Village Political Economy, Land Tenure Insecurity and the Rural to Urban Migration Decision: Evidence from China*

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Abstract

This paper investigates the impact of land tenure insecurity on farmers' labor migration decisions in rural China. To identify the effect of land tenure insecurity, the paper exploits the timing of exogenously scheduled elections and heterogeneity across villages in the size of the largest patrilineal clan. The paper finds that in response to a higher probability of village-wide land reallocation, farmers reduce their probability of migrating by 4.3%, which accounts for 28% of the annual migration rate during this period. This finding attests to the importance of secure property rights in facilitating labor market integration and urbanization.

JEL Codes: O12, O15, J61, Q15, R23

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1 Introduction

Students of economic development have long recognized that an economy-wide structural shift from employment in agriculture to non-agricultural activities is a prominent feature of the longer-term development process.[1] At the level of the household, or family, the shift of labor from agriculture to industry and commensurate movement out of rural areas often proceeds incrementally, with individual family members migrating to urban or manufacturing areas while leaving other household members behind. An important aspect of this gradual process is that family members in rural and urban areas remain linked, and this arrangement often benefits the household in numerous ways.[2] The decision to migrate, however, is shaped by the institutional arrangements, both locally and in migrant destinations, that affect the benefits of migration and employment off-farm. If poor institutions lead to failures of land, labor or credit markets, they may raise or lower the expected benefits to individuals and households from moving out of agriculture. If presence in the village and active work on land limit the likelihood that a household will face loss of land in a reallocation, then heterogeneity in use of administrative land reallocation across rural China may have contributed to differences in migration patterns and shaped the processes of China's urbanization and structural change.

In this paper, we examine how land tenure insecurity in China influenced the decision of rural residents to participate in migrant labor markets over a period from 1995 to 2003. Identifying the effect of tenure insecurity on migration or labor allocation decisions is not straightforward: loss of land may simply reflect earlier choices of the household to move out of farming and to allocate labor to non-agricultural pursuits. Outcomes of village reallocation processes reflect unobserved bargaining between

[1]The movement of labor from concentration in rural agricultural pursuits to urban-based industry figures prominently in many of the classic works in development economics (e.g., Kuznets, 1955; Lewis, 1954 and 1958; Ranis and Fei, 1961).

[2]Transfers from migrants may be an important source of investment funds if local credit markets do not function well (Woodruff and Zenteno, 2007), or alternatively, migrants may provide insurance for households which remain behind (Giles, 2006; Rosenzweig and Stark, 1989).

village leaders and farmers, and prior research has found that reallocations substitute, albeit imperfectly, for a market (e.g., Benjamin and Brandt, 2002) in which households more productive in agriculture receive more land. Thus, both observed and unobserved characteristics of individuals and households that are associated with loss of land may simply reflect shifting of household preferences and abilities to engage in non-agricultural activities.[3] In this paper, we develop an identification strategy exploiting the exogenous timing of village elections and allow for heterogeneity across villages in political competition, which we model as a function of the share of village residents in the largest patrilineal clan at the outset of the panel survey.

Considering both the scale and rapid increase in rural-to-urban migration in China over this period, it may at first seem counterintuitive to spend much time dwelling on barriers to migration. Residents of rural China, however, faced important institutional barriers to geographic mobility throughout the reform period, and rising rural-urban income gaps offer prima facie evidence that migration flows have not proceeded rapidly enough to offset differences in productivity growth between rural and urban areas of the country (Park, 2008). Moreover, upon examination of micro data from rural China, it becomes apparent that there is tremendous heterogeneity across villages in levels of out-migration over the reform period, and that this period was also characterized by sharp increases in inequality within rural areas as well (Benjamin et al, 2005; Ravallion and Chen, 2007). Considerable effort has gone into studying the consequences of the household registration system (or *Hukou* system), ranging from rural-urban inequality (Liu, 2005) to under-sized cities with unexploited economies of scale (Au and

[3]The following papers have each examined the role of land tenure insecurity on migration, but with identification strategies that lack credibility: Lohmar (2000) examines correlations and does not have an identification strategy; Giles (2000) exploits characteristics of the extended family available to keep a migrant's land productive and reduce expropriation risk, but these characteristics may be correlated with credit constraints that also affect migration decisions; de la Rupelle et al (2009) uses share of contract land held by a household as a proxy for risk, but this share reflects a household decision to acquire contract land and will be associated with household preferences for agricultural work; Deininger et al (2011) uses prior household reallocation experience as a proxy for risk, which, given household demographic rules in place for land allocation, will be correlated with prior changes in household size and thus associated with current availability of potential migrants in the household.

Henderson, 2006). At the same time, there is a relative paucity of work describing how variation across rural China may influence migration decision, with likely implications for differences in incomes and consumption across villages.

An abundance of theoretical research suggests that insecure property rights may have important impacts on productivity, factor allocation and economic development in China as they have elsewhere in the developed and developing world.[4] While the specific mechanisms through which property rights affect economic activity are context specific and depend on the existence of complementary institutions or endowments (Besley and Ghatak, 2009a; Katz and Owen, 2009), there are at least four mechanisms through which clear and secure property rights improve efficiencies in resource allocation and productivity (e.g., Besley and Ghatak, 2009b). First, by limiting expropriation, secure property rights may enhance investment incentives and increase output of productive assets. Second, well-defined rights reduce the cost of protecting property. Third, improvement in the protection of property rights facilitates market transactions that allow for welfare-improving gains from trade, and fourth, by allowing assets to be collateralized, secure property rights enable credit transactions.

An increasing body of empirical research based on micro-data from different countries has tested these theoretical predictions, with primary focus on the impact of rights on investments or agricultural production. Evidence from the literature is mixed, though several studies find support for the proposition that secure land rights are investment enhancing and may affect cultivation techniques adopted.[5] Other studies, however, cast doubt on the existence of a systematic influence of land tenure

[4]Feder and Feeny (1991) and North (1990), for example, emphasize the importance of secure property rights in supporting economic development. Further, Acemoglu et al (2001 suggest that variations in protection of property rights across countries led to significant differences in subsequent economic performance.

[5]Land tenure security in Ghana is associated with more tree plantings and higher probability of investment (Besley, 1995), longer duration of land fallowing and higher subsequent agricultural production (Goldstein and Udry, 2008), and higher probability of planting of tree crops and with protection of individualistic land use rights (Bandiera, 2007). Higher risk of expropriation is associated with significant reduction in application of organic fertilizer (Jacoby,

security on investment, and emphasize that informal rights may provide stable entitlements (Brasselle, Gaspart and Platteau, 2002).

More recent empirical microeconomic research has found a role for secure property rights in labor market outcomes, off-farm activities and migration. Do and Iyer (2008) find that a land titling program in Vietnam led to increases in the proportion of cultivated land devoted to perennial crops and facilitated shifting of land to non-farm activities. In urban Peru, Field (2007) finds that providing titles to urban residents leads to increases in labor supply of adults, as well as increasing investment in housing (Field, 2005).[6] Micro evidence from other work suggests correlations between land tenure security and employment, including employment as migrants. Valsecchi (2010) finds that access to a formal land title increases Mexican emigration to the US, and de Brauw and Mueller (2009) show a correlation between the right to transfer land and internal migration in Ethiopia.

