Land Use Policy 28 (2011) 805–814

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

To reallocate or not: Reconsidering the dilemma in China's agricultural land tenure policy

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ARTICLE INFO

Article history:
Received 25 April 2010
Received in revised form 16 January 2011
Accepted 17 January 2011

Keywords:
Land tenure
Administrative reallocation
Efficiency versus equity
China

ABSTRACT

In China, rural land is collectively owned at the village level. Village officials usually have the power to reallocate land property across families on an ongoing basis due to demographic changes in the village. Realizing that frequent land reallocation and abusive land requisition will undermine economic productivity as well as social stability, the "Rural Land Contract Law" passed in 2002 explicitly reads that farmland tenure security must be maintained for at least 30 years since the last nationwide reallocation in 1998. The frequency and magnitude of land reallocation in Chinese villages have decreased as a result. However, failure to allocate land to the newly increased population often induced conflicts among village members if the security of land tenure for 30 years was strictly implemented. Administrative land reallocations then still continued in some villages to accommodate demographic changes in these places. Based on an almost nationally representative rural dataset collected in 119 villages of 6 provinces across China in 2008, this paper lays out some stylized facts about the administrative land reallocation after 1998. By analyzing the opinions of over 2200 farmers on the central policy of maintaining farmland tenure security, we are able to rationalize why some farmers support the policy while others oppose it. This analysis helps us to better understand the dilemma between efficiency and equity embedded in the current agricultural land system in China. It is further shown that social conflicts among village members may easily arise either due to administrative land reallocation or due to lack of it. We argue that this dilemma cannot be resolved effectively without coordinated reforms in household registration system which can help hundreds of millions of Chinese rural migrant workers to permanently settle in cities and release their farmland to those who stay in the countryside.

Introduction

China's rural economic reform, widely regarded as one of the most successful transitional experiences in the world, was initiated 30 years ago with a fundamental reform in the country's agricultural land institution (Johnson, 1995; Lin, 1992). With the extension of land-use rights and residual income rights to households, China's agriculture shifted from a collective-based production system to a family-based one (Rozelle et al., 2002). However, rural land in China was and still is not privatized. Ownership remains "collective" and local governing bodies and village cadres, as legal representatives of the collectives, have acquired de facto control over land use and land allocation. Collective ownership is based on values such as communal rights and equality in production resources for all members of the village. Following this logic, local cadres naturally should have the power of reallocating or readjusting agricultural land holdings if village demographics changes. Families with additional labor should gain more land while households that lost members due to death, marriage, or migration should return part of their land.

This reallocation and readjustment power is currently under fierce debate in the policy circle. Some scholars argue that the discretion of local officials to reallocate land through administrative means is the key weakness of China's agricultural land institution. Frequent reallocation undermines tenure security and discourages investment in agriculture, resulting in lower productivity (Prosterman et al., 1996). This incentive problem can be mitigated by either total land privatization or extending land

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doi:10.1016/j.landusepol.2011.01.006

contracts to 30 or more years (Chen, 1999). The Chinese government has indeed modified its agricultural policies in this direction and promulgated the "Rural Land Contract Law" in 2002, which mandated that farmland tenure security must be maintained for at least 30 years since 1998. The year of 1998 is known in China as the beginning of the second round "agricultural land contract". By that year, the land use contracts that rural families obtained from the Household Responsibility System (HRS) in the late 1970s or early 1980s was about to expire and needed to be renewed. In the 3rd plenary meeting of the 17th Party Congress held in 2008, the Chinese Communist Party further extended the land tenure contracts from 30 years toan unspecified "long term". According to a top rural policy maker of the Chinese government, Mr. Chen Xiwen, such "unspecified long term" can be interpreted as permanent tenure (Xinhua News Agency, 2008).

Economic efficiency, however, is only one side of the complicated story and land policy also needs to consider other social and political factors. In addition to a means of production, farmland also provides insurance and food security for rural residents. In other words, land is their safety net (Park, 1996). Unlike residents in cities who have access to government sponsored social security programs and payouts, land in the rural area is not only an important source of income, but also the last resort for rural residents in case of losing their off-farm job opportunities. This is particularly true for the hundreds of millions of rural migrant workers who have already earned most of their incomes from city employments. If they can keep a piece of land in the countryside, they can return to farming if they ever become unemployed in cities. Some scholars find that in some areas a majority of farmers reportedly opposed privatization (or even extended tenure) because their households enjoyed better overall income security under the current form of collective land ownership (Kung, 1995; Kung and Liu, 1996; Dong, 1996). Whenever there are demographic changes across households within a village, there is pressure for administrative land reallocation.

The Chinese government faces a serious efficiency versus equity dilemma in its agricultural land policy. Before this can be tackled, we believe that some basic facts about the current status of farmland policy need to be understood. This paper attempts to examine two such questions. First, when the second-round agricultural land contracting was carried out in 1998, the central government mandated that agricultural land tenure be extended for 30 years. Since demographic changes across households and thus the pressure for administrative land reallocation within a village would not change merely because of a policy imposed from above, it is important to investigate how Chinese villages have reacted to this policy under a decentralized policy implementation regime. In other words, has agricultural land tenure become securer after 1998? Based on a large rural survey of over 2200 farmers in 118 villages across six Chinese provinces, this paper compares the frequency and magnitude of administrative land reallocation before and after 1998. Second, a sound policy should also take note of villagers' own perspectives. We have also collected information about farmers' subjective evaluations of the central policy. This allows us to understand villagers' preferences on land tenure. With micro-level data, we further explore why some farmers tend to support higher tenure security while others tend to oppose it. This helps to better understand the complicated dilemma between efficiency and equity in China's agricultural system. We argue that this dilemma cannot be effectively addressed unless coordinated reforms in China's Household Registration (*Hukou*) system are carried out so that hundreds of millions of rural migrants can settle down in cities permanently and thus extra land can be released in migrant-sending localities to accommodate rural demographic changes.

