the land has become more profitable.

From a macro perspective, one can look at the role of internal migration in poverty reduction in the context of urbanization. Fitting with the Harris-Todaro model, recent rapid urbanization in many developing countries suggested that it forms an integral part of the development process. Yet, a large part of urban growth in developing countries comes from urban population growth (higher birth rates than mortality rates) and not from rural–urban migration. Urbanization without economic growth is the consequence (Jedwab et al. 2017). In sub-Saharan Africa, the urbanization rate is still comparatively low (40 per cent). Still, the region displays a high urban growth rate, of which only one third is explained by residual migration.

Such observations become relevant when thinking of the role of urbanization in poverty reduction. Gibson et al. (2017), for example, demonstrate that in India, rural poverty reduction was driven more by the growth of secondary towns than large cities. Similar evidence comes from Christaensen et al. (2013) for Tanzania. There they found that migrants benefited more from moves to secondary towns than to big cities. For Ethiopia, Dorosh and Thurlow (2013) investigate the linkages between agricultural production and towns of different sizes. They find that stronger linkages with smaller towns, in contrast to big cities, are associated with more inclusive, thus poverty-reducing, economic growth. These results suggest that agricultural linkages play an important role in closing the rural–urban gaps. However, the evidence on the role of secondary towns is still limited, and mechanisms through which their growth could contribute to poverty reduction are not yet well understood.

In Mozambique, internal migration has not been studied extensively. We found only one quantitative study documenting recent internal migration trends in Mozambique. Muanamoha and Raimundo (2018) use the census data from 1997 and 2007 to assess the prevalence of internal

migration between provinces. They identified the three provinces of Niassa, Manica, and Maputo as the leading destinations for inter-provincial migrants, while Zambezia, Tete, Inhambane, and Gaza displayed most outmigration. The remaining provinces showed varying tendencies over the years. Considering only the most recent period covered in the data, 2002–07, Maputo Province received many migrants from its neighbours, especially from Maputo City, as the city expanded to its neighbouring districts in Maputo Province. Yet, the study considers only absolute numbers and not rates relative to the local population at origin or destination, nor the level of education of migrants, which would help to understand the selective sorting of Mozambican migrants. Furthermore, the analysis at the province level might obscure dynamics within provinces and rural-to-urban mobility.

De Brauw et al. (2014) report a small rural–urban wage gap of 1.07 for Mozambique based on the International Income Distribution Database (World Bank 2012). In many other countries, it is double or triple. The authors suggest that weak infrastructure in the country leads to less information flow about employment opportunities that could incentivize more migration or make migration spells more successful by sorting to the right cities with better employment probabilities.

The World Bank's Mozambique Urbanization Review (World Bank 2017) highlights some of the challenges the country faces. First, the country's urbanization is comparatively slow, and natural population growth accounts for most of it due to high fertility rates. Mozambique's 23 cities only contain around 22 per cent of the population, but they contribute 51 per cent to the national GDP driven by industry and services. While they seem to be important growth drivers, they have become less attractive to new workers as living costs are much higher, labour productivity relatively low, so that real wages are not very different from those in rural areas. The report also points out that smaller towns display higher consumption levels than rural areas and seem to be important for agricultural production linkages. However, connections between rural and urban areas remain limited, not allowing Mozambican subsistence and small farmers, who make up most of the country's population, to connect to markets. Cities themselves are also not well connected, limiting the movement of people, trade of goods, and the opportunity for economies of specialization and scale to develop.

In the present study, therefore, we aim to provide an updated picture of internal migration in Mozambique, describing patterns of migration between provinces and rural–urban areas as well as characteristics of the migrants (such as their sex and education).

3   Methodology

Scholars define migration as the physical movement of people from one place to another, covering long or short distances, which can cover countries, regions, or internal parts of countries. While most people travel only short distances from their original destination and usually within their country, only the migrated people who spend more than four months away from their original homes are considered migrants, according to the National Institute of Statistics (INE) definition. If within the country's boundaries, the migration is considered internal.

The focus of this paper is internal migration, where, as in the case of international migration, some people will voluntarily migrate based on individual choice. At other times, an individual must leave against his or her will, which would be considered forced migration. Ultimately, the distance people migrate depends on economic, gender, family status, and cultural factors (Dastrup 2019).

The paper is based on the three population and housing censuses undertaken in Mozambique in 1997, 2007, and 2017. We draw on two sets of questions in the survey available in each survey year. One set asks for the residence of an individual five years before the census year, corresponding to 1992, 2002, and 2012, respectively. If an individual reports to have lived somewhere else than the current location, the survey also asks for the province and district of that previous residence. The same is asked for one year before the survey. We focus on those who migrated five years ago. This is because of the focus on migration and well-being, where we assume that a migrant would need time to produce changes in his/her life in the place of arrival. We select only the population in economically active age above 15 years old and up to 65. We compute migration rates relative to the local population at the destination.

Internal migration is considered for the major geographical location of the population: provinces, districts, and urban/rural settlements. Urban settlements are considered as those with more than 50 per cent of the population residing in the settlements classified as urban. They are coincidental with the major province capitals: Lichinga, Pemba, Nampula, Quelimane, Tete, Chimoio, Beira, Xai-Xai, Matola, and the five urban districts belonging to Maputo City.

We note one data constraint. We have the full population for the data from 1997 and 2007, but only the representative 10 per cent sample for 2017. However, the sample was designed to represent the population regarding sex, age, and area of residence, but not in terms of migration. Thus, migration patterns are not correctly measured if the migration likelihood varies across these categories—which is likely. Still, we report the results to assess overall trends.