Over the period under study, there was considerable variation in *de facto* land tenure security across China's villages. Under China's constitution, rural land is the property of administrative villages, or collectives, but exclusive use rights are contracted out to individual households. As in many developing countries, laws that offer formal protection of individualistic land use rights in China are not supported by functioning enforcement mechanisms (e.g, Benjamin and Brandt, 2002; Brandt et al, 2004; Dieninger and Jin, 2009; Jacoby et al, 2002).

In this paper, Section 2 first models the variation in tenure security associated with the exogenously determined timing of village elections, and how this varies with heterogeneity across villages in the share of village households bellowing to the largest patrilineal clan. We then show conditions under

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Li and Rozelle, 2002) in China, and inhibited shifts into coffee production in Columbia (Sanchez, Lopez-Uribe and Fazio, 2010).

[6]The effects of titling on residential investment are consistent with those from a "natural experiment" analysis of the allocation of property rights in Argentina (Galiana and Schargrodsky, 2005).

which the prospect of a significant land reallocation within the village influences the decision of a household to allocate labor across farming and employment in an urban wage sector. Section 3 lays out the empirical strategy of the paper and our identification assumptions. Results are presented in Section 4 and conclusions are presented in Section 5.

2.0 A Model

Our theoretical framework highlights the village leader's decision to reallocate land and the household's reaction, in advance, to potential future land reallocations. When the village leader makes a decision about reallocation, he (or she) recognizes that the reallocation may affect the outcome of a subsequent village election. Next, the forward-looking household incorporates the risk of a potential future land reallocation when making a decision on allocation of labor between farming and an urban wage sector.

2.1 The Land Reallocation Decision of the Village Leader

A village head seeks to maximize the expected gain from a land reallocation, and will only work to implement a reallocation if the benefits of doing so exceed the costs. This decision is complicated by the fact that the head is not always certain of subsequent election outcomes, which may be influenced by the decision to reallocate land, or possibly, the failure to reallocate.

Assume the leader maximizes utility over two periods. In the first period he (or she) decides whether to reallocate land or not; a village election, exogenously scheduled, occurs in period two and the incumbent leader runs for reelection.[7] Land reallocations may be held for a variety of reasons. Village leaders may reallocate land in order to promote villagers' equitable access to land, to improve labor-land matching in the absence of a functioning rental market, or to seek private gains via extracting

[7] There is no term limit for village heads, so we assume incumbent leader automatically runs for reelection. Changing this assumption would not affect the essential implications of the model.

rents in the reallocation process (Brandt, Rozelle, and Turner, 2004).[8] Thus, each land reallocation will not only benefit the village as a whole but also benefit the head personally; both of which are taken into account by the head. While the benefits for the village are achieved either through equity or efficiency gains, the leader's personal payoff may be in the form of monetary or in-kind bribes, or political gains reflected in increased support for the leader in the subsequent elections. The cost of land reallocation has two components: a management cost (associated with organizing meetings, solving disputes and implementing the reallocation); and a "political cost". The latter refers to a decrease in the support for the leader due to the loss of land for some residents, or distaste for a leader suspected of taking side-payments in return for favorable consideration in the land reallocation process. Along with the costs and benefits, uncertainty plays a pivotal role in the leader's decision. Even in the absence of a land reallocation, the leader faces uncertainty over election results. Land reallocation adds another dimension to this uncertainty as not all villagers are equally affected in any reallocation and the net impact on a future election is undetermined *ex ante*.

Assume that the village head's value function at time one is $V_1(\pi^v, \theta, f^v)$ where $\pi^v = 1$ if the head calls for a land reallocation and $\pi^v = 0$ otherwise; θ denotes village characteristics unobservable to researchers; and f^v is the share of households from the village in the largest patrilineal clan.[9] The utility at the second period depends on whether the leader is reelected or not. Let $U_2(1)$ denote the utility at time two if the head is reelected and $U_2(0)$ if not reelected. Assume that the head has a probability of p^* being reelected if he doesn't call for a reallocation; and with a probability of $(1 - p^*)$ of losing the election. With no land reallocation ($\pi^v = 0$), the value function of the first period takes the following form:

[8]Beyond a demographic rule, other empirical evidence for the equity hypothesis is scant, but both the efficiency and the rent seeking arguments are supported by Brandt, et al (2004).

[9]The share of households in the largest patrilineal clan is a proxy for the political competition and transparency of the political process within the village. In Section 3 below, we provide additional descriptive evidence on the suitability of this proxy.

$$V_1(0,\theta,f^v) = \beta p^* U_2(1) + \beta(1-p^*)U_2(0) \tag{1}$$

where β is the time discount factor. If the village head decides to reallocate land ($\pi^v = 1$), the value function will reflect both the benefits and costs of reallocation. Let $B^v(\theta, f^v)$ denote the benefits of the reallocation to the village as a whole, $\bar{M}$ be the head's personal gain, and $\bar{C}$ the management cost of reallocation. With reallocation, the head's reelection probability also becomes a function of the reallocation or in a "reduced form" a function of village characteristics, and specified as $p(\theta, f^v)$. In this case the value function takes the following form:

$$V_1(1,\theta,f^v) = B^v(\theta,f^v) + \bar{M} - \bar{C} + \beta p(\theta,f^v)U_2(1) + \beta[1-p(\theta,f^v)]U_2(0) \tag{2}$$

It follows that the difference in the above two value functions is:

$$\Delta V = B^v(\theta,f^v) + \bar{M} - \bar{C} + \beta\{[p(\theta,f^v) - p^*]U_2(1) + [p^* - p(\theta,f^v)]U_2(0)\} \tag{3}$$

The village head only calls for a land reallocation if $\Delta V_1 > 0$. Further, as we will show shortly, there are more active land rental markets in villages where a higher share of households are from the same patrilineal clan, and thus, the use of administrative mechanisms to reallocate land is not as important. This has two implications for our model. First the benefits to the village of reallocation decrease with the share of households in the largest lineage clan: $\frac{\partial B^v(\theta,f^v)}{\partial f^v} < 0$. Second, the net political gain for the head from reallocation is smaller in more homogenous villages, that is $\frac{\partial p(\theta,f^v)}{\partial f^v} < 0$. Thus, the decision of the village head over whether or not to hold a reallocation before an election depends crucially on the extent to which a significant share of the village is from the same patrilineal clan. To evaluate the heterogeneity across villages in the land reallocation decisions of village heads, we examine the derivative of (3) with respect to the share of village in the largest patrilineal clan:

$$\frac{\partial \Delta V_1}{\partial f^v} = \frac{\partial B^v(\theta,f^v)}{\partial f^v} + \beta\frac{\partial p(\theta,f^v)}{\partial f^v}[U_2(1) - U_2(0)] \tag{4}$$

Assuming that the village head prefers to be reelected ($U_2(1) > U_2(0)$), it follows that $\frac{\partial \Delta V_1}{\partial f^v} < 0$, or that the heads of the villages with more households in the largest family lineage clan are less likely to call for a land reallocation right before an election. The land reallocation decision can thus be considered as a function of, among other things, the share of the village in the largest patrilineal clan and the exogenously imposed election timing (E), which can be expressed in a general form as

$$\pi^v = G(\theta, f^v, E) \tag{5}$$

2.2 The Household Labor Allocation Decision

Assume that a representative household, initially endowed with land L_1 and total labor T , lives for two periods. In the first period, the household allocates labor between the urban labor market and farming. In the second period, household members work on the family farm (and any temporary migrants are assumed to have returned home, or "retired" from migrant wage employment). Migrant labor time is denoted by *m,* with $0 \leq m \leq 1$; and thus available labor time devoted to local farming is $(1-m)T$. Let w be the prevailing wage rate in the urban labor market, so that household income from migrant labor can be written as wmL_1. Farming follows a well behaved production function and the total agricultural output in period one can be written as: $Q_1 = f(L_1, (1-m)T)$, where the partial derivatives with respect to land and labor have the standard features $f_1 > 0$; $f_2 > 0$; $f_{11} < 0$; $f_{22} < 0$; and $f_{12} > 0$.