The rest of the paper proceeds as follows. The section "Agricultural land reallocation: the dilemma and policy choices" lays out the institutional background of administrative land allocation in rural China. In the section "Land reallocation before and after 1998: more tenure security?", the stylized facts of agricultural land reallocation both before and after 1998 in 118 villages are presented and compared. On the basis of responses to the questions about the central farmland tenure security policy from over 2200 interviewees, the section "Tenure security in farmers' eyes: conflicting visions" first shows that farmers are largely divided in opinion with regard to tenure security. This is followed by a more rigorous regression-based analysis to examine individual and family characteristics that have affected farmers' opinions. To further demonstrate the conflictive nature of land readjustment, the section "Social conflicts from agricultural land (re)allocation" shows that a significant number of social conflicts arose from farmers' discontent about land (re)allocation issues. The section "Conclusion" concludes with some policy implications about future farmland reforms.

Agricultural land reallocation: the dilemma and policy choices

The Household Responsibility System (HRS) introduced in the late 1970s extends land-use rights and residual income rights to individual households. For collective land, peasants are not given marketable ownership rights or the freedom to use it as a mortgage for loans from banks. What they can hold is only "a contractual right to use agricultural land". Nevertheless, the contractual right to use agricultural land and the right to claim residual income still offer direct and indirect benefits to rural residents. These include, first, households are entitled to the implicit return to land as a factor of production. Second, in an environment of labor market imperfection and limited off-farm opportunities, land provides households with an opportunity to utilize family labor to the fullest (Putterman and Ciacu, 1995). Third, in an imperfect grain market, land serves as a source of food security and a cheap source of calories (Park, 1996). Finally, land also serves as a form of insurance in the event of the loss of off-farm earning opportunities (Giles, 1998).

However, since agricultural land is not privatized, local cadres, particularly those at the township and village levels, still can exert control over land allocation and reallocation. In most villages, land can be taken back from and then redistributed to some or all village households through administrative means. Typically, households are not compensated for the investments in land they have made. Under such a land management system, land tenure is not fully secure since land use rights may be lost (or gained) in village-wide reallocations. In another word, tenure security is largely determined by the frequency and magnitude of village-wide reallocations (Rozelle et al., 2002).

Various factors have led to rural land reallocation such as land consolidation, permanent migration et al. However, the primary reason is demographic change across families within a village. Under the HRS, local leaders typically allocate land to households in a fairly egalitarian way based on some combinations of family size, demographic composition, and labor supply (Putterman, 1992). In principle, all villagers, both present and future, are entitled *ex ante* to equal access to this common property resource. As the size and composition of households change, it requires village cadres to reallocate land on an ongoing basis to maintain equity in agricultural land usage across households within a village. Second, with power entrusted by the state, village cadres could use periodic land reallocation as a way to extract rents or to force village members to comply with central and local policies, such as levies and

fees, land requisition, and birth control mandates (Johnson, 1995).[1] Before the full grain market liberalization in the early 1990s, village cadres were held responsible for fulfilling mandatory grain procurement targets as well. To accomplish these mandates, village leaders have used land as a carrot and a stick, taking land away from villagers who do not comply and giving it to those who do, or refusing to allocate land to those who have children beyond government permission. Third, to improve land productivity and increase the area of arable land, local governments have routinely engaged in land reclamation and consolidation. These projects affect the layout of existing farmland and make new arable land available. Village cadres need to readjust land accordingly so basic equity is maintained (Tan et al., 2006). Finally, with the growth of off-farm opportunities, local officials usually have more incentives to reallocate land to those who stay in the countryside so that they can collect land rents and fulfill state tax and quota obligations with relative ease. Land reallocation is then used to achieve equity or maximize economic and political benefits perceived by village cadres (Rozelle et al., 2002; Kennedy et al., 2004).

As a result, administrative reallocation of agricultural land was quite common in Chinese villages between the 1980s and the middle 1990s (Ho, 2001). Based on a survey of 215 villages across eight provinces in China, Brandt et al. (2002) found that between 1982 and 1995, the average number of reallocation per village was 1.7. There were considerable differences across localities. A quarter of the 215 villages had reallocated land for one time and a fifth of them had conducted reallocation twice. A small number of these villages reallocated their land almost every year. Only 60 villages had *no* readjustment since the introduction of HRS.[2]

The impact of insecure land tenure on land use efficiency and income distribution has been studied quite extensively. Rozelle et al. (2002) offers an excellent survey on this topic. The findings are not so clear-cut. On the one hand, insecure land tenure did have negative impacts on agricultural land investments, thus reduce transactional and allocation benefits that could have been induced by free land turnovers. On the other hand, administrative land reallocation has also helped to match land with households that had higher marginal productivity. It acted like a substitute for market reallocation where land markets were underdeveloped. Not surprisingly, many empirical studies found that unstable land tenure in China had a negative, but relatively modest influence on agricultural efficiency and growth (Zhang and Wang, 2009). Deininger and Jin (2005, 2009), however, argue that the introduction of land rental markets has partly addressed this problem.