4   Major findings

To analyse the post-war migration process, estimations based on the 1997, 2007, and 2017 population and housing censuses are used as references. Accordingly, migration rates were as high as 21.0 per cent in 1997 (all migrants). In the subsequent years, this rate declined to 15.2 per cent in 2007 and to 3.8 per cent in 2017. As expected, considering a longer period, five years, displays higher migration rates than if we only consider the one year before the census. The high migration rates in 1997 can be explained by the post-war period. The Mozambican civil war lasted from 1976 until 1992, during which an estimated five million people were displaced within and outside the country. Thus, in 1997, many of those might have returned to their homes or moved to areas less affected by the war.

Figure 1: Migration rates for each survey year
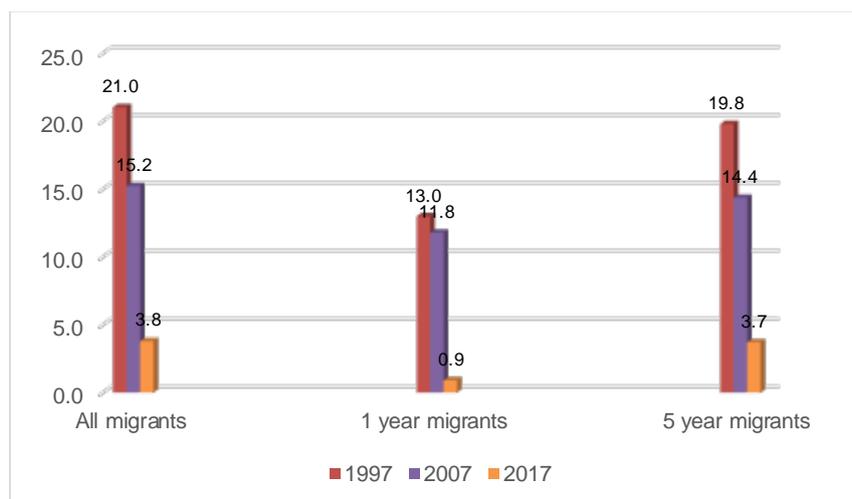
Note: the migration rates are computed by dividing the number of migrants with the total population.

Source: authors' elaboration using population and housing censuses of Mozambique.

4.1   What were the post-war migration patterns?

The historical context can explain the high rates of migration in 1997. Until 1992, people had to move to safer places as the civil war was spreading throughout the country. With the end of the war and elections in 1994, people either returned to their place of origin and/or looked for newer residences as household sizes became unacceptable, with parents living with their adult and/or married children.

Figure 2 illustrates very well the 1997 panorama. The case of Maputo City is peculiar. Maputo City is the country's capital and was almost the least safe place in the southern region of the country. As such, people from parts of Inhambane, Gaza, and Maputo Province accrued to the city as the war intensified in their provinces. With the war's end, and as reflected in the 1997 population census, 20.8 per cent of the city population left for other provinces, being compensated by only 8 per cent of in-migration. The capital lost 12.8 per cent of its population due to migration. Most of these migrants moved to neighbouring Maputo Province which gained 15 per cent of its population after losing only 5.8 per cent. The migratory balance was also positive for the provinces Gaza and Inhambane. The northern provinces of Niassa, Cabo Delgado, and Nampula were net winners as they gained population.

Only the central provinces of Zambezia, Tete, and Sofala were net losers. This must be related to the fact that the war was much more intense in these areas, and people may not have found it safe to return home, among other reasons due to the widespread presence of landmines.

Figure 2: In- and out-migration rates by province, 1997
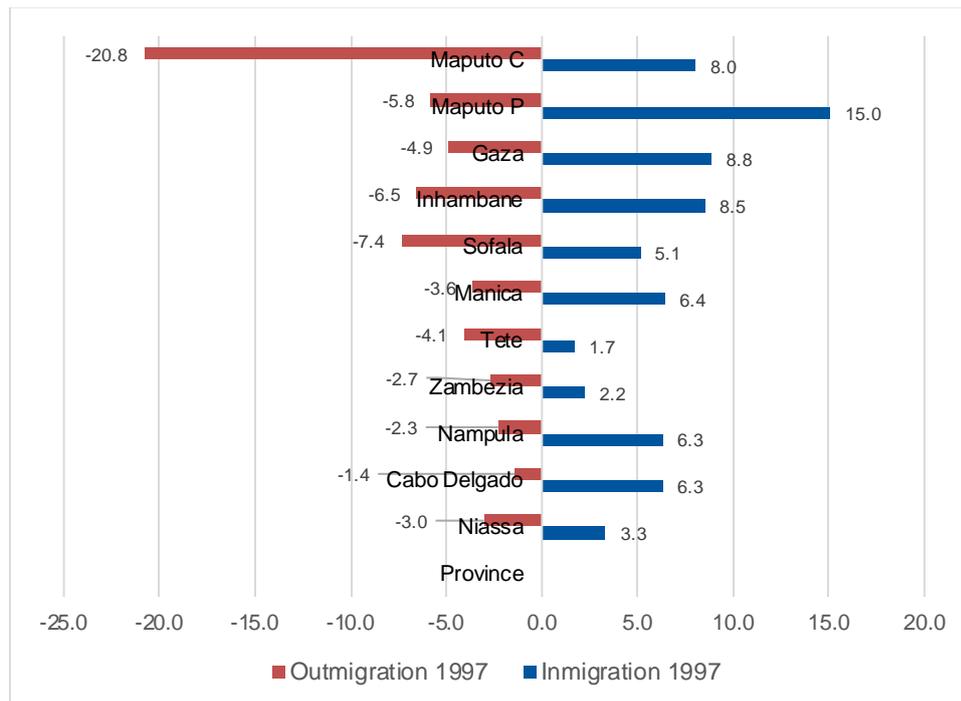
Note: the migration rates are computed by dividing the number of migrants with the total population in each province.

Source: authors' elaboration using population and housing censuses of Mozambique.

Where did people migrate to and from?

