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Rural youth and employment in Ethiopia

Emily Schmidt and Firew Bekele

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ABSTRACT

Ethiopia's focus on Agricultural Development Led Industrialization (ADLI) has led the country to invest heavily in agriculture. This has played a large role in the country's impressive economic growth – approximately 11 percent per year over the last decade. Given this growth, the economic literature would suggest that Ethiopia is on a pathway to structural transformation of its economy, however macro-economic trends suggest minimal transitions from agriculture to higher value labor activities. Ethiopia remains one of the least urbanized countries in sub-Saharan Africa (84 percent of the total population is considered rural) and approximately three-quarters of the population is engaged in agricultural activities. Slow urbanization, paired with vibrant economic growth, suggests that rural youth will shape the transformation process as well as characterize the work force engaged in agricultural production in years to come.

This paper examines labor diversification in Ethiopia, focusing on youth, and explores current conditions that youth face in both the agricultural and non-farm labor markets. Using data from the Ethiopia Socioeconomic Survey (ESS) and the National Labor Force Survey (NLFS), we explore current trends in labor diversification, along with youth non-farm engagement in rural and small towns. We find that youth (ages 25 to 34 years) have a greater probability of working in non-farm enterprises compared to mature individuals (age 35-64). However, wage labor opportunities remain scant in rural Ethiopia. The majority of individuals working in non-farm employment are engaged in small-scale trade activities.

Our analysis suggests that *push* factors are at play with regards to non-farm diversification, whereby those that live in less favorable agricultural potential areas with fewer assets, such as livestock, and less access to agricultural credit are more likely to seek off-farm work. While this research provides evidence that selected youth are engaged in off-farm labor opportunities, however, a low proportion of the rural population, including youth, has diversified into other activities outside of agriculture. Low demand for higher-skilled labor remains a major obstacle to achieving structural transformation in Ethiopia in the near to medium term.

1. INTRODUCTION

The economic growth literature argues that as an economy grows, the location and structure of labor transitions from primarily rural, agriculture-focused activities to more urbanized activities in the industry and service sectors. This structural transformation improves the livelihood of those who earn higher wages in employment offering potentially better wages, but it also increases land to labor ratios of those who remain in agriculture, providing capital to spur innovation and agricultural productivity growth in rural areas. Over the last few decades, Ethiopia's economic development strategy, the Agricultural Development Led Industrialization (ADLI) strategy, has aimed to increase agricultural productivity, and in doing so, encourage labor diversification via the development of rural non-farm activities. This mode of development is supported by a large body of research literature which suggests that growth in the rural non-farm sector is driven by agricultural productivity growth (Haggblade et al. 2002; Haggblade et al. 2006a; Mellor 1976).

Given Ethiopia's focus on ADLI, agricultural production has increased substantially and the country has experienced impressive economic growth over the last decade of approximately 11 percent per year. However, macro-economic trends suggest that Ethiopia's economy remains at a very early stage in its structural transformation. A puzzle presents itself as to how such growth can be maintained given that Ethiopia is one of the least urbanized countries in Africa south of the Sahara (84 percent of the total population lives in rural areas) and approximately three quarters of the population is engaged in agricultural activities (Central Statistical Agency 2007; CSA 2012/13). From a policy point of view, understanding how youth can take advantage of employment opportunities, both in the agriculture and non-agriculture sectors, will inform future economic growth potential in years to come.

Slow urbanization paired with vibrant economic growth suggests that rural youth will remain an important component of the agricultural labor force, while also seeking to diversify into non-agricultural, higher-value labor opportunities. Within the agricultural sector, transformation includes moving from low-value cereal production, which is characteristic of current Ethiopian agricultural production patterns, to high value crops, such as fruit and vegetables. Rural youth may seek to modernize agricultural practices and utilize new technologies to enhance agricultural growth in the medium term. Regarding the overall economic landscape, as structural transformation progresses in Ethiopia, youth may drive labor diversification trends from predominantly rural agricultural activities to more urban focused, manufacturing and service sectors.

This paper examines current trends in labor diversification in Ethiopia, focusing on youth employment activities, and explores the structure of livelihood decisions given underlying agricultural endowments. Although the majority of rural youth work exclusively on their own family farm, it is not clear that focusing on agriculture is a strategy that will provide a sufficient livelihood for future generations. Recent data collected by the Ethiopia Socioeconomic Survey (ESS) suggest that youth, in particular, may have less access to important agricultural assets, such as land and support services, than do their elders. In response to these constraints, one might expect youth to implement more intensive farming. However, the same data show that households headed by youth are not more likely to use agricultural production enhancing technologies than are mature-headed farming households.

Given that youth face constraints in the agricultural sector, we examine youth non-farm labor engagement in rural and small town areas. We find that youth (those aged 25 to 34 years) have a greater probability of working in non-farm enterprises compared to mature individuals (age 35-64). However, wage labor opportunities remain scant in rural Ethiopia. The majority of individuals working in non-farm employment are engaged in small-scale trade activities, such as street and market vending, while there exists limited demand for more skilled labor, such as in the construction and manufacturing sectors. Our analysis suggests that push factors are at play with regards to non-farm diversification, whereby those that live in areas with less favorable agricultural potential, who possess few assets, like livestock, and have less access to agricultural credit are more likely to seek off-farm work.

This paper provides evidence that youth are currently driving the limited structural changes observed in employment patterns in Ethiopia's economy via employment diversification into non-farm enterprises. However, low demand for higher-skilled labor, including in the rural non-farm sector, remains a major obstacle to achieving structural transformation in the near to medium term. The remainder of the paper is organized as follows: Section 2 reports employment trends in Ethiopia with a focus on youth activities in rural, small town, and urban areas. Section 3 explores the difference in agricultural production practices between mature-headed households and youth-headed households. Section 4 focuses on youth non-farm activities using a multinomial logit model to explore correlates of youth decisions to work in the non-farm sector. Section 5 discusses results of the multinomial logit. Section 6 concludes.

2. EMPLOYMENT IN ETHIOPIA

2.1. Employment trends

We utilize two nationally representative survey datasets to explore overall labor activity in Ethiopia: the National Labor Force Surveys (NLFS) of Ethiopia and the Ethiopia Socioeconomic Survey (ESS). Although the NLFS data provide nationally representative data on labor trends in the country, it restricts data collection to 'main occupation', thus we are unable to assess the portfolio of economic activities individuals pursue, in particular rural non-farm work by members of farming households. In order to provide a more comprehensive analysis of labor participation, we complement the NLFS evaluation with a more detailed labor decomposition in rural, small town, and large cities using the ESS. The ESS requests that each individual household records the amount of time worked on agriculture (own-farm), wage, and non-farm enterprises over a 12 month period. Given that 82 percent of Ethiopia's population reside in rural areas, where a majority of individuals define their primary occupation as agriculture, the ESS supports a more diversified analysis of individual work portfolios.

2.2. National Labor Force Surveys, 2005 and 2013

When analyzing the NLFS data, we adopt the Central Statistical Agency (CSA) definition of the active labor force. Labor force participants include individuals that are at least 10 years old (Ethiopia does not limit the labor force at 64 years old). Within the working age population, individuals that are not engaged in work and would not be available to take up work if it was offered, as well as individuals who are students, handicapped, or have long-term illnesses, are not considered a part of the active labor force.[1]

Although we follow CSA definitions for active labor force, we adjust the 2013 definition of economically active to provide a more accurate comparison with the 2005 NLFS data. In 2005, data collected on occupation and industry concentrated on individuals who worked at least four hours per day, while in 2013, individuals who reported working at least one hour were included as part of the economically active population and provided an industry classification. This

[1] The CSA does not include 'seeking work' as a criterion for being considered economically active. This is due to local conditions of inadequate labor absorption, a large share of labor force being self-employed, and inconsistencies in time accounting of individuals that work in the informal labor market.

modification in the questionnaire resulted in a large share of household unpaid family labor (firewood and water collectors) being classified as working in the household services sector in 2013. We adjust for this discrepancy by reclassifying individuals that stated their main occupation as 'wood and water collection' into 'not in the labor force' in order to provide comparable estimates of employment shares within sectors between the two survey years. We report labor shares using NLFS 2013 official definitions (including wood and water collectors in the economically active population) as well as our adjusted 2013 statistics.[2]

Between 2005 and 2013, while official definitions suggest a greater transition out of agriculture of from 80 to 73 percent of economically active population, we find that, after adjusting the data for water and firewood collectors, the share of people working in agriculture decreased by only 3 percent from 80 to 77 percent over this period (Table 2.1). Overall employment shares in the services sector also reflect the reallocation of water and firewood collectors. Official statistics reported the overall services sector to encompass 20 percent of economically active population in 2013, of which private household work increased from 6 to 36 percent of service employment. Adjusting for the discrepancies between the 2005 and 2013 surveys in the definition of those employed, we find that the service sector employed 16 percent of the economically active population in 2013, nonetheless, encompassing the largest share of non-farm labor. Finally, the industry sector has not experienced significant growth over the last decade in terms of job creation, with employment shares increasing by only about one percent between 2005 and 2013.