Another, perhaps no less important, argument for land reallocation is that land provides social security in rural areas and reallocation can accommodate demographical changes (Li and Yao, 2002). This argument is closely related to the issue of equity in land allocation. Without land redistribution that adapts to demographic changes within villages, the issue of inequality in agricultural land endowment and thus issue of income inequality across households would inevitably arise. This is particularly important for the farmers who are more dependent on agricultural land for earnings. This argument can be further extended to the larger economy. The existence of such a quasi-welfare arrangement in the countryside has enabled migrants to take jobs without pensions, medical and unemployment insurances from their employers. Low wages and low welfares have been the foundation for China's rapid growth in the past decades. In this sense, collective land ownership and administrative adjustments have contributed to China's industrialization and urbanization.[3]

Nevertheless, administrative land reallocation is also costly. Compared to pure market transactions under secure tenure, inefficiency is more likely to arise from administrative land reallocation due to the lack of competition and information as well as the high transaction costs to carry out land reallocations.[4] Administrative reallocation may also reduce land rental activities because it generates higher degree of uncertainty and shortens farmers' planning horizon. More importantly, as Brandt et al. (2002) argued, if local officials reallocate land to fulfill state policies such as grain quotas and taxes while at the same time seeking rents for themselves, land reallocation may reduce local welfare.[5]

With all these considerations in mind, it is not a surprise that no consensus has been reached in the academia about whether China should push forward a policy toward permanent tenure security. Though most scholars, in particular a majority of economists, argue that China needs a rural land system that provides long-term tenure security and promotes land use efficiency (Johnson, 1995; Kung and Liu, 1996), there are also quite a number of researchers and policy analysts who believe that at the current stage of development in China, the gain from permanent tenure, not to mention land privatization, may not be very large. Farmers may feel that they are enjoying more security under the collective system of land ownership that reallocates land on an ongoing basis (Kung, 1995; Kung and Liu, 1996; Dong, 1996).

Albeit different views with regard to agricultural land tenure security, the policy message sent from the central government is clear. In 2002, the Chinese central government, with the promulgation of a new legislation known as "Rural Land Contract Law", required a fixed land tenure of 30 years and reallocation was to be permitted only when the village collectives received approval from two-thirds of the members of the Villagers' Conference or two-thirds of the Villagers' Representatives, as well as the approval of the local governments. The government also proposed to speed up the establishment of land markets where farmers can "subcontract, lease, exchange, or swap" land-use rights or join cooperatives.

Students of contemporary China have agreed that the most serious challenge to the central government is policy implementation.

[1] China has a family planning policy that controls birth in cities as well as in rural areas. However, birth quotas are different for urban and rural households. While urban residents can only give birth to one child per household, rural residents can have a second birth after 4–6 years (depending on locality) if the first birth turns out to be a girl. Village leaders still have a responsibility for ensuring that family planning targets are met. The policy also varies for ethnic groups. In general, birth control policies are more lenient toward ethnic minorities. Families with ethnic minority status can have two children in cities and three in rural areas. In recent years, to prevent a possible demographic crisis in the future, the government has relaxed rules even for Han Chinese. Both parents who are single children in their families are allowed to have two children.

[2] The survey covers 8 provinces: Zhejiang, Sichuan, Shanxi, Hubei, Hunan, Hebei, Liaoning, and Yunnan. Thirty-two villages were sampled in the first five provinces, twenty-four villages were sampled in Yunnan, and fifteen and sixteen villages were surveyed in Hebei and Liaoning. Altogether enumerators interviewed village cadres in 215 villages in 50 counties. The sample of villages was constructed to provide a representative cross-section of villages in each province, while the eight provinces represent every major region of China (Brandt et al., 2002).

[3] We thank one anonymous reviewer for suggesting this analysis.

[4] The process of administrative reallocation itself is costly in terms of effort and entails considerable administrative expense. It may also lead to conflicts between local cadres and farmers and among farmers. According to Rozelle et al. (2002), administrative reallocation and a decentralized system of exchange based on land rental among individual households can be viewed as imperfect substitutes to each other because of informational problems and because the high costs of reallocation prevent reallocations from being carried out very frequently.

[5] In the 1950s, China introduced a compulsory grain procurement system. Peasants must fulfill their grain quotas or assignments to the governments before they could distribute the rest to the rural collectives. HRS gave rural households more discretion, but they still had to sign contracts with local governments about grain quotas. It was one of the most important tasks on local officials' shoulders until it was gradually phased out in the mid 1990s.

There is a saying in Chinese policy circle: "once a policy is out of the Zhongnanhai compound, it is out of the central control." This statement may be somewhat an exaggeration, but it is indeed a serious issue in evaluating policy effectiveness in China. Is this also the case for rural land administrative reallocation? In other words, has the central policy been effectively implemented? Moreover, how do the farmers themselves think of the central policy? Is there any difference in their opinions between farmers in places where the central policy has been followed more rigidly and farmers in places where land reallocation took place despite the central call for tenure security? What kind of farmers supports the central policy and who are the ones that oppose it? The next two sections aim to answer these questions.

Land reallocation before and after 1998: more tenure security?

In the summer of 2008, we conducted a large national survey in rural China. We first divided the country into six large regions and randomly picked one province in each: Shaanxi (Northwest), Sichuan (Southwest), Hebei (Central North), Jilin (Northeast), Jiangsu (East), and Fujian (Southeast). All counties in each province were ranked and categorized into five quintiles based on their per capita gross value of industrial output. In each quintile one county was randomly selected. Two townships in each county were chosen respectively by ranking all the townships into two groups according to per capita net income of rural residents and randomly selecting one township in each group. Following the same criteria, two villages in each township were selected. In each of these villages, 20 rural households were randomly selected and surveyed. Due to the 2008 earthquake in Sichuan, our survey team was unable to reach one target township. Moreover, there was an additional 148 questionnaires that could not be used due to errors or failure in most questions. Finally we were able to gather full information for 2212 interviewees in 118 villages from 59 townships of 30 counties.

To gather information about land reallocation, we designed a questionnaire for village cadres. In each village, two cadres (usually one of them being the Villagers' Committee director or the village party secretary and the other being the village accountant) were responsible for answering the questions. We used two indicators to measure land tenure security: the scale of land allocation and the frequency of such adjustment. The scale of allocation is defined as follows: full-scale (or major) reallocations redistribute land across all households in a village and partial (or minor) readjustments redistribute land only across a small number of households within a village while leaving the land of other households unadjusted.