As mentioned above, the 1976–92 civil war did massively displace the population from their places of origin. In Figure 3, we show the patterns of origin and destination provinces. And most of the dislocated population left Maputo City, mostly to Maputo Province, Gaza, and Inhambane. Sofala Province is the second province with the largest population losses. Most of them went to the neighbouring Manica Province, returning home after years of intense war. Zambezia, Tete, and Inhambane were the important points of destination. The other important destination was Maputo City. The third province with large population exits is Zambezia. They went mostly to Sofala and Nampula Provinces. Those leaving from Nampula Province went mostly to Zambezia and Nampula Provinces. But an important share went to Maputo City.

Figure 4 indicates that despite large returns to original places of residence with the end of the war, we still see large movements the other way around: people moving from rural to urban areas. Indeed, 246,000 people moved from urban to rural areas. It appears that neighbouring provinces or cities provide the main destinations during this period, less so the distant but maybe more economically attractive destinations.

Figure 3: Migration flows between provinces, 1997
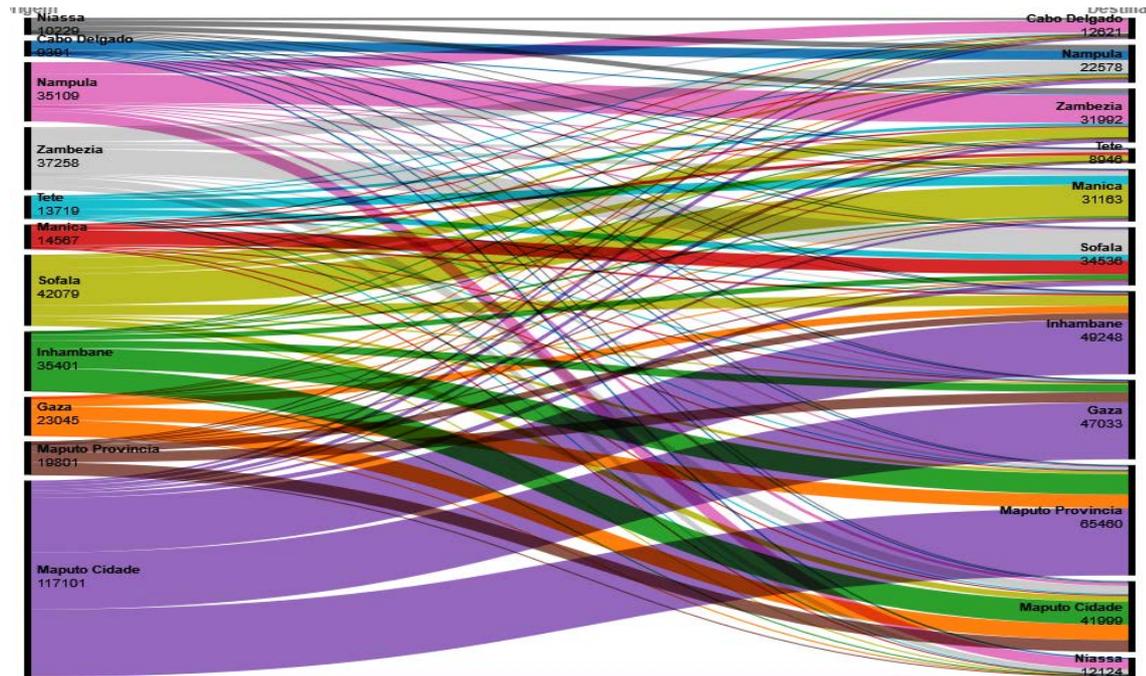
Note: the values displayed are the number of migrants leaving a respective province (on the left) and those arriving in a province (on the right).

Source: authors' elaboration using population and housing censuses of Mozambique.

Figure 4: Rural-to-urban migration flows, 1997

Note: the values displayed are the number of migrants leaving a respective province (on the left) and those arriving in a province (on the right).

Source: authors' elaboration using population and housing censuses of Mozambique.

4.2 The post-war migration

The post-war resettlement process is mostly captured by the 1997 population and housing census. Still, conflict has indeed continued in specific areas like the central provinces of Sofala and Manica and since 2017 in the northern province of Cabo Delgado. As such, most human movements captured by the post-war period (2007 and 2017) can essentially capture social and economic processes. This section is dedicated to the events captured by the 2007 and 2017 population censuses.

Where did people migrate to and from?

As it was mentioned above, migration rates declined significantly compared to 1997. From 19.8 per cent, it dropped to 14.4 and 3.7 per cent in 2007 and 2017, respectively.

At the province level, in 2007, Maputo City continued to be the major population loser, with its inhabitants going mostly to the neighbouring provinces of Inhambane and Gaza. Some of this migration is simply urbanization. A few districts of Gaza directly border Maputo City and thus capture the greater city area. Inhambane, Zambezia, and Sofala Provinces constituted the next losing provinces. Those who left Inhambane went mostly to Maputo Province and City. Those from Sofala went mostly to Manica and Zambezia, the provinces with which it shares borders. Those from Zambezia went mainly to Sofala and Nampula Provinces, again, the neighbouring provinces.

Maputo City is no longer the major migrant receiver as it happened before the civil war despite receiving migrants from everywhere in the country. Maputo Province receives migrants from Maputo City, Inhambane, and Gaza. The provinces of Sofala, Inhambane, Zambezia, and Manica follow in receiving migrants from neighbours.

Regarding migration balance, Maputo City is the major net loser, while Maputo Province is the major net gainer. Inhambane, Sofala, Tete, Zambezia, Nampula Provinces are net losers. Manica and Cabo Delgado Provinces are net gainers. Niassa Province is somewhat stable. The interprovincial flow of migrants above is similar for 2017. The Nacala and Beira corridors, in Nampula and Sofala Provinces, respectively, appear to have played a role in people's movement with migrants moving from Niassa to Nampula and vice versa; and from Sofala to Manica and vice versa.

