8 Determinants of household income and schooling investments in rice-growing provinces in Mozambique, 2002–5

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Introduction

Most Mozambicans live in rural areas and earn their living by cultivating small fields using traditional technologies. Indeed, about 89 percent of the population is involved in agriculture, including a significant segment of the urban population (Government of Mozambique 2001). During the 2004–5 agricultural season, only 6 percent of farmers purchased improved seeds of food crops, 4 percent used chemical fertilizers, and 1 percent had access to canal or pump irrigation systems (Ministry of Agriculture 2005). Thus, the average yield between 2002 and 2006 was merely 1.0 ton per hectare for maize and 0.9 ton per hectare for rice (FAO 2007). Because Mozambican households depend highly on traditional agriculture, the country's gross domestic product per capita per year is only US$345, and more than half of its population is classified as poor (Government of Mozambique 2001).[1] The major challenge is therefore to raise household income so as to reduce poverty, which is the foremost goal of the Mozambican government.

The size of arable land and permanent crops per economically active population in Mozambique as a whole was only 0.54 hectare per capita in 1990, and this declined further to 0.44 hectare in 2000 (FAO 2007), which means that Mozambique can hardly be classified as land surplus. Meanwhile, the population grew at 1.4 percent per year from 1990 to 2000, indicating a strong population pressure on limited land resources, which was similar to the scenario in Asia around the mid-1960s before the advent of the Green Revolution in rice production.

The Asian case studies in Chapters 2–6 show that agricultural development, as exemplified by the development of modern seeds and irrigation technology, knowledge-based farm management, and high-value crop and livestock diversification, has played a major role in increasing total household income by increasing farm income. A rise in household income enhances schooling investments in children, who later on participated in lucrative employment opportunities in the nonfarm sector. This participation has led to a shift in household income structure away from farm to nonfarm sources,

and this has become the major factor behind poverty reduction. To what extent the Mozambique experience follows the Asian experience is what we plan to explore in this chapter.

We aim to explore changes in household income and poverty using a household-level panel data set collected from two rice-growing provinces in Mozambique in 2001–2 and 2004–5 crop years (subsequently referred to in this chapter as 2002 and 2005, respectively). Similar to the methodology adopted in the Asian studies, we first identify the determinants of different household income sources and then explore the factors affecting investments in children's schooling. Past studies in rural Mozambique identified the importance of the size of landholding, formal schooling, and agricultural productivity in explaining poverty (Boughton *et al.* 2005; Boughton *et al.* 2006; Datt *et al.* 2000; James *et al.* 2005; Jayne *et al.* 2003; Tschirley and Benfica 2001; Tschirley and Weber 1994; Walker *et al.* 2004).

We hypothesize that household demographic characteristics, land endowment, and the adoption of new agricultural technologies are not independent but are, in fact, interrelated.

Household endowment of land and labor and decisions to adopt new agricultural technology affect household income in the first period, and that household income in the first period affects schooling investment decisions in the second period. Similar to the Asian studies, this study adopts a panel data analysis of income determination function by using cross-sectional data independently and by using first-difference models. For schooling investment decisions, we estimate a regression function of the probability of being enrolled in school and incremental years in school obtained between two survey years.

This chapter has five remaining sections. The second section explains the features of the data set. The third section describes the changes in poverty, income, and educational progress in two provinces. The fourth and fifth sections present regression results of the determinants of different sources of income and schooling investments, respectively. Finally, the sixth section contains a summary and conclusions.

Data

The National Agricultural Survey of 2005 (Ministry of Agriculture 2005, or Trabalho de Inquérito Agrícola 2005 (TIA05), constitutes the first effort to get a nationally representative panel data set in rural Mozambique, and it covers 94 out of 128 districts. The survey was implemented by the Department of Statistics within the Directorate of Economics of the Ministry of Agriculture in 2005, for the agricultural season 2004–5, covering the period from September 2004 to August 2005. The sampling frame draws heavily on the Census of Agriculture and Livestock in 2000 and the former TIA02 and TIA03 (Ministry of Agriculture 2005). The sample was stratified by province and agroecological zone. Data on small and medium-sized farms were complemented by group interviews at the community level, field measurements,