



Land Governance in an Interconnected World

ANNUAL WORLD BANK CONFERENCE ON LAND AND POVERTY
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LAND ACCESS, TENURE SECURITY AND THE FATE OF RURAL YOUTH IN AFRICA: THE CASE OF MOZAMBIQUE

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Abstract

Unlike the existing literature that focuses on land access, this paper assess whether land access and tenure security have effect on youth employment and migration choices. We consider four indicators: youth land acquisition and youth expected inheritance of land for land access and private risk and public risk for tenure security. This paper hypothesizes that access to land and tenure security are important factor that drive youth in the rural areas to look for non-agricultural livelihood strategies. We employed data gathered in Central and Northern Mozambique with a sample of 3,510 households. Our sample consists of 5,750 youth coming from 2,890 sampled households. Our findings suggest that both land access and tenure secure are positively associated with employment in the agricultural sector. With respect to association between land access and migration, we found mixed results. Furthermore, tenure security is negatively correlated with permanent migration, but positively correlated with temporary migration.

Key Words: Employment, migration, land access, tenure security, youth, Mozambique



1 INTRODUCTION

Mozambique is among the countries with rapidly growing population in Sub-Saharan Africa (SSA) over the period 1997 through 2017. During this period, data from United Nations Population Division show that Mozambique's population grew on average at 2.7% per year, compared with an average growth rate of 2.4% for SSA countries.² Data from the Mozambique Population Census 1997 and 2017 – commonly known by its Portuguese acronym RGPH (*Recenseamento Geral da População e Habitação*) – show that Mozambique's population increased by 68% from 16.1 million in 1997 to 27.1 million in 2017. During this period, annual population growth rate in Mozambique was considerably higher in urban areas than in rural areas (3.2% versus 2.4%). However, during the same period, the largest share of the total population lived in rural areas (30.6% for urban area versus 69.4% for rural area).

With an annual growth rate of 2.5% over the period 1997 through 2017, youth accounted on average for 33.6% of the total population during the period 1997 to 2017 with little variation from year to year.³ Despite this considerably stable youth share of the population, youth population increased by 68.8% from 5.4 million in 1997 to 9.1 million in 2017. During the same period, the share of people under the age of 15 stood on average at 44.7%. This suggests that on average, about 80% of the population comprises children and youth (Figure 1). Furthermore, people under the age of 25 accounted on average for 65% of the population over the period 1997-2017. This youth bulge could either potentially bring about productivity gains if they are employed in various sectors of the economy or become a threat to political and social stability if they are not employed. Between 1997 and 2017, youth share of total population was on average higher in urban areas than in rural areas (38.5% versus 31.4%); similar patterns are observed in each year. However, the largest share of the total population (69.4%) and of youth population (64.9%) lived in rural areas where agriculture is the main livelihood strategy.

Data from the nationally representative National Agriculture Survey of 2014 – commonly known by its Portuguese acronym IAI (*Inquérito Agrícola Integrado*) – show that 83.8% of individuals 15-year old or older have agriculture as their either primary (65.3%) or secondary (18.5) livelihood strategy. However, unemployment is high in both urban and rural areas especially among youth. Data from IAI 2014 reveal

² This annual growth rate obtained from United Nations Population Division is consistent with data from Mozambique Population Census also showing population growth rate of 2.7% per year during the period 1997-2017.

³ Consistent with the African Union definition, we define youth as individuals aged between 15 and 34. However, the United Nations consider youth as individuals aged between 15 and 24.



that 39.5% of individuals 15-year old or older had wage jobs or were self-employed in the last 12 months prior to the survey. Among youth, 34.5% had wage jobs or were self-employed, compared with 46.1% for individuals aged 35 and older.

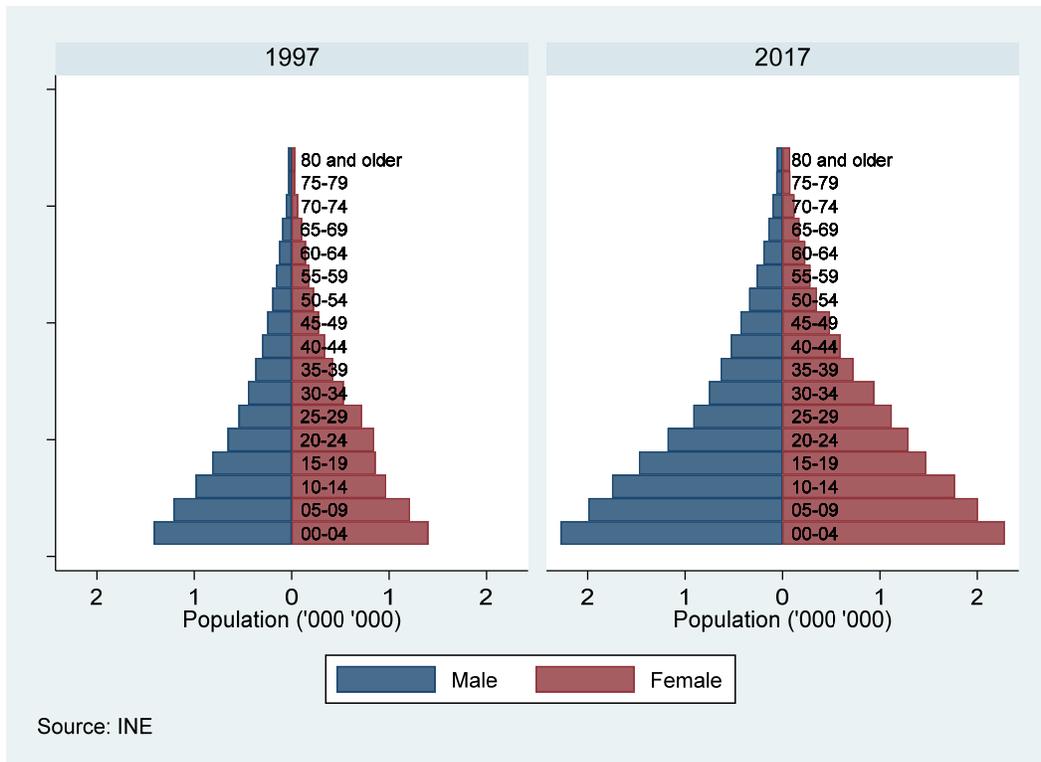


Figure 1 Population structure by age group

On the other hand, data from the nationally representative Integrated Labor Force Survey 2005 – commonly known by its Portuguese acronym IFTRAB (*Inquérito Intregado à Força de Trabalho*) – indicate that 15.7% of individuals aged 15 and older were unemployed, and that unemployment rate was higher in urban than rural areas (23.5% versus 11.6%).⁴ Data from IFTRAB 2005 also point out that unemployment rate is

