

# **Consumption and Production Responses to Rural Policies and Welfare Effects: Application of an Agricultural Household Model to Tanzania**

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The role of agriculture as way out of poverty has been deeply discussed and much of this literature stresses that agriculture-based growth is more effective than other forms of growth in reducing poverty. In Tanzania, subsistence farming accounts for nearly 50% of total agricultural output and 85% of cultivated land is for food crops. Despite the high growth rates registered over the last decade, poverty has decreased only slightly both in rural and urban areas. The strong expansion of the aggregate agricultural sector has been mainly the result of unevenly distributed growth of crops across the regions and led by large-scale farmers. Thus, it can be argued that the current structure of the agricultural sector has favoured larger-scale production of rice, wheat, and traditional export crops, and is characterized by a slow expansion of food crops and livestock. All this may explain the weak relationship between agricultural growth, poverty reduction and better nutrition outcomes. This study intends to contribute in understanding farmers' decisions on production and consumption, within the theoretical framework of non-separable agricultural household models and to provide an empirical framework for the design of agricultural development strategies aiming to reduce rural poverty in Tanzania. In particular, this research aims at developing a model to estimate how changes in agricultural production (produced by different agricultural policies) affect households' consumption patterns, and thus monetary and caloric poverty. At this purpose, the impact on household welfare of some of the policies recently carried out within the Agricultural Sector Development Programme (such as fertilizer subsidy program launched in 2008) will be assessed. In addition, a number of other interventions (such as the provision of better extension services, improved seeds, investments in human capital, as well as specific price policies affecting the prices of agricultural inputs and outputs) will be simulated. Results of these micro-simulations will be used to draw possible policy implications in terms of poverty reduction.

A non-separable farm household model is implemented on the 2008-2009 Tanzania National Panel Survey Integrated Households Survey (TNPS) to assess the impact of specific agricultural policies on farm households' income in presence of imperfect markets. We concentrate on labour market failure, since in our opinion this is among the major constraints in a context like that of rural Tanzania, where labour is the most important input in farm production. Hence, we employ a non-separable agricultural household model since the separable one relies on the assumption that hired and family labour are perfect substitutes and that labour market is perfect. Non-separability (due to an imperfect labour market) implies not only that production and consumption decisions are interlinked, but also that labour allocation is likely to be determined by shadow wages rather than actual market wages. At this purpose, a two-stage estimation strategy is followed, where the first stage estimates the shadow prices of family labour, while in the second stage the production and demand systems are estimated by the use of a multi-input multi-output production system (translog) and complete demand system (QAIDS) respectively. The production and consumption

decisions taken under labour market failures are thus interlinked by the family labour (which enters in the production system) and its counterpart in the consumption system, the leisure; both prices are determined by the shadow wage as estimated in the first stage. These models help us to capture adjustments in production (both in output and input) and consumption patterns following specific policy simulations.