ESSP RESEARCH NOTE 51 • April 2016

ETHIOPIA
Strategy Support Program

ETHIOPIAN DEVELOPMENT RESEARCH INSTITUTE
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SYNOPSIS OF ESSP WORKING PAPER 77

Synopsis: Market Access, Welfare, and Nutrition: Evidence from Ethiopia

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We estimate the impact of improved market access on household well-being and nutrition using a quasi-experimental setting in Ethiopia. We find that households in remote areas consume substantially less than households nearer to markets, they are more food insecure, and their school enrollment rates are lower. Although their diets are also less diverse, we find no significant differences in anthropometric measures. Part of these welfare differences can be attributed to lower household agricultural production in remote areas. But agricultural production differences alone do not account for all of the differences in household consumption levels for remote households. An additional contributing factor is the deteriorating terms of trade for remote households that negatively affect both the size of the agricultural surplus that these households market and the quantity of food items that they purchase. Reducing transaction costs associated with poor rural infrastructure can pay important dividends as it facilitates households' abilities to transform marketed surpluses into consumption goods and into healthier, more diverse diets.

INTRODUCTION

One of the main drivers of stronger economic performance in developing countries is presumed to be better market access. Further, achieving better access to markets through improved rural road infrastructure is often seen as a promising way of improving the welfare of poor rural populations in these countries. Improved infrastructure has been shown to be associated with lower poverty, higher household consumption levels, and improved health outcomes. The reasons put forward for these positive associations typically include reduced transport and input costs and greater non-farm income earning opportunities. However, despite policy emphasis on improving agricultural value chains and access to markets for improved welfare, there exist little solid evidence of the impact that market access and lower transport costs have on nutritional and other welfare outcomes. This paper explores the pathways through which remoteness from markets affects dimensions of household and individual welfare.

DATA

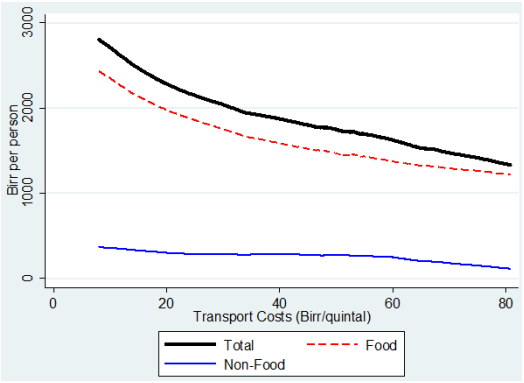
The study area for this research was selected from a region in northwestern Ethiopia where communities are relatively homogenous, yet transport costs differ substantially within the region, primarily because of the geography of the region and not because of road placement. The rugged terrain of Alefa *woreda* (district), containing the market town of Atsedemariam, is an isolated area with little or no electricity and mobile phone access, and without any development assistance programs. This market town, central to this study, is connected to a major metropolitan area, Gonder, to the northeast by a gravel road that is passable all year round. Communities channel goods through Atsedemariam, relying on donkeys or foot traffic to do so because of the difficult terrain and poor transport infrastructure.

In December 2010 and January 2011, households were surveyed in seven sub-*kebeles* (sub-districts) along the route emanating west from Atsedemariam. For sampling purposes, an equal number of households (170 in each category) was interviewed in five different distance brackets, measured in travel time by donkey to the market town. To measure remoteness, the survey included questions on the cost of renting a donkey for a round-trip to Atsedemariam and on how many kilograms a donkey can carry for such a trip, as well as the time farmers take to walk to and from the market town.

MARKET ACCESS AND WELLBEING

In exploring the relationship between market access and individual welfare, we begin with an analysis of annual household per capita consumption. Figure 1 illustrates a steep decline in household per capita consumption over the transport cost gradient. Although the mean per capita consumption level in the sample is 1,795 Birr (US$ 105), the least remote households have per capita consumption levels of over 2,335 Birr (US$ 135), which is 55 percent greater than for the most remote households (1,510 Birr, or US$ 90). Further, given the low income levels, food consumption makes up over 85 percent of household consumption throughout the transport cost gradient, and, consequently, is the major driver of declining total consumption for more remote households.

Figure 1. Household Per Capita Consumption by Remoteness



Source: Ethiopia Rural Transport Survey 2011
Note: Remoteness is defined by transportation costs from the location to the market in Atsedemariam.

In addition to lower household consumption levels, households in more remote areas suffer from more food insecurity. Many households are worried about having enough food, and these concerns increase with remoteness. Dietary diversity, a measure of a high quality diet and an important predictor of nutritional status, also is adversely affected by remoteness. More remote households tend to have diets that include fewer food groups than less remote households, and, in particular, the number of food groups children consume declines with remoteness at

a rate that is slower than for adults. Yet, the relationship between nutrition outcomes and remoteness in the survey area is not obvious. Other factors appear to play a part, such as poor sanitation. Additionally, with regard to educational attainment, we see levels of enrollment for children aged 5 to 15 significantly lower in more remote areas.