Figure 5: Interprovincial migration

a) 2007
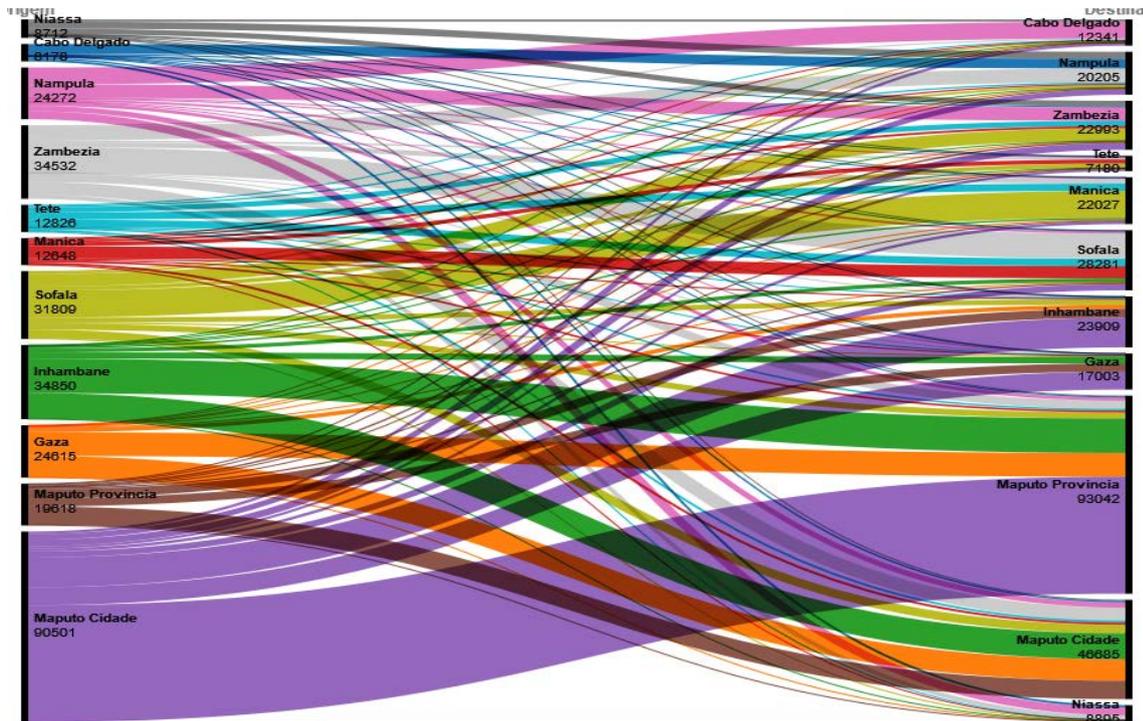
b) 2017
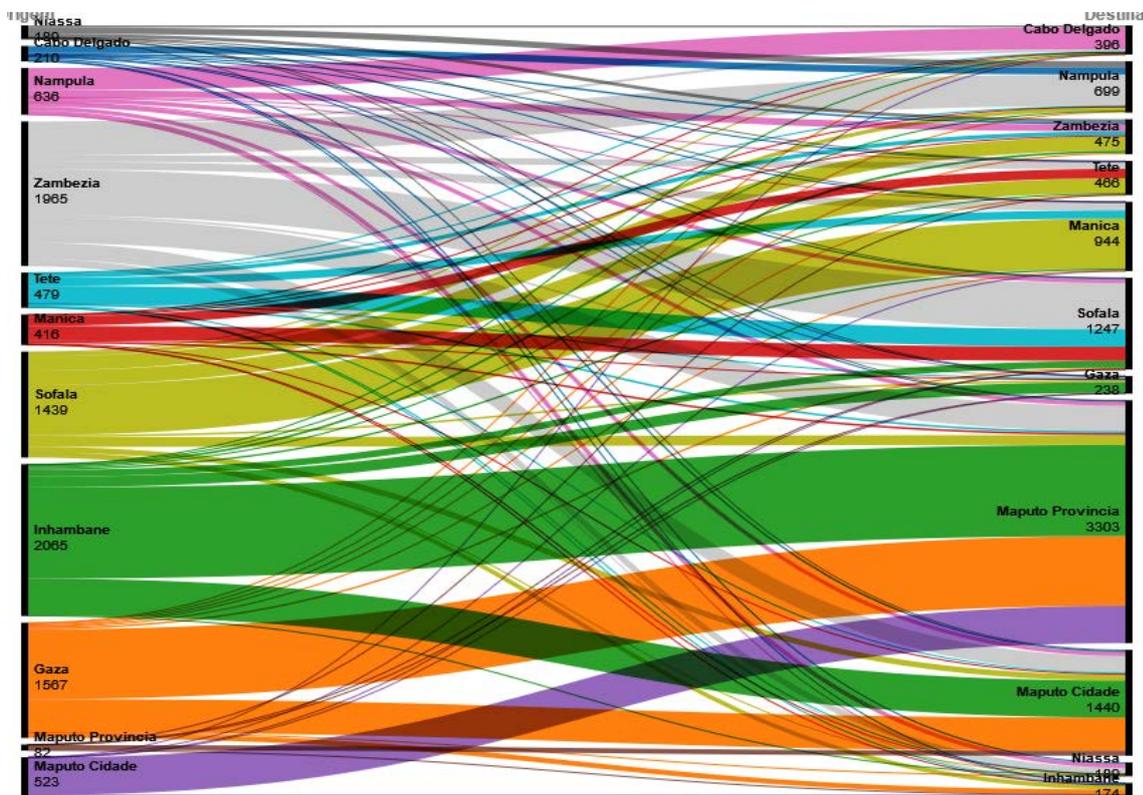
Notes: the values displayed are the number of migrants leaving a respective province (on the left) and those arriving in a province (on the right).

