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Impact of land tenure policy on agricultural investments in China: Evidence from a panel data study

Liangliang Gao^a, Dingqiang Sun^{b,*}, Jikun Huang^c^a Rural Development Institute, Chinese Academy of Social Sciences, Beijing, China^b College of Economics and Management, Nanjing Agricultural University, Nanjing, China^c Peking University, Beijing, China

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ABSTRACT

The goal of this paper is to examine the impact of changes in China's rural land policy on agricultural investments. Dramatic changes occurred in China's rural land policies after 2000, including the extension of rural land contractual period, restriction of land reallocation among villages and villagers groups, elimination of agricultural taxes for responsibility land, and rapid development of rural land rental markets. These changes have given farmers more secure tenure on collectively controlled responsibility land and have strengthened farmers' income rights for responsibility lands, incentivizing them to increase their investments on responsibility lands. A panel data method was used to quantitatively investigate the impact of land policy changes on agricultural investment. We considered the application of organic fertilizer as an indicator for long-term agricultural investment, and compared the use of organic fertilizer between private plots and responsibility lands operated by the same household. The results showed that the difference in organic fertilizer use between private plots and responsibility land for the same household has become smaller from 2000 to 2008. Our findings suggest that recent changes in rural land policies have provided farmers incentives to increase land quality investment on their responsibility lands.

1. Introduction

A clearly defined land property right plays a critical role in agricultural production and economic growth. In general, secure property right is an important factor that can influence investment decisions by a rational agent (Alchian & Demsetz, 1972; Demsetz, 1967). Since land is one of the most important inputs for agricultural production, the tenure security of farm land has a significant impact on the utilization of the land. Farm land tenure policy can influence the risk of land expropriation and long-term investments that can improve land quality and farm productivity (Feder & Feeny, 1993). Moreover, as land right consists of a set of rights, different types of land property rights, such as the use rights, transfer rights and rights of alienation may have heterogeneous effects on land investments (Besley, 1995; Feder & Onchan, 1987; Jacoby, Li, & Rozelle, 2002). Today, insecurity of farm land property rights remains a major issue in transitive economies and many developing countries, where various land tenure policy reforms are ongoing.

Land tenure policy reform in China provides a good case study to understand the impact of land tenure insecurity on agricultural investments. China's Household Responsibility System (HRS) reform during 1979 to 1984 first defined the use rights and ownership of farm land. Under the HRS, collectively owned land was assigned to individual households with contracts of up to 15 years, providing farmers with greater incentives to increase agricultural production. This reform dramatically promoted the total factor

* Corresponding author at: College of Economics & Management, Nanjing Agricultural University, No. 1, Weigang Road, Nanjing 210095, China.
E-mail address: dqsun@njau.edu.cn (D. Sun).

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productivity in China's agriculture and accounted for about half of the agricultural growth during 1979–1984 (Lin, 1992). After 1984, however, China experienced a slow increase in agricultural productivity and a sharp decline in collective agricultural investments (Wen, 1995). Several studies have argued that the insecurity of use rights for responsibility land may lead to a low level of investment by farmers (Li, Rozelle, & Brandt, 1998).

The current literature on land tenure policy and farm investments highlights the critical role that a clearly defined property right can play in land investment in China. A group of studies utilized the frequency of land reallocation within a village as an indicator for land insecurity to examine the effect of land tenure on farmer investments (Xu & Zhang, 2005; Zhong & Ji, 2009). However, those studies found different results.¹ Li et al. (1998), on the other hand, compared long-term land investment among private land (also called *ziliu di*), collective and responsibility land, assuming that the private land had more secure land right than collective and responsibility lands, to identify the impact of land tenure policy on agricultural investment. This study could have better dealt with household heterogeneity through a household fixed effect, resulting in a consistent estimate on the effect of land tenure policy on land investment. Unfortunately, their data obtained from a small sample size and outdated, hardly assessing the impact of recent changes in China's farm land tenure policy.

China's farm land tenure policy has dramatically changed since 2000. In 2002, China issued a new law for rural contracting land, and two years later, the Chinese central government further modified the law of land management. In 2008, China issued its first property law. Several important changes in farm land tenure policy are worth being highlighted here. First, under the new law for rural contracting land, the length of the contract has been extended from 15 years to 30 years, which provides farmers higher security of tenure on collectively controlled land. Second, farm land reallocation in rural China has been restricted since 2000. According to a survey conducted by Tao et al. (2009), land reallocation within villages or villagers' groups² has significantly declined. Restrictions on periodic land reallocation have reduced farmers' risk of losing their use rights of responsibility land. These policy changes would considerably affect the security of collectively controlled responsibility land, and consequently may influence farmer's investment on land in rural China.

Moreover, several important changes in farm land policies occurred, which may influence the tenure rights of farm land in China. For instance, agricultural taxes for responsibility lands were abolished in 2006 nationally. The elimination of agricultural taxes, along with the introduction of agricultural subsidies since 2004, may strengthen the income rights of agricultural land, and consequently lead to more investment on responsibility land. Also, land rental markets in rural China have developed dramatically since 2000, strengthening the transfer rights of farm land (Ma, Heerink, Feng, & Shi, 2015). Chinese farmers now can cash their long term investment in farm land through rural land rental markets, increasing their incentive of land investment.

The overall goal of this paper is to understand the dynamic impact of China's land tenure policy on agricultural investments since 2000, which may in turn assist China's policymakers to better assess the effect of China's farm land policy reform and further improve China's farm land management. To meet this general goal, we compared the long-term investment between private and responsibility lands owned by the same rural household. This strategy can better control for the unobservables that may affect the land investment at the household level, and has been widely used in the study of institutional economics, such as Shaban (1987), which focused on productive efficiency of crop-sharing contracts.

To measure the impact of land rights on farm investment, we considered the application of organic fertilizer as an indicator for long term investment. Organic fertilizer mainly consists of animal wastes (pig manure, chicken manure, cow dung and so on) and straw, which can improve soil quality, and may sustain land quality for four or five years (Jacoby et al., 2002). Unlike other types of long term investments, such as irrigation, which are more likely to be invested by local governments or a group of farmers, the application of organic fertilizer mainly reflects investment choice of an individual farmer. Li et al. (1998) also used the application of organic manure as an index of long term investment.³

The rest of the paper is organized as follows. In the next section, we provide the institutional background on China's land policy and major changes after 2000. Section 3 discusses the data set we used in the empirical study. In Section 4, we present the econometric strategy, the basic results of estimation, and results from alternative estimating methods. Section 5 concludes the paper with a discussion of policy implications.

2. Land tenure policy and agricultural investment in China

2.1. China's land tenure policy

Before the household responsibility system was completed, China's agricultural production was organized in a collective-based production team system. A production team typically consisted of about 20–30 neighboring households and worked together on collectively owned land. Because of high costs in monitoring labor inputs among a team and rewards to individual farmers were not tied to their work directly, output growth was very low (Lin, 1988).

China's land policy reform began at the end of 1970s. After the implementation of the household responsibility system, essentially

¹ Xu and Zhang (2005) show that land security can significantly improve land related investments by farmers while Zhong and Ji (2009) find no evidence that secure land right can increase farm household investments in China.

² The village refers to the administrative village which is the lowest level rural administrative and land management unit in China. An administrative village is often consisted with several villagers' groups which have fewer administrative responsibilities and weaker organizational capability than the village.

³ Li et al. (1998) examine the impact of property rights on China's agricultural production. Their results show that the right to use land for long periods of time encourages the use of land-saving investments in rural China.

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