

# Crop commercialization in Ethiopia: Trends, drivers, and impact on well-being

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## Background

Agricultural transformation refers to a series of changes in agriculture that both reflect and drive rising income and economic development more broadly. While the macroeconomic patterns of agricultural transformation are relatively well documented, less is known about how it is manifested at the household level. Ethiopia makes an excellent case study as it has had one of the fastest growing economies in the world.

An important aspect of this process is agricultural commercialization, that is, the rising share of agricultural output is sold on the market rather than being consumed at home. Agricultural commercialization tends to rise with development with improved infrastructure and communications, the availability of inputs and know-how regarding commercial crop production, and farmers being willing to accept the risks associated with producing crops for the market. Agricultural commercialization is widely believed to allow farmers to earn higher income as they specialize in crops for which they have a comparative advantage.

The analysis makes use of a data from three rural household surveys carried out in Ethiopia by IFPRI in 2012, 2016, and 2019. Each survey used a sample that was representative of the four main agricultural regions of the country (Tigre, Oromia, Amhara, and SNNP) with sample sizes of 3000 to 5000, including 1,900 households that were interviewed in all three rounds. In addition, we incorporate several weather variables based on CHIRPS rainfall data to estimate the effect of the level and variability of rainfall on agricultural commercialization.

## Results

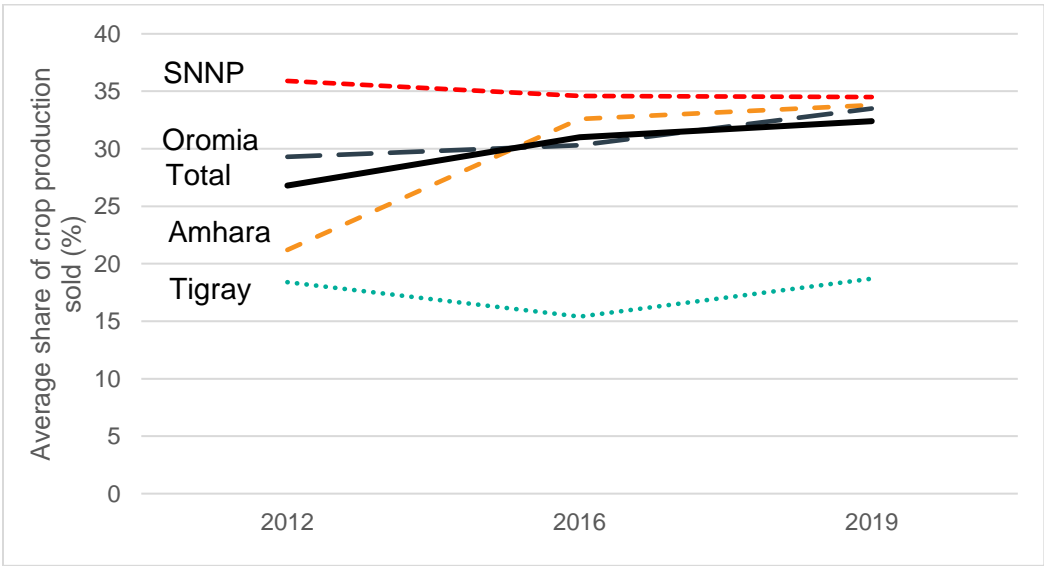
Farm households are not easily divided into “subsistence” and “commercial” farmers. In fact, there is a continuous distribution of farmers, from those who do not sell any of their crop production to those that sell all their production.

There are virtually no pure subsistence farmers. About one fifth of those growing crops don't sell any of their harvest in a given year, but these households earn income from livestock, small businesses, and wages. Furthermore, virtually all rural households purchase food to supplement own production.

The average farm household in 2019 sold about one-third of the value of their crop production. However, overall crops sales account for almost one-half of the value of crop production. The distinction between these two definitions of commercialization has not been widely recognized. The average marketed share gives equal weight to each household, while the marketed share of total crop production gives more weight to households with a larger harvest in value terms.