Table 2.1: Employment shares by industry of the economically active population (ages 10 years and older), percent

Industry	2005	2013 unadjusted	2013 adjusted
Agriculture	80.2	72.7	76.6
Industry	6.7	7.3	7.7
Services	13.2	20.0	15.7
Private households	6.0	36.4	10.2

Source: National Labor Force Survey (2005, 2013).
'2013 unadjusted' represents the national CSA-based definition of sectors. '2013 adjusted' reclassifies water and firewood collectors as 'Not economically active' – this sort of work is not taken into account in the figures in this column.

Although the government of Ethiopia has made significant investments in education with an emphasis on increasing access to secondary education opportunities, non-agricultural workers are predominantly engaged in low-skill sectors. Sales workers make up 29 percent of non-agricultural work, of which street and local market vendors comprise 42 percent (Table 2.2). Formal shopkeepers and informal home-brewed alcohol sellers comprise almost equivalent shares of 22 and 21 percent of sales workers, respectively. These employment trends suggest a mode of development that is moving, albeit slowly, towards a service sector focused economy. However, the specific service activities that individuals are engaged in reflect a low level of development with limited labor demand.

Table 2.2: Share of non-agricultural employment in Ethiopia by occupational group, 2013, percent

Occupational group	Share of non-agricultural employment
Sales workers	30.2
Street and market salespersons	*43.6*
Shop salespersons	*22.1*
Alcohol sales	*20.6*
Other sales	*13.7*
Construction and mining	10.6
Food processing, wood and garment craft	7.6
Refuse workers	7.0
Teacher	6.5
Personal service worker	5.9
Other	32.2

Source: National Labor Force Survey (2013).

[2] In 2013, 88 percent of individuals that reported water and wood collecting as their primary occupation reported that this activity was classified as unpaid family worker. The majority of these workers were female (89 percent) and rural (94 percent). This category was not present or accounted for in 2005. For more information on these individuals see Appendix 1.

In order to better understand employment activities within the Ethiopian economy, we disaggregate employment numbers by geographic area (rural, small town, and urban areas) and by age group. Focusing on youth, the data suggest that rural youth are primarily engaged in agriculture, while a greater share of youth living in 'other urban' locations and in large cities are engaged in non-agricultural work. As per the CSA definition of 'other urban', we can assume that these centers represent secondary cities that are urban centers with populations of less than 100,000 people and are not considered regional capitals. When comparing the percent share of individuals working in agriculture between rural areas and these secondary cities, diversification is primarily occurring in the secondary cities whereby 22 and 12 percent of youth aged 15 to 24 years and 25 to 34 years, respectively, report their primary occupation is in agriculture (Table 2.3). However, it is important to note that 'other urban' represents only 12 percent of the economically active population, both overall and for youth.

Table 2.3: Percent of employed population whose primary occupation is in agriculture, 2005 and 2013, by age cohort and spatial domain

Spatial domain	Age 10-14	Age 15-24	Age 25-34	Age over 35	Total
Ethiopia					
2005	92.0	77.6	74.8	80.7	80.2
2013 *	93.4	75.4	66.3	77.3	76.6
Rural					
2005	94.2	85.8	85.6	89.7	88.5
2013 *	95.3	86.9	83.9	90.1	88.9
Other urban [1]					
2005	48.5	21.6	11.5	18.5	19.9
2013 *	54.1	19.1	14.5	23.0	21.0
Major urban [2]					
2005	17.9	3.6	2.1	4.3	3.8
2013 *	22.9	3.6	2.5	5.4	4.2

Source: Ethiopia National Labor Force Surveys (2005, 2013).
* 2013 data are based on reclassification of individuals that reported their primary occupation as 'wood and water collectors' into 'Not in the labor force'.
[1] Other urban centers are urban centers with populations of less than 100,000 people in 2007 and which are not considered regional capitals.
[2] Major urban centers include all regional capitals and the 15 other major urban centers that had a population size of 100,000 or more in 2007.

Evaluating employment transitions between 2005 and 2013 disaggregated by age and spatial domain, the NLFS results presented in Table 2.3 suggest very little movement out of agriculture occurred in rural areas between 2005 and 2013. Almost equivalent shares of youth aged 15-24 and youth aged 25-34 are working in agriculture in 2013 as there were in 2005. The share of youth working in agriculture in secondary cities shifted slightly down by 3 percent (from 22 to 19 percent) for those age 15-24. However, individuals in secondary cities aged 25-34 and over 35 years experienced slight increases in the overall share of the economically active engaged in agriculture. As expected, individuals living in major urban cities, who represent 10 percent of the economically active population, predominantly work in the non-agriculture sector. Given that the NLFS restricts data collection to the main occupation of individuals, we now turn to examining the ESS, which provides information about secondary occupations and time spent on specific activities.

2.3. Ethiopia Socioeconomic Survey

In order to better understand the portfolio of labor opportunities available to youth, we utilize the Ethiopia Socioeconomic Survey (ESS) which provides detailed, individual-level information on labor portfolios.[3] The ESS 2013/14 was implemented in 433 enumeration areas and comprises 5,262 sample households. Sampling of rural, small town (population with less than 10,000 people) and urban areas (greater than 10,000 people) was implemented to allow representative sampling of the population in order to estimate regional and national level data.[4]

The ESS requested information on the amount of time worked on specific activities for each individual in the household. The post-planting and post-harvesting modules of the questionnaire recorded the activity and number of hours, days, and weeks enumerated individuals worked on the household farm. Similarly the time use and labor module recorded

[3] ESS began as the Ethiopia Rural Socioeconomic Survey (ERSS) in 2011/12. The first wave of data collected in 2011/12 included only rural and small town areas. The 2013/14 ESS (wave 2), which we use in this paper, was expanded to include all urban areas.

[4] Regional strata includes: Addis Ababa; Amhara; Oromiya; Southern Nations, Nationalities, and Peoples (SNNP); Tigray; and 'Other regions'

the occupation and industry of wage employment of the respondent, as well as the number of days and weeks worked during the last 12 months for primary and secondary occupations. Finally, a non-farm enterprise module asked the household to report any non-farm enterprise that was operating in the last twelve months, its primary activity, the number of months (and days in the month) that the enterprise was active, and finally the household members that worked in the non-farm enterprise. We use data from these four modules to create a portfolio of individuals' labor activities based on time worked in a specific sector.

Based on the ESS data, Ethiopia comprises 93.5 million people, of which 51 percent are aged between 15 and 64 years (inclusive). Within this age group, approximately 76 percent (36.4 million) reported that they worked on their own farm, for wages, or within a non-farm enterprise. Of this working population, the majority of individuals (78 percent) are engaged solely in own-family farm activities, while only 12 percent report having a secondary job outside of their own farm. Similar results were found by Bachewe et al. (2016) using a large-scale household survey data in high potential agricultural areas (Agricultural Growth Program survey) in which it was also found that total off-farm income comprised 18 percent of total rural income. Although the ESS data are instructive in understanding labor portfolios, they do not allow an accurate estimation of unemployment. Rather, the 'not working' population are those that do not report working in any labor activity and are not currently students. Under these definitions, approximately 19 percent of the working age population is not working.[5]

Labor diversification can be viewed from two perspectives. First, it is important to understand to what degree households are able to diversify their overall household income. In this scenario, we imagine that household labor is allocated in an efficient manner, given each household member's characteristics. For example, some members of the household may be better students or more entrepreneurial, while others are more equipped, i.e., physically or in terms of skills, to remain working on the farm. Thus, diversified labor allocation remains at household level while individuals within the household specialize in specific activities. Second, individuals may choose to diversify their overall personal labor portfolio. Given that agricultural work is seasonal in Ethiopia, individuals may choose to diversify their work portfolio by seeking out jobs in the non-farm sector during the non-agricultural season. We assess both of these options in turn to understand how youth are taking advantage of employment opportunities outside of their own-family farm work.