We believe that information from village cadres is more complete. Even so, the memory gap may cause some bias. We have taken a few precautionary steps to mitigate this problem. First, we insisted that at least two cadres should be present during the interview. When in doubt, they could discuss with each other and reach a consensus. Second, we also asked the village accountants to be one of the interviewees. Usually the village accountants were senior members of the Villagers' Committees and had more knowledge about the village history. Finally, in order to collect information about village history, like clans, temples, veterans in revolutionary wars, and victims of the Great Leap Forward and Cultural Revolution, we had another questionnaire for a small group of village elderly and elite. Interviewers of the cadres were instructed to consult the elders and elites if village leaders were not certain about land adjustments before 1998.

Table 1 lists the shares of villages in our sample that have carried out both full-scale land reallocation and partial land readjustment (the third column), full-scale reallocation only (the fourth column), partial land readjustment only (the fifth column), and no readjustment at all (the sixth column). These shares are shown for the two periods (i.e. before 1998 and 1998–2008, respectively) we want to compare. Most notably, the number of villages which have conducted both full and partial land reallocation has dropped steeply. Before 1998, more than 10% of villages reallocated land among all and some village households. After 1998, only one village (0.84%) managed to accomplish both. Similar declines can be found in full reallocation only and in partial readjustment only. But many villages still carried out small-scale land adjustments in the post-1998 period. As a result of these changes, more than half of the sample villages have followed the central call for tenure security and did not adjust rural land at all. While the temporal trend is across-the-board, some regions have changed more than others. For example, a higher percentage of villages in Sichuan, Shaanxi, and Jilin remained relatively active and reallocated land in the post-1998 era. On the other hand, the majority of village cadres in Jiangsu and Fujian have kept their hands off from farmland. Unlike the first group, Jiangsu and Fujian provinces have more developed industries and neither farmers nor local cadres probably have strong motivation to adjust land.

Table 1
Land reallocation before and after 1998 (% of villages).

Province	Sample	Both	Full-scale reallocation only	Partial reallocation only	No-reallocation
1998–2008					
Jiangsu	20	0	20	0	80
Sichuan	18	0	0	55	44
Shaanxi	20	5	0	50	45
Jilin	20	0	0	70	30
Hebei	20	0	0	35	65
Fujian	20	0	0	20	80
National	118	0.8	3.4	37.8	58
Before 1998					
Jiangsu	20	15	35	25	25
Sichuan	18	0	0	72	28
Shannxi	20	15	5	55	25
Jilin	20	4.8	4.8	70	20
Hebei	20	15	30	25	30
Fujian	20	15	5	40	40
National	118	10.9	13.5	48	27.7

Source: Authors' Survey in 2008.

Table 2
Average frequency of land reallocation before and after 1998.

Province	Village sample	Average frequency of land reallocation before 1998			Village sample	Average frequency of land reallocation between 1998 and 2008		
		Full-scale	Partial	Total		Full-scale	Partial	Total
Jiangsu	20	1.3	1.6	2.9	20	0.5	0	0.5
Sichuan	18	0	3.4	3.4	19	0	1.1	1.1
Shaanxi	20	0.2	2.2	2.4	20	0.1	1.6	1.6
Jilin	20	0.1	3.5	3.7	20	0	1.4	1.4
Hebei	20	0.7	0.9	1.5	20	0	1.3	1.3
Fujian	20	0.3	1.4	1.7	20	0	0.4	0.4
National	118	0.4	2.1	2.6	119	0.1	1	1.0

Source: Authors' Survey in 2008.

Table 3
Average frequency of land reallocation conditional on reallocation.

Province	Village sample	Average frequency of land reallocation before 1998			Village sample	Average frequency of land reallocation between 1998 and 2008		
		Full-scale	Partial	Total		Full-scale	Partial	Total
Jiangsu	15	2.6	3.9	6.5	4	2.3	0	2.3
Sichuan	13	0	4.8	4.8	10	0	2.0	2.0
Shaannxi	15	1.0	3.1	4.1	11	1.0	2.8	3.8
Jilin	17	1.5	4.7	6.2	14	0	2.1	2.1
Hebei	14	1.4	2.1	3.6	7	0	3.6	3.6
Fujian	12	1.5	2.5	4.0	4	0	1.8	1.8
National	86	1.6	3.6	5.0	50	1.3	2.5	2.7

Source: Authors' Survey in 2008.

Table 1 summarizes whether or not land reallocation has happened in a village. The other indicator measures the frequency of such reallocations (Table 2). The pattern is a familiar one. Like in Table 1, the number of full-scale land reallocations has decreased faster than that of partial adjustments. Regionally, village cadres in Jiangsu and Fujian provinces were the least enthusiastic about shuffling land. Table 3 takes one step further and calculates reallocation frequency given that a village has adjusted its land. The decline is consistent with the previous table but the extent of drop is not as dramatic. Thus it can be concluded that the steep drops in Table 2 is mostly attributable to the fact that more villages have ceased to adjust land even though villages that continued to reallocate were only somewhat less active.

Fig. 1 further shows the trend of full and partial land reallocation by year after 1998. Unfortunately, we do not have similar information before 1998. However, we can still see that many villages carried out major or minor land readjustment in 1998 when the second contract period started. Generally the frequencies of land reallocation were low but there was indeed a rise in reallocations after 5 years in 2003. This indicates the pressure of land reallocation inevitably accumulated after some time of no reallocation.