⁴ Following the Mozambique National Statistics Institute (INE), an individual is considered unemployed if in the reference period the person (i) did not have a job; (ii) was available to work; (iii) looked or did not looked actively for job; (iv) had occasional job; (v) was self-employed but did not work during the reference period; (vi) practiced



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considerably higher among youth compared to adult aged 35 and older (24.6% for individuals aged 15-24 versus 15.7% for individuals aged 25-34 versus 8.3% for individuals aged 35 and older). Similar patterns are observed in urban and rural areas. Against this background, creating productive employment opportunities for youth, especially in rural areas, is a major concern for not only Mozambique but also most developing countries where growing youth labor force seeks employment in both formal and informal sectors. High poverty incidence raises further concerns about challenges stemming from high youth unemployment. Data from nationally representative Household Budget Survey 2015, commonly known by its Portuguese acronym IOF (*Inquérito sobre Orçamento Familiar*) show that 46.1% of households are poor with higher poverty incidence in rural than in urban areas (37.4% versus 50.1%). The same data indicate that poverty incidence stood at 44.4% among households headed by youth, compared with 46.7% among households headed by individuals aged 35 or older.

As widely argued, agriculture can potentially create job opportunities to absorb growing youth labor force, but the sector has to become more attractive to youth by increasing its productivity and profitability. Cultivated area allocated to annual crops in the 2013/2014 agricultural season amounted to 5.3 million hectares, representing 15.4% of total estimated arable land in Mozambique. This could suggest that Mozambique is a land abundant country although pressure of land is increasing with rapidly growing population as discussed above.⁵ Yet, access to land and tenure security is limited: only 2.4% of plots cultivated by small- and medium-scale farmers in the 2013/2014 agricultural season had official land use rights certificate commonly known by its Portuguese acronym DUAT (*Direito de Uso e Aproveitamento da Terra*); of which 40.4% had provisional DUAT. In a country where land markets are prohibited by law – coupled with limited farm wage employment opportunities especially given that large-scale farmers represent only 1.1% of total number of farmers in the 2013/2014 agricultural season – Bezu and Holden (2014) and Kosec, et al. (Forthcoming) argue that access to land could be among the important factors determining whether a rural youth could depend on agricultural livelihood, migrate to urban areas or be employed. Empirical evidence (Monteiro, et al., 2014, Ghebru, et al., 2015, Pitoro, 2017) indicate that access to and equitable distribution of land, land transfer rights, land disputes and other tenure security issues have long been problems and points of serious controversy in Mozambique. Thus, this paper seeks

agriculture as regular worker but did not work during the reference period; and (vii) was engaged in family work without remuneration but did not work during the reference period.

⁵ Small- and medium-scale farmers account together for 98.9% of total cultivated area under annual crops in the 2013/2014 agricultural season (96.7% for small-scale versus 2.2% for medium-scale).



to assess whether access to land and tenure security are drivers of youth unemployment and migration to urban areas, which would have great policy relevance.

This paper hypothesizes that in the absence of vibrant labor intensive non agriculture sector, access to land is an important push-factor that drives youths in the rural areas to look for non-agricultural livelihood strategies. In the current context in Mozambique, population growth does not yet put pressure on land. Neither can one reasonably argue that all youth in rural areas have easy access to land. Purchase, sale, leasing and mortgaging of land are all constrained in Mozambique. Furthermore, ambiguities in transferability of land through inheritance, assignment under traditional rules, and government provision result in both underemployment of and increased non-agricultural livelihood strategies pursued by rural youth.

Although some studies (Bezu and Holden, 2014, de Brauw, et al., 2014) attempted to identify the underlying causes of rural-urban migration in SSA, to the best of our knowledge, with the exception of Kosec, et al. (Forthcoming), none of them attempted to examine the impact of access to land and tenure security on youths' livelihood strategies decision. This study differs from Kosec, et al. (Forthcoming) in at least three ways. First, in addition to land access, we test whether tenure security has an effect on employment decisions made by youth. Second, our application is to a land abundant country (Mozambique) as opposite to Kosec, et al. (Forthcoming)'s application to a land scarcity country (Ethiopia). Third, despite some similarities, the Land Laws in the two countries differ in some relevant ways. For instance, contrary to Ethiopia, Mozambique Land Law enable that land use rights be granted to communities and require that community consultations be undertaken prior to awarding of land use rights. Controlling for other socioeconomic factors pertaining to rural-urban migration, we test the hypothesis that access to land is an important push-factor that drives youths in rural Mozambique to migrate and look for non-agricultural livelihood options. Specifically, we test whether youths' actual and potential access to land have an impact on their decision to migrate. By doing so, we not only test the stated hypothesis but also identify the underlying factors behind one's revealed livelihood strategy.

2 CONCEPTUAL FRAMEWORK

There are a range of both pull and push factors that make youths in the rural agrarian population to opt for or migrate to non-farm activities. The literature on migration mentions both 'pull' and 'push' factors as reasons for migration and present evidences supporting both forces (Ellis 1998). However, whether it is because of the pull factors or the push factors that youths in the agrarian population look for non-farm



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activities or migrate to other areas have important differences in terms of their policy implication. Knowing the underlying causes of livelihood diversification of the rural youth helps to tackle the causes (if it is an outcome of distress and desperation) or to further stimulate the phenomenon (if it is an outcome of new opportunities and aspiration) by directing it in particular ways that enhance the opportunities it represents.

Ellis (1998) argues that the notions of push versus pull factors can be equivalently interpreted as involuntary versus voluntary as well as desperation versus choice as they are ways of broadly categorizing alternative sets of circumstances resulting in livelihood diversification. In practice, Ellis (1998) further argues, individuals change their livelihood strategy being influenced by multiple factors. Sometimes a single factor may dominate over all others factors for an individual in a specific context.⁶ But, usually a cumulative combination of factors represent challenges or/and opportunities for different individuals in order to make the later change their livelihood strategy.

Wage income differentials between agriculture and non-agriculture sector are identified as the major 'pull' factor by many studies (see Rigg 2006). If earnings from non-agricultural employments are assessed to be higher than earnings from agricultural employment, the pull factors would emerge. In other words, in a situation where returns to labor and capital in non-agricultural employment is higher than returns in agricultural employment, non-agricultural employment will be more attractive than farming. The notion of efficient allocation of resources detects that where there is a strong and vibrant non-agricultural sector in the rural areas, rural residents diversify into the non-agricultural sector or could also be fully engaged in the non-agricultural sector if the returns from the non-agricultural sector dominate the returns from agriculture at all levels of labor and capital (Bezu and Holden 2014). By undertaking a broad literature review in the area, Rigg (2006) has tried to show how non-agricultural opportunities have expanded mobility and led to the delocalization of livelihoods.