2.4. Household-level labor diversification

In order to evaluate labor diversification within households, we split the sample by youth and mature households based on the age of the household head. We compare mature-headed households to three youth categories (overall youth age 15 to 34 years; young youth age 15-24; and experienced youth age 25-34). The data suggest that a significantly lower proportion of workers in youth-headed households, in all youth age cohorts, work exclusively on their own agricultural land (Table 2.3). Whereas 84 percent of mature-headed households dedicate all of their household labor to their own agricultural production, approximately 8 percent less, 76 percent, of youth-headed households focus their available labor solely on own family farm agricultural activities (Table 2.4).

Table 2.4: Allocation of household labor to own farm, other farms, or off-farm, by age cohort of household head, 2013/14, percent of households

	Mature-headed HHs (aged 35-64)	Youth-headed HHs (aged 15-34)	Young youth-headed HHs (aged 15-24)	Experienced youth-headed HHs (aged 25-34)
Own family farm	83.8	75.5 ***	74.9 ***	75.6 ***
Mixed own farm and non-farm	12.9	16.3 ***	11.4	16.9 ***
Off own-farm (agriculture)	*9.1*	*10.3*	*12.6*	*10.1*
Off own-farm (non-agriculture)	*90.9*	*89.7*	*87.4*	*89.9*
Off-farm	3.4	8.1 ***	13.7 ***	7.5 ***
Off own-farm (agriculture)	*7.5*	*7.0*	*7.9*	*6.9*
Off own-farm (non-agriculture)	*92.5*	*93.0*	*92.1*	*93.1*

Source: Ethiopia Socioeconomic Survey (2013/14).
Note: t-tests are relative to mature households; *** p<0.01, ** p<0.05, * p<0.1.

More youth-headed households have diversified labor portfolios compared to mature-headed households. A greater share (16 percent) of youth-headed households between the ages of 25 and 34 years have a mix of own family farm and

[5] According to the NLFS (2013), approximately 20 percent of age eligible (10-64 years) individuals were considered to be not economically active, and 4.5 percent of the economically active population was unemployed.

non-farm labor compared to mature households (13 percent), while younger households (age 15-24) show less diversification compared to mature households (Table 2.4). This may be because older youth (age 25-34) have gained the necessary experience and have expanded their social network to search out non-farm opportunities, while the younger households are still reliant on parental support, have fewer household members, and lack the necessary resources to diversify their household labor portfolio. Finally, a greater share of youth-headed households in all age cohorts are engaged exclusively in the non-farm sector. Within the non-farm category, most individuals are working in the non-agricultural sector. This follows agricultural practices in Ethiopia, where limited labor demand for agricultural work exists due to labor-sharing customs in rural areas (*debbo* and *wonfel* systems).[6]

2.5. Individual-level labor diversification

Given that the majority of agricultural production in Ethiopia involves a single harvest annually, on-farm work is a highly seasonal activity. Individuals may seek out other income-earning opportunities off the farm during the slack agricultural season. In order to compare individual engagement in non-farm labor opportunities, we split the sample of individual workers between youth aged 15 to 34 years and mature individuals aged 35 to 64 years. In addition, we disaggregate individuals over geographic space to explore the supply of non-farm labor opportunities in rural, small town (centers with population of less than 10,000 people), and urban areas (centers with more than 10,000 people).

Focusing on rural areas, while a smaller proportion of rural youth work exclusively on own-farm activities (63 percent) compared to mature rural individuals (76 percent), the data do not suggest that rural youth are more engaged in diversified labor portfolios, such as wage labor or non-farm enterprise activities (Table 2.5). However, when comparing youth and mature populations that do not report working in any sector (and are not attending school), the share of rural youth (20 percent) that are not working is twice that of mature individuals (10 percent). Similarly, the data suggest that there is little demand for non-farm work in rural Ethiopia, with only 10 percent of youth and 12 percent of mature individuals having a mixed on-farm and non-farm work portfolio (Table 2.5). These patterns are similar when splitting the youth cohort between young youth (those aged 15 to 24 years) and experienced youth (aged 25-34). However, the share of experienced youth having a mix of on-farm and off-farm employment, at 16 percent, is more than double the share of young youth with such a pattern of employment (7 percent) (Appendix 2).

Table 2.5: Labor type, by location and age cohort, 2013

	Percentage share of youth (age 15-34)			Percentage share mature (age 35-64)		
	Rural	Small town	Urban	Rural	Small town	Urban
Working population	76.0	50.1	44.9	90.2	75.2	66.0
Own-farm only	63.1	12.1	2.8	76.4	17.3	3.7
Own-farm and off-farm	10.4	8.4	1.8	12.0	19.2	3.8
Own-farm & non-farm enterprise	*8.5*	*6.3*	*1.2*	*9.5*	*11.5*	*2.4*
Own-farm & wage	*1.7*	*1.7*	*0.6*	*2.2*	*6.3*	*1.2*
Own-farm, non-farm enterprise, & wage	*0.2*	*0.4*	*0.0*	*0.3*	*1.4*	*0.2*
Off-farm [1]	2.5	29.6	40.3	1.8	38.7	58.4
Non-farm enterprise	*1.7*	*18.8*	*15.6*	*1.1*	*27.2*	*23.5*
Wage	*0.8*	*8.9*	*23.6*	*0.5*	*7.4*	*32.4*
Non-farm enterprise & wage	*0.0*	*1.9*	*1.1*	*0.1*	*4.2*	*2.5*
Not working	20.1	33.3	28.3	9.8	24.5	33.0
Student [2]	3.9	16.6	26.8	0.0	0.4	1.1
Eligible population (thousands)	26,034.5	269.7	4,989.0	14,227.7	131.4	2,018.4

Source: Ethiopia Socioeconomic Survey (2013/14).
[1]Off-farm work comprises individuals who work in off-farm enterprise and/or wage work
[2]Students are defined as those who do not report time working in own-farm, wage, or off-farm enterprise activities and report activity as 'student'.

Given the limited non-farm activity reported in rural areas, one would expect that small towns play an important role in providing light manufacturing, trade, and other services. Small towns do provide greater opportunities for non-farm labor compared to rural Ethiopia. However, the data suggest that non-farm labor demand remains constrained in such areas as well (Table 2.5). Slightly over one-third of youth in small towns report working either exclusively in non-farm activities or in

[6] For more information on *debbo* and *wonfel* systems, see Krishnan and Sciubba (2009).

mixed farm and non-farm activities. A greater share of mature individuals in small towns (58 percent) have entered into non-farm activities or a mix of non- and on-farm work. Among the youth population, small towns are important hubs for education (16.6 percent of youth in small towns are students). However, it is unclear how potential higher educational attainment is translated into higher paying non-farm wage employment (Table 2.5). Non-farm enterprise work is the predominant non-farm labor opportunity for youth in small towns, encompassing more than double the number of youth engaged exclusively in wage work.

Finally, individuals living in urban areas (cities of 10,000 people or more) who work are predominantly engaged in non-farm work. Non-farm enterprise work remains an important share of non-farm work in urban areas—16 percent of youth and almost a quarter of the mature age cohort work in such enterprises (Table 2.5). These numbers suggest that the demand for higher-skilled labor, which is predominantly wage-based, may still be lacking in urban areas.

The youth workforce that focuses solely on own-farm activities, reports working for only 21 weeks of the year on average (Table 2.6). Mature workers engaged exclusively in farming report working for 27 weeks of the year. These data suggest that the majority of the workforce in Ethiopia (68 percent of rural workers and 58 percent of the overall workforce) are not economically active for more than half of the year. Individuals that have a mixed portfolio of own-farm and non-farm labor are engaged in work for more than double the time—46 and 49 weeks for youth and mature workers, respectively—spent at work by those who work exclusively on their own farm (Table 2.6). However, workers that mix farm and non-farm work make up only about 10 percent of the total workforce regardless of age. Similarly, youth and older workers exclusively engaged in wage or non-farm enterprise activities report working for 46 and 48 weeks, respectively, but these also represent a small share of the overall workforce. We find similar results when splitting the youth sample into young youth (15-24) and experienced youth (25-34) (Appendix 3)

Table 2.6: Average time worked per year by type of work, by age cohort, weeks

Working youth (15-34 years)	All workers	Exclusive farmers	Exclusive off-farmers	Mixed farm and off-farm workers
Average time worked per year	**27.7**	**21.6**	**45.7**	**45.7**
Farming own-farm	18.1	21.6	-	15.3
Off-farm work [1]	9.5	-	45.7	30.4
Wage	*3.9*	-	*25.5*	*5.9*
Non-farm enterprise [2]	*5.6*	-	*20.2*	*24.4*
Working mature (35-64 years)				
Average time worked per year	**32.2**	**27.2**	**48.2**	**49.1**
Farming own-farm	23.2	27.2	-	18.2
Off-farm work [1]	8.9	-	48.2	30.9
Wage	*3.7*	-	*26.8*	*7.4*
Non-farm enterprise [2]	*5.2*	-	*21.4*	*23.5*

Source: Ethiopia Socioeconomic Survey (2013/14)
[1] Off-farm work consists of off-farm enterprise and wage work.
[2] Individual time worked in a non-farm enterprise was not collected, thus we allocate the full amount of time that the non-farm enterprise was in operation (total weeks) to each person that is reported working in the non-farm enterprise.