The marketed share of crop production increased between 2012 and 2019 (see graph). The increase was between 6 and 10 percentage points, depending on which definition of commercialization and the sample was used. The increase in commercialization occurred in households with low and high levels of commercialization, but the share of farmers not selling any crops remained stable at about 20%. The increase in the average marketed share was statistically significant in Amhara and Oromia, but not Tigray or the SNNP region. Male-headed households recorded a statistically significant increase in marketed share, while the increase for female-headed households was not significant. Finally, the increase in commercialization over 2012-19 was statistically significant for the third, fourth, and fifth quintiles by per capita income, but not for the poorest two quintiles. Thus, it seems that female-headed households, poor households, and those in low-rainfall areas are being "left behind" in the trend toward agricultural commercialization.

**Figure 1: Figure 1. Average share of crop production that is sold by region and year**



Source: Analysis of the 2012, 2016, and 2019 Ethiopia Agricultural Commercialization Cluster Surveys.

The average marketed share varies by region, being lower in Tigray than in the other three main regions of Ethiopia. These differences persist in the regression analysis even after controlling for farm size, distance to road, and income. The analysis shows that the low and variable rainfall patterns in Tigray are an important reason why commercialization is lower in this region.

The marketed share of crop production is higher among male-headed households than female-headed households. This is largely because female-headed households have smaller farms and lower per capita income. The gender gap in commercialization disappears in the regression analysis in which these differences are controlled.

Crop commercialization declines somewhat with the age of the head of household. Household with heads over the age of 60 years sell a smaller share of output. These differences persist in the regression analysis when other factors are controlled.

Farm size is a strong predictor of the level of commercialization of a household. Farms with less than 0.5 hectares sell, on average, just one quarter of their crop production, while those with more than 5 hectares sell almost half of crop output. This relationship holds up in the regression analysis after controlling for sex and age of the head of household, education, distance to road, and income quintile.

Commercialization also varies with the distance to the nearest road, with farms more than 4 kilometers from the nearest road selling a smaller share of crop production compared to farms less than 1 kilometer from the road. Interestingly, this relationship seems to have weakened significantly between 2012 and 2019 so that distance is much less of a factor than it used to be.

Crop commercialization is positively associated with household wealth, as measured by an index of the ownership of household consumer goods. This is probably because wealthier households are more able to tolerate the risk associated with commercial crop production.

Finally, the marketed share of crops varies with the level and variability of rainfall. More specifically, crop marketing is positively associated with average level of rainfall and negatively related to the variability of rainfall. Higher levels of rainfall presumably increase yields and generate a larger surplus available for sale. Higher variability in rainfall creates a risky environment, causing farmers to limit the additional risk they face from commercial production.

We find that all of the increase in commercialization was due to higher shares of each crop being sold, with no contribution from shifts toward more commercial crops. There was a shift from low-commercialization crops such as enset, sorghum, and faba beans to medium-commercialization crops including wheat, white teff, and “other cereals” (mainly rice), but this was offset by shifts away from high-commercialization crops like coffee and fruit.

Although coffee and other “cash crops” are more highly commercialized than cereals, cereals account for 35% of the value of crop sales and vegetables account for 15%, which are both greater than the contribution of coffee (12%).

There are various pieces of evidence indicating that crop commercialization raises farm income and improves household welfare. First, in general commercial crops generate more revenue per hectare than staple grains and other food crops. For example, coffee and chat generate more than twice as much revenue per hectare as any of the cereals, while fruit and vegetable production earns five times as much. Second, more commercial households have a higher average value of crop production per hectare. Third, a regression analysis indicates that the level of commercialization has a positive and statistically significant association with per capita income, even after controlling for farm size, family labor, dependency ratio, distance to road, and other factors. And finally, a separate regression analysis suggests that the level of commercialization has a positive and statistically significant impact on diet diversity, even after controlling for other household characteristics.

