The Impact of Agriculture Technology Adoption on Farmers’ Welfare in Uganda and Tanzania

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Abstract

The paper looks at the determinants of technology adoption and how this affects farmers’ welfare measured by consumption expenditure in Uganda and Tanzania. The study uses panel datasets based on the Living Standards Measurement Study-Integrated Surveys on Agriculture for the period 2005 to 2015. To do this, we use both a probit and linear probability model for the determinants of improved new seeds varieties. In addition, the impact of technology of welfare is based on endogenous switching regression. This helps us to control for selection problems on production and adoption decisions. The determinants of both countries include farm size, contact with government agencies, number of improved seed varieties and credit. However, there are determinants that are specific for each country. The results for the impact of improved new seeds varieties on welfare, show that households that use improved new seed varieties tend to be different from those that do not. They also have higher consumption expenditure. The results show the potential of improved seeds varieties in helping households in especially in rural areas increasing their welfare.

Keywords: Household welfare, Technology adoption, Sub-Saharan Africa, Uganda, Tanzania, Endogenous switching

Introduction

Since the late 1970s to mid-1980s, many African countries implemented macroeconomic, sectoral and institution reforms aimed at ensuring high and sustainable economic growth, food security and poverty reduction. Despite all these accelerations, the agricultural sector’s growth has remained insufficient to adequately address poverty, attain food security, and lead to sustained GDP growth on the continent (Dessy et al., 2006). More worrying is that the sector remains characterized by low use of modern technology and low productivity and thus unable to meet the increasing food needs of a growing population. While there has been some evidence of new crop varieties in some countries in Africa, adoption rates remain far below countries in Asia, casting doubts on the possibility of a green revolution. For example, in 2000, African adoption rates of modern varieties of rice, wheat and maize per area harvested were less than half those of rates in East and Southeast Asia, and the situation has not changed much (Dethier & Effenberger, 2012). Hence, research and adoption of technological improvements are crucial to increasing agricultural productivity and reducing poverty, while