

Forced to sell the farm: Evaluating the effect of expropriation and compensation programs on small-scale farmers in Ethiopia

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Expropriating land from small-scale farmers is an important way of providing new land for industrial expansion and growing towns, especially in countries where land markets are poorly developed. Ethiopia is an extreme example of this. User rights held by small-scale farmers do not extend to the right to sell land and so there is no private land market where investors can acquire land. Instead, the government intervenes on behalf of investors by transferring land from farmers and ensuring that the farmers are paid compensation. This paper uses a unique dataset to examine the investment choices of rural households in Ethiopia who face such a situation. The data comes from a baseline survey of households living in and around the proposed site for a large factory. A year and a half after the baseline survey, households lost their land and received a financial compensation payment. I use variation in whether a household owns plots located inside the proposed project boundary to identify the effect of anticipating expropriation. These households grow relatively more sorghum (a safe crop) and relatively less wheat (a risky crop). Using two-stage least squares I show that subjective beliefs on the likelihood of expropriation act as a channel through which expropriation affects investment choices. The results are robust to a number of other specifications, including some that account for unobservable geographic variation in household location. This finding is consistent with other evidence on the relationship between tenure security and investment incentives ([Fenske, 2011](#); [Goldstein and Udry, 2008](#); [Besley, 1995](#)) and evidence on crop choice and risk mitigation ([Dercon, 1996](#); [Fafchamps, 1992](#); [Fafchamps et al., 1998](#)).

Context and data

I use data from a baseline survey that was conducted in September 2011 in a rural area near Kombolcha, Ethiopia. Kombolcha is a town of approximately 60,000 people that lies on one of the main road going north from Addis Ababa to Djibouti. It was recently designated as an industrial city by the Federal Government of Ethiopia and has begun to attract a number of large industrial investment and infrastructure

projects. Rural land around the town has already been or will be expropriated to make space for these investment projects, including approximately 340 hectares of land located within the survey area. In January 2013, the land was taken by the government and households were paid financial compensation in accordance with a formula specified in the federal land laws. This formula is usually ten times the current market value of the average production of the parcel over the previous five years. In practice, it is impossible to assess this for an individual parcel of land, so the local government determines a per unit value for land for the whole project area. Farmers receive a higher payment if their land is irrigated, they are compensated their tree crops and they receive financial compensation and replacement land if their home is expropriated.

The sample consists of 299 households living in a 5km by 5km area around the project area. All households were from the same administrative unit (kebele). Out of a sample of 299 households, 130 lose land, 167 do not and 2 are missing information. This represents approximately one third of the households in the kebele. Total land held by the group that lose their land accounts for about 200 ha out of 340 ha assigned for the investment project, while the whole sample accounts for 450 ha out of the kebele's 1000 ha. Comparisons between administrative data and descriptive statistics suggest that the sample is representative of this kebele. The 167 households that do not lose land serve as a control group to estimate the effect of anticipating expropriation. Households in the treatment and control group are comparable since they come from the same administrative area, have the same access to public services, have similar access to markets and are not able to move away in response to the announcement of the factory project.

Method and findings

The paper uses plot level and household level information collected in the survey to estimate three outcomes of interest at the plot level: Was fertilizer used? Was sorghum planted? and Was wheat planted? I am interested in the effect of two variables that measure expropriation risk: 1) the kebele official's assessment of whether the household will lose their land and 2) the respondents subjective evaluation of the likelihood that their land will be taken. In this part of Ethiopia households grow wheat, tef, sorghum and maize as the main cereal crops. Farmers have adopted improved varieties of wheat, which benefit from chemical fertilizer use and row planting technology. Households in this area tend to grow wheat for market and sorghum for their own consumption. I consider wheat a riskier crop because it requires a greater financial investment in inputs than sorghum. Sorghum, on the other hand does not require any inputs and, conditional on sufficient rain after planting, will provide a more certain yield. I estimate a two-stage least squares model where I use the official's assessment as an instrument for the

respondents subjective expectation. I find that households facing expropriation are more likely to grow sorghum, less likely to grow wheat and less likely to use fertilizer on their plots. I suggest two mechanisms that may be causing this behaviour: first, households may avoid high cost, high return investments such as fertilizer, or wheat, because they worry that they will not be able to recoup their investment. Second, households may anticipate a reduced income stream after their main productive asset is taken from them and so focus on growing safer, food crops such as sorghum. I end the paper by addressing some potential sources of endogeneity and run a variety of alternate specification to test the robustness of these results. In particular, I focus on the possibility that unobservable characteristics of the plots are related to unobserved characteristics of the project area. To do this, I run a regression discontinuity design and a spatial fixed effects model using GPS information on the location of households as a proxy for the location of a plot. The results are robust to some of these specifications, but limitations on the spatial data weaken these particular tests. The second round of data collection was completed in November 2013, and more detailed information about plots was collected in order to assess the robustness of the result. As far as possible, the data from Round 2 will be used to complement the findings from the baseline survey.