



ETHIOPIA



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Changing farm sizes and farmers' demographics in Ethiopia

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ABSTRACT

Important changes in farms and farm demographics are noted in Ethiopia since 2004/05. These changes have important implications on discussions of the future of Ethiopian agriculture. Comparing the national agricultural sample survey of the Ethiopian Statistical Services (ESS) data between 2004/05 and 2016/17, we find that:

- (1) Average farm sizes of smallholders declined by more than 10 percent over the decade, from 1.2 to 0.9 hectares; the decline in farm sizes of female headed households is more pronounced at over 21 percent,
- (2) Farmers are becoming older: the share of Ethiopian farmers under 35 declined from 36 to 30 percent,
- (3) The youth have smaller and declining farm sizes, declining from 0.9 to 0.8 hectares,
- (4) Rental markets are becoming more important, with 12 percent of crop land being rented in at the end of the period; especially the youth rely more on rental markets to access land, with 20 percent of their land rented in, and
- (5) Education levels are rapidly increasing, with the share of illiterate youth farmers declining from 56 to 30 percent.

This has important implications for the future of Ethiopian agriculture and the overall economy.

1. INTRODUCTION

Rapid economic growth has been observed in in Sub-Saharan Africa (SSA) the last three decades, where half of the ten fastest economies resided. The current demographic structure gives Africa a rapidly increasing youth labor force. Other megatrends in Africa include rapid urbanization and consequent shifts in food value chains and food systems, rapid occupational changes from farming to nonfarm jobs, and increased pressure and competition over farmland (Mastercard Foundation, 2023; Minten and Dorosh, 2020; Jayne et al., 2014). How rapid economic and agricultural growth is impacting farmer demographics, farm sizes, and the potential for decent livelihoods in agriculture is not well known. This brief paper fills some of the information gaps.

We look at the case of Ethiopia, a country with the second largest population in Africa. Ethiopia's economy has been rapidly transforming as it had one of the fastest growing economies in the world between 2004/05 and 2017/18. Moreover, the country has one of the fastest growing populations in Africa, with a large proportion of the population under 30. This study highlights important implications for policymaking, especially on the need of creating employment opportunities for the youth and achieving food and nutritional security. Furthermore, additional studies in demographic and occupational changes, together with trends of population growth and urbanization, are needed in the face of ongoing food-systems transformation (Abate et al., 2022, FAO et al., 2022; Minten and Dorosh, 2020; Bachewe et al., 2018; World Bank, 2017). Several studies investigate the issue of farm size and urbanization, particularly for Asia, where more than half of the world's population reside and the issue of declining farm sizes has surfaced earlier (e.g., Futoshi et al., 2021; Jayne et al, 2014; Masters et al., 2013; de Haan, 2013;). This study contributes to that literature, by including an important African case as well as by introducing additional aspects of the demographic transition.

2. DATA

We use data collected by the Central Statistical Agency of Ethiopia (CSA)¹ in its annual Agricultural Sample Survey (AgSS) of agricultural households. The dataset covers the 2004/05 to 2016/17 main agricultural season locally known as “meher” and pertains to smallholder farmers that dominate agricultural land use in Ethiopia.² Thus, this study does not include medium and large-scale, mostly commercial, farms 25 hectares or larger, which make up 6 percent of the agricultural land (Bachewe et al., 2018). Although data is unavailable on the number of large-scale farmers, smallholder farmers are likely to account for even a higher share of the total number of farmers. The data we use provide information, among others, on demographic characteristics of farmers and on size and tenure type of each plot cultivated. CSA's AgSS typically collects data from over 40,000 farm holders. For instance, 43,629 farm holders were surveyed in 2014/15 and data was collected regarding 440,058 plots they operated. During the period covered in this study, the sampling frame of the AgSS included the entire rural parts of the country except the non-sedentary population of three zones of Afar and six zones of Somali regions (CSA, 2016a). We use these data to conduct simple descriptive analyses of trends in landholdings and demographic characteristics of farmers in Ethiopia. While a number of studies have looked at farm dynamics in the agricultural sector, they have not used representative agricultural data consistently collected over time that reflect the situation in the country as a whole. In this research, we fill that gap.

¹ Currently, the Ethiopian Statistical Services (ESS).

