



The impact of migration on agricultural restructuring: Evidence from Jiangxi Province in China



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ABSTRACT

This paper explores the key impacts of migration on agricultural production restructuring in Jiangxi province by considering household farm activities choice and crop acreage adjustment behavior. We used the Heckman model to address the sample selection bias and instrumental variable to deal with the reverse causality problem. The results show that, amid China's unique institutional background, the administrative restrictions on the free flow of labor and land hindered agriculture restructuring, forcing the rural family members left behind to turn to less labor-intensive subsistence grain production instead of more capital-intensive livestock cultivation, or to even abandon their farmland. However, we also find the important role of return migrants in the agriculture modernization process. They can provide both financial and human capital to promote more specialized agricultural production. We propose several suggestions for agricultural restructuring in rural China.

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1. Introduction

Rural restructuring is an important topic, as rural development plays a vital role in urban development and regional economic growth (Long et al., 2009). Over the past several years, a huge number of floating populations from rural to urban places has become a particularly important social phenomenon; as a result, rural areas in China have experienced a structural transformation of their agricultural sectors, combined with profound demographic changes (Long et al., 2012). Due to the constraints arising from the urban-rural dualism of land ownership and household registration, the rapid rural restructuring under the changes of the allocation of critical resources have brought about many problems and challenges (Long et al., 2016). In particular, out-migration has been led by younger and better educated rural residents, producing a "brain drain" that has resulted in the loss of the most active population segment among rural communities (Long and Woods, 2011). The rural population is increasingly marginalized, and natural environments have been destroyed (Gutman, 2007). In most areas,

high-quality farmland has been abandoned, and houses have become vacant, causing great concern and controversy over rural decline among academics and policymakers. With an accelerating trend towards the aging of the rural labor force, there is also an increasing concern that a vast labor migration could negatively affect China's future food security. Discussions on labor shortages and about who will feed China or engage in farming in the future have resonated with the public.

Most of the literature on migration has focused on whether it has positive effects on the welfare of migrants or the economies of migrant destinations (Brücker and Jahn, 2011; Carrasco et al., 2007; Fan, 2001; Friedberg, 2001; Kirdar, 2009; Zhao, 2005). Recently, the impact of migration and remittances on the source communities has received increasing attention, and many studies have focused on the impacts of migration on agriculture production structure adjustments in less-developed countries. Taylor and Yunez-Naude (2000) explored the critical role of rural education in agricultural transformation in rural Mexico, finding that family members with at least a high school education were much more likely to shift from staple production to cash crop production. Schmook and Radel (2008) studied the impact of international labor migration on a possible forest transition in Mexico and discovered that migration earnings substituted for agricultural earnings and that migrating households cultivated significantly less farmland. Wouterse and

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Taylor (2008) used data from Burkina Faso to test the impact of migration on activity choice and incomes in rural households and found that remittances stimulated livestock cultivation but negatively affected both staple production and nonfarm activities. McCarthy et al. (2006) and Miluka et al. (2010) studied household strategies in Albania and similarly concluded that migrants were more likely to invest in extensive livestock production and move out of staple cereal production. However, the results of De Brauw (2010), who studied agricultural structural changes in Vietnam, show that while migration forced farmers who were left behind to reduce the rice planting scale, the agricultural production structure did not adjust to the capital-intensive production. This rich field of research has thus produced several different results. However, empirical studies related to production structure adjustment in rural China are relatively rare. We can infer that the impact of out-migration on agricultural restructuring in rural China differs from that in other foreign countries.

This paper makes four main contributions to the research. First, it uses the New Economics of Labor Migration (NELM) framework to test the effects of labor loss and remittances inflow on agricultural production structure adjustments in Jiangxi Province,¹ providing practical suggestions for the development of China's middle region. Second, with the promotion of mechanization and socialized agricultural services in recent years, different kinds of agricultural activities generate different labor demands. This paper divides agricultural activities into three categories to analyze the changes in production structure: subsistence grain production (such as rice, maize, wheat), cash crop production (such as oil, cotton, sugar, vegetables), and livestock cultivation.² Third, as several studies regard migration as completely homogeneous, the paper studies the heterogeneity of three kinds of migration, local migration, remote migration and household-head migration,³ as well as their effects on the production structure. Finally, within the “dual-track” institutional structure, special attention should be given to return migrants because they present the inflow of both financial and human resources to these communities (Zhao, 2002). This paper also tests the impact of return migrants on Chinese agricultural restructuring.

