HOW DOES RISING RURAL POPULATION DENSITY AFFECT SMALLHOLDER AGRICULTURE? EVIDENCE FROM ETHIOPIA, KENYA & MALAWI


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Motivation

- Population densities in many sub-Saharan Africa are much higher than they were two decades ago.
- The rising rural population densities are profoundly affecting farming systems.
  - Diminishing land sizes and limited scope of accessing land.
  - Limited off-farm opportunities.
- Are increasing population densities inducing innovations aimed at intensifying the use of land?
  - Consistent with the induced innovation theories of Boserup (1965) and Ruttan and Hayami (1971).
Total rural population projections

Source: UN Pop Council, 2013
Local analysts point to historical land injustices as the main cause of the 2007 post-election violence and the 2014 killings in the coastal region of Kenya.
Effects of population density on smallholder-intensification – analytical framework
Data sources

• **Ethiopia**: 6 waves of household-level data from the Ethiopian Rural Household Surveys covering 1293 households

• **Kenya**: 5 waves of panel survey data on 1,146 farm households

• **Malawi**: 3 waves of rural farm households; only 1375 households were re-interviewed in the last wave

• **Geographic Information Systems**: Population and land estimates data came from two GIS databases:
  - Global Rural–Urban Mapping Project (GRUMP)
  - GlobCover 2009
RESULTS: ETHIOPIA

Kilogram of fertilizer used/ha, by population density

Household landholding /adult equivalent by population density
RESULTS: KENYA

Figure 1: Fertilizer quantities applied per hectare cultivated

Figure 2: Total value of cash expenditures per ha cultivated

Figure 4: Net crop income per hectare cultivated

Figure 5: Net crop income per family labor (resident adults)
RESULTS: MALAWI

- Fertilizer kg/ha, by pop. den.
- Gross value of crop output/ha, by pop. den.
- Farm Income per Adult Equivalent, by pop. den.
- Value of assets/adult equivalent, by pop. den.
Summary of findings

- Rural population density is projected to increase by 48% in sub-Saharan Africa in the next 35 years
- Population density is endogenous- what are the drivers of population density in sub-Saharan Africa?
- Rising population densities are influencing household behavior and farming systems in sub-Saharan Africa
  - Intensification is not possible beyond some population density thresholds
  - 13% of the rural population in Kenya live in areas beyond the thresholds
- Our results do not explain the reasons for the decline in agricultural intensification
  - Signs of unsustainable agricultural intensification– reduced fallows; soil mining, etc.
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