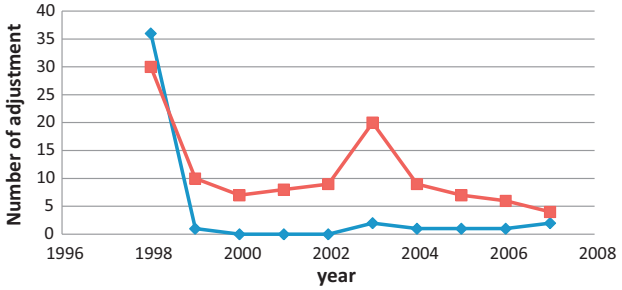

Fig. 1. The number of full and partial land adjustments, 1998–2008. Note: the blue line represents full reallocation and the red line indicates partial adjustment. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

In short, the data in these tables portray a fairly familiar picture about China's policy implementation. Many villages have stopped totally reshuffling farmland among all members and reduced the frequency of partial readjustments. But still many villages continued reallocation, especially small scale readjustments. The development of land rental markets may be one possible explanation for this drop (Deininger and Jin, 2005, 2009). As villagers started to accommodate their land need through the market, they might not push for land adjustment at the village level. Since the decrease was across-the-board, the central government's policy of securing land tenure must have played an important role as well. The evidence suggests that the central government was capable of achieving its main policy objectives. Local officials' action partly reflects the central government's indecision on this matter. As discussed earlier, there are perfectly legitimate reasons to readjust land within a village. The mismatch between land holding and household size violates the basic premise of communal rights and equity. Despite the call for tenure security, the central policy makers are undecided on this dilemma and thus unwilling to punish violators.

Tenure security in farmers' eyes: conflicting visions

As analyzed in the beginning, a sound public policy should weigh costs and benefits carefully. It is also important to understand the preferences of the target population. If there are strong resistances among these people, policy makers need to adjust the policy to lower implementation costs.[6] This is particularly relevant in the

[6] Using a sample of 34 village in Shaanxi province, Kennedy et al. (2004) found that village elections have allowed villagers' preferences to be reflected in the cadres' decisions.

Table 4
Questions on farmers' attitudes toward farmland tenure policy.

Question 1	Do you think the central policy of stabilizing tenure for 30 years is reasonable?
Question 2	If a policy requires that no more farmland is allocated to a family which has added new family members, is this policy reasonable in your view?
Question 3	If a policy requires that families which have married their daughters out of the village not return part of their farmland, is this policy reasonable in your view?
Question 4	If a policy requires that families with deceased members not to return part of their farmland, is this policy reasonable in your view?
Answer choices	0 = reasonable; 1 = not really sure; 2 = unreasonable

debate about farmland tenure in China because the benefits and costs will be distributed unevenly in the village. Presumably, families with variable conditions and needs will take on different views on this issue. To analyze farmers' attitudes toward tenure security, we asked each interviewee four related questions in our 2008 survey. These four questions and the three possible answers are translated in Table 4. The first question is designed to elicit interviewee's general attitude toward the central policy of stabilizing tenure for 30 years. The following three questions measure farmers' opinions on the same issue, albeit under three more specific hypothetical circumstances.

For each of the four questions, the interviewees were asked to pick one choice out of the three potential answers. A positive answer (coded as 0) means that the interviewee thought that the central policy was reasonable while a negative answer (choice code 2) indicates the opposite view. The choice in between these two (choice code1) signals that the interviewees did not have a strong opinion on this policy in any particular way. These four different but highly related questions are designed together so that we can evaluate whether our interviewees are consistent in their answers.

As shown in Table 5, farmers are largely consistent in their answers to different questions. For the four related questions respectively, 62.79%, 61.98%, 59.95%and 61.10% of interviewees did not endorse the central government's attempt to stabilize farmland tenure. On the opposite end, around 30% of our interviewees agreed that the central government's policy was reasonable (32.01%, 28.98%, 30.38% and 29.59% for the four questions, respectively). Clearly farmland tenure security is a polarizing issue in the countryside and people have strong opinions about it. To explore villagers' preferences further, Table 5 breaks down villages into two groups, one with farmland reallocation after 1998 and the other without any readjustment. The shares of farmers who did not support the central policy in villages with land reallocation were about 3–4% points higher than the shares in the villages without land reallocation. Moreover, the shares of farmers who chose the "not sure" answer in villages with land reallocation were 2–3% points lower than those in villages without land reallocation after 1998. As a result, the shares of farmers who supported the central policy were roughly the same between villages with and without land reallocation. Generally speaking, these figures show that the differences in farmers' attitudes between villages with and without land reallocation are quite small. The slightly higher shares of farmers who expressed unfavorable views toward central land tenure policy in villages with reallocations are not surprising since reallocation was more likely to take place in villages where more farmers were in favor of it.

Table 5
Villagers' opinion about land tenure security.

	Question 1	Question 2	Question 3	Question 4
Share of villagers in all villages (%)				
Unreasonable	62.8	62.0	60.0	61.1
Not really sure	5.2	9.0	9.7	9.3
Reasonable	32.0	29.0	30.4	29.6
Share of villagers in villages with land reallocation after 1998 (%)				
Unreasonable	64.1	63.5	61.9	62.4
Not really sure	3.4	8.3	8.1	8.3
Reasonable	32.6	28.2	30.0	29.3
Share of villagers in villages without land reallocation after 1998 (%)				
Not really sure	6.4	9.6	10.8	10.0
Reasonable	31.6	29.5	30.6	29.9

Source: Authors' Survey in 2008.

The findings above are based on aggregate level figures and micro-level data should reveal more interesting dynamics. For example, we can ascertain what villagers were more likely to support tenure security and why. To answer this question, we utilize more rigorous regression-based analyses.

Since each of the four questions has three possible answers, ordered probit models are appropriate to analyze this kind of data. In statistical analysis, ordered probit is a generalization of the popular probit analysis and is used for ordinal multinomial dependent variables. The central idea of the model is that there is a latent continuous metric underlying the ordinal responses. Thresholds partition the real line into a series of regions corresponding to the various ordinal categories. The latent continuous variable, y^* is a linear combination of some predictors, $\mathbf{x}$, plus a disturbance term that has a standard normal distribution. Like the models for binary data, we are concerned with how changes in the predictors are translated into the probability of observing a particular ordinal outcome (Wooldridge, 2001).

