While Kenya is widely perceived to be a success story in increasing modern input use, it is not clear that smallholder households are adapting sufficiently to keep up with the price changes caused by rising land pressures. Recent studies have shown the concerning trend of increased population density resulting in decreased farm sizes and value of farm production. Without significant policy interventions, this trend is likely to continue, if not worsen: the inflation-adjusted rental price of land nearly doubled in all regions of Kenya between 2010 and 2014, while over the same period the real agricultural daily wage only increased by 18%.

Understanding how households respond to changing factor prices is thus of utmost importance, and this paper tests whether they adjust input use based solely on relative prices or whether this response is inhibited by other factors, including, possibly, market frictions. Using a 13-year panel of 1,208 rural households located throughout Kenya, we estimate farm-level demand for land and fertilizer. Once controlling for secular trends with a year fixed effect and differences in local growing and market conditions with district fixed effects, we find that land rental rates do not have a significant effect on demand for cultivated area, a small (but marginally significant) effect on the decision to use fertilizer at the extensive margin, with an elasticity of 0.045, and a larger and significant effect on conditional fertilizer demand, with an elasticity of 0.273. Across all specifications, wage rates do not appear to have a systematic effect on demand for either input. Taken together, these results indicate that households are not responding flexibly to changes in land rental rates or local wages.

This, in turn, suggests that policies which focus only on relative prices are unlikely to be effective in promoting intensification and that households face other constraints to input use. Failing to address these constraints can lead to misallocation of inputs at the household level, which ultimately affects aggregate productivity. As such, identifying and addressing these constraints so that households can respond flexibly to relative price changes has potentially large implications for overall efficiency and welfare.