3. YOUTH AND AGRICULTURAL PRODUCTIVITY

The labor trends discussed above suggest that agriculture remains an important livelihood for the majority of rural youth (63 percent) and the overall population. However, limited non-farm labor opportunities are constraining a large share of individuals from reaching their full working potential. Those who are solely engaged in own-farm activities, 78 percent of the overall working population, report being economically active for only about half of the year. Given limited non-farm labor demand, as well as the large share of rural youth that work exclusively in agriculture, we now assess to what degree youth are leading any agricultural transformation processes in Ethiopia, particularly those that involve specialization in high value crops or the utilization of modern technologies.

The goal of education policy in Ethiopia has been, in part, to produce educated farmers who would then be able to effectively adopt new agricultural technologies (MOE 2005). These objectives continue to underpin the national education policy. This would suggest that as rural youth create their own, independent households and acquire their own agricultural

land, they may seek solutions to increase agricultural productivity and overall welfare via agricultural intensification, diversification, and modernization.

Table 3.1 compares the characteristics of agricultural households located in rural and small towns (less than 10,000 people), disaggregated by the age of the household head. [7] Several differences stand out. First, youth-headed households have access to significantly less agricultural land compared to mature-headed households. Youth-headed households own and operate approximately 0.8 and 1.4 hectares, respectively, compared to mature-headed households that own and operate 1.5 and 1.7 hectares, respectively. Limited data suggest that the young youth-headed households (aged 15-24 years) have greater difficulty accessing land than the experienced youth-headed households (between the ages of 25 and 34 years), however this result should be read with caution given the small sample size of young youth-headed households.

Table 3.1: Agricultural household-level characteristics in rural and small town areas, by age cohort of household head, means

	Mature-headed HHs (35-64)	Youth-headed HHs (15-34)	Young youth-headed HHs (15-24)	Experienced youth-headed HHs (25-34)
Land characteristics				
Operated area, ha	1.74	1.38 *	0.75 **	1.46
Owned area, ha	1.49	0.82 ***	0.59 *	0.85 ***
Landless, %	7.2	14.0 ***	20.6 ***	13.2 ***
Good agricultural potential, %	26.4	24.1	16.5 **	25.0
Agricultural inputs				
Inorganic fertilizer, %	59.9	57.7	44.5 ***	59.3
Organic fertilizer, %	67.7	59.8 ***	53.0 ***	60.7 ***
Irrigation, %	09.8	10.8	14.5	10.4
Herbicide, %	33.9	39.3 ***	33.9	40.0 ***
Tractor, %	4.2	6.6 ***	08.9 **	06.3 **
Improved seed, %	30.1	29.0	26.5	29.3
Row planting, %	50.0	45.1 ***	51.2	44.4 ***
Grow cash crop, % [a]	82.3	78.3 ***	75.6 **	78.7 **
Receive agricultural credit, %	23.8	20.5 **	08.4 ***	21.9
Receive agricultural extension, %	45.8	40.2 ***	26.2 ***	41.8 **
Household characteristics				
Household size, number	6.18	4.85 ***	3.82 ***	4.97 ***
Number of observations	*2,752*	*1,024*	*135*	*889*

Note: t-tests are relative to mature households; *** p<0.01, ** p<0.05, * p<0.1.
[a] Cash crops include beans, nuts, sesame and other seeds, spices, fruit, vegetables, coffee, chat, cotton sugar cane, and tobacco.

Landlessness is also greater among youth-headed households. For example, 7 percent of mature-headed households living in rural and small town areas are landless, compared to 14 percent of youth-headed households. Similarly, the share of landlessness among the youngest households (15-24 years old) reaches 21 percent, while 13 percent of experienced youth-headed households between 25 and 34 years of age are landless (Table 3.1). This follows recent research by Bezu and Holden (2014) who found that youth in the rural south of Ethiopia have limited access to agricultural land due to land scarcity and land market restrictions. Headey et al. (2014) also report declining farm sizes over time, with younger rural households facing larger constraints in obtaining agricultural land.

Finally, youth are not more likely to implement agricultural enhancing technologies (improved seed, cash crop production, and row planting) compared to mature-headed households. However, compared to mature households, youth use more technologies that are labor-reducing, such as herbicides and tractors. This is in line with recent work by Bachewe et al. (2015) and Minten et al. (2013) who found that substitution of labor with labor-saving modern inputs, in particular herbicides, is increasing in lieu of time spent on weeding. This may be due to the smaller household size of youth-headed

[7] Research shows that a variety of factors affect household uptake of agricultural technologies. Extensive literature has analyzed specific issues including: physical and human capital endowments (Pender and Fafchamps 2006); access to agricultural extension (Abrar et al. 2004); supply of seeds (Dercon and Hill 2009); heterogeneity of fertilizer success (Suri 2011); risks of negative shocks (Dercon and Christiaensen 2011); and access to credit (Duflo et al. 2011).

households which creates a labor-constrained environment in which such households will seek technologies to decrease labor demands in agricultural work. Overall, these figures suggest that agriculture may not be the optimal or first choice of employment among youth-headed households, given the current environment.

4. CORRELATES OF YOUTH ENGAGEMENT IN NON-FARM EMPLOYMENT

A rich literature has evaluated the determinants of non-farm labor engagement including disaggregated analysis of individuals' decisions to seek out skilled versus unskilled non-farm labor opportunities (Reardon et al. 2001; Winters et al. 2009; Mduma and Wobst 2005; Bezu et al. 2009); market access and non-farm participation (Fujita et al. 1999; Renkow 2006; Henderson et al. 2001; Fafchamps and Shilpi 2003; Deichmann et al. 2009); and effects of income or wealth on non-farm labor choices (Bezu and Holden 2010; de Janvry and Sadoulet 2001; Woldehanna and Oskam 2001; Dercon and Krishnan 1996). However, largely missing from the literature on Ethiopia is an in-depth evaluation of the transition of youth from employment on-farm into the non-farm sectors. A recent report by the World Bank outlines the opportunities and challenges for youth employment in Africa and provides a comprehensive overview of potential growth sectors, including agriculture. However, the discussion in this overview is limited to country and regional levels (Filmer and Fox 2014). Bezu and Holden (2014) evaluated the determinants of youth aspirations to pursue non-farm employment in Ethiopia. However, they did not examine the experience of youth that already are in the non-farm work force. This section addresses some of this knowledge gap by evaluating the determinants of youth employment in the non-farm sector, specifically for those individuals that chose to diversify their personal labor portfolio.

In this analysis, non-farm labor activities refer to any labor that is conducted off the own-family farm. We limit our sample to individuals living in rural or small town areas. We are interested in assessing workers that choose to diversify into non-farm labor activities, i.e. wage or non-farm enterprise activities, in addition to working on their own-family farm in either planting or harvesting. These individuals are split into two categories: workers that have diversified their labor portfolio into wage labor and workers that have diversified into non-farm enterprises. We compare these individuals to those that remain working exclusively on their own-family farm. Finally, in order to look specifically at youth labor choices, we split the sample by age cohort.

Table 4.1 provides the average values for key variables used in the empirical analysis. The profiles of rural and small town workers in Ethiopia differ in terms of individual, household, and location characteristics. Youth between the ages of 25 and 34 years are generally more active in the non-farm sector (wage or non-farm enterprise), while youth between the ages of 15 and 24 tend to work more on own-farm labor. Those that diversify into wage labor activities have completed more schooling (36 percent completed primary school) and are often the household head (60 percent).

Females are more engaged in non-farm enterprise work and are less active in wage labor (Table 4.1). Primary school completion rates are approximately the same for individuals that diversify into a non-farm enterprise activity and those that work solely on own-farm activities, suggesting that non-farm enterprise activities do not require a significantly different skill set or greater experience level than does own-farm work. Compared to own-farm workers, wage and non-farm enterprise workers report higher annual expenditure per capita, which may be associated with higher potential profitability of off-farm work.