Source: authors' elaboration using population and housing censuses of Mozambique.

By region, the bulk of the migrants captured in the 2007 census are those leaving the central part of the country to the south (around 32,000 migrants), but other directions are not negligible: from the south to the centre, north to centre, north to south, and centre to north.

For 2017, the census analysis shows a different direction: most migrants move from the north to the south. The north-to-centre and the centre-to-north movements are also important. See Figures 6a and 6b.

Figure 6: Migration between regions

a) 2007
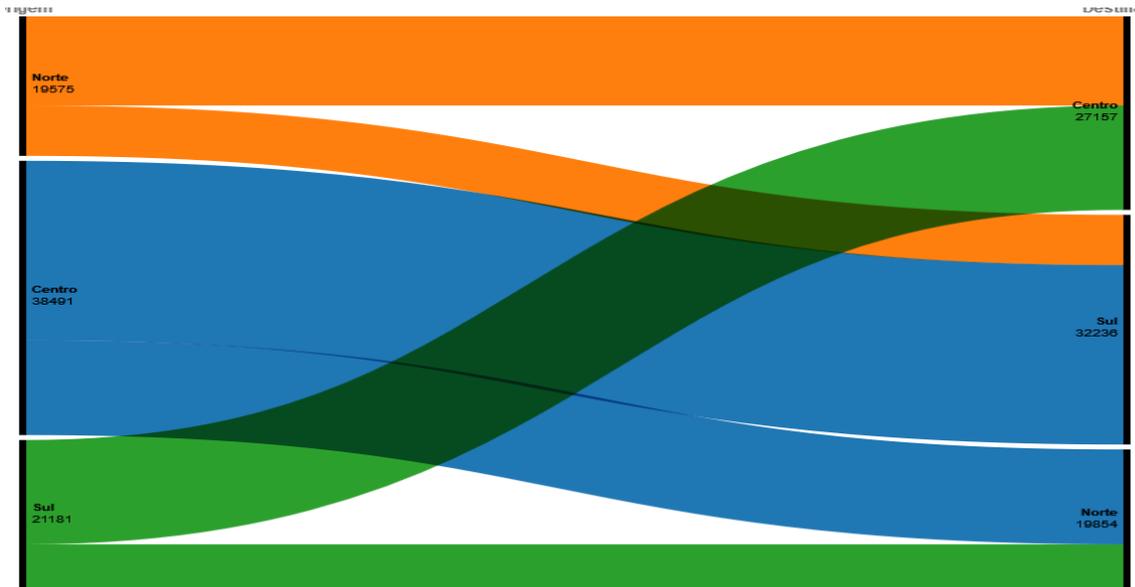
b) 2017
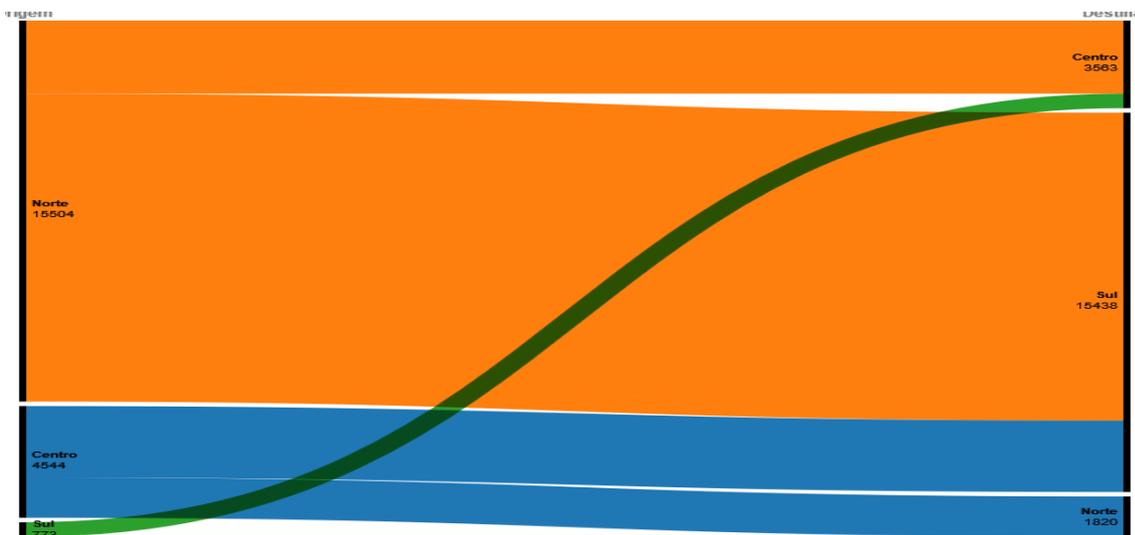
Note: the values displayed are the number of migrants leaving a respective region (on the left) and those arriving in a region (on the right).

Source: authors' elaboration using population and housing censuses of Mozambique.

By area of residence, Figure 7a shows that rural-to-urban migration in 2007 was very important in the country. Indeed, in 2007, 279,300 people moved from a rural to an urban area, adding to the

other 60,000 moving from an urban to another urban settlement. This sums up to 357,900 migrants to the urban areas. The opposite direction was also present, yet much smaller. Our estimates indicate 109,000 persons leaving urban areas for rural ones.

Figure 7b on rural-to-urban migration for 2017 indicates that the levels of migration have reduced significantly. At the same time, the proportion of migrants leaving urban areas to the rural ones reduced, too. Either there was a reclassification of rural areas, or rural areas became less attractive for migrants.