² In most of Ethiopia meher (e.g.: 2004/05) is the major cropping season that follow the major summer rains and runs from around May (of 2004) to around January (of 2005). Therefore, in our discussions, we shorten the 2004/05 meher as 2004; 2016/17 as 2016, and so forth.

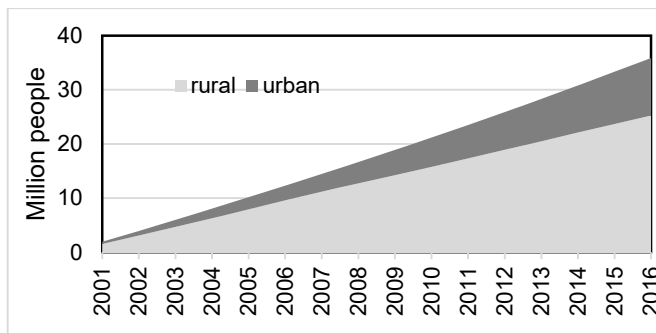
3. DEMOGRAPHIC TRENDS

3.1. Population and urbanization trends

There has been a rapid growth in Ethiopia's population over the period studied. The size of the population ranked 16th in the world in 2001 while it ranked 12th largest in 2016. The population grew at rates higher than 2.75 percent during the study period and no nation with a population of at least 50 million grew at such rates.

Growth in population is especially an issue given the rapid growth of the rural population. Figure 3.1 shows that the rural population grew by 25 million people between 2000 and 2016. Over the same period, the urban population increased by 10.5 million. Even though the urban population is expected to grow faster in the future, projections put the rural population at 106 million (26 million more than in 2016), constituting 74 percent of the total population in 2030 (World Bank, 2015). Access to land is crucial, as most rural residents depend on agriculture as their main source of livelihood (Schmidt and Bekele, 2016; Bachewe et al., 2018). However, there seems to be limits to increasing agricultural land area. This is especially an issue for the younger population given that they have less access to agricultural land, and they might have different aspirations as well (Bezu and Holden, 2014; Kosec et al., 2017).

Figure 3.1: Population growth (in millions) in Ethiopia from 2000 to 2016, by rural and urban



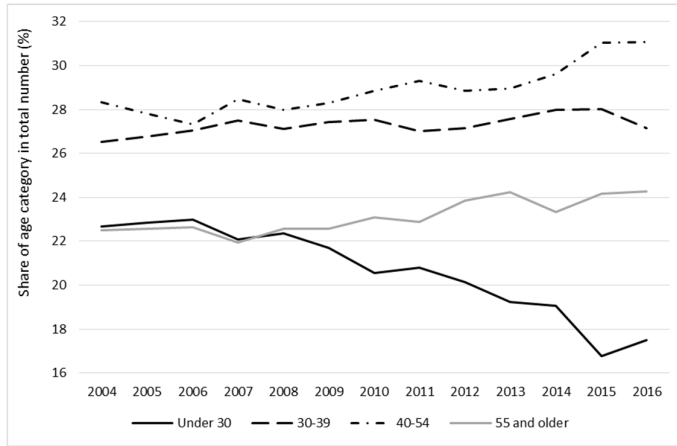
Source: Authors' calculation from World Bank (2017) data.

3.2. Trends in farmers demographics

3.2.1. Farmers are becoming older

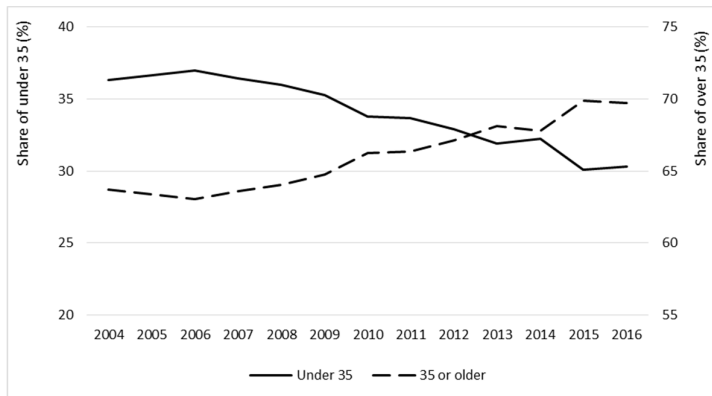
We use two methods to classify farmers into age groups. First, we use the Ethiopian government's classification of under 35 farmers into youth and those 35 or older into mature farmers. Second, we use age quartiles to classify farmers into four groups (under 30, 30-39, 40-54, and 55 or older). Figure 3.2 indicates that the share of farmers in the three upper age quartiles (starting from 30-39) increased by 2.4-10 percent during the period while the proportion under 30 declined by 23 percent (from 22.7 percent in 2004/05 to 17.5 percent in 2016/17). Similarly, Figure 3.3 shows that the proportion of youth farmers under 35 declined from 36 percent to 30 percent of all farmers between 2004 and 2016. More generally, the average age of farmers increased from 42.7 years in 2004 to 44 years in 2016.