On the other hand, landlessness, market failures, erosion of assets (for example, land subdivision at inheritance), seasonality, risk, and disasters leading to livelihood collapse are identified as the major 'push' factors by several studies. These largely hold true for the rural poor.⁷ Reardon, Berdegue, Barrett, &

⁶ “Diversification is an infinitely heterogeneous social and economic process, obeying a myriad of pressures and possibilities in the rural economy. It is differentiated in its causes and effects by location, demography, vulnerability, income level, education and many other factors. This shows the importance of local contexts in livelihood diversification and therefore of tailoring local policies to local circumstances.” Ellis (1998), pp 29

⁷ “A number of sources concur that the capability to diversify incomes is critical for the survival capabilities of the rural poor (Motion, 1979; Haggblade et al, 1989; Hazell and Haggblade, 1993). This is partly because poor households



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Stamoulis (2007) relate the push factors to performance of agriculture. These authors argue that the basic production potential given available technologies and agro-ecological characteristics as well as risk factors that may cause inter-seasonal and other transitory drops in farm income, chronic food insufficiency, and fluctuations in farm income render the rural poor to opt to non-agricultural sector. Binswanger & Rosenzweig (1986) indicate incomplete markets for factors, including, but not limited to, missing or incomplete land, credit, and insurance markets as another important source of push factors. Under both circumstance, the young people generally look for any non-agricultural activities as a result of distress and desperation and usually end up with unskilled, low paying, off-farm wage employment in the rural area or migrate to the urban centers and end up with unskilled, low paying wage employment. Consistent to this, Ellis (1998) indicates that a prevalent feature of rural poverty in Asia is associated with near or actual landlessness where landless or near-landless households must rely on off-farm and non-agricultural income sources for survival.

The rural population who do not own agricultural land in the face of land scarcity and missing land markets experience the ultimate push factor. Most rural youth in SSA fall under this category. In agricultural population where land is scarce, it is not easy for youth to get access to their own land. Of course, it is not unusual for youth to get access to work on family land as most youth in rural areas often live with their parents in a household. However, this does not mean that they appropriate the product of their effort for themselves. Even if they have share, this does not mean that they could easily appropriate the product of their effort as they want. Even worse they may have only limited influence on their own labor allocation. Thus, it is not unrealistic if we assume that having one's 'own' land or farming for self is a more preferred strategy than working on family land for a rural youth.

However, as it is stated above, in the face of land scarcity and missing land markets, it is not easy for youth to get access to their own land or to farm for themselves. Under this circumstance, that means in the presence of strong push factors, the actual livelihood strategy choice of the rural youth is not simply between employment in the agricultural sector and employment in non-agricultural sector. This is related to two factors. First, employment in non-agricultural sector could be the only option rather than being an alternative. Second, even if employment in the agricultural sector is an option, it could be in the form of

are more vulnerable to seasonal and risk factors than better off households. It is also because poor households lack assets; they may be landless or near landless, and possess few or no livestock. Without the capability to produce enough food on own account, the poor must diversify income sources in order to survive (Zoomers and Kleinpenning, 1996)." Taken from Ellis (1998), on page 18.



working on family land or being hired at a very low wage on others farm. In both cases, the landless and near-landless youth look for the non-agricultural sector just for survival.

Land scarcity which can be explained by lower per capita farmland size at the household level is the primary factor that push the rural youth to migrate to other areas to get non-agricultural employments. Even if land is not very scarce, the rural youth – especially female and non-first-born children – may not have easy access to farm land if there is no good inheritance practices in the society. Moreover, the existing formal rules and/or traditional practices in relation to land acquisition through purchase, rent, gift and assignment by formal authorities and under traditional rules may not be favorable to youths.⁸

This paper hypothesizes that access to land is an important push-factor that pushes youth in the rural agrarian society to look for non-agricultural livelihood options. It is possible to argue that population growth puts pressure on land; and rural youth do not have easy access to land and are hampered by ambiguities in transferability of land through purchase, sale, leasing, inheritance, assignment under traditional rules, and mortgage. And these render the rural youths to be underemployed and to look for non-agricultural livelihood strategies, which are also scarce in the Mozambican context.

3 FACTORS BEHIND LIVELIHOOD STRATEGY CHOICES OF YOUTH IN RURAL AREAS

The existing literature on livelihood strategy options and/or choices of the rural poor of the developing world is very vast. Agriculture is the major sources of livelihood in the rural areas of the developing countries. Mozambique is no exception. However, the non-agricultural sector is also an important source of employment and income for significant segment of the rural poor. For instance, Haggblade et al. (2007) indicated that, on average, rural non-agricultural employment accounts for 10% of full-time employment in Africa. In terms of income, on average, the share of rural non-agriculture income to household total income is reported to be approximately 35% in Africa (Reardon et al. 2007). Although non-agricultural employment opportunities could be obtained where the poor is living, it is also common to migrate to other areas in search of non-agricultural employment (Matsumoto et al. 2006).

⁸ “For example, differential access rights to land are often the key determinant of distinct livelihood strategies pursued by poor compared to better-off rural households. Likewise, social proscriptions on permissible courses of action of women can make big differences to the livelihood options available for women compared to men (Dwyer and Bruce, 1988; Davies and Hossain, 1997).” Taken from Ellis (1998) on page 4.



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In this brief survey of the existing literature, we concentrate on works that try to identify factors that determine the migration decision of the rural youth in search of non-agricultural employment. And we will try to examine these studies in the context of push and pull factors of migration decision. In some context, migration decision making could be mainly influenced by push factors while in other contexts the pull factors may dominate over the push factors. Evidence supporting both forces are found in the literature.

In the presence of emerging vibrant, labor-intensive non-agricultural economy, the migration of the rural youth to urban and semi-urban areas where such economy is located is a typical case of migration due to pull factors. The historical experiences of Japan, Taiwan, and South Korea and more recently that of Malaysia can be taken as very good examples of such case where access to land became no more a condition for the rural people especially for youth to stay in the country side (Rigg 2006). Similarly, in Bangladesh the rural-urban migration that was associated labor shortages brought a significant amount of remittances flow that revitalized the land tenancy market and increased agricultural productivity by promoting mechanization while also raising rural wages (Afsar 2004). Bigsten (1996) similarly argue that pull of high wages is more important than the push of land scarcity in explaining migration decisions in Kenya.

