Poverty dynamics revealed in production performance and forestry in improving livelihoods: the case of West Anhui, China

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Abstract

Using distance function model and data envelopment analysis, we measure the productivity of rural households in Jinzhai, a well-known poverty county. We find that most of them improved their productivity in the 1980s, and a small number did so throughout the period of 1978–1997. For the group as a whole, however, its productivity growth and income increase were abysmal, because, among other things, expenditures increased at faster pace than revenues. This is well reflected in forestry, whose potential in reducing poverty and improving livelihoods has been constrained by government market control. Also, the wide distribution of household performance suggests that many failed to move closer to the production frontier, let alone to push it out to a higher level. Further, the adoption of the household responsibility system contributed to technical change, which played an important role in driving the productivity growth in the early 1980s, but the uncertainty associated with the contract expiration/renewal in the early 1990s led to negative technical change and thus productivity decline. Removing the institutional and technical impediments is thus essential to reduce poverty.
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1. Introduction

In 1978, China abandoned collective agriculture and assigned most agricultural land to families under the household responsibility system. It also sharply increased the prices paid for agricultural goods. Over the next 15 years farm output grew more than 6% a year (Lin, 1992). This dramatic increase in agricultural productivity precipitated the country's long-running economic boom and poverty reduction. More than 200 million people have been lifted out of poverty in the last 25 years (Liu et al., 2000).

However, China has also had significant increas- es in inequality and disparity—between coastal and in-land areas, with the poor, isolated, and often upland areas of its interior participating little in growth (World Bank, 2001). As such, there remain at least 30 million people in poverty (Yao, 2000). Why have these people not been able to participate in and thus reap the benefits generated by the economic growth? How will they improve their livelihoods in the future? What part can forests play in reducing poverty? The goal of this paper is to address these overarching questions by measuring and analyzing the productivity growth of

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rural households with survey data obtained from a nationally well-known poverty county in West Anhui, Jinzhai, covering the period of 1978–1997.

We believe that measuring and analyzing the productivity growth of rural households in poverty can shed new light to understanding the fundamental causes to the 'poverty trap' and designing more effective policy to tackle it in China. To our knowledge, however, little has been done in this regard before. Much of the existing work features highly aggregated and often descriptive studies (Liu et al., 2000; Yao, 2000). This is surprising in view of the fact that the Chinese government has clearly stated that it is committed to continued poverty reduction and building a well-off society. As a matter of fact, it is also rare to find this kind of empirical examination of productivity growth for rural households in other parts of the world, despite reducing the proportion of people living in extreme poverty by half between 1990–2015 has been one of the major goals of the international community (World Bank, 2003). Hence, we hope that our study can contribute to this endeavor in and outside China.

It should be noted that the inclusion of forestry in our analysis is intriguing and beneficial, given the recent surge of international attention to forestry as a means of sustainable livelihoods for the poor (Warner, 2000; World Bank, 2001). Poverty is usually determined on the basis of income or consumption thresholds. These criteria, while useful for national and international statistics, fail to capture the local complexity and dynamics of poverty (Warner, 2000). They also fail to account for current and potential resources. Another commonly used measure of poverty is food security—or lack of it. Food insecurity exists when people lack access to sufficient amounts of food and thus not consuming the food required for normal growth and development. However poverty is not only based on income and/or food availability.

Currently, sustainable livelihoods have been widely promoted as a new perspective to poverty. A livelihood comprises the capabilities, assets, and activities required for living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Carney, 1998). It has been argued that forests can play an important role in improving livelihoods. For instance, Arnold (1998) identifies increased income, improved food security, reduced vulnerability, and enhanced well being as the contributions of forest resources to sustainable livelihoods. Nonetheless, it remains to be seen whether and under what conditions forest resources can contribute to sustainable livelihoods. Our analysis is expected to address these questions.

Overall economic growth is crucial for generating income and opportunity, which can in turn eliminate poverty and enhance livelihoods in developing countries (World Bank, 2003). As such, we will focus our attention on the measurement and analysis of the total factor productivity (TFP) to elucidate the dynamics of poverty and potential means to tackle it in this paper. Although local people's participation, intra-generation equity, and social capital building are important elements of sustainable resource management and livelihoods, we will not examine them here.

For the post-commune rural China, measuring the rural TFP at the household level is appropriate because households have become the basic production units ever since. The use of household-level data is also desirable for characterizing the microeconomic performance and identifying the bottlenecks of growth. In this paper, we measure and decompose the TFP of 93 rural households between seven periods (1978, 1980, 1985, 1990, 1995, 1996 and 1997) based on the distance function model (Färe and Primont, 1995) and the data envelopment analysis (Coelli et al., 1998).

Our data cover four outputs (crop production value, forest production value, livestock production value, and other production value) and six inputs (cropland, forestland, crop expenditure, forestry expenditure, livestock expenditure, and other expenditure). These output/input values were compiled using relevant price indices. Since the survey was conducted in the late 1990s while the study period covers the two prior decades, farmers were unable to recall their labor use in different areas for the early years. Therefore, a drawback of the dataset is that labor input was excluded. Despite this, the TPI growth during 1978–1998 was abysmal, as will be seen, suggesting that our findings may not be altered much by the absence of labor input.

We find that the household productivity growth was very low and variable. Much of the contribution