The explanatory variables that are used in the model to predict the probabilities of different answers are shown in the equation below.

$$y_i^* = \beta_0 + \beta_1 Popchange_i + \beta_2 Agrincshare_i + \beta_3 Rentin_i + \beta_4 Age_i + \beta_5 Gender_i + \beta_6 Expedu_i + \beta_7 Fampop_i + \beta_8 Landpc_i + \beta_9 Incpc_i + \beta_{10} CCP + \beta_{11} Cadre_i + \beta_{11} V_j + e$$

Popchange is a dummy indicating whether a family had experienced a net increase of population since 1998. It takes a value of one if it has a net increase, otherwise the value is zero.[7] *Agrincshare* is the share of agricultural income in the total family income. *Age*, *Gender*, and *Expedu* represent the age, gender and the education level of the interviewee respectively. We also control some family level variable, including rented land (*Rentin*),[8] current family size (*Fampop*), area of contracted agricultural land per family member (*Landpc*), and family income per capita (*Incpc*). *CCP* and *Cadre* are two dummy variables, measuring whether the interviewee is a Chinese Communist Party member and whether he or she is currently serving as a village cadre. e_i is a normally distributed

[7] Our variable of population change only measures the positive direction. A further distinction between families with no population change and families with decrease in population may be worthwhile. Moreover, as one reviewer suggests, it is also important to include an independent variable of land investment. Unfortunately, we did not collect that information in the survey.

[8] Households' access to land rental market is also a factor that should be considered. If farmers have already had access to land rental markets, their needs may be partly met through the market mechanism therefore they may not have very strong opinions for or against land reallocations. In our survey, we asked many questions about land rental markets. In the sample villages, 19% of households have rented in land, 23% of which in fact rented in more than 10 mu farmland. A lot of farming households have participated in the land rental market. We thank the reviewer for pointing this out.

Table 6
Summary statistics of variables.

Variable	Observations	Mean	Standard deviation	Min	Max
Popchange	2212	0.3	0.5	0	1
Agrincshare	2212	0.3	0.3	0	1
Age (year)	2212	49.5	11.2	18	86
Expedu (year)	2212	6.2	3.3	0	16
Male (1 = yes, 0 = no)	2212	0.6	0.5	0	1
Fampop (person)	2212	4.3	1.7	1	18
Landpc (mu)	2212	1.5	1.9	0	33.3
Rentin (mu)	2212	1.61	8.95	0	300
Incpc (RMB 1000 Yuan)	2212	6.5	9.0	−12.8	150
CCP (Yes = 1, No = 0)	2212	0.08	0.26	0	1
Cadre (Yes = 1, No = 0)	2212	0.03	0.17	0	1

Source: Authors' Survey in 2008.

error term with a mean of zero and standard deviation of one. In our regressions we also controlled the village dummy V_j.

Table 6 reports summary statistics for all the independent variables. As shown in the table, about one-third of the sample families experienced net population growth. On average, 34% of our sample families' income came from agriculture. The minimum value for *per capita income (Incpc)* was RMB −128,000 Yuan because farmers' income, both from agricultural and non-agricultural sources, could be negative. It is interesting to note that the average age of our interviewees is close to 50. This reflects the fact that in rural China a lot of young people migrated to cities for non-agricultural opportunities in industries and services.

Table 7 summarizes the regression results with all village dummies controlled. For all the regressions corresponding to the four questions about land tenure security, the coefficients for *Popchange* are positive and statistically significant. This implies that compared to an interviewee whose family had no population change or experienced a net decrease in population from 1998, an interviewee whose family had added new members since 1998 was more likely to have negative view on land tenure policy. In other words, these villagers wanted more frequent farmland reallocation or readjustment. On the contrary, the significant and negative coefficients for *Landpc* in these models indicate that families with higher landholding tend to be more reluctant to give up their land and be more supportive for land tenure policy. Likewise, the coefficients for *Fampop* are all negative and statistically significant, meaning that larger families are more likely to support long-term farmland tenure security. This is consistent with their interest of preserving the status quo and preventing their exiting holdings from being redistributed.

Table 7
Ordered probit regressions with village dummies controlled.

	Que 1	Que2	Que 3	Que 4	Migrantland
Popchange	0.123*	0.122*	0.111*	0.118*	−0.0685
	(0.0684)	(0.0670)	(0.0659)	(0.0665)	(0.0649)
Agrincshare	−0.256**	−0.262**	−0.220**	−0.227**	0.178*
	(0.105)	(0.103)	(0.101)	(0.102)	(0.101)
Landrent	0.000264	0.000142	0.000337	0.000151	0.000608
	(0.000993)	(0.00100)	(0.00104)	(0.00103)	(0.000393)
Age	−0.00603**	−0.00580**	−0.00427	−0.00425	0.00215
	(0.00304)	(0.00295)	(0.00292)	(0.00294)	(0.00287)
Expedu	−0.0258**	−0.0275***	−0.0242**	−0.0248**	0.0167*
	(0.0103)	(0.00992)	(0.00991)	(0.00998)	(0.00976)
Gender	−0.151**	−0.143**	−0.128**	−0.149**	0.140**
	(0.0648)	(0.0636)	(0.0633)	(0.0637)	(0.0621)
Fampop	−0.0488**	−0.0442**	−0.0350*	−0.0404**	0.0155
	(0.0203)	(0.0200)	(0.0199)	(0.0200)	(0.0206)
Landpc	−0.0522*	−0.0476*	−0.0534*	−0.0518*	0.0173
	(0.0278)	(0.0255)	(0.0275)	(0.0275)	(0.0211)
Incpc	−0.00278	−0.00329	−0.000573	−0.00115	0.00896***
	(0.00390)	(0.00385)	(0.00367)	(0.00373)	(0.00253)
CCP	−0.0199	−0.0484	0.00993	−0.0235	−0.0271
	(0.111)	(0.110)	(0.113)	(0.113)	(0.109)
Cadre	−0.0218	−0.00211	0.00537	−0.00630	0.136
	(0.105)	(0.104)	(0.104)	(0.105)	(0.100)
Cuttoff point 1	−1.764***	−1.762***	−1.761***	−1.796***	0.418
	(0.443)	(0.397)	(0.434)	(0.434)	(0.375)
Cutoff point 2	−1.606***	−1.485***	−1.471***	−1.515***	0.911**
	(0.442)	(0.396)	(0.433)	(0.433)	(0.375)
Log-likelihood	−1637.1	−1779.9	−1832.9	−1830.3	−1908.8
Pseudo R2	0.085	0.078	0.075	0.073	0.052
McKelvey&Zavoina's R2	0.457	0.444	0.432	0.435	0.384
Observations	2212	2212	2212	2212	2212

Note: The numbers in parentheses are robust standard errors. Village dummies are controlled.
* The significance level at 1%.
** The significance level at 5%.
*** The significance level at 10%.

