

# Rural Income Diversification in Ethiopia: Patterns, Trends, and Welfare Impacts

Gashaw T. Abate, Fantu N. Bachewe, Mekdim D. Regassa, and Nicholas Minot

## Summary

Increased diversification of rural households into the rural non-farm economy is an important driver of economic growth and structural transformation in countries like Ethiopia where most people live in rural areas and are largely dependent on seasonal agriculture. In this study, we explore the patterns and trends of diversification and assess its drivers and welfare effects during the recent decade (2012 – 2019) using three rounds of representative household data collected from four major regions in Ethiopia. Our results show that sample households generally adopt a livelihood strategy dominated by farming and that the level of diversification has been stagnant over the period of analysis considered. More importantly, most households continue to draw a substantial share of their income from crop production, followed by livestock. The income from non-farm activities accounts only between 17-23% of the total household income. Upon exploring the link between diversification and welfare outcomes, we find that households with relatively diversified income sources have significantly higher consumption expenditure per capita, consume diverse diets, and live in house with better roof quality. Further analyses reveal that income diversification is positively associated with credit access, membership in social insurance, ownership of assets and wealth, and population density. Conversely, access to relatively large, fertile, and irrigable land discourages diversification. In sum, the results imply the need for a deliberate effort to expand the non-farm economy to tap its full potential for employment generation, income growth, and overall welfare improvements.

## Background

Rural areas in Sub-Saharan Africa (SSA) are characterized by less diversified economic activities and traditionally generate most of their income from agriculture and extraction of natural resources partly because of underdeveloped markets and infrastructure. However, there is growing evidence that participation in and the importance of the non-farm economy has been increasing in the last few decades. This increase in diversification of households into the rural nonfarm economy is crucial in terms of poverty alleviation, income growth, and building resilience to shocks (von Braun and Feder 2007; Reardon et al. 2007; Barrett et al. 2001b; Ellis 1998). Diversification within agriculture and non-farm economic

activities is also vital in the face of increased climate change and transformation needed in agri-food systems to reduce malnutrition (Asfaw et al. 2019; Wan et al. 2016; Mathenge and Tschirley 2015).

In this paper, we study rural income diversification in Ethiopia during 2012-2019, a period marked with rapid economic growth in the country. Our analysis mainly focuses on assessing the patterns and trends of income diversification and participation in and share of different income sources in total income of rural households. We also examine the relationship between income diversification and household factor endowments (household wealth, income streams, and household head characteristics), the effects of exposure to production risk (e.g., long-term rainfall variability) on diversification, and the association between diversification and welfare outcomes at the household level.

## **Methods: measurement, data, and estimation strategy**

We measure income diversification using Herfindahl diversification index (HDI) – an index that considers both the number of income sources and income shares from each source. We identify and use five common categories of income sources: crop, livestock, wage, enterprise/business, and remittances. HDI is a commonly used measure, and it ranges between zero and one. A diversification index of zero ( $HDI_h = 0$ ) occurs when a household specializes in only one income generation activity and a diversification index of one ( $HDI_i = 1$ ) occurs when a household earns an equal share of its income from all sources. We also use the number of economic activities and the share of economic activities in total household income as alternative measures of diversification to triangulate some aspects of our main findings.

We use three rounds of household survey data collected by the International Food Policy Research Institute (IFPRI) in collaboration with the Agricultural Transformation Agency (ATA) of Ethiopia. The data covers the four main agriculturally important regions of Ethiopia and it encompasses a wide range of information on household demographics, income (crop, livestock, agricultural and non-agricultural wage, enterprise, remittances, and other incomes), consumption (food and non-food), and assets, among others.

Households' income generation decision is a two-part process. First, households decide whether to participate in an activity and second, they decide on the proportion out of total income generated from the activity. We use Double-Hurdle model to assess drivers of income diversification, a model that is suitable to examine the two closely related decisions that may be affected by different factors, which is often the case in income diversification decisions (Goodwin et al. 1993). To examine the effect of income diversification on household welfare, we used a panel fixed effect and an instrumental variable (IV) estimation methods, to address potential concerns on the direction of impact (i.e., does diversification result in better welfare outcome or better welfare leads to diversification).

