

Policy Brief

Labor Markets in East Africa

Researcher Brian Dillon, Peter Brummund, Germano Mwabu
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Abstract

We develop new tests for the completeness of rural labor markets, based on asymmetric responses in farm labor to changes in household composition. We implement our test using nationally representative panel data from Ethiopia, Malawi, Tanzania, and Uganda. The overall pattern is one of excess labor in rural areas, with substantial heterogeneity by cultivation phase, gender, and agro-ecology. In Ethiopia, poor households face a de facto labor shortage, driven more by lack of finance than by a physical shortage of workers. There is evidence of partial gender segmentation. In all four countries, women are more difficult to replace than men.

Project Objectives:

Labor markets play a critical role in economic development. Because labor is the primary endowment of poor households, reductions in poverty are driven first and foremost by increases in the returns to labor, whether in the market or in self-employment. Labor is also a critical input to the agriculture sector, through which it contributes to the majority of production in rural areas. Without an adequate understanding of the process that determines the returns to the labor supply of rural households, it is difficult to identify the appropriate set of policies to raise incomes, increase agricultural productivity, and reduce poverty.

In this paper we develop an extension to a classic test for complete and competitive markets. Under certain conditions, this extended test allows us to learn whether rural labor markets are clearing – i.e., whether the wage adjusts to equate supply and demand – and if not, whether the average market is in excess supply or excess demand. Our test of labor markets is based on the correlation between the amount of labor used on the household farm and the number of working age household members. It has long been known that when markets are working well, farm labor should not depend on the number of workers in the household. However,

if there are multiple missing or incomplete markets, households become over-reliant on their own members for farming labor, introducing a connection between household size and farming intensity. This is termed non-separation. The classic separation test involves regressing farm labor utilization on a measure of the household labor endowment (Benjamin, 1992).

We show that in panel data, a variant of the separation test can sometimes provide insights into the state of the rural labor market, specifically. The intuition is as follows. Suppose that in period $t-1$, a household faces a binding ration on the number of hours it can work in the market (a labor demand constraint), perhaps because of a downward sticky wage. Such rationing can lead to non-separation, with household members working on the family farm up to a point at which the marginal revenue product of farm labor is below the market wage. Now suppose that from period $t-1$ to period t , someone exits the household. If the reduction in the household's labor endowment relieves the binding ration on market work, separation becomes possible. Farm labor falls, but only to its optimal level. The opposite is not true: if the household labor endowment increases from period $t-1$ to period t , the ration continues to bind, non-separation persists in period t , and farm labor increases. The implication is that in a large sample, a binding labor demand constraint (a shortage of off-farm jobs) predicts a specific pattern of asymmetric average responses to increases and decreases in labor endowments.

A binding ration on the supply of labor – i.e., a lack of available workers – predicts the opposite set of asymmetries. In this case, farm labor utilization responds more to decreases in labor endowments than to increases. Hence, by testing for asymmetries in the average response of farm labor usage to increases and decreases in the household labor endowment, we can test necessary conditions for binding constraints on labor demand and labor supply. This test requires panel data, because identification is from within-household changes in la-

bor endowments over time.

We apply the test to recent, nationally representative panel data sets collected by the national statistics offices of Ethiopia, Malawi, Tanzania, and Uganda as part of the Living Standard Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) project. In the implementation we allow for heterogeneity by cultivation phase (planting, weeding, harvest), gender composition of the labor endowment, and agro-ecological zone. We also provide auxiliary theory and empirical tests to differentiate asymmetric responses due to labor market failures from asymmetries driven by other possible market failures (credit, land, insurance).

Key Findings:

The descriptive sections of the paper provide a detailed, updated view of rural labor markets in East Africa. We show the following using summary statistics and figures:

- i. There is a clear spike in labor demand during both planting and harvest, though the former is more severe (this finding is for Malawi).
- ii. Labor supply to the household farm is much greater, and more variable throughout the year, than labor supply to the market.
- iii. Older household members do not typically “retire” from farm work. 80-year-olds work on the farm more than 20-year-olds; 70-year-olds work the same average number of days on farm as 40-year-olds.
- iv. Household labor endowments are constantly changing. The share of households experiencing a change in the number of working age members from one survey to the next ranges from 40-80%, depending on how we count children aging into the workforce.
- v. Changes in household size are only weakly correlated within villages, so it is not generally possible to characterize villages as “source” or “destination” villages for internal migrants.
- vi. Migrants into and out of rural households tend to use their time similarly to existing

household members. New arrivals do not work on the farm more or less than current members.

The main empirical findings are as follows. First, across empirical specifications, separation is rejected in all four study countries. The estimated elasticity of farm labor utilization to the household labor endowment ranges from 0.55-0.65 for Ethiopia, Malawi, and Tanzania, and is roughly half that magnitude in Uganda. When we allow for asymmetric non-separation and variation across cultivation phases, some intriguing differences emerge across countries. Findings for Malawi and Uganda are clearly consistent with a binding ration on off-farm work, i.e., a general pattern of excess labor supply in rural areas. Results for Tanzania lean in the same direction, although the asymmetry is less pronounced. In Ethiopia we find the opposite: the initial evidence is consistent with a binding labor supply constraint. To further examine this surprising result for Ethiopia, we test the hypothesis that the Productive Safety Net Programme, a large-scale workfare program in Ethiopia, might be crowding out labor supply to the private market. There is little evidence to support that hypothesis. However, we do find that the labor supply constraint in Ethiopia only binds for poor households; non-poor households exhibit asymmetric responses consistent with a binding demand constraint (i.e., a lack of off-farm opportunities). This implies that asymmetric non-separation in Ethiopia is due to a mix of factors: financial market constraints prevent poor households from farming at optimal intensity, while labor demand constraints prevent non-poor households from working the desired number of hours in the market.

We also find some important level differences across cultivation phases, consistent with long periods of under-utilized labor between peaks of more efficient resource allocation, and across agro-ecological zones. Finally, we find evidence of partial gender segmentation in labor markets. Labor supply constraints are more likely to bind for

women, and labor demand constraints are more likely to bind for men. That is, labor supplied to the farm by female household members is less likely to be replaced in the market than that supplied by their male counterparts.

Policy Implications:

The above results suggest some clear lessons for policymakers. First, different approaches are called for in different countries. This may sound simplistic, because policies should always be tailored to local conditions. Here, however, we find results that appear to be similar across settings upon the initial analysis. Only when we allow for asymmetric adjustment do we see that the underlying labor market failure in Ethiopia is different from that in the other study countries.

Second, if there is a general take-away across the array of results in the paper, it is that rural households in East Africa face a lack of off-farm opportunities. The fact that non-separation is most pronounced during lower intensity cultivation phases suggests that the technology of non-mechanized agricultural production is at least partly to blame. The need to provide substantially more labor during brief but critical periods leads to an over-supply of rural labor during other times of year. A tempting policy conclusion would be to support mechanization, and thereby to decrease labor demand during peak periods, allowing labor to exit rural areas. However, the more fundamental issue appears to be the lack of low- to medium-skill non-farm jobs that draw excess labor off of farms and induce farms to mechanize out of necessity.

Some text in this brief is drawn directly from the paper being summarized.

References

Benjamin, D. (1992). "Household composition, labor markets, and labor demand: Testing for separation in agricultural household models." *Econometrica* 60(2): 287-322.



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