Other independent variables that have statistically significant coefficients include the age and the gender of the interviewees, as well as the share of agricultural income in the interviewees' family income. Interviewees whose families are more dependent on agriculture for income are more likely to support the central policy of tenure security probably because this policy could provide better security and stronger incentives for them to make long term investment on agricultural land. For similar logic, men also tend to view the central policies as reasonable. In the countryside, men generally shoulder the responsibility of planning family production and can appreciate the stability embedded in the central policy. The impact of age is negative but statistically significant only in the first model. Older people may anticipate their death in the not-so-distant future and want to keep the status quo for their families. It is also possible that they do not have the necessary skills to work in cities therefore cherish their current land holding stronger than young people. The signs and level of statistical significance of the three questions are generally consistent with each other. Moreover, as discussed above, farmers' policy preferences were mostly shaped by their stakes in the policy and they preferred policies that could maximize the interest of their families.

An important issue in land reallocations is whether the land of migrated households should be reallocated to other households. In our survey, we asked one question that is related to this dimension as the following: How should land be handled if migrants from your village have settled in cities? The answer choices are: (a) the migrants should keep it if they want; (b) it should be returned but the migrants should be compensated; (c) it should be returned to the village. These are coded as −1, 0 and 1 as the dependent variable (*Migrantland)* and the same ordered logit regressions is run with the results reported in the last column of Table 7. The dynamics is quite different. Only education, agricultural dependence, gender, and income seem to affect farmers' attitude on this topic. More educated, male and agriculture-dependent farmers support the central policy of securing land tenure, but they also support taking migrants' land back. Clearly in their mind reallocating their existing land is different from reclaiming migrants' land, which does not necessarily involve redistributing their own land. This is a very important topic and more thorough research is needed to understand the dynamics. Many other factors may affect farmers' views and these variables need to be controlled through statistical regressions or careful case selection.

The empirical findings demonstrate the complicated and difficult trade-offs between efficiency and equity involved in China's agricultural land tenure security. On the one hand, farmers whose family experienced growth in population tended to support land reallocation. As discussed in the section "Agricultural land reallocation: the dilemma and policy choices", land reallocation may not only help to equalize land holdings across households, but also, under circumstances of imperfect labor market and land rental market, help to improve land use efficiency. On the other hand, land reallocation may also reduce dynamic land use efficiency by lowering incentives of long term investment on agricultural land. That is why interviewees whose families were more dependent on agriculture opposed land reallocation. This also partly accounts for the fact the older and the female interviewees tended to support tenure security policy since they were more likely to engage in agriculture though these two groups of farmers might also support the tenure security policies out of concern that their own land would be taken away in land reallocation due to family demographic changes. In Table 7, we also list McFadden's R2(Pseudo R2) and McKelvey&Zavoina's R2 to show fit-goodness of each specification.

Table 8
Public order incidents and petition related to land and land allocation, 2005–2008.

Province	Public order incidents related to land		Petitions related to land	
	All	In which over land allocation	All	In which over land allocation
Jiangsu	1	1	6	1
Sichuan	0	0	2	2
Shannxi	0	0	0	0
Jilin	3	2	4	4
Hebei	1	0	5	3
Fujian	1	0	1	0
Total	6	3	18	12

Source: Authors' survey in 2008.

Social conflicts from agricultural land (re)allocation

Because farmers have different views on agricultural land tenure, disputes on land distribution would inevitably emerge. According to the Chinese State Council (2007), one of the two most common and serious land disputes in China is the violation of land contracting rights and the other is illegal land takings by local governments in urban and industrial development. Our survey has also collected information about major public order incidents in these villages as well as the major causes.Table 8 lists the number of public order incidents and petitions related to rural land issues as a whole and that related to land allocation issues in the 119 villages between year 2005 and 2008. Here public order incidents are defined as various collective actions by villagers, including blocking public transportation, preventing the building of state or commercial projects, confronting police forces sent by local government agencies, and engaging in collective fights against other farmers in public. These incidents are usually used by some villagers as a tool to challenge local governments or other stakeholders who are willing to sacrifice farmers' livelihood in favor of their own economic or political interests. Petitions include all the actions taken by individual farmers or a group of farmers who bring their complaints to higher level governments for readdress.Table 8 shows that, among all six public order incidents in the six provinces in the past three years, three cases were directly related to land (re)allocation. For example, the Jiangsu case occurred in a village of Danyang County, where 20 farmers in the village believed that land allocation was unfair. They went to the village leader to request a fair land reallocation. In the two public order incidents related to land allocation in Jilin, the village cadres leased out village's circulating land (usually reserved to accommodate demographic changes in villages to people from outside) to plant trees for commercial gains. Sixty farmers in this village went out collectively to stop planting trees. Both cases led to direct clashes between villagers and village cadres.