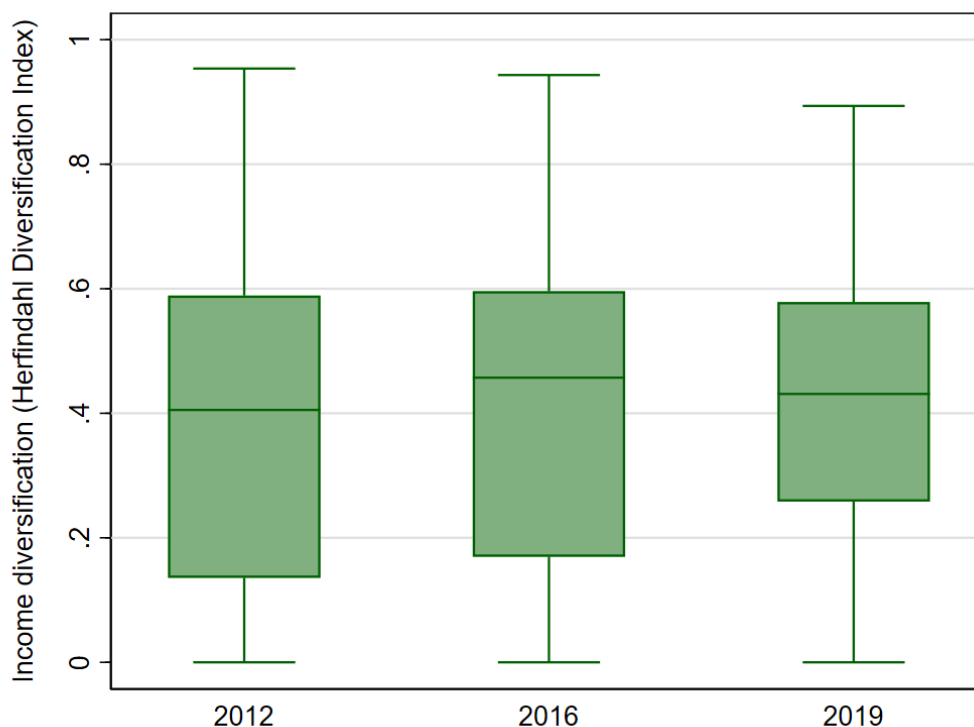
## **Results and discussion**

### ***Patterns and trends of rural income diversification***

Our results show that agriculture continues to be the main sources of income for rural households in Ethiopia and diversification of income sources has changed only marginally over the period considered. For instance, in 2019, about 90% of households participate in crop production and generate about 60% of their income from the same source, followed by livestock income which accounts for about 22% total household income. The share of income from non-farming activities in total income during the same

year was 17%, which is considerably lower than the share of non-farm income in rural areas of Latin America (47%), Asia (51%), and Africa (34%) (Haggblade et al. 2010). Income from business (enterprise) activities were the dominant source of non-farm income, while the share of income from non-agricultural wage, remittance, and other sources were very limited. The income diversification index presented in Figure 1 summarizes the low- and stagnant-income diversification trend observed in the data. Diversification of income generation activities, measured on a scale of 0 to 1, averaged less than 0.5 in all three years with little (7%) change over the eight-year period.

**Figure 1: Income diversification (Herfindahl Diversification Index), by year**



Source: Authors' analysis using IFPRI-ATA ACC Survey data (2012, 2016, and 2019 rounds).

### ***Determinants of rural income diversification***

The results on determinants of income diversification are largely consistent with the push and pull factors documented in previous theoretical and empirical works (e.g., Barrett et al. 2001b; Ellis 1998). Interhousehold differences in asset endowment play an important role in income diversification both as push and pull factor. While households that own a relatively large, good quality and irrigable land are less diversified (primarily focus on crop production), households with large family size, higher education levels, and female-headed are more diversified and generate sizable share of their income from non-farm activities. Households with a relatively better access to financial services (including traditional or social insurance) and information are also more likely to engage in diverse income generating activities outside of agriculture.

Location related factors play equally important roles in income diversification. A higher population density leads to higher income diversification presumably because increased population puts pressure on farming (push) and, at the same time, increases demand for non-agricultural products which may pull/attract households towards diversification. Households in locations with low and less reliable rainfall

diversify away from crop agriculture and generate sizable share of their income from livestock production and remittance. Our analysis on the effect of El Niño-caused drought on diversification also indicates that households in severely affected areas diversify their income sources right away, indicating the use of diversification as an ex-post shock-coping strategy.

### ***Income diversification and household welfare***

While crop and livestock production are the dominant sources of income in rural Ethiopia, sizable share of households in our data tend to allocate their assets and efforts across a variety of activities beyond agriculture to broaden economic opportunities and cope/manage risk exposures as we documented here. Whether engagement in diversified economic activities lead to better welfare outcome at household level is one of the research questions we explored. Our results clearly show that income diversification has a strong positive effect on consumption expenditure per capita, household dietary diversity, and roof quality (proxy indicators for housing quality). For instance, the estimates from the fixed effects model show that a one standard deviation increase in income diversification index leads to a 13 percent growth in consumption per capita; a 0.24 increase in number of food groups consumed; and a 4.8 percentage point increase in housing quality.

## **Conclusion and policy implications**

Our study assesses the patterns and trends of rural income diversification and its effect on welfare outcomes in Ethiopia. Several important results emerge from our analysis. First, most rural households drive their livelihood from agriculture and non-farm income accounts for only about 17-23% of the total household income, on average. Second, the change in income diversification over the last decade is very marginal. Third, consistent with prior works, households' endowment (e.g., land and human capital), access to markets and information, and location characteristics (e.g., population density, rainfall pattern) significantly influence households' decision to diversify. Fourth, households with diversified income sources have relatively better welfare outcomes as measured by consumption expenditure, diet diversity, and housing quality.

The observed stagnant trend in diversification calls for a deliberate effort to expand the non-farm economy given its potential for employment generation, poverty reduction, income growth, and overall welfare improvements. Expanding the scope of agricultural policies to include promotion of high value commodities such as livestock, fruits, and vegetables (from the current cereal focus) that can catalyze commercial activities in rural areas can be a good starting point towards such efforts. Policy makers can also expand the rural non-farm economy by creating incentive systems that encourage value addition (processing) in rural areas and thereby employ locals, enrich up-ward and down-ward linkages, and help in the transfer of technologies to small- and medium-scale firms in the areas. Moreover, experiences of other emerging economies indicate that expansion of roads, communication, electrification, and marketing and transportation infrastructure in rural areas play a crucial role in creating and/or accelerating the growth of rural non-farm economy.

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