In contrast, in contexts where emerging vibrant, labor-intensive non-agricultural economy is absent, it is mainly land shortage that pushes the rural youth to look for nonagricultural work. For instance, both Mulat (1997) and Yohannes (1996) argue that Ethiopia have reached acute levels of land shortage, propelling many into nonagricultural work. In parts of Tanzania where young households with restricted land access, many youth have become more dependent on nonagricultural economic activities or are resorting to migration (Mung'ong'o 1998).

4 BACKGROUND AND CONTEXT

Recognizing the potential contribution of assured land use rights to promoting investment in land improvement, increasing land productivity, and reducing poverty, the government of Mozambique (GoM) enacted the National Land Policy in 1995, the Mozambique Land Law in 1997 and the respective Land Law Regulation in 1998. All these three legislative documents were drafted and came into effect soon after the signing of peace agreement between the ruling party (FRELIMO) and the opposition party (RENAMO) in 1992 to end a 16-year civil war; hence those legislative documents reflect to a large extent the post-war scenario. As stated in the latest Mozambique Constitution of 2004 (articles 109 and 110), both the 1995 National Land Policy and the 1997 Mozambique Land Law assert that all land belongs to the GoM and cannot be sold or otherwise alienated or mortgaged in any way, but allow granting of land use-right



certificates (DUATs) to individuals, communities, and companies.⁹ Despite being illegal, informal land markets are active in Mozambique, especially in urban areas. Data from IAI 2014 indicate that 9.7% of the total number of plots owned by households in the 2013/2014 agricultural season were acquired through purchased.

DUATs can be awarded in the following ways: (i) occupation by individual or community based on customary norms and practices; (ii) occupation by individuals if land used in good faith for at least 10 years without objection; and (iii) granting of land-use rights by government upon legal request from individuals, communities, or entities. Occupation via good-faith and customary norms and practices are important modes of land acquisition in Mozambique. According to data from IAI 2014, the most important modes of land acquisition in terms of share of the total number of plots in the 2013/2014 agricultural season include inheritance (25.7%), allocation by parents (24.7%), occupation (22.4%), purchase (9.7%) and allocation by local authorities (9.5%). Local community consultation prior to awarding DUATs is among the prominent features of the 1997 Mozambique Land Law. According to the law, DUATs can be transferred among holders – via inheritance or sale of existing infrastructure on the land – but cannot be sold. Ghebru, et al. (2015) and Tanner, et al. (2015) argued that the 1997 Mozambique Land Law is innovative and progressive due mainly to its participatory approach, and recognition of community land use rights and customary norms and practices.

Two types of land use-right certificates can be awarded under the law: *provisional* DUAT valid up to five years for nationals and two years for foreigners, and *definitive* DUAT valid up to 50 years (with possibility of renewal for another 50 years) if granted by the GoM for economic activities and with perpetual use period if obtained by good-faith occupancy or customary norms and practices.¹⁰ When applying for DUAT for economic activity, having a land use plan are among the requirements to be granted a *provisional* DUAT which can be upgraded to *definitive* DUAT if the land use plan are executed as outlined upon issuing of *provisional* DUAT. However, low execution rates of land use plans due to various reasons appear to be evident and widespread. According to Monteiro, et al. (2014), the share of plots (plot area) fully used

⁹ DUATs approval competences are as follows: up to one thousand hectares approved by provincial governors (provincial level approval), more than one thousand hectares but less than 10 thousand hectares approved by the Minister of Land, Environment and Rural Development (central level approval); and more than 10 thousand hectares approved by the Council of Ministers (central level approval).

¹⁰ The 1997 Mozambique Land Law make a distinction between urban and rural land; however, our discussion focuses on issues related to rural land because they are the most relevant for the objectives of this study.



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according to the land use plan when DUATs were awarded in the total number of plots (total plot area) supervised by DNT officials ranged from 35.9% (19.3%) to 56.4% (57.1%) during the period 2009-2012 (Figure 2).¹¹ This suggests that considerable proportions of plots with DUATs are idled, potentially reflecting low landholders' capacity to fully utilize their plots with DUATs on the one hand and speculative behavior through informal land markets on the other hand.

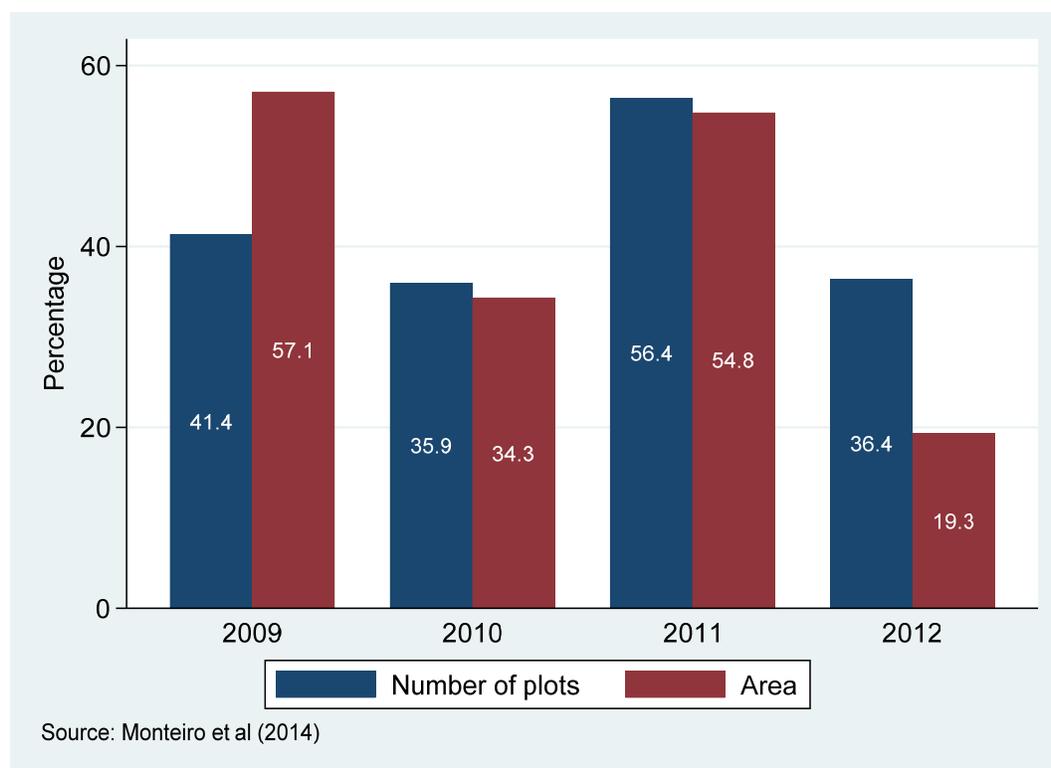


Figure 2 Plot and area used according to land use plan

The 1995 National Land Policy and the 1997 Mozambique Land Law recognize customary land use rights to individuals who have occupied land in good faith for at least 10 years without objection by enabling

¹¹ DNT is the Portuguese acronym for National Directorate of Land (*Direcção Nacional de Terra*) of the Ministry of Land, Environment and Rural Development (MITADER). Prior to 2015, DNT used to be known as DNTF – which stands for National Directorate of Land and Forestry (*Direcção Nacional de Terra e Florestas*) – when it was under the Ministry of Agriculture and Food Security (MASA).