## Policy Implications

Should the government and development agencies promote agricultural commercialization? The evidence from our analysis of the Ethiopia ACC Surveys of 2012, 2016, and 2019 suggest that agricultural commercialization should be encouraged because it tends to lead to higher incomes, mainly because it allows farmers to grow crops with a higher return per hectare. Semi-subsistence farmers mainly grow staple grains such as maize, wheat, teff, and sorghum, whose value per hectare is modest (less than 20,000 birr/ha), whereas commercial crops can generate between two- and five-times as much revenue per hectare. The effect of agricultural commercialization on nutrition and food security is less clear. In our analysis, we find a positive and statistically significant but relatively small effect of crop commercialization on household diet diversity, a measure of the quality of the diet.

Should farmers be given specific instructions on which crops to grow and sell on the market? International experience and our analysis suggest that it is better to create conditions which alleviate constraints on agricultural commercialization than to push them into commercialization. The patterns of commercialization largely follow what we would expect based on rational decisions of resource-constrained and risk-averse farmers working with incomplete information. Thus, there is good reason to believe that semi-subsistence farmers do not have any irrational attachment to traditional farming practices but a rational concern about the costs and risks of commercial production and relying on the market for their food.

How can we create conditions that enable agricultural commercialization? The government and development organizations can create conditions which alleviate constraints on agricultural commercialization by addressing the four main obstacles to agricultural commercialization: low productivity, transaction costs, risks, and capital costs.

Low productivity is a constraint because if farmers cannot produce enough staple grains, they will be unable to generate a surplus for sale and unwilling to take the risk of allocating part of the land to non-food crops for sale. The survey data shows that farmers do not insist on satisfying all their food needs before beginning to sell part of their harvest. Efforts to raise productivity through agricultural research, extension services, and efficient input markets not only raise yields, but they allow farmers to sell a larger share of their harvest.

The most obvious way to reduce transaction cost is by building and maintaining rural roads, which has been an important part of Ethiopian public investment in rural areas. However, transaction costs also include the cost of identifying a buyer, negotiating a price, and making the transaction. Thus, in addition to a good road network, agricultural commercialization is facilitated by a competitive and efficient transportation and marketing system and the widespread availability of accurate information about agricultural prices. The spread of mobile phones has improved the flow of information in rural areas, although telecommunication rates remain higher than in neighboring countries.

Risk is an important deterrent to agricultural commercialization. Low-commercialization households are more likely to earn revenue from the sale of staple grains, for which production and price risk are lower. In contrast, high-commercialization farmers are much more likely to earn revenue from the sale of fruits, vegetables, coffee, and chat. Interventions to help farmers understand and manage production and market risks will facilitate agricultural commercialization. Extension services, marketing information services, weather forecasts, contract farming, and crop insurance are all seen as different approaches to reducing the risks associated with adopting new commercial crops.

Capital costs can be an obstacle to some types of agricultural commercialization. Producing a larger harvest of maize, sorghum, or wheat requires more inputs, such as seed, fertilizer, and labor, but it does not involve large fixed costs. However, production of vegetables may involve additional land preparation, stakes, irrigation, and other investments. And tree crops such as fruit and coffee often need 3-5 years before they can be harvested. Credit programs have often been used to expand production of tree crops, but small-scale producers face a challenge in demonstrating that they can and will repay the loans. The focus of credit programs should be on expanding the number of agricultural borrowers and helping financial institutions identify good investments rather than lowering interest rates.

Overall, the results of this study confirm that agricultural commercialization has the potential to increase farm income and improve the well-being of rural households. However, programs that promote agricultural commercialization need to recognize that subsistence production is not the result of ignorance of the benefits of commercialization. Rather, subsistence production is a rational response to constraints related to cost, risk, and lack of information. Programs to promote commercialization need to address these constraints by reducing the cost and risks associated with growing new crops; providing information about production methods, markets, and weather; reducing the time and cost of getting products to market; and addressing the risks associated with volatile prices of commercial crops and food. Some farmers will resist commercialization, and perhaps for good reason. These households may be better served by other strategies to improve their standards of living, such as increased productivity in staple crops, non-farm activities, safety net programs, or migration assistance. The results of this study provide some guidelines for identifying households most likely to gain from crop commercialization and for addressing some of the key constraints faced by farmers engaging in commercial production.

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