The household's initial land endowment is subject to reallocation by the village head. The outcome of the reallocation decision, however, is not known until the second period, which introduces uncertainty into the household labor allocation decision in the first period, which will be based on, among other things, perceived ability to influence land tenure security. Let $\widehat{\pi^v}$ denote the perceived

probability that the village will have a significant land reallocation in period two; and s is the perceived share of land that would be negatively affected if the reallocation happens. Significant village land reallocation is determined by the village head according to the model previous discussed; and it is independent of individual household's labor allocation ($\frac{\partial \widehat{\pi^v}}{\partial m} = 0$). We assume that the perceived share of land that is negatively affected in a reallocation (s) is positively related to the labor devoted to the urban sector at the first period ($\frac{\partial s}{\partial mT} > 0$). We also assume that the share is related to household's technology parameter, θ, which captures dimensions of agricultural productivity that are observable to the village head but not to the econometrician. As the village head cares about efficiency and may be less likely to take land from farmers with high agricultural productivity, we assume $\frac{\partial s}{\partial \delta} < 0$. In the second period, the farmer expects to have $L_2 = [1 - \widehat{\pi^v} s(mT, \theta)]L_1$ units of land, with agricultural output $Q_2 = f(L_2,\ T)$.

Normalizing the price of agricultural produce to 1, as the household maximizes utility by choosing the optimal share of labor time in migration, m, during the first period:

$$V(U) = \max_m \{f(L_1, (1-m)T) + wmT + \beta f(\left[1 - \widehat{\pi^v} s(mT, \theta)\right]L_1, T)\} \tag{6}$$

It follows that the first order condition for an interior solution is:

$$w = f_2 + \beta f_1 \widehat{\pi^v} s_1 L_1 \tag{7}$$

This equation dictates that the optimal share of labor allocated to the urban sector is such that the discounted value of marginal product of labor on the farm over the two periods is equal to the forgone wage rate in the urban sector.

To assess how changes in the probability of village land reallocation influence the household's migration decision, we use the implicit function theorem to derive the following relationship from equation (2):

$$\frac{dm}{d\widehat{\pi^v}} = \frac{\beta s_1 L_1 (f_{11}\widehat{\pi^v} s L_1 - f_1)}{T[\beta f_1 \pi^v s_{11} L_1 - \beta f_{11}(\widehat{\pi^v} s_1)^2 L_1 - f_{22}]} \tag{8}$$

If the marginal cost of migration (in terms of the share of land negatively affected by land reallocation) increases with migration, or $s_{11} > 0$, then $\frac{dm}{d\widehat{\pi^v}} < 0$, that is, the share of labor allocated to the urban sector decreases when the perceived probability of significant labor reallocation in the village is higher. If the cost of migration is decreasing, or $s_{11} < 0$, then the sign of $\frac{dm}{d\widehat{\pi^v}}$ is undetermined.

This model implies that the impact of land reallocation on individual household labor allocation decisions is an empirical question. To identify this impact in the empirical analysis, we utilize information embedded in equation (5), and develop a strategy exploiting heterogeneity in share of village in the largest lineage group (f^v) and interactions with the timing of village elections (E).

3.0 Empirical Strategy

3.1 Specification and Identification

One prediction of the model is that, conditional on individual heterogeneity, an increase in the probability of land reallocation in the village should decrease an individual's propensity to work as a migrant. The model thus suggests estimating an equation for migration of individual i in village j at time t denoted by M_{ijt}, which is a function of land tenure insecurity measured by the likelihood of significant land reallocation at time *t+1* in the village R_{jt+1}, characteristics of the individual (X_{ijt}), his/her household (H_{ijt}) and village (V_{jt}), province-specific year effects $D_{p\times t}$, individual fixed effects v_{ij} and village fixed effects e_j. To allow village fixed effects to have an impact on migration growth over time, we interact e_j with a time trend *T*. With the idiosyncratic error term denoted as ε_{ijt}, the estimation equation can be written as:

$$M_{ijt} = \alpha_0 + \alpha_1 R_{jt+1} + \boldsymbol{X'}_{ijt}\alpha_2 + \boldsymbol{H''}_{ijt}\alpha_3 + \boldsymbol{V'}_{jt}\alpha_4 + D_{p\times t} + v_{ij} + e_j T + \varepsilon_{ijt} \quad (9)$$

Controlling for heterogeneity across individuals is likely to be important in satisfactorily explaining their migration behavior. To this end the rich information in the RCRE household and village panel data from 1995 to 2003 together with the supplementary survey data collected in 2004 is potentially very useful, and it allows us to include a large set of control variables in the regression analysis. More specifically, we include in $\boldsymbol{X}_{ijt}$ variables of individual gender, age, years of schooling. Since previous analysis shows that parent health status affects an adult child's migration decision and that this effect varies with the number of siblings (Giles and Mu, 2007), $\boldsymbol{X}_{ijt}$ also includes controls for whether a father or mother is still alive and number of siblings, regardless of their current residence in the household. Household characteristics such as land holding per capita, consumption per capita, working age (16-60) men and women (excluding individual *i*) as share of total household members are included in $\boldsymbol{H}_{ijt}$. In addition, we control for the number of young women (age 19-24) and the number of young men (age 21-26) in the family, which proxy for potential household demographic changes caused by marrying-out or marrying-in, and which may be correlated with both land reallocation risk and household member's migration decision. Among village characteristics, $\boldsymbol{V}_{jt}$, are village population size, income per capita, land per capita, the number of village cadres, share of village cadres with high school education or above, a village land gini index, and three variables capturing village election timing: indicators equal to one if election regularly scheduled election takes place in the current year or one or two years earlier.

Even with this large set of control variables, we cannot rule out the possibility that individual unobservable traits, such as agricultural productivity or risk aversion, may affect both migration decisions and exposure to land reallocation risk. One sensible way of controlling for individual fixed effects is to first-difference (9) and then write the model as:

$$\Delta M_{ijt} = \beta_1 \Delta R_{jt+1} + \Delta\boldsymbol{X'}_{ijt}\beta_2 + \Delta\boldsymbol{H'}_{ijt}\beta_3 + \Delta\boldsymbol{V'}_{jt}\beta_4 + \Delta D_{p\times t} + e_j + \Delta\varepsilon_{ijt} \quad (10)$$

Any effect of land tenure insecurity is now identified from variation in individual migration decisions over time. Note that after differencing the village-specific trend, village fixed effects e_j, including unobserved dimensions of the migration network, village geographic location and past migration regulations, will now explicitly affect *changes* in migration over time. Moreover, we incorporate variables on individual gender and age in (10) as they likely affect changes in individual's migration decision even though these variables are time invariant.[10]

$$\Delta M_{ijt} = \beta_1 \Delta R_{jt+1} + \Delta \boldsymbol{X}'_{ijt}\beta_2 + \Delta \boldsymbol{H}'_{ijt}\beta_3 + \Delta \boldsymbol{V}'_{jt}\beta_4 + \beta_5 Gender_{ijt} + \tag{11}$$

$$\beta_6 Age_{ijt} + \beta_7 Age^2_{ijt} + \Delta D_{p\times t} + e_j + \Delta\varepsilon_{ijt}$$

The identification in equation (11) rests on elimination of unobserved fixed determinants of migration. However, one must still be concerned that there may be unobserved time-varying determinants of migration that are also correlated with changes in land tenure security. For example, local economic shocks may change individual migration decisions, as may demographic changes in the village. Both of these time varying factors would plausibly affect both the occurrence and scope of land reallocation in the village, thus biasing the estimate of β_1.

