

Poverty & Productivity: Small-Scale Farming in Tanzania, 1991-2007

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Key Message:

The most important source of consumption growth in Tanzania between 1991 and 2007 has been structural change, i.e. people moving out of agriculture. Within the smallholder agricultural sector, yields of the most important crop – maize – have been declining during the 2000's, and total factor productivity and adoption of technologies such as improved seeds and inorganic fertilizer have been stagnant at best.

I. Motivation for Research

Tanzanian policymakers still lack even basic data on time trends in agricultural productivity. This paper attempts to fill that gap.

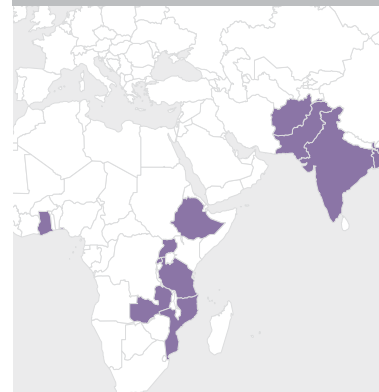
II. Key Findings

The research paper provides three main findings, based on an analysis of the Household Budget Surveys (HBS), National Sample Census of Agriculture (NSCA), and National Panel Survey (NPS):

Movement out of agriculture was much more important for consumption increases than was productivity growth within agriculture. It has been the decline of the agricultural sector (in terms of employment shares) rather than growth within agriculture (in per capita consumption terms) that has had the greatest impact on overall consumption over the past two decades. While the overall rate of average consumption growth has been slow, at approximately 1.1% per annum from 1991 to 2007 (see Figure 1), the largest share of this growth (over 40% of the total) was due to structural change, i.e., movement out of agriculture and primarily into non-farm self-employment (see Figure 2).

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Figure 1: Household Consumption by Occupation, 1991–2007

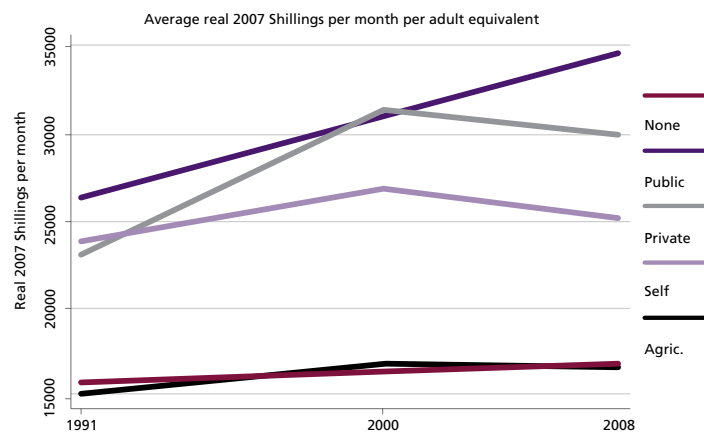
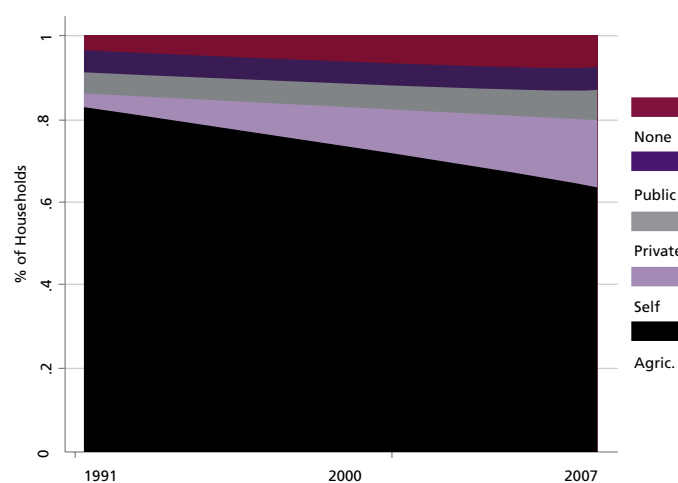


Figure 2 – Occupation of Household Heads, 1991-2007

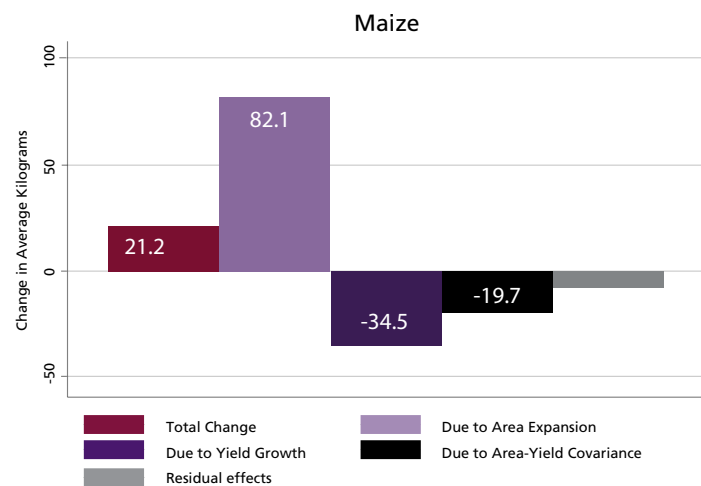


Agricultural output increases were mainly due to area expansion, while average yields for many crops declined. For maize and most other major crops (rice paddy being the key exception), we find that average yields have actually declined between 2002/03 and 2008/09, and where output growth is present it is primarily attributable to area expansion not productivity growth (see Figure 3 and Figure 4).

Figure 3. Technology Adoption by Smallholders

	2002/03	2008/09
Tractor	3%	2.6%
Improved seeds	17.2%	15.9%
Pesticides	11.9%	12.9%
Irrigation	6%	3.9%
Fertilizer (all types)	27.3%	25.3%

Figure 4



There were no increases of the already low levels of modern technology adoption among smallholders, despite being potentially profitable. We find no increase in use of key modern technologies such as inorganic fertilizer, hybrid seeds, irrigation, etc. during the 2000s. Adoption of these technologies is low and stable over time. The declining yields in maize and other crops are not due to reduced technology usage, but rather to falling total factor productivity (TFP).

Estimates of the rate of return to inorganic fertilizer from the NPS 2008/09 data suggest that it is profitable for smallholders. There are a number of important methodological caveats on this result however. More precise measurement of this heterogeneity is needed before making a general assessment of the viability of schemes to promote new technology adoption.

III. Policy Implications

Understanding the patterns of productivity growth and poverty reduction – and the role of smallholder technology adoption in this process – will be important for a wide range of policy decisions, including subsidization of farm technologies, promotion of small versus large farming, and the emphasis on farming versus urban job creation as a poverty reduction strategy.

IV. Dissemination:

For more information on this paper and related work please contact

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