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landholders under customary tenure systems to acquire DUATs. Given that two decades have passed and substantial structural economic changes have occurred since its approval, the 1997 Mozambique Land Law is under review to bring the law aligned with the new social and economic environment. The GoM have various initiatives aimed at increasing land tenure security through, among other things, land demarcation and delimitation and ultimately issuance of DUATs to individuals and communities. For instance, according to Monteiro, et al. (2014) and Ghebru, et al. (2015), the GoM in partnership with donors and non-governmental organizations (NGOs) – such as *Iniciativa para Terras Comunitárias* (iTC), *Centro Terra Viva* (CTV), ORAM, *Forum Terra*, KULIMA just to mention a few – have carried out land demarcation and delimitation since 1999. More recently, the Mozambique Ministry of Land, Environment, and Rural Development (MITADER) is implementing a program known as *Terra Segura* and aimed at issuing five million DUATs for individuals and four million DUATs for communities during the period 2015 through 2019.

Figure 3 displays number of communities and area delimited over the period 2000-2016. This figure illustrates that both number of delimited communities and area fluctuates substantially from year to year. This could be a reflection of limited human resource and financial constrains faced by MITADER to undertake community land demarcation (CLD). Over the period 2000 through 2016, a total of 937 communities were delimited, representing a total area of 17.0 million hectares. MITADER appear to be more active in terms of total number of communities delimited during the period 2011-2016, compared with the period 2000-2010 (754 versus 183). Similar pattern is observed if one looks at total area delimited in the two time periods (10.2 million hectares versus 6.8 million hectares).

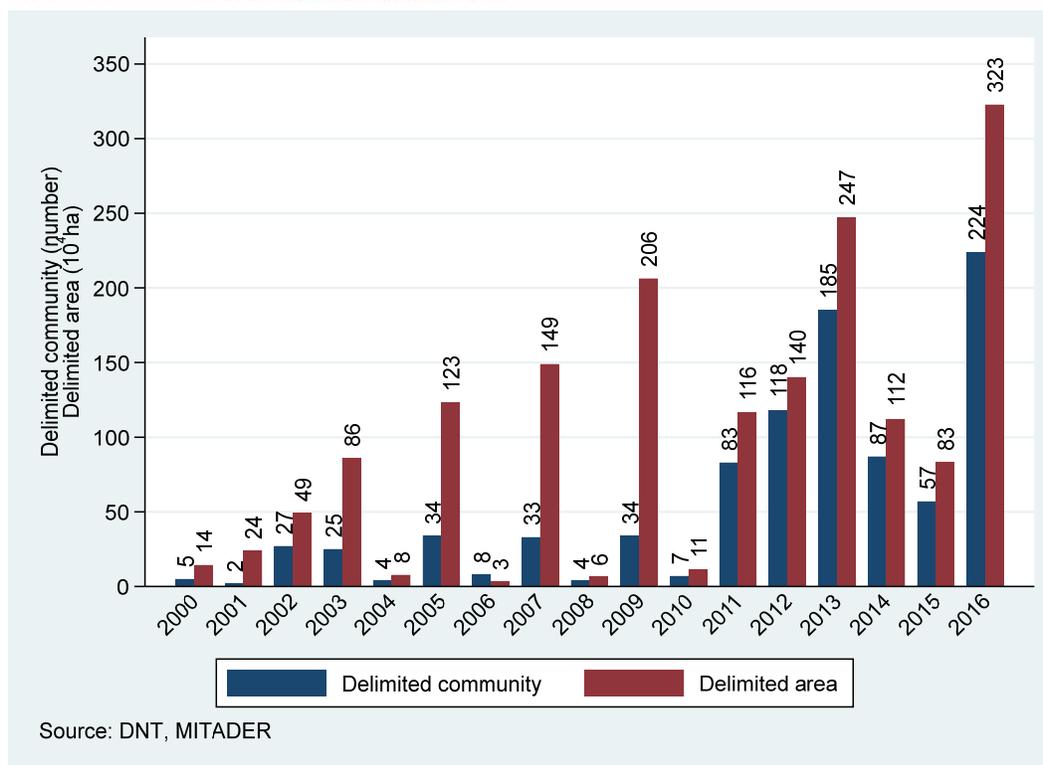


Figure 3 Delimited communities and delimited area over the period 2000-2016

5 DATA

We used two data sets namely a nationally representative National Agricultural Survey of 2014 – commonly known by its Portuguese acronym IAI (*Inquérito Integrado Agrícola*) – and Supplementary Land Tenure Survey (SLTS) of 2015. IAI 2014 was administered by the Mozambique Ministry of Agriculture and Food Security (MASA) from September to December 2014, while SLTS 2015 by International Food Research Policy Institute (IFPRI) in collaboration with Mozambique Eduardo Mondlane University (UEM) from May to July 2015. With a sample of 6,128 households (HHs), IAI 2014 covered the 2013/2014 agricultural season and all ten provinces of the country. SLTS 2015 revisited HHs interviewed for IAI 2014 in seven provinces – Sofala, Manica, and Tete provinces in Central Mozambique and Zambezia, Nampula, Cabo Delgado and Niassa provinces in Northern Mozambique – leaving out Maputo, Gaza and Inhambane provinces in Southern Mozambique. Central and Northern Mozambique are the regions with the highest agricultural potential in the country. These two regions accounted for 85.1% of the total cultivated area under crop production and 88.7% of the total maize, the main staple food, produced in the 2013/2014



agricultural season. Central and Northern regions are also endowed with better agro-ecological conditions for agricultural production, compared with Southern region. With an attrition rate of 18.7%, SLTS 2015 covered 3,510 HHs in seven provinces, while IAI 2014 sampled 4,318 HHs (see Table 1).