To obtain consistent estimates of the effect of land tenure security in equation (11), we consequently construct instruments for the change in village land reallocation that are unlikely to be direct determinants of changes in individual's migration. For this purpose, we exploit the interaction of two sources of variation at the village level to identify the impacts of significant land reallocation. The first variation is in the timing of the village election (E_{jt}), and the second are the differences across villages in the share of village households in the main patrilineal clan in the first period of the panel (F_{j0}).

[10]One interpretation of these variables in levels is that gender and individual schooling affected the trend in individual migration decisions in (9) and levels remain in (10) after first-differencing. Identification of (11) requires that the most important sources of unobserved heterogeneity are those that may be correlated with both risk of facing a reallocation and the migration decision.

Using these two components and their interactions, the occurrence of land reallocation at time *t* can be characterized by the following expression:

$$R_{jt+1} = G(E_{jt}) + \gamma F_{j0} + F_{j0} \times G(E_{jt}) \tag{12}$$

The rationale for using information on election timing, E_{jt}, to identify the risk of land reallocation is based on the fact that village committees, the primary self-governance organization in rural villages, have legal authority over reallocation of land in the village.[11] The selection procedure for the chair of villager committees, also known as the village head, has undergone multiple reforms since the early 1980s, but by 1998, ten years after the enactment of a provisional law on the election of village committees, the majority of villages across China were electing their village head through popular vote.[12] Previous studies have shown that village elections seem to affect both the frequency and the scale of land reallocations.[13] Our data point to a clear correlation between the timing of village elections and the timing of significant land reallocations in the village. As shown in Figure 2, land reallocations most likely to occur around years of village election. In particular, most of reallocations happen in one year before an election, one year after an election or in the election year.

One important feature of the timing of village elections is that they are largely exogenously determined at the county level, or occasionally at the township level, by the "leading group for village

[11] Article 5 of the the Organic Law of Villagers' Committees enacted in 1998 stipulates, "The villagers committee shall, in accordance with the provisions of laws, administer the affairs concerning the land and other property owned collectively by the peasants of the village."

[12] The 1987 provisional Organic Law of Villagers' Committee mandated that all villages conduct elections to select village committee members. The provisional law took effect in 1988 and was implemented in a decentralized and experimental manner. By 1993, 22 provinces had formulated procedures of implementing the provisional Organic Law in village elections (CRLSRT, 2000). In 1998 the Organic Law was further amended and formally took effect. Based on the revised Organic Law, provinces updated their procedures of implementations of the law.

[13] For example, Brandt, Rozelle and Turner (2004) find that a contested election in the year of land reallocation or the year prior to the land reallocation shortened the duration between two land reallocations, and also reduces the size of the reallocation. Deininger and Jin (2009) show that after the passing of Rural Land Contracting Law in 2003, illegal land reallocation (land reallocation without ratification from villagers' assembly and permission from township and county government) became much less frequent in villages where both the village head and communist party secretary are elected.

elections."[14] The leading group at the county level is the most important agent in planning, organizing and supervising elections in the villages under its administration, and in some provinces the leading group at the township level is charged with the same responsibility (CRLSRT 2000).[15] One major responsibility of the leading groups is to educate villagers about the protocols of elections and to encourage voter turnout. For this purpose, they often launch a county wide (or township wide) information campaign before each election. Consequently, the timing of village elections, in terms of election year, is fairly uniform within one county (Zhang et al. 2004), although the timing of election varies within a province (Table 3) and even more so across regions (O'Brien and Li, 2000).[16]

Even though election years, specified by county or township leading groups, are generally exogenous to the characteristics of each village, we can't rule out the possibility that some village elections may reflect "endogenous leadership turnover." These occurrences arise when a conflict between village residents and village leaders becomes serious enough that township or county authorities intervene to schedule a new election. The supplemental village survey used for our analysis helpfully allows us to exclude elections that occurred right after a resignation or dismissal of a village head. The timing of the resulting "regularly scheduled elections" reflects only the stipulation of the county or township election leading groups, but with potential measurement error.

Measurement error in election year timing is inevitable for two reasons. First, election information is collected retrospectively, and thus prone to recall error. Second, in many counties elections are scheduled around the Chinese New Year in order to encourage turnout of migrants who return to home villages to visit families during this time (Tang, 2004). Because some survey respondents use the lunar

[14] See the appendix table on related regulations of the four provinces (Anhui, Henan, Jiangsu and Shanxi) on the organizational structure and the timing of village elections.

[15] The leading group at the county or township level is composed of multiple county or township officials, often from different agencies such as the bureau of civil affairs, the department of public relations, and the bureau of public security.

[16] The exact date of election can vary across villages within a county because an election committee at the village level has the right to decide on the voting date and location (see the related documents in the appendix table).

calendar while others use the western calendar when reporting retrospective information, errors in precise measurement of election year arise and generate seemingly within-county variations in the timing of elections (Mu and Zhang, 2010).[17] Measurement error in election timing implies a need for flexibility in specifying how the timing of an election is related to the timing of significant land reallocation. We therefore use three indicator variables-- for whether the observation year is the year of a regularly scheduled election, or one or two years before– to predict the timing of a land reallocation:

$$G(E_{jt}) = G(v_1 ElectionYear_{jt} + v_2 OneYearBefore_{jt} + v_3 TwoYearsBefore_{jt}) \quad (13)$$

The composition of family lineage clans within villages has long been regarded as an important determinant of the informal institutions in rural China. The share of village households in the major patrilineal clan is a convenient proxy for homogeneity of family lineage, and we use this value in the initial period of the panel (F_{j0}) as the second component of (12). Residents belonging to the same lineage have shared patrilineal descent and maintain close social ties, and therefore family lineage may substitute for formal institutions in solving information and enforcement problems, help to mitigate social conflicts and to improve local governance (Xu and Yao, 2009). Moreover, Tsai (2007) finds that villages with more homogenous family lineage generally enjoy better provision of public goods. In the RCRE data used in this paper, the relationship between homogeneity of family lineage and incidence of village land reallocation is clearly negative – the larger the share of households in the same patrilineal clan in 1995, the less likely it was to experience a significant land reallocation during the 1995-2003 period under study (Figure 3).