Figure 3.2: Share of farmers in four age categories, 2004/05 – 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

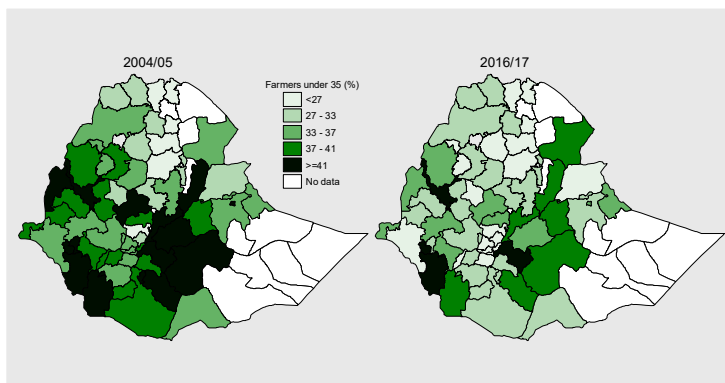
Figure 3.3: Share of youth and mature farmers, 2004/05 – 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

We further depict the change in the proportion of youth farmers across zones surveyed in Map 1. Darker colors indicate a higher share of younger farmers in the total population. We note that younger farmers were especially well presented in the south and the west of the country, but that situation seems to be changing quickly. The map shows the proportion of farmers 34 years or younger declined in 60 of the 64 zones during 2004/05-2016/17 and the decline averaged 16.5 percent.

Map 1: Share of farmers under 35 (percent), 2004/05 and 2016/17

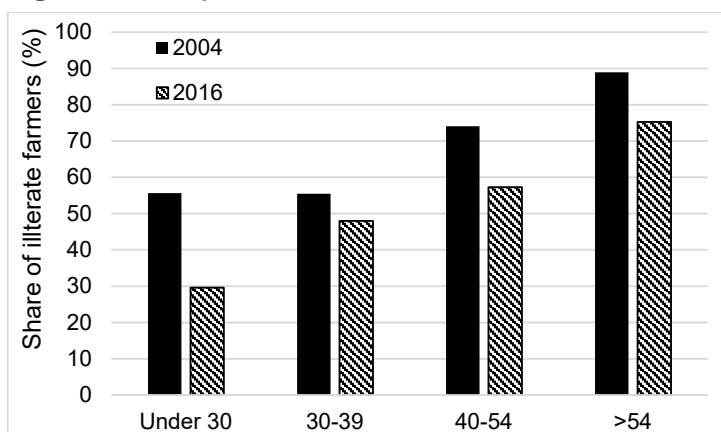


Source: Authors analyses using CSA plot level data (CSA 2017)

3.2.2. Farmers are becoming more literate

The data indicate remarkable educational achievements for all age categories of farmers in Ethiopia during the period studied (Figure 3.3). Improvement of education levels is important given that better educated farmers are more likely to adopt improved technologies for farming (Bachewe et al., 2018). Overall, the proportion of illiterate farmers declined by about 18 percent, from 69 percent in 2004/05 to 56 percent in 2016/17. However, we note that the reduction in illiteracy has been especially happening in the category of the younger farmers as we see a reduction in illiteracy rates from 56 to 30 percent over the last decade.