Table 1 Distribution of sampled households for IAI 2014 and SLTS 2015

Province	IAI 2014	SLTS 2015	Attrition rate (%)
Niassa	476	400	16.0%
Cabo Delgado	592	406	31.4%
Nampula	837	689	17.7%
Zambezia	803	730	9.1%
Tete	605	439	27.4%
Manica	534	415	22.3%
Sofala	471	431	8.5%
Total	4,318	3,510	18.7%

SLTS 2015 is unique and rich in at least four important dimensions. First, it has very detailed information on plot characteristics, potential and actual access to land, public and private land insecurity, past insecurity experiences and future threats, land-related dispute experiences, land-related intra-household decision making practices, land-related investment practices, different modes of land acquisition, land loss and depositions experiences, land and assets inheritance practices, off-farm economic opportunities, migration practices, access to credit and etc. Second, it collected gender-disaggregated data to capture the existing important intra-household variation in terms of key perception variables. Third, it captured information about two generations (i.e., information about heads/spouses of households and their siblings, information about children in the households, and information about currently non-residents past household members). Finally, it collected information at three levels: household, household member, and plot.

Variable definition

Our analysis focuses on the effect of land access and tenure security on youth employment choices and youth migration decisions. We considered two employment outcomes and three migration outcomes. Employment outcomes include employment in the agricultural sector and employment in the non-agricultural sector. These outcomes are both dummy variables equal to one if youth is employed in the respective sector (agricultural or non-agricultural) and zero otherwise. Migration outcomes include permanent migration, temporary migration, and migration for work or land. Permanent migration is a



dummy variable equal to one if youth who was a household member was absent in the household for 12 months prior to the interview and zero otherwise; while temporary migrant is a dummy variable equal one if youth listed as household member was absent in the household for at least one month but less than 12 months prior to the interview and zero otherwise. Migration for work or land is a dummy variable taking the value of one if youth who was a household member migrated, either permanently or temporarily, to search for work or land and zero otherwise.

We consider two indicators of land access (land acquisition and expected inheritance of plots in the future) and two indicators of land tenure security (likelihood of private dispute over plots and likelihood of public expropriation of plot). Land access indicators are measured at individual level, while tenure security indicators are at household level. Land acquisition is a dummy variable equal to one if youth acquired land through any form of land acquisition (inheritance, attributed by local authorities, occupation, etc.) and zero otherwise. Expected inheritance of plots is a dummy variable taking the value of one if youth has inherited land from parents prior to the interview or was listed as household member who would inherit land from parents if parents died. Private risk is a dummy variable equal to one if household had experienced private land conflict in the past or expected to have private land conflicts in the following five years after the interview. Public risk is a dummy variable equal to one if the household's expectations to lose a given plot due to public expropriation in the following five years after the interview was either a very likely or likely or fifty-fifty-chance event.

6 EMPIRICAL STRATEGY

We seek to assess whether access to land and tenure security are important factors that drive youth in rural Mozambique to look for agricultural and non-agricultural livelihood strategies. To do so, we estimate a probit model specified as

$$\Pr(y_i = 1 | \mathbf{X}_i, LA_i) = \Phi(\mathbf{X}_i\boldsymbol{\beta} + \alpha LA_i) \quad (1)$$

where y_i denotes a livelihood choice (on-farm employment or off-farm employment) made by youth i . We estimate separate models for on-farm and off-farm employment. \mathbf{X}_i represents a vector that captures individual- and household-level characteristics hypothesized to influence the livelihood choices of the youth. Individual level variables include gender equal to one if youth is female and zero otherwise, age in years, years of schooling, marital status equal to one if youth is married and zero otherwise, number of



brothers, and number of sisters; while household level variables include gender of household head equal to one household head is female and zero otherwise, age of household head in years, household size measured in adult equivalent, cultivated area in hectares, and wealth index.¹² LA_i denotes a land access indicator. We capture youth's land access with two dummy variables: land acquisition and expected inheritance. We assess the effect of each land access indicator on employment outcome separately. β and α are unknown parameters to be estimated and $\Phi(\cdot)$ represents the cumulative standard normal function.

Similar to employment outcomes, we test whether each land access indicator separately has an impact on migration outcomes by estimating separate probit model for three migration outcomes (permanent migration, temporary migration and migration for work or land). Using the approach similar to that for land access, we assess whether tenure security indicators (private risk and public risk) have impact on employment and migration outcomes. Given that some households have more than one youth (the proportion of households with at least two youth as household members is 53.1%), we cluster standard errors at household level.

7 RESULTS

7.1 Demographic characteristics

Our sample consists of 5,750 youths coming from 2,890 households; representing respectively 30.2% of the total number of individuals in interviewed households and 82.3% of the total number of interviewed households. This share of youth in our sample is consistent with the share of youth in total population as data from RGPH show that youth accounted for 33.3% of the population in 2014. Table 2 summarizes demographic individual- and household-level characteristics used as explanatory variables in the models we estimated. This table shows that sampled youth had on average 23 years. The proportion of youth who are 25 years old or younger stand at 65.4%. Table 2 illustrates that while the majority of youth (53.4%) are female, less than one quarter of the sampled youth live in female-headed households (21.7%). The data also show that only about 19.8% of the sampled youth are household heads with an average age of 27.4 years; compared with an average of 21.9 years for those who are not household heads. Table 2 illustrates that the

¹² We employed principal component analysis (PCA) to compute wealth index taking into account animal and asset ownership. Animals considered in our PCA include cattle, goat, sheep, pig, donkey, rabbit, chicken, duck, goose, turkey and grouse; while assets considered in PCA include lamp, radio, bike, table, motorbike, and mobile phone.



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number of brothers averaged less than one among all sampled youth and two among youth with brothers. Similar patterns are observed for sisters.

Table 2 shows that sampled youth live on households with an average of six members, of which two are on average youth. This table also shows that households with youth cultivated on average 1.4 hectares. It is worth pointing out that 43.8% of households with youth cultivated less than one hectare. Using principal component analysis we computed wealth index taking into account animal and asset ownership.¹³ The data show that cultivated area is positively associated with wealth. The richest 20% of households cultivated higher areas than the poorest 20% of households (1.9 hectares versus 1.0 hectare). Household wealth is positively correlated with agricultural employment but negatively correlated with non-agricultural employment. The share of youth who is employed in the non-agricultural sector (agricultural) is 11.7% (70.6%) among the poorest 20% of households, compared with 14.1% (53.5%) among the richest 20% of households.

Table 2 Demographic characteristics

Characteristics	Mean	Standard deviation
Individual-level characteristics		
Gender (1 = female; 0 otherwise)	0.5341	0.4989
Age (years)	23.0496	5.6406
Years of schooling	4.5578	3.7838
Married (1 = yes; 0 otherwise)	0.5631	0.4960
Number of brothers	0.7831	1.3921
Number of sisters	0.6970	1.2577
Household-level characteristics		
Gender of household head (1 = female; 0 otherwise)	0.2166	0.4120
Age of household head (years)	40.6661	14.2746
Household size (adult equivalent)	4.7009	2.0501
Cultivated area (hectares)	1.3881	1.5633
Wealth index	-0.3233	1.3600

7.2 Youth employment

Agriculture is undoubtedly the main employment sector for the youth. The proportion of youth who are employed in the agriculture is 61.3%, compared with 13.8% who are employed in the non-agriculture

¹³ Animals we considered include cattle, goat, sheep, pig, donkey, rabbit, chicken, duck, goose, turkey and grouse; while assets include lamp, radio, bike, table, motorbike, and mobile phone.