This negative correlation can possibly be explained by two distinct features from which more homogenous villages differ from less homogenous ones. First, mutual trust between villagers built

[17]The Chinese New Year (or Spring Festival) is based on the lunar calendar, and it typically follows the western New Year by as much as two months.

through common family lineage may facilitate land rental transactions and ease the need for land reallocation. To provide evidence for this, albeit indirect, we turn to data on measures of conflicts within villages as well as land rental activities. Figure 4 shows that both the numbers of civil disputes and reported criminal acts decrease with the share of households in the largest patrilineal clan.[18] Moreover, disputes over land are far less likely to be the major cause of conflicts among villagers in villages with large family lineage clans, but they are often the most important source of conflict in villages that lack them (Figure 5). The data on the share of households engaged in rental activities confirms that land rental activities are much less frequent in villages without major family lineage clans (Figure 5). With a relatively active land market, villages with large family lineage clans may rely less on reallocation to improve the match between labor and land, and therefore land reallocation is less frequent in such villages. Second, if village leaders use land reallocation as a rent-seeking tool, then villages with a large family lineage clan may have less reallocation because leaders are better monitored in such villages (Xu and Yao, 2009; Tsai 2007). Consistent with the monitoring argument, we find that the village representative assembly tends to play a much more important role in the decision-making of villages with large family clans than in those without.[19] In particular as shown in Figure 6, with more households in the largest family lineage clan, the village representative assembly is more likely to be authorized to examine village financial records and also more likely to report instances in which it changed decisions of the party committee or the village committee. Information from village elections also suggests other dimensions in which villages with large lineage clans may be more democratic,

[18] Xu and Yao (2009) report that there are fewer civil disputes and crimes in those villages where a head is elected from the largest family lineage clan.

[19] By law, the village assembly supervises the work of the village committee (see article 18 of the 1998 Organic Law of the Villagers Committees) and can be convened with a simple majority participation of the villagers at or above the age of 18 or with the participation of the representatives from at least two-thirds of the households in the village. As a form of direct democracy, the village assembly is an unwieldy governing institution, especially in villages with a large population. In practice, the majority of villages (93% in our sample) adopt a more manageable representative system and use a village representative assembly instead. The real power of village (representative) assembly is questionable, however, given its infrequent meetings and its tendency to be controlled by village cadres (Oi and Rozelle, 2000).

specifically, as shown in Figure 7, these villages tend to have more candidates and candidates are more likely to make public speeches during their election campaigns.

Although we have shown that both the timing of election and the composition of family lineage are be correlated with incidence of village reallocation of land, we can't rule out that they may also affect migration decisions. For example, there might be less out migration in the election year or the year before if villagers want to be present for an election campaign and voting.[20] Family lineage may also affect migration, through social network effects, for example, or through improved access to informal credit. To account for these concerns, the election timing dummies $G(E_{jt})$ are included in the main regression, and we control for F_{j0} through the village fixed effets.

The effect of uncertainty over land reallocation is identified off the interaction of election timing dummy variables $G(E_{jt})$ and the initial year share of village households in the main patrilineal clan, F_{j0}. Thus, we exploit heterogeneity in the timing of land reallocation, relative to election timing (Figure 8), to identify the impact of the risk of facing a reallocation on migration. Given the specification of election timing as in equation (13), the instrumental variables take the form of three interaction terms: share of village households in the main patrilineal clan interacted with three variables denoting election timing in equation (13). We expect that around election time, villages with fewer households in the main patrilineal clan are less likely to have significant land reallocation than those with more. This approach essentially exploits an institutional complementarity between election and lineage composition in the timing of land reallocation and it assumes that their joint effect is independent of $\Delta\varepsilon_{ijt}$ in equation (10). We will test this assumption by checking the robustness of the estimations to the inclusion of various sets of variables.

[20]There is also heterogeneity across villages in whether an absent village resident may entrust a family member or others to cast a ballot.

4.0 Data and Descriptive Statistics

For our primary analysis, we use household and village surveys conducted in fifty-two villages of four provinces from August to October 2004 in collaboration with the Research Center for Rural Economy (RCRE) at the Ministry of Agriculture. All 3999 households in the 2003 wave of the RCRE panel for these four provinces were enumerated, allowing us to match villages and households from the 2004 supplemental survey with a historical panel of villages and households that RCRE surveyed annually from 1986 to 2003.[21] As our primary focus is on the migration decision, we make use of individual level information on labor allocation decisions of current and past household members from 1995 onward, which was enumerated in the supplemental household survey. The supplementary survey collected retrospective information on the current residence and migration history of all individuals who had been household members at any time since 1995. At the village level, we have information on village family lineage, significant land reallocations since 1991, land use rights, village election, and turnover of village leaders. The supplementary data is then matched with the RCRE regular household panel survey data in these four provinces. From the RCRE household panel data, we obtain information on annual household consumption and land holding. The RCRE village panel includes many of the descriptive statics on crime and conflict that we reference in our discussion above.

In the supplemental survey, respondents at the village level identified years in which significant land reallocations were carried out at either the level of the village or within several village small groups. Within each village, three village small groups were also randomly selected and details of their

[21]A detailed discussion of a larger nine-province sample from the RCRE panel dataset, including discussions of survey protocol, sampling, attrition, and comparisons with other data sources from rural China, can be found in the data appendix of Benjamin, Brandt and Giles (2005). This paper makes use of village and household data from the four provinces where the authors conducted follow-up household and village surveys, which are Shanxi, Jiangsu, Anhui and Henan.

reallocation history were also recorded.[22] Also enumerated were estimates of the number of households that faced some reallocation. In Table 1, we report summary statististics for instances in which land reallocations were significant enough that more than 10 percent of households in the village experienced reallocation. Such reallocations do not occur with great frequency, as the average annual share of villages experience reallocations was 19 percent in sampled villages, but for some years and provinces over 1995-2003 period, reallocation could be quite significant. For example, more than 80 percent of villages in Jiangsu experienced a large land reallocation in 1998, as did more than 40 percent of villages in Henan during the same year. For Anhui and Shanxi, more land reallocation occurred in 1995 and 1999, respectively. The timing was consistent with the "second-round" of land contracting in the province.[23] Conditional on the occurrence of a village-wide reallocation, households faced considerable risk on average as one-third would be affected. This risk also varies across years and provinces. For example, in 1998 when "second contracting" was carried out in Henan province, 80 percent of households were affected. In 2003, however, only 13 percent of households faced reallocation.

By 2003, all but one village in the sample had had at least one village election. Table 3 provides annual information on share of villages reporting regularly scheduled elections. Two distinct features of elections are important to flag. First, election timing varies within province. If there was no variation, we would expect to find that the entire province would be on the same election cycle. Second, the election cycle varies both within and across provinces. While this may partially reflect recall errors in

[22]As land is reallocated within small groups, information at this level allows more precise measure of reallocations for the subset of households that can be matched to small groups. Other households are matched to average village-level reallocation incidence.

[23] The first-round contract period was 15 years, but the starting year differed across provinces. When the first-round contract expired, the second –round contracting entailed new contracts between the village collective and households, normally with longer contract periods. Of course, to degrees that varied across villages, reallocation risk was present regardless of whether or not the end of the contract term had been reached.

reporting, it could also suggest that elections were not that "regular" before the Organic Law was passed in 1998.

With respect to migration, Table 4 and Figure 1 report migration rates for the sample of 7000 individuals aged 16 to 50 over the 1995 to 2002 period. On average, 16 percent of the sample had experience working outside of their home county. Consistent with the trends observed in other panel data (e.g., the CHNS), the migration rate tripled from 9 percent in 1995 to 27 percent in 2002. Migration is clearly correlated with age, gender and education level. More specifically, men have higher migration rate than women, and there is no sign that the gender gap is closing over time. The young are more likely to migrate than the old, as are the more educated.

5.0 Results

Table 5 reports the baseline OLS regression results alongside those from first differenced OLS models. All the variables mentioned above are included as regressors. The coefficient on the land reallocation variable in both regressions is negative, but small in magnitude and not statistically significant. It's worth noting that both gender and age effects are significant but relatively small in magnitude.