Comparing household and location characteristics, individuals that work in wage labor come from smaller households with less agricultural land and livestock (Table 4.1). In addition, these individuals receive less extension services and have less access to agricultural credit, compared to individuals that exclusively work on their own-farm. Rural wage workers also live in areas where agriculture is less suitable, and therefore less attractive. These differences in household characteristics are similar for individuals who diversify into non-farm enterprise activities, with the exception that a significantly greater share of individuals working in non-farm enterprises live in areas with good agricultural potential. Finally, market access and distance to a major road are not significantly different for non-farm and own-farm workers. While wage workers tend to be closer to a market, overall, most households are relatively remote (at least 55 km on average) from major market centers.[8]

[8] Major market centers are defined by FEWSNET and do not include weekly markets, thus for sensitivity purposes, we also used distance to a city of at least 20,000 people and found insignificant results.

Table 4.1: Profile of rural and small town workers (ages 15-64) by employment type, mean characteristics

	Own-farm	Wage	Non-farm enterprise
Age 15-24, proportion	0.36	0.24 ***	0.29 ***
Age 25-34, proportion	0.24	0.35 ***	0.35 ***
Age 35-64, proportion	0.40	0.41	0.37
Household head, proportion	0.33	0.60 ***	0.39 ***
Female, proportion	0.49	0.20 ***	0.54 **
Married, proportion	0.59	0.69 **	0.67 ***
Completed primary school, proportion	0.10	0.36 ***	0.10
Student, proportion	0.13	0.05 ***	0.09 ***
Household size, number	6.64	5.89 ***	6.50
Adult males (age 15 to 64 years), number in household	1.82	1.52 ***	1.55 ***
Adult females (age 15 to 64 years), number in household	1.71	1.56 *	1.69
Expenditure, '000 birr/capita/year	1.38	2.95 ***	2.25 ***
Agricultural area owned, ha	1.62	1.24	1.22 *
Agricultural area operated, ha	1.94	2.23	1.60
Receive agricultural extension, proportion	0.52	0.34 ***	0.48
Receive agricultural credit, proportion	0.27	0.18 ***	0.22 ***
Livestock ownership, Tropical Livestock Units	4.24	2.87 ***	3.64 ***
Experienced drought, proportion	0.08	0.09	0.04 ***
Experienced flood, proportion	0.03	0.01 ***	0.03
Land with good agricultural potential, proportion	0.26	0.19 *	0.35 ***
Distance to nearest major market center, km *	62.2	55.9 *	64.3
Distance to nearest major road, km	13.8	15.2	14.4
Observations	*5,737*	*337*	*1,493*

Note: t-tests are relative to own-farm workers; *** p<0.01, ** p<0.05, * p<0.1.
* Major market centers are defined by FEWSNET and do not include weekly markets

5. MULTINOMIAL LOGIT MODELING OF OFF-FARM EMPLOYMENT

These descriptive statistics provide an important comparison of general worker profiles by employment type. However, these comparisons of averages do not take into account the diverse labor market environments across Ethiopia nor control for differences among individual workers and households. In order to take into account these distinguishing factors, we evaluate individuals that engage in non-farm enterprise or wage work relative to own-farm workers using a multinomial logit model. In doing so, we are able to identify the correlates of individual, household, and location characteristics of rural youth workers who choose a more diversified labor portfolio compared to those who work exclusively on their own family farm.

5.1. Potential determinants of engaging in off-farm employment in rural Ethiopia

Diversification into non-farm employment can be grouped based on two factors that are considered incentive variables. These relate to whether an individual is *pushed* from agricultural work into non-farm activities in order to seek out sufficient sources of income, or an individual is *pulled* into non-farm activities given higher returns to labor and capital compared to agriculture. In addition, capacity variables also affect non-farm participation. Individuals differ in their ability to take advantage of non-farm opportunities based on their human, physical, and financial capital. For example, some individuals are more educated, with better access to savings for start-up capital and greater options for non-farm work due to proximity to a market or transportation network.

We include a variety of explanatory variables in our multinomial logit analysis in order to account for incentive and capacity factors at the individual and household level. At the individual level, the majority of variables are considered capacity factors. We include an aggregated age variable defined by three groups: youth aged 15 to 24 years, youth aged 25 to 34, and the comparison group of mature adults aged 35 to 64. These age aggregates attempt to capture experience level and potential life cycle effects, as well as to explicitly evaluate youth participation in non-farm activities. We also include individual characteristics, such as whether or not the individual is a household head, female, or married. If an individual is the

household head, she or he may be more inclined to stay working on the farm in order to insure sufficient agricultural output. In addition, Ethiopia's land tenure system requires residency on the farm to maintain usufruct rights to farmland which may create greater disincentives for household heads to seek alternative employment. Education—measured by whether an individual completed primary school—is also an important factor, given that it improves the value of labor, raises the opportunity costs for an educated individual to stay at home and engage in lower paying agricultural work, and potentially enhances the individual's social network to facilitate access to non-farm jobs.

At the household level, we include a variety of variables that can be considered as incentive and capacity variables. For example, owning a relatively large agricultural land area may indicate better farming potential and food self-sufficiency, which would incentivizing individuals to remain in agriculture. Alternatively, larger land holdings may be associated with higher crop incomes, which can provide start-up capital for work in the non-farm sector.[9] We include both *total agricultural land owned* and *total agricultural land operated* to account for these factors. We also include livestock ownership in the form of Tropical Livestock Units owned by the household, per capita expenditure of the household, and whether a household is located in an area with good agricultural potential. We hypothesize that youth who have access to land with good agricultural potential are less likely to seek non-farm employment. However, assuming productivity growth has reached a certain threshold to increase demand for non-farm goods and services, individuals may seek higher returns via labor diversification out of agriculture (Mellor 1976; Haggblade et al. 2006; Deichmann et al. 2009). Similarly, we include whether a household has experienced a flood or drought during the last year in order to take into account potential fluctuations in agricultural productivity. Such fluctuations may incentivize individuals to seek other forms of employment as a means of insurance against agricultural uncertainty.

In addition to physical endowments at the household level, individuals coming from larger households with a greater number of working adults would likely exhibit a greater probability of working in the non-farm sector because their labor would not be as critical for agricultural production within such households. In order to account for differences in female and male labor roles in rural Ethiopia (for example, it is rare for females to cultivate land in Ethiopia – see Deininger et al. 2008), we include the number of adult females and the number of adult males within the household, as well as total household size.

Household variables are included to differentiate between households that have received agricultural credit or agricultural extension. These variables represent incentive factors to stay working on-farm because they target agricultural activities.[10] Finally, distance to a market or trafficked road captures a household's locational potential for non-farm labor opportunities, as well as assessing the effect on transaction costs, and thus, an individual's willingness to seek non-farm labor. Job search costs would be lower for those that live closer to markets or key transportation corridors, while at the same time they may be better informed of potential job opportunities.

5.2. The multinomial logit model

For this analysis, the sample is split into three categories: individuals that work solely on their own family farm; individuals that report working in a mix of own-family farm and wage work; and individuals that report working in a mix of own-family farm and non-farm enterprise. The response probabilities for the multinomial logit with three alternatives are defined as:

$$\log\left(\frac{\pi_{wi}}{\pi_{ni}}\right) = \alpha_{wr} + \beta_w X_i,$$

where π_{wi} is the odds of seeking off-farm work w, π_{ni} is the odds of remaining on the family farm and working solely in agriculture, and parameter α_{wr} is the baseline hazard of work in region r for the specific work type *w*. β_w is a vector of parameter estimates. X is a vector that denotes the factors that influence labor choice.

We estimate three models to assess correlations between youth and livelihood choice. The first model employs the entire sample of rural and small town working population aged 15 to 64 years to test if youth (aged 15-34) are more likely to enter off-farm labor opportunities compared to mature individuals (aged 35-64). The second model is limited to youth aged

[9] See Reardon et al. (2007) and Bezu and Barrett (2012) for a greater discussion on land holdings and non-farm labor diversification.

[10] Recent work evaluated credit via microfinance programs aimed at non-farm activities and found mixed results with regards to such credit inducing greater engagement in non-agricultural income earning opportunities. Hagos (2003) found a positive effect of microfinance credit programs on income level changes derived from self-employment. However, no effect was found on participation in wage employment. Bezu and Holden (2014) reported that access to savings and credit are significant factors for transitioning into high-return rural non-farm activities. Tarozzi (2014) evaluated access to microfinance credit in Amhara and Oromiya on a variety of outcomes and found no significant effects on non-farm enterprise creation.