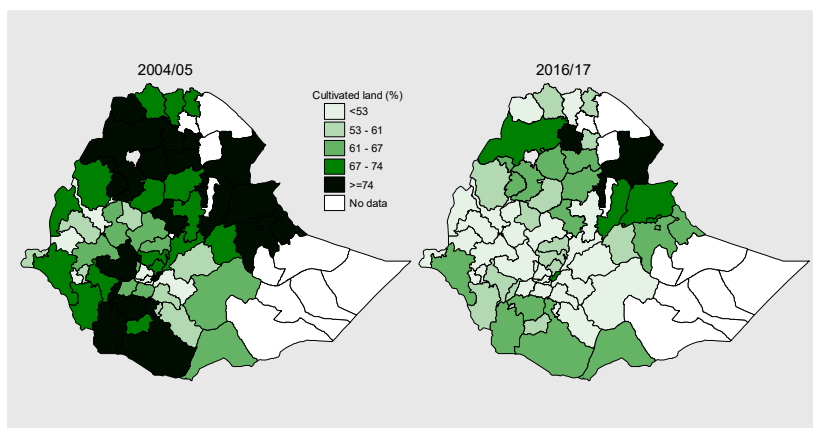
Figure 3.3: Proportion of illiterate farmers in different age categories, 2004 and 2016



Source: Authors analyses using CSA plot level data (CSA 2017)

The decline in the proportion of illiterate farmers has been across the board in the administrative zones covered in the AgSS data. Map 2, shows the extent of decline in farmers' illiteracy rates in Ethiopia during 2004-2016.

Map 2: Illiterate farmers (in percent) by zone, 2004/05 and 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

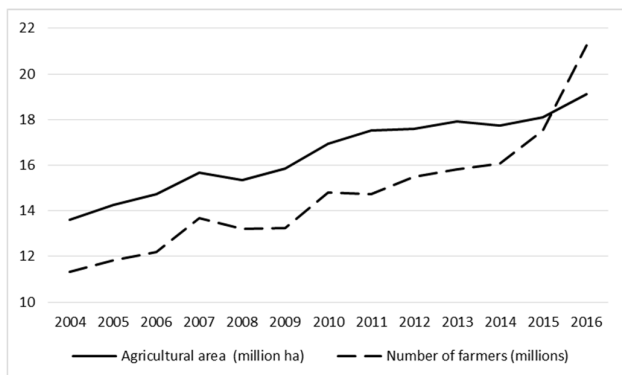
4. TRENDS IN FARM SIZES

4.1. Farm sizes of smallholders are declining

Figure 4.1 shows that both total agricultural land area and the number of farmers increased considerably during the period 2004/05 to 2016/17. Total agricultural land in 2016/17 was 40 percent higher than in 2004/05 (a growth of 2.9 percent annually) but the number of farmers increased

even faster, by 85 percent during the same period (5.6 percent per year). It is especially in the last 5 years that we see significantly slower growth in the expansion of agricultural land.³ Since population growth patterns change slowly and growth in agricultural land is constrained by the limited availability of land, the observed decline of availability of land per farmer is likely to be an increasingly binding constraint in the future. This, in turn, has important implications for the future of Ethiopian agriculture.

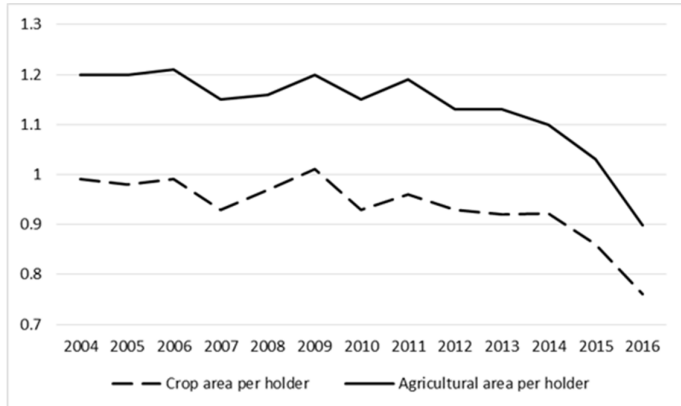
Figure 4.1: Agricultural area and number of farmers, 2004/05 – 2016/17



Source: Authors depiction of CSA data (CSA 2005a-2017a)
 Note: numbers for 2016/17 from household (plot level data)

Further building on these numbers, Figure 4.2 shows the trend in farm sizes in Ethiopia over the period studied. The figure illustrates that agricultural (crop) area declined by over 25 (24) percent from about 1.2 (1) hectare per farmer in 2004/05 to about 0.9 (0.8) ha in 2015/16. Although agricultural landholdings declined at an average annual rate of 2.3 percent, they stayed about the same in the first half of the decade (2004-2010) and almost all of the decline occurred in the latter half (2010-2016).⁴