Turning to the IV results, using the share of households in the largest lineage group interacted with the three election timing variables, two interaction terms are significant in the first stage, and they suggest that villages with a higher share of households in the largest lineage group are less likely to experience a land reallocation in the two years before an election. The Angrist-Pischke F-statistics is 3.53, with a p-value 0.02, and this raises concerns that the first-stage is far from sufficiently strong. The Anderson-Rubin Weak Instrument Robust test, however, provides some assurance that the negative

effect of future reallocations on migration decisions In the second stage are robust to possible weak instrument bias.[24] We obtain a significant coefficient on the future land reallocation variable, suggesting that if the village has a land reallocation in the following year, then farmers will reduce their migration probability by 4.3 percent.

We are further concerned that changes in household characteristics, such as demographic changes, may be endogenous and that household consumption change may be correlated with unobserved shocks that could also affect change in migration. We thus estimate the model excluding all the household level variables, including demographic composition, landing holding and consumption. The estimated coefficient on future land reallocation remains unchanged, suggesting that results were not driven by biases in these variables.

Next, we examine which groups of individuals are particularly affected by land tenure insecurity. First, we stratify the sample by gender, and find there doesn't seem to be a gender difference in the impacts, even though the coefficient for men is more precisely estimated. Second, we stratify the sample into two groups based on age. We find the impact on migration for young farmers is more significant and larger. Third, when stratification is carried out by educational attainment, we find particularly strong evidence that the better educated are affected. As men, young people and the better educated have a higher tendency to work as migrants to begin with, it is not surprising that we find a stronger effect of land tenure insecurity on the migration decisions of these groups.

6. Conclusion

Through the early 2000s, farmers in rural China faced a substantial level of risk of losing land in large scale village land reallocations. The timing of land reallocations appears to be strategically decided by

[24]We report the Anderson-Rubin Weak Instrument Robust tests and confidence sets for each specification shown tin Tables 6-8. This is the CLR test developed by Moreira (2003) and then generalized for arbitrary intra-cluster correlation by Finlay and Magnusson (2009).

village cadres who take into consideration of the timing of village elections, and these decisions are influenced by underlying features of the village political economy associated with the lineage composition of the village. Exploring variation across villages in the share of residents belonging to the largest lineage group (also referred to as a patrilineal clan), we identify the impact of land reallocation risk on the farmer's migration decision. We find that, in expectation of a land reallocation in the following year, farmers reduce their propensity to migrate for work by 4.3 percent, providing evidence that insecure property rights shaped patterns in the movement of labor out of agriculture. In order to facilitate a structural change of an agriculture-based economy to an industrialized economy, strengthening individual property rights over agricultural land seems to be essential. More recently, land tenure insecurity in rural China is reflected in land seizures without proper compensation. More research is needed to examine institution arrangements that may reduce the incidences of such land-taking.

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Table 1. Frequencies of significant land reallocations and share of households affected (1995-2003)

	All	1995	1996	1997	1998	1999	2000	2001	2002	2003
Panel A: Frequencies of significant village land reallocations										
All	0.188	0.273	0.109	0.073	0.327	0.200	0.200	0.182	0.164	0.164
Anhui	0.167	0.556	0.222	0.000	0.056	0.167	0.222	0.111	0.056	0.111
Henan	0.181	0.188	0.000	0.063	0.438	0.188	0.250	0.250	0.125	0.125
Jiangsu	0.343	0.182	0.182	0.273	0.818	0.273	0.182	0.364	0.545	0.273
Shanxi	0.067	0.000	0.000	0.000	0.100	0.200	0.000	0.000	0.000	0.200
Number of villages	55	55	55	55	55	55	55	55	55	55
Panel B: Share of households affected in significant village land reallocations										
All	0.321	0.557	0.313	0.187	0.654	0.271	0.127	0.231	0.233	0.219
Anhui	0.319	0.648	0.472	0.000	0.676	0.348	0.110	0.121	0.276	0.180
Henan	0.282	0.596	0.000	0.478	0.798	0.282	0.101	0.293	0.224	0.125
Jiangsu	0.358	0.010	0.070	0.092	0.522	0.037	0.336	0.219	0.232	0.245
Shanxi	0.349	0.000	0.000	0.000	0.808	0.474	0.000	0.000	0.000	0.279
Number of households	1858	799	291	273	947	722	796	536	520	581

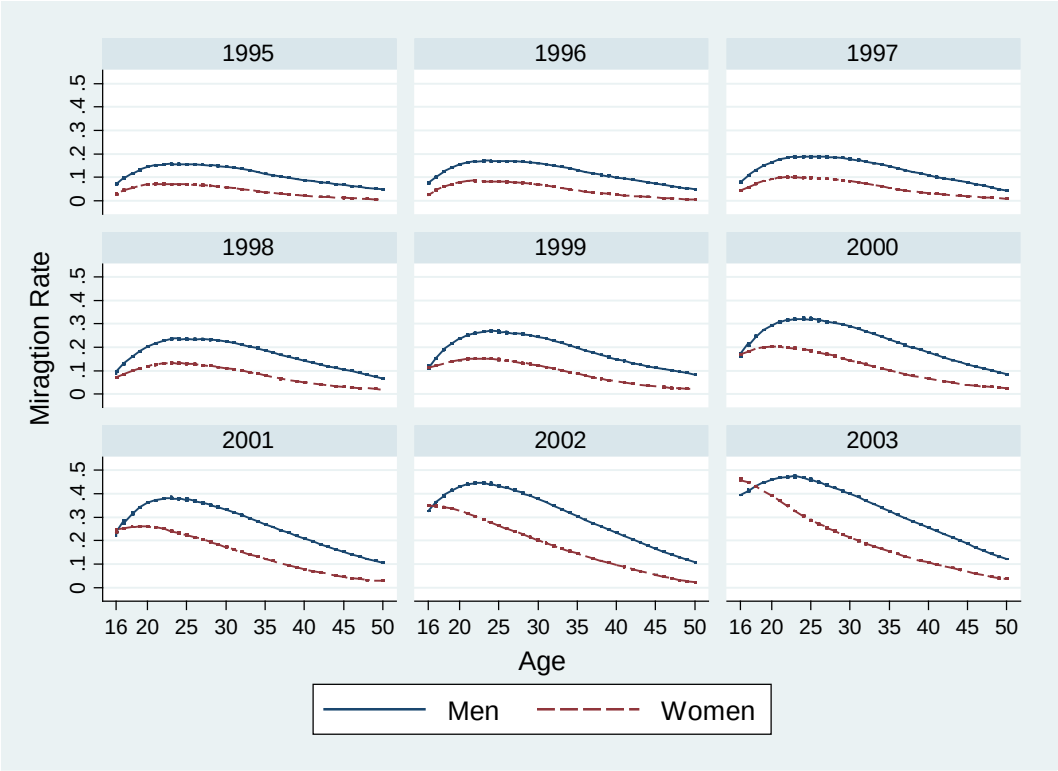
Table 2. Land reallocation and other land rights

	No Significant Village Land Reallocation during 1995-2003			Had Significant Village Land Reallocation during 1995-2003		
	1993	1998	2003	1993	1998	2003
A household can transfer land to other relatives.	1	1	1	0.860	0.932	0.953
If you transfer land to other relatives, you are more likely to lose land in the reallocation.	0	0	0	0.054	0.050	0.050
A household can transfer land to unrelated parties.	0.889	0.889	0.900	0.829	0.886	0.907
If you transfer land to unrelated parties, you are more likely to lose land in the reallocation.	0	0	0	0.054	0.050	0.050
Number of villages		11			44	

