



# Reallocating wealth? Insecure property rights and agricultural investment in rural China<sup>☆</sup>



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## ABSTRACT

This paper evaluates the impact of village-level land reallocations in China on household economic outcomes. The primary objective is to analyze the effect of short-term differences in tenure security in the year of a reallocation, employing the past history of land shifts as a source of exogenous variation in current tenure security. The results show that a decrease in the probability of losing the current plot yields an increase in agricultural inputs and production with no change in non-agricultural investments, conditional on household fixed effects that control for any unobserved and time-invariant characteristics of the household. This suggests that even small increases in the security of tenure enjoyed by households could yield benefits in terms of greater agricultural output.

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## 1. Introduction

The establishment of clear land rights has long been considered to be an important milestone in the development of the modern industrialized countries. Because land is the principal asset in a preindustrial economy, the development of an institutional structure that encourages its efficient use is argued to substantially enhance growth (North & Thomas, 1973). Conversely, many analysts have identified the absence of stable and enforced property rights as a major impediment to growth in today's developing countries (De Soto, 2000).

However, despite this emphasis on the importance of private property rights, collectively owned or managed land remains a widespread phenomenon in the developing world. Collective or partly collective land structures continue to be predominant in rural areas in China, Mexico, and many parts of sub-Saharan Africa. These forms of land ownership can yield substantial benefits in terms of equity, but they may also generate significant efficiency costs.

In China, the post-Mao period saw the emergence of a hybrid system of landownership, in which formal title to land is held by the village collective while use rights are held by households. Moreover, plots are subject to periodic reallocations among households, a process village officials conduct every three to five years, thereby generating systematic insecurity in land tenure. The objective of this paper is to estimate the economic costs of insecure land tenure induced by these periodic reallocations by analyzing a wide set of both agricultural and non-agricultural outcomes.

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I examine variation in tenure insecurity within a village conditional on a reallocation being conducted. Households that have recently had their land reallocated are less likely to have their land reallocated in a subsequent round, and accordingly the past history of changes in landownership can be employed as a proxy for the probability of loss of the current plot. The results show that the reduction in the probability of losing the current plot as a result of past inclusion in a reallocation results in an increase in the use of agricultural inputs and in total agricultural output of around 0.1 standard deviations, with no evidence of simultaneous substitution out of non-agricultural activities.

This effect of relatively more secure tenure is evident for households that gained land in the past, as well as for those that lost land in the past. Accordingly, any plausible alternative channel for the observed pattern would require that an unobservable shock correlated with reallocation affect both relatively land-rich and relatively land-poor households in the same way relative to the mean. The observed pattern of symmetric increased investments by households at both ends of the land-ownership distribution in the year of a reallocation is inconsistent with most obvious sources of omitted variable bias.

While these effects are not large in magnitude, they suggest that there are potentially meaningful gains from even marginal increases in the tenure security enjoyed by rural households. On the other hand, it is also useful from the perspective of policy implications to note that the negative spillover of insecure property rights on non-agricultural investment seems minimal.

This paper supplements an existing literature that has evaluated the impact of varying regimes of property rights in China. Feder, Lau, Lin, and Luo (1992) argue based on a before-and-after analysis that excessive investment in nonproductive assets such as housing is evidence of the negative impact of insecure land tenure. Brandt, Huang, Li, and Rozelle (2002) analyze the impact of land tenure by comparing households' private plots, assigned permanently to households in some villages for their personal cultivation, with "responsibility land", acreage that is allocated to households for grain cultivation but subject to reallocations. Similarly, de la Rupelle, Quheng, Shi, and Vendryes (2009) use household-level heterogeneity in land rights within a village to identify the impact of reallocations on outmigration, finding that insecure land rights induce temporary, rather than permanent, outmigration in order to ensure claims are retained on land left behind. Both papers make the assumption that plots are exogenously assigned to different contractual types within a village.

Jacoby, Li, and Rozelle (2002) analyze the impact of insecure tenure on investment in rural China by using a hazard model to estimate predicted risks of expropriation for different plots held. They find that a higher expropriation risk decreases investment in organic fertilizer. More recently, Zhao (2014) finds in a difference-in-differences analysis that the elimination of reallocations leads to an increase in rural per capita net income, but also a large increase in inequality and a decline in agricultural output; Ma, Herrink, van Ierland, van den Berg, and Shi (2013) report that perceived land tenure security significantly affects collectively governed investments (specifically, investment in irrigation canals) in a rural area of Gansu province, but does not significantly affect individual farmer investments; and Bai, Kung, and Zhao (2014) find that a negative effect of reallocations on organic fertilizer use is driven entirely by full reallocations, as opposed to partial reallocations.

Two recent papers have focused on how reallocations interact with the rental market. Wang, Riedinger, and Jin (2015) find that more frequent reallocations discourage transfers of land to non-relatives in the rental market. Feng, Herrink, Ruben, and Qu (2010) analyze investment in rented plots, and find that the tenure status (rented or contracted) of plots is not a significant determinant of input use; while they do not directly address the question of variation in tenure security induced by reallocations, their results suggest that tenure security is not the only important determinant of input choice.

There is also a larger literature about the economic impact of property rights that evaluates land reforms in which tenants without formal title are endowed with stronger property rights (Banerjee, Gertler, & Ghatak, 2002; Besley & Burgess, 2000). Goldstein and Udry (2008) analyze property rights in Ghana and conclude that individuals with more secure tenure rights by virtue of their more powerful political positions invest more in maintaining soil fertility. Another set of papers focused on urban land policy in Latin America finds that land titling increases labor supply and investment (Besley, 1995; Field, 2005; Galiani & Scharfrodsky, 2010). In the historical literature, Hornbeck (2010) analyzes the impact of the introduction of barbed wire on agricultural productivity in the western U.S., and concludes that the stronger protections of land title afforded by barbed wire led to a significant increase in settlement, land values and crop productivity.

Finally, it is useful to note that an alternate perspective on Chinese rural property rights suggests that these institutions should be analyzed in terms of their function, rather than their definition as private or collective, and emphasizes that the rural land tenure system is primarily designed as a system of social welfare, rather than a system for the commercial transfer of land (Ho, 2014). As such, this system may be perceived as both credible and desirable by rural households, even if it entails substantial insecurity. Ho (2014) presents evidence from a survey of 1140 households in 24 provinces suggesting there is a high level of popular support for the current system of land tenure, including reallocations, and a relatively low level of land conflict. Additional survey evidence suggests that a majority of rural households in fact do not support policies that seek to limit reallocations (Song, 2010).

Similarly, Andreas and Zhan (2015) argue that recent reforms designed to marketize collective ownership and reform the rural hukou will undermine the role of collective land rights as a social safety net, facilitating displacement and the transfer of land away from rural households. Fei (2011–12) suggests that reallocations should be limited, but not abolished. Ye (2015) provides a useful summary of this broader debate, emphasizing that while modernization of land tenure systems may increase overall agricultural productivity, enhance specialization, and allow labor to be transferred out of agriculture, it may also lead to increased inequity and increased risk for vulnerable rural households.

Relative to the existing literature, this paper employs a novel identification strategy to evaluate the impact of insecure tenure on an unusually large set of economic outcomes. To my knowledge, this is the first paper in the literature on reallocations in China that has estimated an impact of insecure tenure on household outcomes conditional on household fixed effects and

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