Table 8 also shows 18 petitions in the 118 villages between 2005 and 2008, among which 12 were directly related to land (re)allocation. The Jiangsu case was in Sheyang County where farmers complained over land reallocation. In 2005, 20 farmers brought this case to the township government and the country government. In the two petitions in Sichuan, there were 15 and 6 farmers respectively appealed to the upper level governments in 2005 and 2007 to complain unfair land (re)allocation. The four petition cases in Jilin happened either because farmers were unhappy with the land allocation or because village cadres allocated the village's circulating land to their relatives so that other farmers had no access to the public resources. In one case of Jilin, a farmer who was deprived of land went to all levels of governments including the central government until he finally got the land back. In the three petition cases occurred in Hebei, two were related to farmers' complaints

against frequent land reallocation. And the other happened because two farmers who had leased the village circulating land prior to an administrative allocation were unhappy with the arrangement after the land reallocation.

Social conflicts over land allocation became an increasingly serious issue in the late 2008 and the early 2009. As a result of the world financial crisis, many migrants lost their jobs in cities, particularly those in export sectors, and had to go back to their birthplaces. Based on a survey covering 165 villages across 15 major migrant-sending provinces, a recent report by the Rural Center for Agricultural Research showed that by middle January 2009, 15.3% of the rural migrants returned to their villages due to unemployment. Among all the rural migrant workers in cities, 8.3% had no agricultural land at all either because they gave up their land in the late 1990s or the early 2000s when farming was not a profitable business at that time, or because they already leased their land to other farmers, or because they were not allocated any land in the first place due to the central policy of tenure security. Considering the fact that China has about 130 million rural migrants, this implies that there are up to 10 million migrant workers in China who had no agricultural land at all. Indeed, the RCRE report showed that 55 out of the 165 villages had 246 disputes over agricultural land allocation in 2008. 20 out of the 55 villages had 45 disputes over agricultural land allocation due to returned migrants, a 125% increase compared to the incidents of such disputes in 2008 (Caijing, 2009). This surge, however, may be temporary. As the Chinese economy recovered quickly in the second half of 2009, many migrants returned to cities, relieving the pressure in the rural areas (China Daily, 2009). But, without fundamental changes in the institutional rules governing farmland and migration, the tension over land allocation will remain high in the villages.

To sum it up, though the intention of the central tenure security policy is good, it is inevitably a controversial policy in implementation. Under any circumstance, farmers will be largely divided with respect to administrative land reallocation. Any policy will have their supporters and opponents in villages since rural families have different interests depending on their family circumstances. This dilemma is unlikely to disappear in the future. A significant number of farmers have conflicting positions with regard to land reallocation. Therefore, either complying with the central tenure security policy or failing to do so can easily result in social conflicts between farmers and village cadres and between farmers themselves.

Conclusion

Based on a large rural survey in 2008, this paper finds that the frequencies of agricultural land reallocation have indeed decreased in Chinese villages since the promulgation of the central farmland policy in 1998. Despite the central call for tenure security, a significant number of villages still continued agricultural land reallocation, either in full scale or partial scale. We also discover that over 60% of farmers are not supportive of the central government's farmland tenure policy. Farmers are largely divided because there are significant differences with regard to population change and the degree of dependence on agricultural production. Reallocating land by administrative approach may help to realize equity across rural families, but it may also dampen the incentive for long term agricultural investment. Whatever the final policy will be, social conflicts could easily arise both among farmers themselves and between farmers and local cadres. Therefore, there is indeed a major dilemma in China's agricultural land tenure policy.

Deininger and Jin (2009) argue that the emerging land rental markets have partly solved the problem. Through market transactions, farmland has been transferred to more productive households. Since these farmers are more dependent on agriculture and less well-off than families that are involved in businesses and industries, these transactions can increase equity in a village. While this is clearly an improvement over the pure administrative reallocation regime, we propose a complementary solution that emphasizes Hukou reform for migrants in the urban areas. Under this reform, city governments would grant urban Hukou status to migrants so that the latter can have full access to all social welfares associated with Hukou, such as public assistance, public housing, schools, and health care. By accepting this, migrants must return their farmland in their home villages to the collective. Essentially, migrants are swapping their rural land for urban welfares.

This reform can complement the land rental market in two ways. First. As Jin and Deininger acknowledge, high transaction costs may prevent land rental markets from realizing their full potential. Uncertainties as a result of the Hukou system are a major source of high transaction costs. Many migrants have moved to cities to work and raise their families. But there is very little chance that they can obtain urban Hukous, especially in Beijing, Shanghai, and Guangzhou. Anticipating an uncertain future, migrants cannot afford making long-term plans. They may stay out of the land rental market altogether and keep their land untended. Or they may lease land on an ad hoc basis or lease it to relatives only. None of these is conducive to improving agricultural productivity. Therefore, lifting Hukou restriction can broaden migrating families' time horizon and facilitate the healthy development of land rental markets. Second, land rental markets encourage division of labor so families that are good at farming can cultivate more land while others engage in manufacturing and service in cities. This does enhance equity but farming families have to pay for the land use rights. Our proposal can further promote equity by making urban Hukous conditional. Migrants should release their farmland if they choose urban Hukous. For some farmers, this may be a preferable option. As a result, the released land can be allocated to farming households free of charge.

To some extent, the central government has made attempts in this direction. In recent years, the Chinese leaders have called for development of small- and medium-scale cities and reform Hukou in these cities. If these urban areas can absorb large number of migrants, more land could be allocated to farming households. This should improve both efficiency and equity. This approach, however, has its own limits. The reality is that small and medium scale cities cannot provide sufficient job opportunities. Most migrants have flocked to big cities, such as Beijing, Shanghai, Shenzhen, where good jobs are plenty and salaries are higher. Moreover, as a result of gradual reforms in the past years, Hukou is no longer restrictive in most small cities. Therefore, it is not clear how much untapped potential can be released. Reforming Hukou in big cities is admittedly difficult but it also offers a bigger promise to tackle the dilemma in the countryside.

Acknowledgments

The authors gratefully acknowledge the China National Science Foundation (project 70633002, 71073138), China Social Science Foundation (08-ZD025), the Fundamental Research Funds for the Central Universities and the Research Funds of Renmin University of China, as well as the Vassar College for support of related fieldwork. All faults are solely ours.

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