Figure 4.2: Agricultural and crop area per holder (ha), 2004/05 – 2016/17



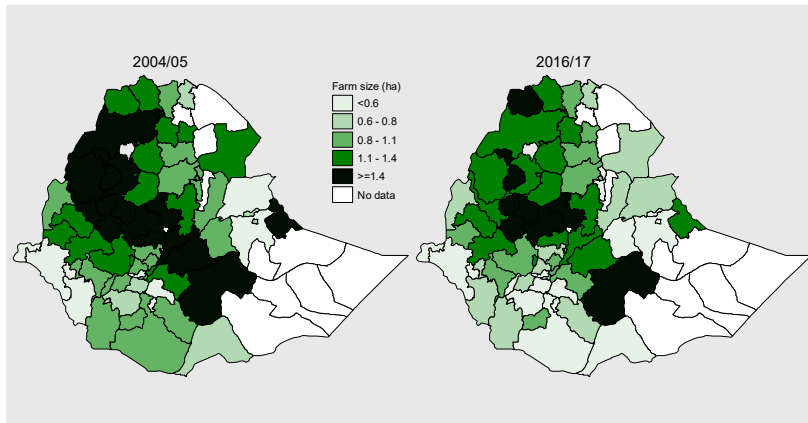
Source: Authors depiction of CSA data (CSA 2005a-2017a)
 Note: numbers for 2016/17 from household (plot level data)

³ Indeed, the difference between average annual growth rates in the number of farmers and agricultural land (-1.4 percent) is about the same as the observed average annual decline in agricultural landholdings.

⁴ The distance between the two graphs in Figure 1.1 is about the same over the years, which indicates that non-crop area remained about the same during the period (at about 0.2 ha). However, the data also show that the area of fallow land declined considerably and that under other uses (grazing, woodland, and other uses) increased, which reflects existing land constraints and that increasingly little land is left to recover.

Map 3 shows zonal average farm sizes in the 64 administrative zones covered in CSA's AgSS.⁵ Darker colors reflect relatively larger farms. The map shows that the decline in agricultural landholding per farmer is a widespread phenomenon rather than a localized occurrence. The map illustrates that agricultural landholding per farmer declined in 57 of the 64 administrative zones covered in CSA's AgSS and that farm sizes declined by 15 percent in an average zone between 2004/05 and 2016/17.

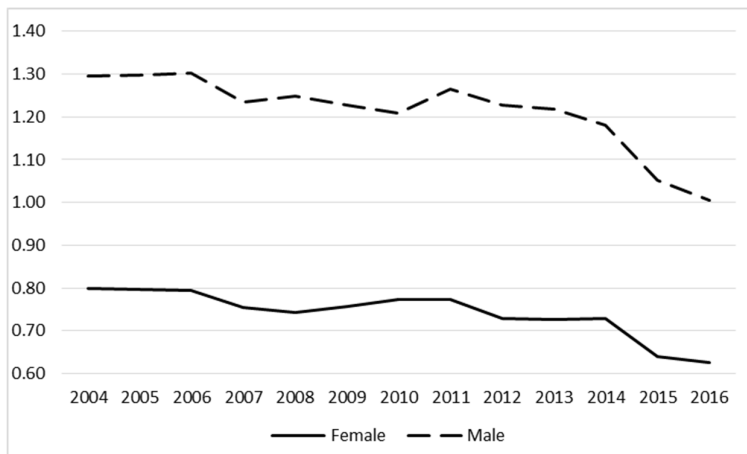
Map 3: Average agricultural land size (ha) of smallholders, 2004/05 and 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

We further depict in Figure 4.3 agricultural land holdings of female and male farmers. Landholding of male farmers was on average 64 percent larger than that of female farmers. Furthermore, landholdings declined for both female (at 21.5 percent) and male farmers (22.5 percent). However, the average landholding of males at the end of the decade (1.0 ha) was still larger than landholdings of females at the beginning of the decade (0.8 ha).