15-24 to evaluate how individual, household, and location variables are correlated with non-farm labor. The third model is limited to youth aged 25-34 and follows the same methodology of the second model to evaluate how more established youth engage in the labor market. In order to take into account differences across districts in terms of access to infrastructure and information, as well as differences of agro-ecological zone, standard errors are clustered at woreda (district) level.

5.3. Results and discussion

The coefficients in a multinomial logit model are calculated in relation to a base outcome and difficult to interpret directly. However, average marginal effects can be predicted, so we focus the discussion on the reported marginal effects. We set our base outcome as individuals that work exclusively on their own-farm for all three models. Model 1 evaluates whether youth are more likely to diversify into wage or non-farm enterprise opportunities in addition to working on own-family farm work. Analysis suggests that older youth (age 25-34) have a greater probability of diversifying into non-farm enterprise activities compared to mature individuals, however this does not hold true for youth age 15-24 (Table 5.1). It may be that the younger cohort of youth have not built up sufficient work experience or developed an appropriate social network to successfully engage in a non-farm enterprise. Although older youth are using non-farm enterprise labor as an avenue to address underemployment during the agricultural off-season, wage labor is less accessible to Ethiopia's youth. According to Model 1, youth (regardless of their age) are no more active in the wage labor market than are mature individuals (aged 35-64).

Focusing specifically on youth (Models 2 and 3), those that are located in areas with good agricultural potential have a greater probability of diversifying into non-farm enterprises, especially older youth aged 25-34 years old (Table 5.1, Model 3). This supports the findings of previous research that contended that local non-farm income is greater in better agro-climatic areas, whereas migration is a more common strategy in unfavorable climatic areas (Reardon 1997; Reardon et al. 2007). Woldehanna and Oskam (2001) reported that households in Tigray during good production seasons prefer non-farm enterprise work over wage employment, suggesting that a good production season gives farmers the financial capacity to start a non-farm enterprise. Youth aged 15-24 that are located in good agricultural productivity areas are also more likely to mix farm and non-farm enterprise work (Table 5.1, Model 2). Research conducted by Bezu and Holden (2014) found that a lack of access to land was driving youth migration from agriculture. Our analysis suggests that youth (age 25-34) with greater land ownership have a 3 percent lower probability of diversifying into wage labor compared to working exclusively on their own family farm. Overall, assets and capital are associated with mature youth employment decisions. Greater ownership of land, livestock, and access to agricultural credit decrease the probability that mature youth diversify out of farming into wage labor activities (Table 5.1, Model 3).

Similar to agricultural endowments, agricultural shocks can have an effect on an individual's choice to seek alternative income sources outside of agriculture. We find this particularly true for youth aged 25-34 years. In this case, those that experienced a flood during the last year had a 37 percent less probability of expanding into a wage labor job, however this effect may be temporary and reflect a post-shock necessity of rehabilitating own agricultural land rather than an overall trend of off-farm labor activity. Research on the impact of shocks on labor diversification suggests a greater propensity to diversify. Bezu and Barrett (2012) assessed employment transitions out of agriculture between 2004 and 2009 and found that shocks that reduced agricultural income motivated individuals to seek out high-return rural non-farm employment. Similar results of agricultural shocks increasing longer term non-agricultural earnings were reported by Porter (2012) using data from 1994-2004.

While good agricultural potential and greater access to capital and assets (agricultural credit and livestock) decrease the likelihood of diversifying into non-farm labor, distance to a market or road does not affect the probability of youth finding non-farm employment. This may be due to several reasons. First, a large share of the rural population in this sample live relatively far from a market (on average about 55 km). Second, thin labor markets in small towns and rural areas may limit youth's ability to take advantage of off-farm wage opportunities simply because there is not enough off-farm labor demand. These relationships suggest that in Ethiopia the rural and small town non-farm sector is influenced primarily by push factors (lack of land, agricultural services, and assets) rather than driven by urban or small town labor demand.

Table 5.1: Multinomial models of determinants of type of labor engagement for rural workers in Ethiopia, by age cohort

	Model 1		Model 2		Model 3	
	Working population: age 15-64		Young youth working population: age 15-24		Experienced youth working population: age 25-34	
Explanatory variables	Mix of own-farm and wage work	Mix of own-farm and non-farm enterprise	Mix of own-farm and wage work	Mix of own-farm and non-farm enterprise	Mix of own-farm and wage work	Mix of own-farm and non-farm enterprise
Age 15-24, 0/1	-0.016	0.013	-	-	-	-
	(0.010)	(0.019)				
Age 25-34, 0/1	0.000	0.049 ***	-	-	-	-
	(0.006)	(0.015)				
Household head, 0/1	0.002	0.037 **	0.019 **	0.030	-0.014	0.049
	(0.009)	(0.017)	(0.009)	(0.035)	(0.016)	(0.033)
Female, 0/1	-0.036 ***	0.037 **	-0.004	0.034	-0.061 **	0.079 ***
	(0.011)	(0.016)	(0.009)	(0.021)	(0.025)	(0.028)
Married, 0/1	0.005	0.011	-0.001	0.039	-0.006	0.016
	(0.007)	(0.016)	(0.010)	(0.024)	(0.012)	(0.034)
Completed primary school, 0/1	0.045 ***	0.001	0.030 ***	0.018	0.055 ***	-0.032
	(0.008)	(0.018)	(0.010)	(0.020)	(0.011)	(0.035)
Adult (age 15 to 64) males in household, number	-0.006 **	-0.022 ***	0.000	-0.009	-0.015	-0.003
	(0.003)	(0.007)	(0.004)	(0.010)	(0.008)	(0.021)
Adult (age 15 to 64) females in household, number	0.004	0.002	0.002	0.001	0.008	0.018
	(0.003)	(0.008)	(0.004)	(0.011)	(0.005)	(0.019)
Expenditure, '000 birr/capita/year	0.005 ***	0.025 ***	0.003 ***	0.016 ***	0.006 ***	0.031 ***
	(0.001)	(0.005)	(0.001)	(0.006)	(0.002)	(0.011)
Agricultural area owned, ha	-0.002	-0.006	0.007	-0.003	-0.026 **	0.001
	(0.002)	(0.006)	(0.011)	(0.009)	(0.011)	(0.022)
Agricultural area operated, ha	0.002	0.004	-0.017	0.006	0.004	-0.010
	(0.002)	(0.007)	(0.014)	(0.009)	(0.002)	(0.014)
Receive agricultural extension, 0/1	-0.016 **	-0.003	-0.007	-0.012	-0.018	0.013
	(0.006)	(0.017)	(0.010)	(0.025)	(0.011)	(0.030)
Receive agricultural credit, 0/1	-0.006	-0.021	0.001	-0.004	-0.068 **	-0.051
	(0.009)	(0.019)	(0.009)	(0.024)	(0.027)	(0.033)
Livestock ownership, Tropical Livestock Units	-0.002 *	-0.004	0.000	-0.005	-0.006 *	0.000
	(0.001)	(0.003)	(0.000)	(0.003)	(0.003)	(0.006)
Experienced drought, 0/1	0.005 **	-0.079 **	0.005	-0.054 *	0.013	-0.095
	(0.007)	(0.036)	(0.009)	(0.050)	(0.017)	(0.070)
Experienced flood, 0/1	-0.031	-0.005	-0.007	0.028	-0.366 ***	-0.028
	(0.020)	(0.050)	(0.012)	(0.044)	(0.069)	(0.102)
Good agricultural potential land, 0/1	-0.010	0.052 *	-0.020 *	0.042 *	-0.011	0.086 ***
	(0.009)	(0.020)	(0.011)	(0.025)	(0.017)	(0.031)
Distance to nearest market, km	-0.001	0.001	-0.001	-0.001	-0.003	0.002
	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.003)
Distance to nearest major road, km	0.001	0.002	-0.004	0.005	0.004	0.000
	(0.003)	(0.006)	(0.005)	(0.007)	(0.003)	(0.010)
Observations	*7,567*		*2,526*		*1,754*	

Note: The base outcome for all three models are individuals that work exclusively on their own-farm. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

When comparing youth labor decisions to diversify into non-farm employment, it becomes apparent that experienced youth (ages 25-34) have a greater likelihood of engaging in non-farm work (in addition to own-family farm labor) compared to mature individuals (age 35-64). Although difficult to determine from cross-sectional data, the analysis presented in this paper suggests that youth—in particular, experienced youth—may be driving the small share of labor diversification in rural and small towns. Moving forward, understanding if labor diversification occurs step-wise; i.e., individuals move from working exclusively on their own-farm activities, to diversifying into non-farm in addition to own-farm activities, and then finally transitioning fully into non-farm labor activities; will provide greater insight into Ethiopia's likely economic trajectory over the

next few decades. If this is the mode of labor transition within Ethiopia, we may be witnessing the initial transition of an economy moving towards greater structural transformation.