This paper contributes to the analysis of rural economic restructuring in China by examining the effects of rural-to-urban migration on agricultural activities in the source communities, focusing on the responses of the family members left behind, and exploring how to adjust and optimize the structure of agricultural production by applying econometric methodology to survey data drawn from Jiangxi Province. The rest of the paper is organized as follows. Section 2 provides background on China and illustrates the theoretical and analytical framework on how out-migration affects the household labor allocation and farming behavior. Section 3 discusses the study's data and methodology. Section 4 presents the empirical results. Section 5 concludes the paper and discusses the results in a comparison with previous studies.

2. Migration and agriculture restructuring: A theoretical and analytical framework

2.1. Background on China

Before 1978, rural employment in China was centered on agriculture and was organized into collectives. The Chinese government was interested in securing agricultural production and limiting demand for subsidized food in urban areas, resulting in a strict segmentation between the rural and urban labor markets during the three decades of the centrally planned system (Putterman and Dong, 2000). Since China started its economic reform in 1978, several national macroeconomic development strategies have been implemented to promote rural restructuring. The Household Responsibility System (HRS) and the establishment of township and village enterprises (TVEs) returned some degree of personal freedom to rural people, offered new channels of employment, and increased agricultural productivity. The strategy of “Building a New Countryside” adopted in 2006 also improved agriculture production and public goods provision. Although regulations on rural-to-urban migration have been relaxed and rural conditions have greatly improved, the income gap between urban and rural areas has not narrowed. In fact, the unbalanced development of urban and rural areas, largely attributed to the administrative restrictions on the free flow of land and labor elements, has resulted in a temporary circular migration pattern, the split-household strategy to compensate for the risks of migration, and the lack of migrant workers' integration in urban areas (Froissart, 2008).

The unique internal migration pattern and small-scale traditional agricultural production pattern in China have been shaped by the “dual-track” structure⁴ of urban and rural development through two characteristic Chinese institutional systems: the “household registration system” (*hukou*)⁵ and the absence of market transactions for farmland. The *hukou* system is a state institution that retains tight control over migration from rural to urban areas by preventing the rural population from settling permanently in urban areas. It also restricts access to state-sponsored benefits for the majority of the rural population (Chen et al., 2015). Local governments have no responsibility for the non-*hukou* residents in their jurisdiction. Without a local urban *hukou*, migrants are paid salaries much lower than those of urban residents due to labor market segmentation, with limited access to social insurance and other forms of welfare (Zhu, 2003); they are also excluded from several public services, such as child education and housing. Thus, migrants are eventually supposed to return to the countryside. On the other hand, agricultural producers in rural China face imperfect land markets; for example, rental markets for land are thin, and the free allocation of rural construction land⁶ across regions is not allowed. As a result, migrants may have a piece of land in the countryside that

¹ Jiangxi is in southeastern China, in the middle and lower reaches of the Yangtze River and is one of the six provinces in the middle region of China.

² In this paper, “livestock cultivation” refers mainly to the small-scale cultivation for each household as a unit that is dependent on the households' landholding, including cattle, pig, fish and poultry farming.

³ In our paper, “local migration” refers to that of migrants who lived with their families but who worked in the local non-farm sectors for more than half the year, such as in local township enterprises; “remote migration” refers to migrants who worked or lived away from home, such as across regions or provinces, in a small or medium-scaled cities, for at least six months in 2008 or 2009 but did not return by the end of 2008; “household head migration” represents households whose male or female head participated in migration.

⁴ The urban-rural “dual-track” structure has two aspects: a dual-track economic structure and a dual-track social structure. The former refers to the segmentation between the urban economy characterized by socialized production and the rural economy characterized by smallholder production. The latter refers to the difference between the welfare regimes in urban and rural areas, more precisely, the different social status and social rights between urban and rural residents.

⁵ In the 1950s, China established a special household registration to prevent the rural population from moving to cities and to keep the price of grain low enough to support a high rate of industrialization. Chinese policymakers removed the limits on *hukou* registration in small cities, relaxed restrictions in medium-sized cities, and set qualifications for registration in big cities or in metropolises to strictly control the migrants.

⁶ Rural construction land is the land in rural areas occupied by housing and other nonagricultural buildings.

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