Figure 7: Migration between rural and urban areas

    a)   2007
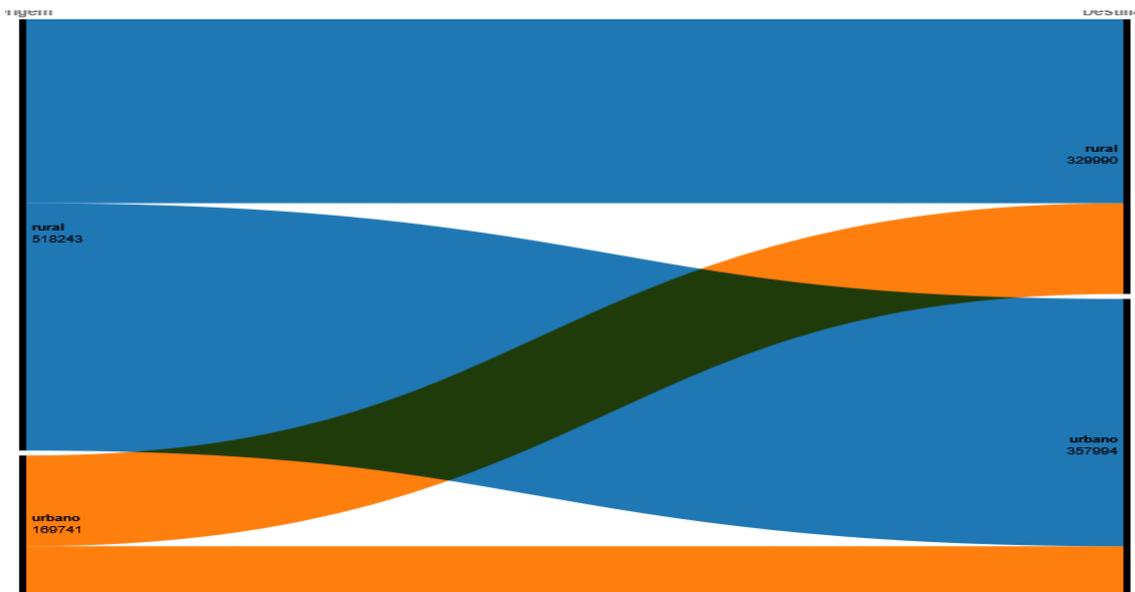
    b)   2017

Note: the values displayed are the number of migrants leaving a respective area (on the left) and those arriving in an area (on the right).

Source: authors' elaboration using population and housing censuses of Mozambique.

4.3   Are migrants selected on education?

In the literature review, we discussed the selective nature of internal migration. Thus, we document the characteristics of migrants to assess the degree of selection into internal migration present in Mozambique. Table 1 presents the percentage of the population, male and female, with none, a low, medium, or high level of education. Overall, the migrants' levels of education display a trend of improving education levels over time, like the general population. Yet, migrants, male and female, are, on average, significantly better educated than non-migrants.

Table 1: Education level of migrants and non-migrants by gender and year

		Male			Female		
		Migrant	Non-migrant		Migrant	Non-migrant	
		Mean	Mean	Mean difference	Mean	Mean	Mean difference
1997	None	0.34	0.20	-0.135***	0.20	0.09	-0.114***
	Primary	0.64	0.79	0.151***	0.79	0.91	0.123***
	Secondary	0.02	0.00	-0.016***	0.01	0.00	-0.009***
	Higher	0.00	0.00	-0.000***	0.00	0.00	-0.000***
	Observations	729,580	3,056,441		755,811	3,678,872	
2007	None	0.01	0.02	0.018***	0.01	0.02	0.016***
	Primary	0.67	0.80	0.135***	0.79	0.89	0.097***
	Secondary	0.29	0.16	-0.128***	0.18	0.08	-0.100***
	Higher	0.04	0.01	-0.024***	0.02	0.01	-0.014***
	Observations	407,373	4,417,518		381,557	5,141,681	
2017	None	0.03	0.05	0.017***	0.03	0.05	0.015***
	Primary	0.35	0.56	0.214***	0.43	0.69	0.261***
	Secondary	0.54	0.36	-0.172***	0.48	0.24	-0.237***
	Higher	0.09	0.03	-0.059***	0.05	0.02	-0.038***
	Observations	26,066	604,073		26,125	697,630	

Note: asterisks represent level of statistical significance of t-test/chi-squared test of difference in means: .01 - ***; .05 - **; .1 - *.

Source: authors' elaboration.

4.4   Did migration pay off?

The question arises whether migration is associated with an improvement or deterioration of a migrant's well-being. The literature suggests that voluntary migration occurs only if the expected returns are positive (Sjaastad 1962; Stark and Bloom 1985; Lagakos 2020). In the final step, we assess the correlation between migration and poverty.

The poverty status is defined using the multidimensional poverty index (Alkire et al. 2015). An individual is defined as poor if she or he lives in a household deprived of 60 per cent of a weighted sum of deprivation indicators. Table 2 lists the definition of deprivation dimensions and indicators. The dimensions include education, health determinants, and housing conditions. The indicators are defined such that they are comparable across survey years.

Table 2: Dimensions, indicators, weights, and definitions used to construct multidimensional poverty

Dimension	Indicator (weight)	The household is considered deprived if…
Education	Primary education (1/2)	…no one concluded primary school.
Health determinants	Safe water source (1/8)	…the household does not use canalized water (inside or outside the house), from a tank, from a well with manual or mechanic pump, mineral or bottled water.
	Safe sanitation (1/8)	…the household uses a not-improved latrine or has no type of toilet or latrine.
Housing conditions	Conventional building material (1/24 for roof, wall, and floor material each)	…the house is covered with unconventional/unsafe roof material, walls or floor are built with unconventional/unsafe material.
	Electricity access (1/8)	…the household does not have access to the electricity network.

Source: authors' elaboration.