6. CONCLUSION

Over the last several decades, Ethiopia has focused its public investments in economic growth according to its Agricultural Development Led Industrialization (ADLI) strategy. This led to large increases in agricultural output. Simultaneously, the country has experienced impressive economic growth at approximately 11 percent per year during the last decade. Although these trends point to structural transformation as a major driver of economic growth, labor force survey data suggest that Ethiopia remains at a very early stage in its structural transformation. Whereas one would expect to see a transition out of agriculture into higher value non-farm employment, we find that the share of economically active people working in agriculture only decreased by approximately 3.6 percent (from 80.2 to 76.6 percent) between 2005 and 2013.

Focusing on youth employment, the data suggest that few rural and small town youth (13 percent) engage in non-farm economic activities. However, individuals who are exclusively engaged in own-farm activities are underemployed, working approximately for half of the year given the seasonality inherent to crop agriculture in Ethiopia. Given the large share of rural youth that have remained working exclusively in agriculture, we assess if youth are taking a lead role in agricultural transformation processes in Ethiopia. Comparing youth versus mature-headed households, we find that on average youth-headed households have less agricultural land, less access to services (credit and extension) and are less likely to implement agricultural enhancing technologies (inorganic fertilizer, improved seeds, row planting, etc.) compared to mature-headed households. Although, compared to more established households headed by older adults, youth-headed households face greater constraints in the agricultural sector, the analyses do not show that youth are leading the adoption of agricultural enhancing technologies, such as improved seed, cash crop production, or row planting. However, we do see a greater share of youth using technologies that are labor-reducing, such as herbicides and tractors.

Given the constraints faced by Ethiopian youth to access land and agricultural services, we evaluate whether youth are turning towards non-farm employment as an alternative livelihood strategy. In doing so, we divide youth into two categories: 1) youth aged 15-24 who are less experienced, but possibly more mobile and able to seek out off-farm labor opportunities, and 2) youth aged 25-34 who we assume to be more established in their communities and potentially more experienced in off-farm work. The econometric results suggest that youth age 25-34 have a higher probability of engaging in non-farm enterprise activities. However, neither youth age cohort are more likely to work in wage labor compared to exclusively working on own-farm activities. The analysis suggests that wage labor opportunities are few, and those that obtain wage employment tend to be male, with a higher education, and have fewer agricultural resources than those who do not engage in wage labor. This last factor suggests that push factors have a large influence on youth non-farm employment decisions.

Although diversification out of agriculture reaps potentially higher wage opportunities in the non-farm sector, our analysis suggests that employment opportunities outside of agriculture are limited in rural Ethiopia. This finding parallels that of recent research by Diao and McMillan (2015) in which they suggest from their results that proactive policies or foreign investment may be needed to spark structural transformation. Given that the majority of Ethiopia's population lives in rural areas and works in agriculture, investments in agriculture-enhancing technology and services remains important to increase productivity, and ultimately to spark greater non-farm demand for goods and services. Continuing to evaluate constraints and ameliorate conditions for youth to be productively employed in agriculture and in the non-farm sector as the economy continues to grow is crucial to ensuring healthy, sustainable economic growth moving forward.

REFERENCES

Abrar, S., O. Morrissey, and T. Rayner. 2004. "Crop-level Supply Response by Agro-climatic Region in Ethiopia". *Journal of Agricultural Economics* 55: 289–311.

Bachewe, F., G. Berhane, B. Minten, A.S. Taffesse. 2015. *Agricultural Growth in Ethiopia (2004-2014): Evidence and Drivers*. ESSP Working Paper 81. Addis Ababa: IFPRI-Ethiopia Strategy Support Program.

Bachewe, F., G. Berhane, B. Minten, and A.S. Taffesse. 2016. *Non-farm Income and Labor Markets in Rural Ethiopia*. ESSP Working Paper 90. Addis Ababa: IFPRI-Ethiopia Strategy Support Program.

Bezu, S., and C.B. Barrett. 2012. "Employment Dynamics in the Rural Nonfarm Sector in Ethiopia: Do the Poor Have Time On Their Side?". *Journal of Development Studies* 48 (9): 1223–1240.

Bezu, S., S. Holden, and C.B. Barrett. 2009. *Activity Choice in Rural Nonfarm Employment: Survival versus Accumulation Strategy*. Centre for Land Tenure Studies Working Paper 11/14. Ås, Norway: Centre for Land Tenure Studies, Norwegian University of Life Sciences.

Bezu, S., C.B. Barrett, and S. Holden. 2012. "Does the Nonfarm Economy Offer Pathways for Upward Mobility? Evidence from a Panel Data Study in Ethiopia". *World Development* 40 (8): 1634–1646.

Bezu, S. and S. Holden. 2014. "Are Rural Youth in Ethiopia Abandoning Agriculture?". *World Development* 64: 259-272.

de Janvry, A. and E. Sadoulet. 2001. Income Strategies among Rural Households in Mexico: The Role of Off-Farm Activities. *World Development* 29 (3): 467-80.

Deichmann, U., F. Shilpi, and R. Vakis. 2009. "Urban Proximity, Agricultural Potential and Rural Nonfarm Employment: Evidence from Bangladesh". *World Development* 37 (3): 645–660.

Deininger, K., A. D. Ayalew and A. Tekie. 2008. *Impacts of Land Certification On Tenure Security, Investment, and Land Markets: Evidence from Ethiopia*. World Bank Policy Research Working Paper 4764. Washington, DC: World Bank.

Dercon, S. and L. Christiaensen. 2011. "Consumption Risk, Technology Adoption and Poverty Traps: Evidence from Ethiopia". *Journal of Development Economics* 96: 159–173.

Dercon, S. and R. Hill. 2009. *Growth from Agriculture in Ethiopia: Identifying Key Constraints.* Working Paper prepared for a Study on Agriculture and Growth in Ethiopia, Department for International Development. Oxford: Centre for the Study of African Economies, University of Oxford.

Dercon, S. and P. Krishnan. 1996. "Income Portfolios in Rural Ethiopia and Tanzania: Choices and Constraints". *Journal of Development Studies* 32 (6): 850-75.

Diao, X. and M. McMillan. 2015. *Toward an Understanding of Economic Growth in Africa: A Re-Interpretation of the Lewis Model*. NBER Working Paper No. 21018. Cambridge, MA: National Bureau of Economic Research

Duflo, E., M. Kremer, and J. Robinson. 2011. "Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya". *American Economic Review* 101: 2350–2390.

Fafchamps, M. and F. Shilpi. 2003. "Spatial Division of Labor in Nepal". *Journal of Development Studies* 39 (3): 23–66.

Federal Democratic Republic of Ethiopia. 2015. *The Second Growth and Transformation Plan (GTP II) (2015/16-2019/20)*. Addis Ababa: National Planning Commission.

Filmer, D. and L. Fox. 2014. *Youth Employment in Sub-Saharan Africa*. Africa Development Series. Washington, DC: World Bank.

Fujita, M., P. Krugman, and A. J. Venables. 1999. *The Spatial Economy: Cities, Regions and International Trade*. Cambridge: MIT Press.

Haggblade, S., P. Hazell, and T. Reardon. 2002. *Strategies for Stimulating Poverty-alleviating Growth in the Rural Nonfarm Economy in Developing Countries*. EPTD Discussion Paper 92. Washington, DC: International Food Policy Institute.

Haggblade, S., P. Hazell, and T. Reardon. 2006a. *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*. Baltimore: Johns Hopkins Press.

Haggblade, S., P. Hazell, and P. Dorosh. 2006b. "Sectoral Growth Linkages between Agriculture and the Rural Nonfarm Economy". In *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*, edited by S. Haggblade, P. Hazell, and T. Reardon. Baltimore: Johns Hopkins University Press.

Hagos, F. 2003. *Poverty, Institutions, Peasant Behavior, and Conservation Investments in Northern Ethiopia*. PhD diss., Department of Economics and Social Sciences, Agricultural University of Norway.

Headey, D., Dereje, M., Taffesse, A.S. 2014. "Land Constraints and Agricultural Intensification in Ethiopia: A Village-level Analysis of High-Potential Areas". *Food Policy* 48: 129-141.