Table 3. Share of Villages with a Regularly Scheduled Election

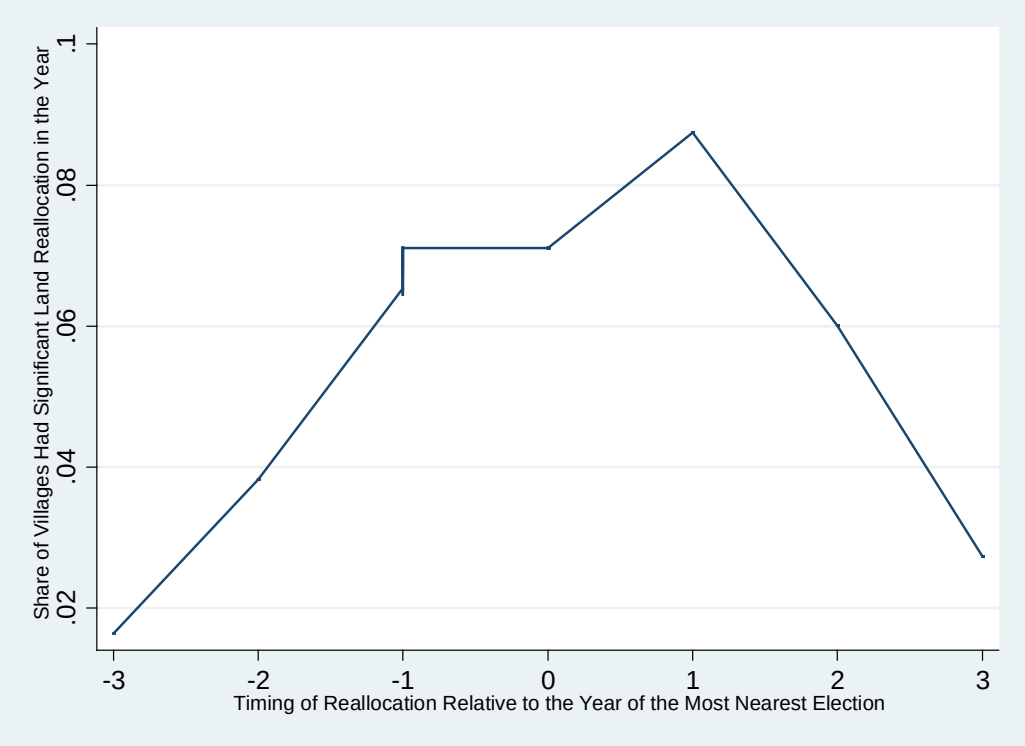
	All	1995	1996	1997	1998	1999	2000	2001	2002	2003
All	0.154	0.145	0.145	0.182	0.182	0.182	0.091	0.182	0.182	0.091
Anhui	0.123	0.111	0.111	0.222	0.056	0.278	0.056	0.167	0.111	0
Henan	0.139	0.125	0.125	0.125	0.125	0.25	0.063	0.125	0.25	0.063
Jiangsu	0.222	0.273	0.182	0.091	0.455	0.091	0.182	0.364	0.182	0.182
Shanxi	0.156	0.1	0.2	0.3	0.2	0	0.1	0.1	0.2	0.2
Number of villages	55	55	55	55	55	55	55	55	55	55

Figure 1
Migration Rates by Age and Gender (1995-2003)



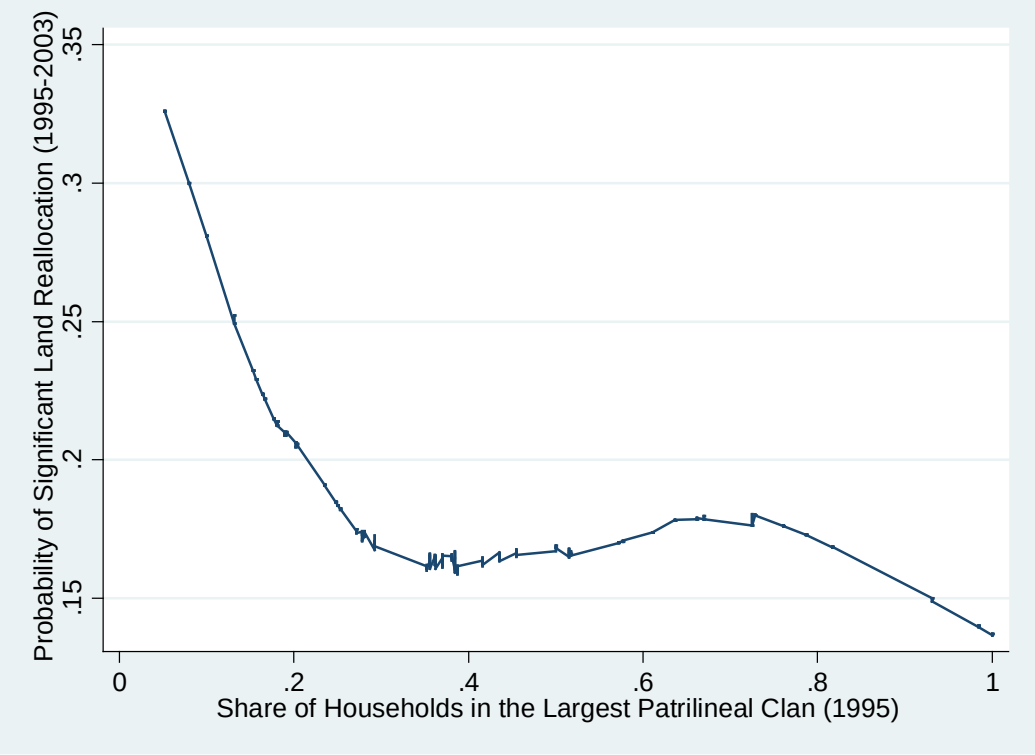
Source: RCRE Supplemental Household Survey 2004. The supplemental survey conducted in August and September 2004 asked information about the age, gender, education and work and residence location history of all current and former household residents back to the 1995 wave of the matching RCRE Household Survey.