Figure 4.3: Agricultural landholdings of female and male farmers (ha), 2004 – 2016



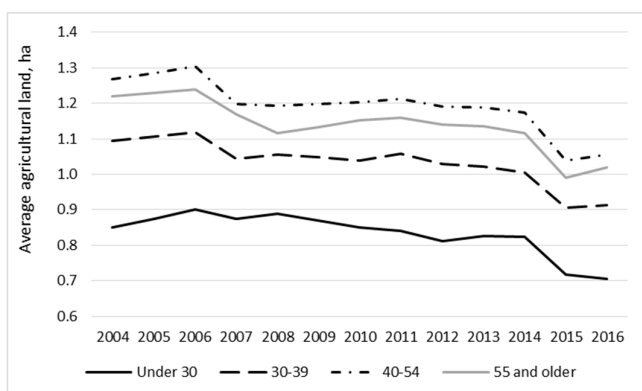
Source: Authors analyses using CSA plot level data (CSA 2017)

⁵ 2004/05 and 2005/06 data are unavailable for ten zones (four, three, two, and one zone in Gambella, Oromiya, Benishangul-Gumuz, and Amhara regions, respectively). We use the data in the earliest year available (2006/07) for these zones.

4.2. The youth have smaller and declining farm sizes

We depict average land sizes cultivated by farmers in the four age quartiles in Figure 4.5 and land sizes of youth and mature farmers in Figure 4.6. Both figures indicate that the decline in agricultural area shown in Figure 4.2 also occurred across all age quartiles. Moreover, Figure 4.5 indicates that farmers in the second and third age quartiles operated (on average 24 percent and 15 percent) larger farm sizes than those in the preceding (younger) age quartiles while farm sizes of 55 or older farmers were slightly smaller than that operated by those in the 40-54 age quartile. Similarly, farm sizes of under 30 (youth) farmers were on average 29.6 percent smaller than that operated by mature farmers. These differences in farm sizes of different age groups remained rather similar across years.

Figure 4.5: Agricultural landholdings of farmers in four age categories (ha), 2004/05 – 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

The graph in the right panel of Figure 4.6 further indicates that gender of the farmer is even more important than age in the landholding size and likelihood of access to land. Male farmers in both age categories operated larger land than females. More specifically, agricultural landholdings of youth-male and mature-male farmers were on average 53 and 110 percent larger than landholdings of youth-female farmers while males in the respective age categories operated 28 and 75 percent larger land than that operated by mature-female farmers.

Figure 4.6: Agricultural landholdings of youth and mature farmers (ha), 2004/05 – 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

In Map 4 we depict the share agricultural area operated by youth farmers in 2004/05 and 2016/17. The map indicates that the share of land operated by the youth declined in 57 zones out of 64 between 2004/04 and 2016/17. The data indicate that on average 30 percent of total zonal agricultural area was operated by youth farmers in 2004/05 and this declined to 24.7 percent in 2016/17.

Map 4: Share of agricultural land operated by under 35 farmers (percent), 2004/05 and 2016/17

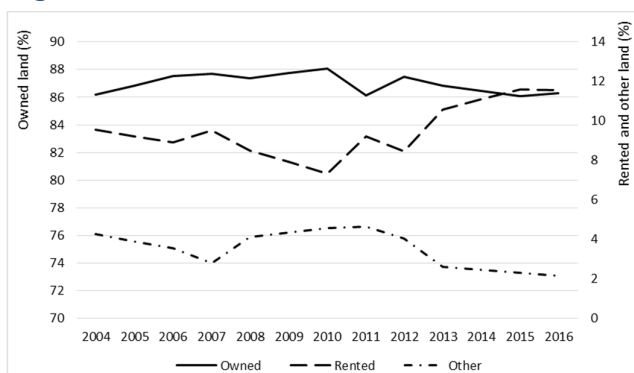


Source: Authors analyses using CSA plot level data (CSA 2017)