While our data does not allow us to observe individuals' poverty status at their origin before migration, we can observe their poverty status at their destination and compare it to that of non-migrants. A simple comparison between migrants and non-migrants is prone to selection bias, meaning that other unobserved factors systematically determine the migration decision and the poverty outcome (Heckman et al. 1998). To reduce this concern, we apply inverse probability weighted regression adjustment (IPWRA) (Cattaneo 2010). This method proceeds in two steps. First, we predict the likelihood of being a migrant based on observable characteristics. The inverse of the predicted migration probability is then used as a weight in a regression of poverty status on migrant status controlling for the observable characteristics. In contrast to simple matching approaches, this approach is doubly robust to misspecification in either the migration prediction or the poverty regression (Cattaneo 2010). Specifically, we estimate

$$Y_i^t = \alpha + \beta_1^t M_i^t + \beta_2^t X_i^t + \gamma_d + P_p + \varepsilon_i^t \tag{1}$$

Where Y_i^t is the poverty status of individual i in year t. We estimate this regression separately for each year. The outcome is binary, equal to 1 if an individual lives in a household considered poor based on the multidimensional deprivation index as defined above, 0 otherwise. It is predicted by an individual's migrant status, M_i^t, individual characteristics, X_i^t (age, age squared, gender, education, urban residence, household size), as well as the district, γ_d, and province, P_p, of residence. The regression is weighted by the inverse probability weight defined as:

$$w = 1/p \ \ if \ M = 1 \tag{2}$$

$$w = 1/(1-p) \ \ if \ M = 0 \tag{3}$$

where p is the predicted probability of being a migrant based on observable characteristics estimated in a logistic regression of the following specification:

$$P(M = 1)_i^t = \alpha + b_2^t X_i^t + \gamma_d + P_p + \varepsilon_i^t \tag{4}$$

14

with X_i^t, γ_d, and P_p defined as in (1) above. Following Imbens (2015), we trim the sample after predicting the migration probability to exclude observations with very low or very high predicted probabilities to ensure common support.

In Table 3, we show the regression results that estimate the probability of being a migrant corresponding to specification (4). As we observed above, many internal migrants moved to urban areas so that we are most likely to encounter them there, more so in 2007 and 2017 than in 1997. Migrants are significantly less likely to live in larger households in 2017, whereas they were slightly more likely in 2007. In 1997, household size is irrelevant for migrant status. In terms of education, the pattern also changes in each year. In 1997, having primary or higher education reduced the likelihood to be a migrant, while secondary education was associated with a higher probability. This could reflect the mix of reasons for migration after the war ended, including return to one's origin, which is often independent of education. In contrast, in 2007, migration probability increases with the education level and the association is large. In 2017, this pattern continues but with a smaller correlation. Women were less likely to migrate than men in all years. Finally, we observe a non-linear relationship between age and migration similar in all years.

Table 3: Probability to be a migrant, by year

	Migrant		
	(1)	(2)	(3)
	1997	2007	2017
Urban	0.044***	0.460***	0.213***
	(0.004)	(0.005)	(0.016)
Household size	0.000	0.005***	-0.140***
	(0.000)	(0.000)	(0.002)
Education (base=none)			
Primary	-0.118***	2.438***	0.178***
	(0.003)	(0.022)	(0.027)
Secondary	0.464***	2.793***	0.420***
	(0.015)	(0.023)	(0.027)
Higher	-0.979*	3.361***	0.920***
	(0.449)	(0.024)	(0.032)
Female	-0.173***	-0.192***	-0.077***
	(0.002)	(0.003)	(0.009)
Age	0.019***	0.007***	0.013***
	(0.001)	(0.001)	(0.002)
Age squared	-0.000***	-0.000***	-0.001***
	(0.000)	(0.000)	(0.000)
Observations	8,220,704	10,348,129	1,353,894

Note: standard errors in parentheses. Level of significance: * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Each regression includes district fixed effects. We applied logit estimations.

Source: authors' elaboration using population and housing censuses of Mozambique.

Table 4 presents the results of the regression of poverty on migrant status controlling for other characteristics and applying inverse probability weights. The likelihood for a migrant to live in a multidimensionally poor household is significantly negative in all census years and has been declining over time. In 2017, a migrant is 6.3 per cent less likely to be poor compared to a non-migrant and compared to 5.8 and 6.1 per cent in 1997 and 2007, respectively.

Table 4: Probability to be poor, by year

|	Poor		
	(1)	(2)	(3)
	1997	2007	2017
Migrant	-0.058***	-0.061***	-0.063***
	(0.000)	(0.001)	(0.003)
Urban	-0.163***	-0.149***	-0.224***
	(0.001)	(0.001)	(0.005)
Household size	-0.006***	-0.006***	-0.022***
	(0.000)	(0.000)	(0.001)
Education (base=none)			
Primary	0.341***	0.038***	0.032***
	(0.001)	(0.008)	(0.009)
Secondary	0.067***	-0.272***	-0.480***
	(0.004)	(0.008)	(0.009)
Higher	0.874***	-0.451***	-0.472***
	(0.241)	(0.008)	(0.015)
Female	-0.009***	0.006***	-0.023***
	(0.000)	(0.001)	(0.003)
Age	0.004***	0.001***	0.008***
	(0.000)	(0.000)	(0.001)
Age squared	-0.000***	-0.000*	-0.000***
	(0.000)	(0.000)	(0.000)
Observations	7,892,151	9,934,188	1,299,728
R-squared	0.328	0.293	0.496

Note: standard errors in parentheses. Level of significance: * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Each regression includes district fixed effects. We applied ordinary least squares (OLS) estimations and inverse probability weights on a trimmed sample.

Source: authors' elaboration using population and housing censuses of Mozambique.