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sector. The remaining 24.9% of the youth are still students. Table 3 summarizes land access and land tenure security by employment sector. The share of youth who acquired land and who are likely to inherit land are respectively 38.9% and 68.1%, suggesting that sizable share of youth have access to land. On the other hand, considerable share of youth have experienced private land dispute (14.8%) or expected to experience public expropriation of their land (27.9%). Panel A in Table 3 suggests that youth who are employed in the agriculture sector have more access to land than their counterpart not employed in the agriculture sector (those who are either employed in the non-agriculture sector or still students). Among youth who are employed in the agricultural sector, 51.1% acquired land, compared with 18.7% among those who are not employed in the agricultural sector. Overall, 38.6% of youth acquired land regardless of being employed in the agricultural sector.

Table 3 Land access and tenure security by employment sector

Land access and tenure security indicator	No	Yes	Total	p-value for mean comparison (No vs Yes)
Panel A: On-farm employment				
Youth acquired land (dummy)	0.1874	0.5113	0.3858	0.0000
Youth likely to inherit land (dummy)	0.6899	0.6752	0.6809	0.2483
Private tenure risk (dummy)	0.1246	0.1630	0.1481	0.0001
Public tenure risk (dummy)	0.2400	0.3037	0.2790	0.0000
Panel B: Off-farm employment				
Youth acquired land (dummy)	0.3765	0.4440	0.3858	0.0003
Youth likely to inherit land (dummy)	0.7058	0.5251	0.6809	0.0000
Private tenure risk (dummy)	0.1502	0.1351	0.1481	0.2723
Public tenure risk (dummy)	0.2842	0.2471	0.2790	0.0325

On the other hand, youth who are employed in the agricultural sector experienced higher tenure risk than those who are not employed in the agricultural sector (16.3% versus 12.3% for private risk and 30.4% versus 24.0% for public risk). Panel B in Table 3 illustrate that based on public risk, youth employed in the non-agricultural sector are less tenure secured than those not employed in the agricultural sector (24.7% versus 28.4%). However, no clear pattern emerged on our indicators of land access. Proportion of youth who acquired land is higher among youth employed in the non-agricultural sector (44.4% versus 37.7%); while the proportion of youth who are likely to inherit land is lower among who are not employed in the agricultural sector (52.5% versus 70.6%).



7.3 Youth migration

Table 4 summarizes indicators of land access and tenure security by migration status. The proportion of youth who are permanent and temporary migrants are 5.1% and 11.4%, respectively, while the share of youth who migrated to search for either work or land stand at 5.2%. Panel A in Table 4 suggests that youth who are permanent migrants have more access to land than their counterparts who are not permanent migrants. Among youth who are permanent migrants, 45.1% acquired land, compared with 37.8% among those who are not permanent migrants. The proportion of youth who migrated permanently stand at 80.2% for those who are likely to inherit land and 67.4% for those who are not likely to inherit land. Panel B in Table 4 illustrates that temporary-migrant youth have more access to land than those who did not temporarily migrated (42.8% versus 37.5%). On the contrary, the share of youth who are likely to inherit land is higher for youth who did not migrated temporarily compared with those who temporarily migrated (68.5% versus 64.4%). Land acquisition is higher among youth who migrated for work or land than among those who did not migrate for work or land (45.7% versus 37.7%); however, the proportion of youth who expect to inherit land is no different between youth who migrate for work or land and those who did not.

Table 4 Land access and tenure security by migration status

Tenure security indicator	No	Yes	Total	p-value for mean comparison (No vs Yes)
Panel A: Permanent migration				
Youth acquired land (dummy)	0.3772	0.4505	0.3810	0.0119
Youth likely to inherit land (dummy)	0.6734	0.8020	0.6800	0.0000
Private tenure risk (dummy)	0.1530	0.0751	0.1490	0.0003
Public tenure risk (dummy)	0.2846	0.1502	0.2777	0.0000
Panel B: Temporary migration				
Youth acquired land (dummy)	0.3749	0.4284	0.3810	0.0079
Youth likely to inherit land (dummy)	0.6845	0.6448	0.6800	0.0401
Private tenure risk (dummy)	0.1410	0.2119	0.1490	0.0000
Public tenure risk (dummy)	0.2631	0.3918	0.2777	0.0000
Panel C: Migration for work or land				
Youth acquired land (dummy)	0.3768	0.4567	0.3810	0.0055
Youth likely to inherit land (dummy)	0.6817	0.6500	0.6800	0.2526
Private tenure risk (dummy)	0.1437	0.2467	0.1490	0.0000
Public tenure risk (dummy)	0.2666	0.4800	0.2777	0.0000



No clear pattern emerged regarding association between migration outcomes and tenure security. Youth who permanently migrated tend to be more tenure secured than their counterpart who did not permanently migrated (7.5% versus 15.3% for private risk and 15.0% versus 28.5% for public risk). By contrast, youth who temporarily migrated tend to be less tenure secured than their counterpart who did not temporarily migrated (21.2% versus 14.1% for private risk and 39.2% versus 26.3% for public risk). Consistent with temporary migration, youth who migrated to search for work or land are less tenure secured than those who did not migrate to search for work or land (24.7% versus 14.4% for private risk and 48.0% versus 26.7% for public risk).

7.4 Effect of land access on employment and migration

Table 5 summarizes the effects of land access indicators (panel A for youth land acquisition and panel B for youth expectation to inherit land) on employment and migration outcomes. This table suggests that land access is strongly positively associated with on-farm employment and strongly negatively associated with off-farm employment. Youth's land acquisition increases the probability of being employed in the agricultural sector by 12.6%; while the probability of being employed in the agricultural sector is 5.1% higher among youth who expected to inherit land than among those who did not expect. When we included adults in our estimated regressions (adults plus youth), the effect of land acquisition and land inheritance on on-farm employment dropped to 11.5% and 3.0%, respectively. This could suggest that youth are more responsive to land access. Similar patterns are observed for off-farm employment but with opposite signs. For instance, youth land acquisition reduces the probability of being employed in the non-agricultural sector by 4.0%, while youth expectation to inherit land is associated with a 2.8% fall in the probability of being employed in the non-agricultural sector.