Henderson, J. V., Z. Shalizi, and A. J. Venables. 2001. "Geography and Development". *Journal of Economic Geography* 1 (1): 81–105.

Krishnan, P. and E. Sciubba. 2009. “Links and Architecture in Village Networks”. *The Economic Journal* 119: 917–949.

Mduma, J. and P. Wobst. 2005. “Determinants of Rural Labor Market Participation in Tanzania”. *African Studies Quarterly* 8 (2).

Mellor, J. 1976. *The New Economics of Growth: A Strategy for India and the Developing World.* Ithaca: Cornell University Press.

Ministry of Education (MOE). 2005. *Education Sector Development Program III* (ESDP-III) 2005/2006-2010/2011. Addis Ababa: Government of Ethiopia.

Minten, B., S. Tamru, E. Engida, and T. Kuma 2013. *Ethiopia’s Value Chains on the Move: The Case of Teff*. ESSP Working Paper 52. Addis Ababa: IFPRI-Ethiopia Strategy Support Program.

Pender, J. and M. Fafchamps. 2006. “Land Lease Markets and Agricultural Efficiency in Ethiopia”. *Journal of African Economies* 15: 251–284.

Porter, C. 2012. “Shocks, Consumption and Income Diversification in Rural Ethiopia”. *Journal of Development Studies* 48 (9): 1209-1222.

Reardon, T., J. Berdegue and G. Escobar. 2001. “Rural Nonfarm Employment and Incomes in Latin America: Overview and Policy Implications”. *World Development* 29 (3), 395-409.

Reardon, T. 1997. “Using Evidence of Household Income Diversification to Inform Study of the Rural Nonfarm Labor Market in Africa”. *World Development* 25: 735-747.

Reardon, T., J. Berdegue, C. Barrett and K. Stamoulis. 2007. “Household Income Diversification into Rural Nonfarm Activities”. In *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*, edited by S. Haggblade, P. Hazell, and T. Reardon. Baltimore: Johns Hopkins University Press.

Renkow, M. 2006. “Cities, Towns and the Rural Nonfarm Economy”. In *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*, edited by S. Haggblade, P. Hazell, and T. Reardon. Baltimore: Johns Hopkins University Press.

Suri, T. 2011. “Selection and Comparative Advantage in Technology Adoption”. *Econometrica* 79: 159-209.

Tarozzi, A., J. Desai and K. Johnson. 2015. “The Impacts of Microcredit: Evidence from Ethiopia”. *American Economic Journal: Applied Economics* 7 (1): 54-89.

Winters, P., B. Davis, G. Carletto, K. Covarrubias, E.J. Quiñones, A. Zezza, et al. 2009. “Assets, Activities and Rural Income Generation: Evidence from a Multicountry Analysis”. *World Development* 37 (9): 1435–1452.

Woldehanna, T. and A. Oskam. 2001. “Income Diversification and Entry Barriers: Evidence from the Tigray Region of Northern Ethiopia”. *Food Policy* 26 (4): 351–365.

APPENDICES

Appendix 1: Water and wood collectors, numbers (in thousands) and percentage of the economically active population, by age cohort, sex, and rural/urban, 2013

Age category	Male	Female	Urban	Rural
10 to 14 years	311.7	1,072.7	89.1	1,295.3
	(22.5)	(77.5)	(6.4)	(93.6)
15 to 24	178.6	1,254.6	88.9	1,344.3
	(12.5)	(87.5)	(6.2)	(93.8)
25 to 35	30.3	933.3	42.2	921.3
	(3.1)	(96.9)	(4.4)	(95.6)
36 to 55	22.8	842.8	38.2	827.4
	(2.6)	(97.4)	(4.4)	(95.6)
Over 55	12.3	208.1	12.1	208.3
	(5.6)	(94.4)	(5.5)	(94.5)
Total	**555.7**	**4,311.5**	**270.5**	**4,596.7**
	(11.4)	**(88.6)**	**(5.6)**	**(94.4)**

Source: National Labor Force Survey (2013).
Note: Percentage shares are reported in parentheses.

Appendix 2: Youth labor type, by location and age cohort, 2013, percent

	Percentage share of young youth (age 15-24)			Percentage share experienced youth (age 25-34)		
	Rural	**Small town**	**Urban**	**Rural**	**Small town**	**Urban**
Working population	70.3	39.1	32.8	85.3	69.6	62.1
Own-farm only	61.3	12.9	3.4	66.1	10.8	2.0
Own-farm and off-farm	7.0	4.8	1.1	16.0	14.7	2.8
Own-farm & non-farm enterprise	*5.7*	*3.7*	*0.8*	*13.0*	*11.0*	*1.7*
Own-farm & wage	*1.1*	*1.1*	*0.3*	*2.6*	*2.7*	*1.1*
Own-farm & non-farm enterprise & wage	*0.1*	*0.0*	*0.0*	*0.3*	*1.0*	*0.0*
Off-farm[1]	2.1	21.4	28.3	3.3	44.1	57.3
Non-farm enterprise	*1.6*	*16.5*	*12.0*	*2.0*	*22.8*	*20.7*
Wage	*0.4*	*4.0*	*15.6*	*1.3*	*17.7*	*34.9*
Non-farm enterprise & wage	*0.0*	*0.9*	*0.7*	*0.0*	*3.5*	*1.7*
Not working	23.7	35.0	24.6	14.2	30.2	33.5
Student[2]	6.0	25.9	42.6	0.5	0.1	4.4
Eligible population (thousands)	16,162.1	172.5	2,925.7	9,872.4	97.16	2,063.4

Source: Ethiopia Socioeconomic Survey (2013/14).
[1]Off-farm work comprises individuals who work in off-farm enterprise and/or wage work
[2]Students are defined as those who do not report time working in own-farm, wage, or off-farm enterprise activities and report activity as 'student'.

Appendix 3: Average time worked per year by type of work, by youth age cohort, weeks

Working young youth (age 15-24)	**All workers**	**Exclusive farmers**	**Exclusive off-farmers**	**Mixed farm and off-farm workers**
Average time worked per year	**24.7**	**20.2**	**43.5**	**44.2**
Farming own farm	17.6	20.2	0	13.9
Off-farm work[1]	7.1	0	43.5	30.3
Wage	*2.7*	*0*	*21.9*	*5.8*
Off-farm enterprise[2]	*4.4*	*0*	*21.7*	*24.6*
Working experienced youth (age 25-34)				
Average time worked per year	**31.4**	**23.8**	**47.4**	**46.7**
Farming own farm	18.8	23.8	0	16.3
Off-farm work[1]	12.6	0	47.4	30.4
Wage	*5.5*	*0*	*28.3*	*6.1*
Off-farm enterprise[2]	*7.1*	*0*	*19.1*	*24.4*

Source: Ethiopia Socioeconomic Survey (2013/14)

[1] Off-farm work consists of off-farm enterprise and wage work.

[2] Individual time worked in a non-farm enterprise was not collected, thus we allocate the full amount of time that the non-farm enterprise was in operation (total weeks) to each person that is reported working in the non-farm enterprise.

About the Authors

Emily Schmidt is an Associate Research Fellow in the Development Strategy and Governance Division of IFPRI based in Washington DC and **Firew Bekele** is a Post-doctoral Fellow at the Ethiopian Development Research Institute (EDRI) based in Addis Ababa.

About ESSP

The Ethiopia Strategy Support Program is an initiative to strengthen evidence-based policymaking in Ethiopia in the areas of rural and agricultural development. Facilitated by the International Food Policy Research Institute (IFPRI), ESSP works closely with the government of Ethiopia, the Ethiopian Development Research Institute (EDRI), and other development partners to provide information relevant for the design and implementation of Ethiopia's agricultural and rural development strategies. For more information, see http://www.ifpri.org/book-757/ourwork/program/ethiopia-strategy-support-program; http://essp.ifpri.info/; or http://www.edri-eth.org/.

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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
2033 K Street, NW | Washington, DC 20006-1002 USA
T: +1.202.862.5600 | F: +1.202.457.4439
Skype: ifprihomeoffice | ifpri@cgiar.org | www.ifpri.org

IFPRI–ESSP ADDIS ABABA
P.O. Box 5689, Addis Ababa, Ethiopia
T: +251.11.617.2000 | F: +251.11.646.2318
mahlet.mekuria@cgiar.org | http://essp.ifpri.info

ETHIOPIAN DEVELOPMENT RESEARCH INSTITUTE
P.O. Box 2479, Addis Ababa, Ethiopia
T: +251.11.550.6066; +251.11.553.8633 | F: +251.11.550.5588
info@edri-eth.org | www.edri-eth.org

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