4.3. Rental markets are becoming more widespread and the youth increasingly rely on these rental markets to access land

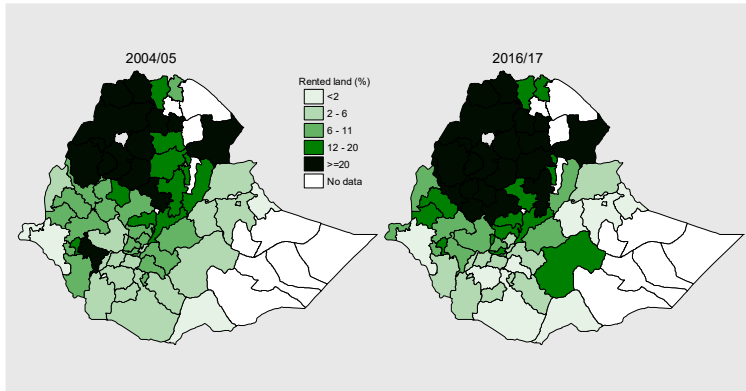
CSA data identify three forms of land acquisition: owned (obtained from local authorities), rented-in, or others. In Figure 4.7 we depict the share of land out of total zonal area obtained in these forms of acquisition during 2004/05 to 2016/17 while in Map 5 we depict the share of rented-in land during 2004/05 and 2016/17. Figure 4.7 indicates that the share of rented-in land generally declined during 2004-2010 and the reverse occurred during 2010-2016. The share of rented-in land in 2016/17 was 21 percent higher than that in 2004/05. The increase in rental land seems to have come at the expense of more traditional ways of land sharing, such as share-cropping. Map 5 also bears this finding. More specifically, the map indicates that the share of rented-in land increased in 37 of the 64 zones during 2004/05-2016/17 and the increase in rented-in land averaged 24.5 percent. It is to be noted that land rental markets are relatively more important in the north of the country.

Figure 4.7: Share of area of owned, rented-in, and other land, 2004/05 – 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

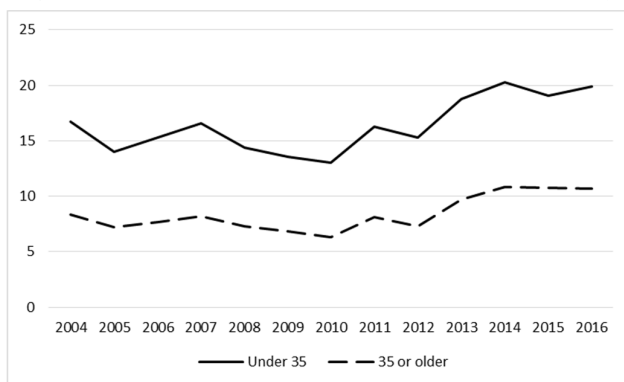
Map 5: Share of rented area of land (percent), 2004/05 and 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

In Figure 4.8 we depict the share of rented-in land out of total land operated by youth and mature farmers. The figure shows that the share of rented-in land operated by youth farmers was nearly twice that operated by mature farmers in an average year during 2004/5-2016/17 and that the share of rented-in land has especially increased in the last 5 years.

Figure 4.8: Share of rented-in land operated by age category, 2004/05 – 2016/17



Source: Authors analyses using CSA plot level data (CSA 2017)

5. IMPLICATIONS

This paper studies trends in population growth, farmer demographics, farm size, and farm tenure characteristics in Ethiopia during 2004/05-2016/17, which was marked with remarkable economic growth in the country. Farmers are becoming older, with the share of youth farmers declining. However, education levels are rapidly increasing and the share of illiterate, particularly illiterate youth farmers has declined rapidly. Average farm size declined during the period and the decline was most pronounced among female farmers. The youth have smaller and declining farm sizes. Furthermore, rental markets are becoming more important. Especially the youth rely more on rental markets to access land. These results have important policy implications.

First, the observed decline in average landholding size implies that policymakers need to prioritize land and tenure policies that will improve agricultural productivity to ensure food security. Land policy discourse in Ethiopia appears to be bogged down by long-gone ideological extremes, far removed from current economic and social problems of the country. Second, the expected rapid increase in the share of youth population, their low and declining farm size, and the declining potentials of agriculture to absorb the youth suggest that policymakers need to act quickly to create em-

ployment opportunities for this segment of the population. Investments in nonfarm economic activities in small and medium towns of the country will not only facilitate the transformation required to move from farming to a non-agrarian economy but also provide the youth, particularly youth women, a decent livelihood. Third, several studies find improvements in educational achievements of the rural population in the recent past, as is also corroborated by the dataset used in this study. However, further research is required to show whether there were efforts to take advantage of those achievements. The increase in educational attainment of farmers in Ethiopia, particularly youth farmers, provides an important opportunity for policymakers to use these improvements as a building block for further investments that increase social capital and improve labor productivity, thereby transforming the economy out of the current predominantly agrarian economy.

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