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Table 5 Marginal effects of land access indicators on employment and migration outcomes

	Employment				Migration					
	On-farm employment		Off-farm employment		Permanent migration		Temporary migration		Migration for work or land	
	Coefficient (SE)	p-value	Coefficient (SE)	p-value	Coefficient (SE)	p-value	Coefficient (SE)	p-value	Coefficient (SE)	p-value
	Panel A									
Acquired land	0.1259 (0.0149)	0.0000	-0.0403 (0.0125)	0.0010	0.0056 (0.0049)	0.2480	0.0358 (0.0118)	0.0030	0.0098 (0.0076)	0.1970
Joint Chi2 for other individual characteristics	779.26	0.0000	345.44	0.0000	47.31	0.0000	72.29	0.0000	31.14	0.0000
Joint Chi2 for other household characteristics	47.39	0.0000	52.28	0.0000	21.52	0.0000	6.88	0.2296	15.92	0.0071
Pseudo R ²	0.2800		0.1311		0.1336		0.0320		0.0291	
Observations	4,912		4,912		4,976		4,976		4,976	
Probability > Chi ²	0.0000		0.0000		0.0000		0.0000		0.0000	
	Panel B									
Likely to inherit land	0.0510 (0.0141)	0.0000	-0.0284 (0.0098)	0.0040	0.0134 (0.0045)	0.0030	-0.0260 (0.0112)	0.0200	-0.0070 (0.0072)	0.3260
Joint Chi2 for other individual characteristics	812.33	0.0000	304.63	0.0000	54.88	0.0000	71.43	0.0000	27.72	0.0001
Joint Chi2 for other household characteristics	51.80	0.0000	47.51	0.0000	17.08	0.0000	8.50	0.1308	17.37	0.0000
Pseudo R ²	0.2702		0.1292		0.1437		0.0307		0.0287	
Observations	4,912		4,912		4,986		4,986		4,986	
Probability > Chi ²	0.0000		0.0000		0.0000		0.0000		0.0000	



No clear pattern emerged regarding the relationship between land access and migration outcomes. Table 5 illustrates that permanent migration is not associated with youth land acquisition but it is positively associated with youth expectation to inherit land. Youth who expect to inherit land are 1.3% more likely to migrate permanently than their counterparts who do not expect to inherit land. Youth land acquisition leads to 3.6% increase in the likelihood that youth would temporarily migrate; on the contrary youth expectation to inherit land results in 2.6% reduction in the likelihood that youth would temporarily migrate. Similar pattern are registered for the association between land access and migration for work or land.

7.5 Effect of tenure security on employment and migration

Table 6 summarize the effects of tenure security indicators (panel A for private risk and panel B for public risk) on employment and migration outcomes. Unlike land access, clear patterns about the relationship between tenure security and employment and migration outcomes. Findings suggest there exist positive association between tenure security and on-farm employment, but no association between tenure security and off-farm employment. Exposure to private land dispute and land expropriation result respectively in 8.0% and 6.5% increase in the probability of youth being employed in the agricultural sector. As was the case with land access indicators, youth are more responsive to tenure security than entire population: exposure to private land dispute and land expropriation increase the likelihood of employment in agricultural sector for youth and adults by 4.8% and 4.0% respectively.

Our findings indicate that permanent migration is negatively associated with tenure security; while temporary migration and migration for work or land are positively associated with tenure security. Youth who experienced tenure security are less than 2% less likely to permanently migrate (1.4% reduction for private risk and 1.7% for public risk). On the other hand, the probability of temporary migration by youth is 5.1% higher among those who experienced private risk and 6.2% higher among those who faced public risk. Similar patterns but with different magnitude are observed for the association between youth migration for work or land and tenure security: private risk is associated with 3.6% increase and public risk with 4.6% increase in likelihood that youth migrate to look for work or land.



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Table 6 Marginal effects of tenure security indicator on employment and migration outcome

	Employment				Migration					
	On-farm employment		Off-farm employment		Permanent migration		Temporary migration		Migration for work or land	
	Coefficient (SE)	p-value	Coefficient (SE)	p-value	Coefficient (SE)	p-value	Coefficient (SE)	p-value	Coefficient (SE)	p-value
	Panel A									
Private risk	0.0798 (0.0226)	0.0000	0.0023 (0.0143)	0.8710	-0.0141 (0.0068)	0.0380	0.0512 (0.0132)	0.0000	0.0364 (0.0085)	0.0000
Joint Chi2 for other individual characteristics	833.52	0.0000	369.03	0.0000	49.82	0.0000	83.05	0.0000	34.32	0.0000
Joint Chi2 for other household characteristics	50.54	0.0000	49.07	0.0000	20.79	0.0000	6.19	0.0000	18.46	0.0024
Pseudo R ²	0.2722		0.1272		0.1403		0.0348		0.0398	
Observations	4,912		4,912		4,986		4,986		4,986	
Probability > Chi ²	0.0000		0.0000		0.0000		0.0000		0.0000	
	Panel B									
Public risk	0.0652 (0.0164)	0.0000	-0.0090 (0.0112)	0.4220	-0.0172 (0.0059)	0.0040	0.0619 (0.0106)	0.0000	0.0460 (0.0073)	0.0000
Joint Chi2 for other individual characteristics	840.90	0.0000	368.45	0.0000	54.43	0.0000	79.52	0.0000	31.63	0.0000
Joint Chi2 for other household characteristics	50.00	0.0000	49.04	0.0000	22.78	0.0004	6.52	0.0000	16.82	0.0000
Pseudo R ²	0.2724		0.1275		0.1533		0.0422		0.0561	
Observations	4,912		4,912		4,986		4,986		4,986	
Probability > Chi ²	0.0000		0.0000		0.0000		0.0000		0.0000	



8 CONCLUDING REMARKS

Our findings suggest a strong positive association between land access and on-farm employment and negative association between land access and off-farm employment. With regard to the relationship between land access and migration outcomes, we found mixed results. For instance, positive association between youth's expected inheritance of land and youth temporary migration; on the contrary, our findings also show negative relationship between youth's expected inheritance and youth temporary migration. Furthermore, our results suggest no association between youth land acquisition and youth's permanent migration but positive association between youth expected inheritance of land and youth permanent migration. Our findings also indicate that the responses of employment and migration to land access are greater for youth than for youth and adults together.

In addition to assessing of the impact of land access, we exploited the relationship between tenure security and employment and migration outcomes. Like land access, tenure security is positively associated with on-farm employment. However, unlike land access, tenure security has no significant effect on off-farm employment. Our findings suggest tenure security is negatively associated with permanent migration but positively associated with temporary migration and migration for work and land.



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