EXPLAINING THE IMPACT OF REMOTENESS

We assess the effect of remoteness on agricultural production, terms of trade and the marketing of agricultural surpluses, and non-farm earnings.

Agricultural production

Overall, remote households produce less agricultural output than those nearer to the market town. The average value of total production for households in the quintile closest to the market town (Birr 5,336 per household) was 25 percent higher than for households in the most remote quintile (Birr 4,277). The decline in total production was dictated by cereal crops, which accounted for an average of 90 percent of household agricultural output. However, remoteness also influenced crop choice.

Access to modern inputs, such as chemical fertilizer, appears to account for differences in production. Notably, the price of fertilizer for the most remote households is roughly 30 percent higher than for the least remote households, therefore affecting overall profitability of fertilizer use. Access to agricultural extension services and knowledge of appropriate technologies appears to greatly influence behavior and the adoption of new technologies, which affects agricultural production levels. However, we find that only 45 percent of differences in household consumption between the least and most remote quintiles can be attributed entirely to differences in agricultural production.

Terms of trade and marketed agricultural surpluses

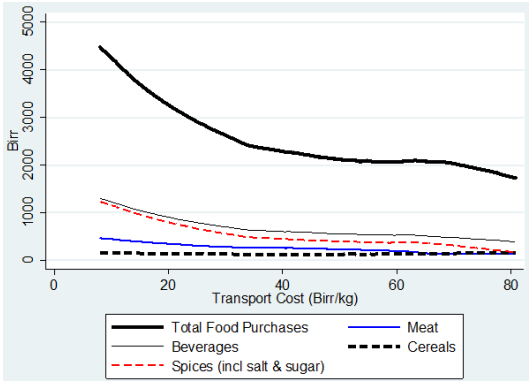
Remote households often struggle with balancing the costs of own production with food consumption. Therefore, the terms of trade for more remote households worsens as their producer prices fall and their consumer prices rise, given the higher transaction costs that they face. In addition, farming households in more remote areas sell less of their production than households that are less remote; and these lower levels of income from marketed surpluses are compounded by rising consumer prices, resulting in fewer consumer goods purchased by more remote households. Different types of goods purchased by households vary significantly by remoteness (Figure 2).

Thus, the transaction costs associated with remoteness limit remote households from participating fully in the market. The consequence of this is that they not only have lower levels of consumption, but the lack of diversity in their consumption baskets indicates that their diets are of lower quality.

Non-farm earnings

From the evidence, it is not apparent that non-farm earnings contribute to higher welfare outcomes in less remote areas, nor that there are greater non-agricultural activities nearer to the market.

Figure 2. Household Food Purchases by Remoteness



Source: Ethiopia Rural Transport Survey 2011

Median annual non-farm earnings do not differ substantially across the different distance brackets. Moreover, those households that do not have non-farm earnings have roughly 20 percent higher levels of household consumption expenditures compared to households with non-farm earnings. This suggests that there might be push factors that result in households engaging in non-farm activities, rather than pull factors.

CONCLUSIONS

We find that access to roads or markets indeed has a positive impact on welfare and diets. Households in more remote areas consume 55 percent less (mostly food) than households nearer to Atsedemariam, their diets are less diverse, they are more food insecure, and the school enrollment rates of their members are 25 percent lower. Part of these welfare differences can be attributed to lower household agricultural production in remote areas, which itself follows from a declining use of modern inputs due to the higher transaction costs associated with acquiring modern inputs and marketing output. Productivity in more remote areas may also be adversely affected by more limited access to agricultural extension services and knowledge of appropriate technologies.

But agricultural production differences alone do not account for all of the differences in household consumption levels for remote households. An additional contributing factor is the deteriorating terms of trade that negatively affects both the size of the agricultural surplus that these households market and the quantity of food items that they purchase.

Access to roads has positive welfare impacts on its own through the link between agricultural production and marketing. However, there is room for additional agricultural investments to facilitate better trade for members of remote communities, and consequently bring healthier, more diverse diets. Even though better market access may be necessary to improve nutrition outcomes, this appears not to be sufficient. Interventions to improve care, health services, and sanitation are necessary as well.

REFERENCES

Refer to ESSP Working Paper 77 for a full list of references used in this study.

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The Ethiopia Strategy Support Program (ESSP) is financially supported by the United States Agency for International Development (USAID) and the Department for International Development (DFID) of the government of the United Kingdom and is undertaken as part of the CGIAR Research Program on Policies, Institutions, and Markets (PIM) led by the International Food Policy Research Institute (IFPRI). This publication has been prepared as an output of ESSP and has not been independently peer reviewed. Any opinions expressed here belong to the author(s) and do not necessarily reflect those of IFPRI, the Ethiopian Development Research Institute, USAID, DFID, PIM, or CGIAR.