These results suggest that migration in Mozambique is associated with better livelihoods. We investigate whether this positive association depends on the migration direction in terms of rural/urban areas of origin and destination. In Figure 8, we present the coefficient of the migrant status from the poverty regression estimated separately for each migration direction. We observe some differences. First, movements from urban-to-urban areas were associated with a large negative likelihood of 15 percentage points to be poor in 1997, which then declined in 2007 to around 10 and further to 4 in 2017. An opposite pattern emerges for the direction from urban-to-rural areas. In 1997, a migrant was around 8 percentage points less likely to be poor if she or he had moved from an urban to a rural area. By 2017, the effect was at 12. Migration from rural-to-urban or rural-to-rural areas is associated with a lower likelihood of being poor which has changed little over time and is only around 4 percentage points.

We compare migrants with non-migrants at the destination, so we cannot conclude whether a specific direction is better for a given migrant. However, we can observe that in all destinations, migrants are relatively better off than non-migrants, especially when they came from urban to rural areas.

Figure 8: Effect of migration on likelihood to be poor by migration direction and year
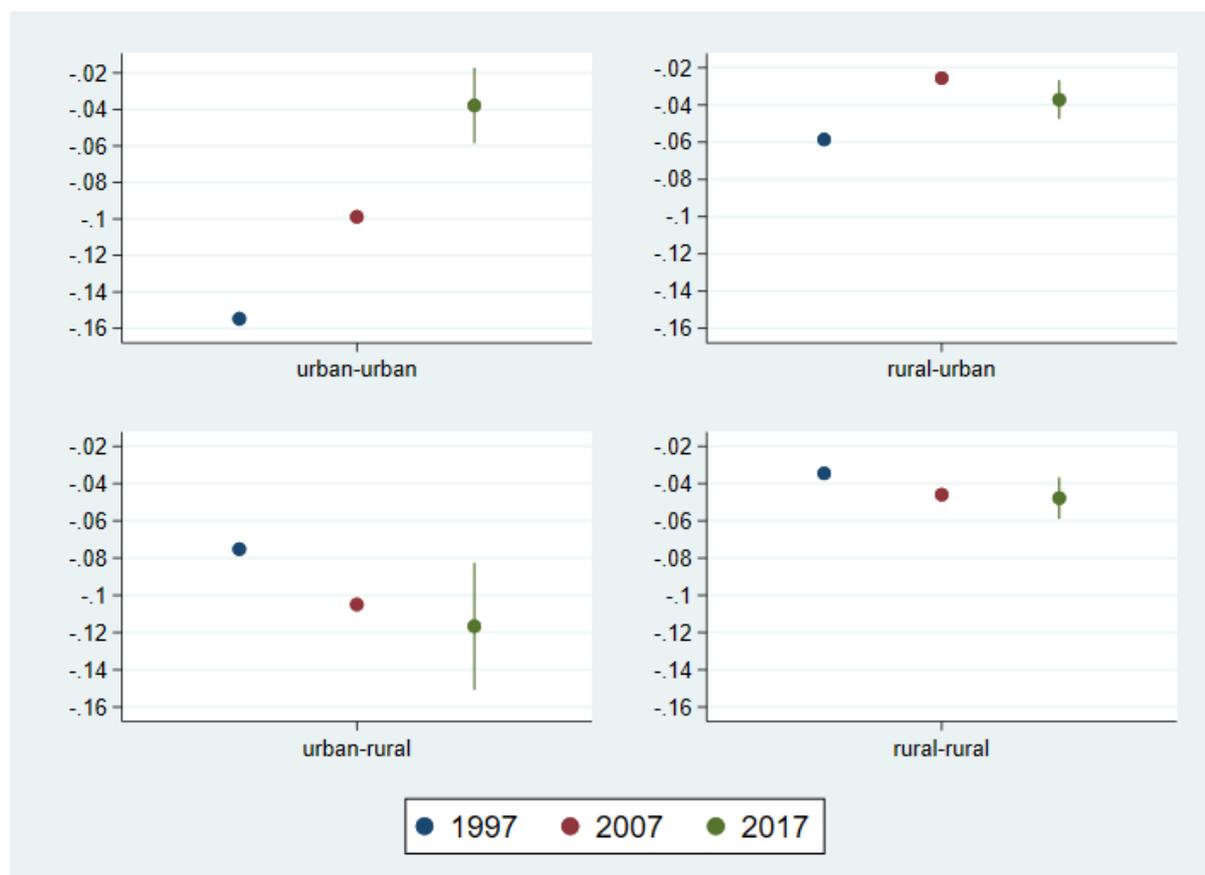
Note: each panel shows three coefficients from separate OLS regressions for each year. The coefficients are that of a dummy of migrant status for a given direction compared to non-migrants in the urban/rural destination, respectively. Inverse probability weights were applied.

Source: authors' elaboration using population and housing censuses of Mozambique.

5   Conclusions

In this study, we document the prevalence of internal migration in Mozambique from the post-war period until most recently, drawing on data from three population censuses. Four patterns emerge. First, the post-war period (1992 to 1997) shows the highest internal migration rates over the past decades. Most recently, migration rates within the country have been relatively low. Second, a large, displaced population was seeking to return to their origins in 1997. The decade was dominated by movements from the capital city to other provinces. However, some provinces were avoided, likely due to wartime legacies, such as landmines. Third, the periods until 2007 and 2017, respectively, reflect economic developments. The capital city is growing beyond its provincial borders, so a large share of internal migration reflects the urbanization in neighbouring provinces. Other trends include migrants moving to territories of important economic activity, such as the Nacala and Beira corridors. Fourth, migrants have always been positively selected on education and migration is associated with lower poverty at the destination.

The findings highlight that internal migration might play an important role in the economic development of Mozambique. Yet, fewer people have moved in the past decade even though economic conditions are very different between regions, provinces, and rural and urban areas. The

lack of internal mobility might also hinder economic convergence within the country. Future research should thus identify the obstacles to internal migration.

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