Figure 2
Election Timing and Timing of Significant Land Reallocations



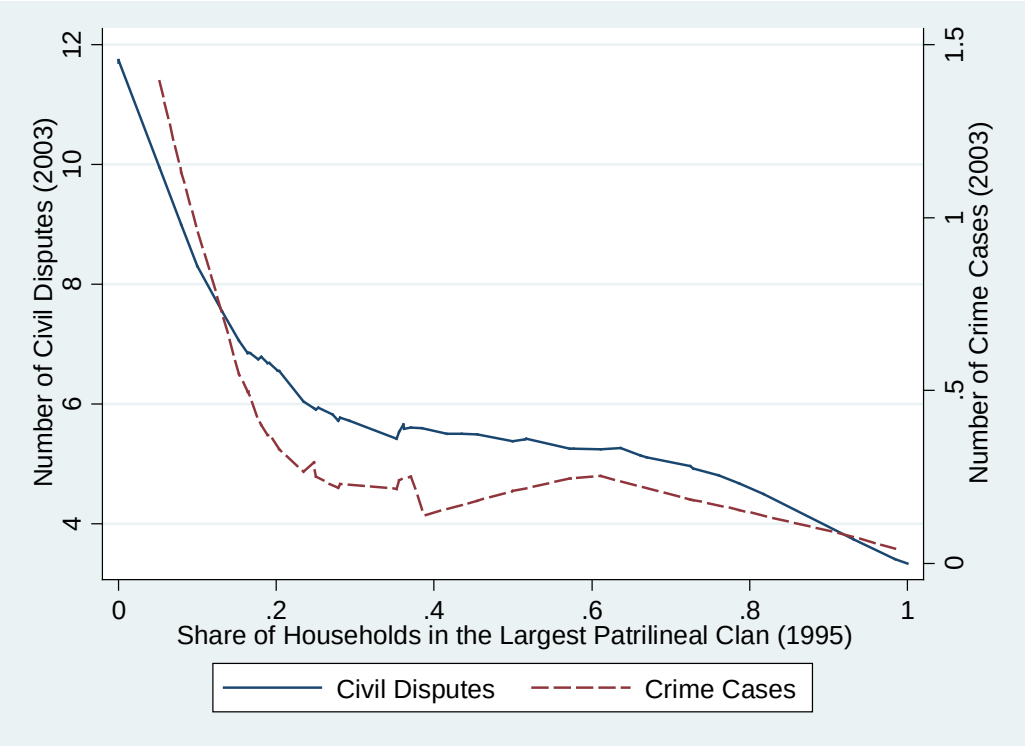
Source: RCRE Supplemental Village and Household Surveys (2004). Note that reallocations are considered to be significant if a village-wide reallocation is indicated on the village survey instrument, or if more than ten percent of households in the village indicate facing a reallocation.

Figure 3
Share of Households in the Largest Lineage Group (1995) and Probablity of Significant Land Reallcoation in the Village (1995-2003)



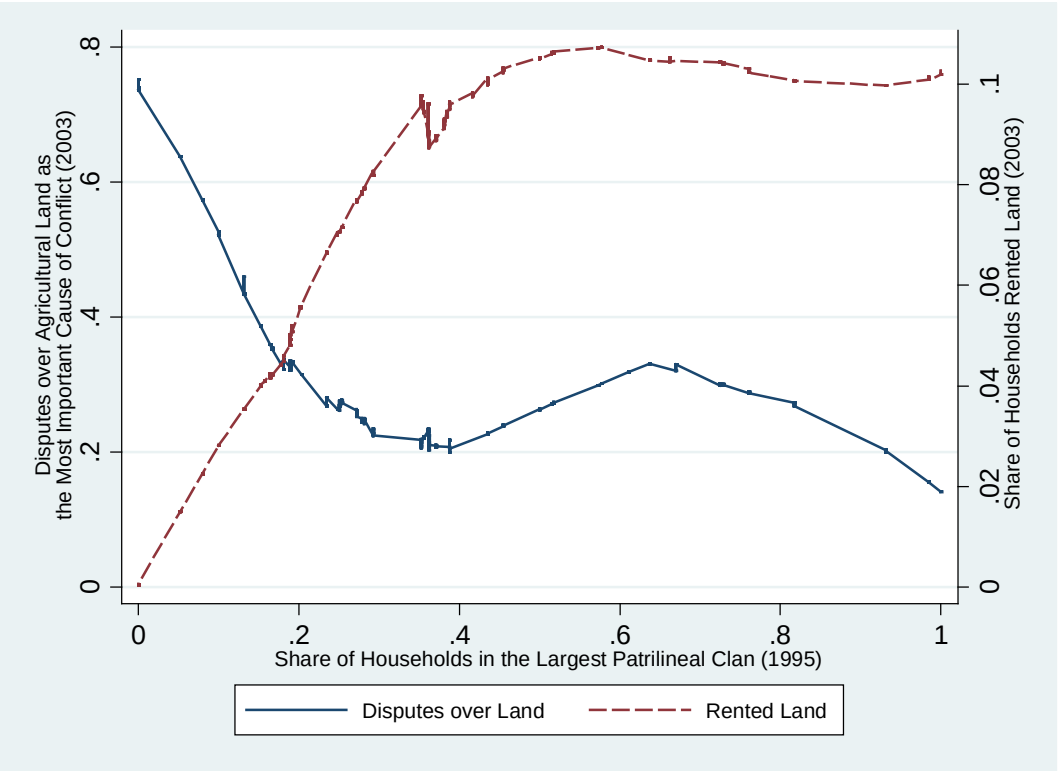
Source: RCRE Supplemental Village and Household Surveys (2004). Note: the share of households in the largest family lineage group (patrilineal clan) is measured in 1995, which is the initial year of the analysis sample.

Figure 4
Share of Households in the Largest Lineage Group (1995)
and Numbers of Civil Disputes and Criminal Cases in 2003



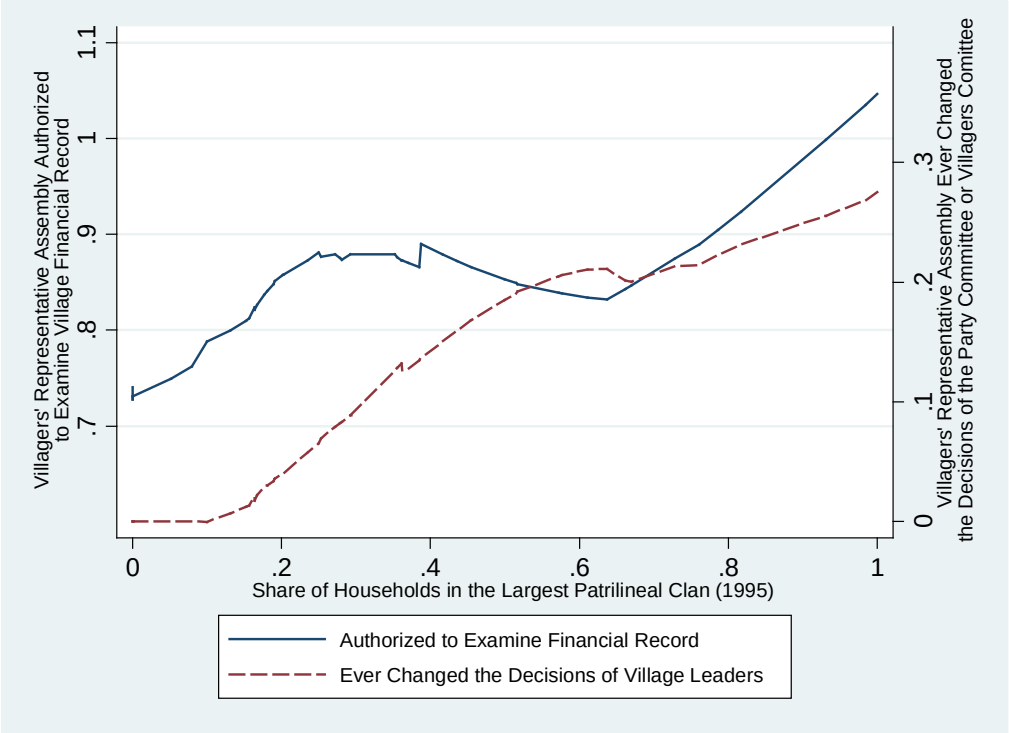
Source: RCRE Supplemental Village Survey (2004).

Figure 5
Share of Households in Largest Lineage Group (1995), Disputes over Land as the Most Important Source of Conflict (2003), and Share of Households Participating in Land Rental(2003)



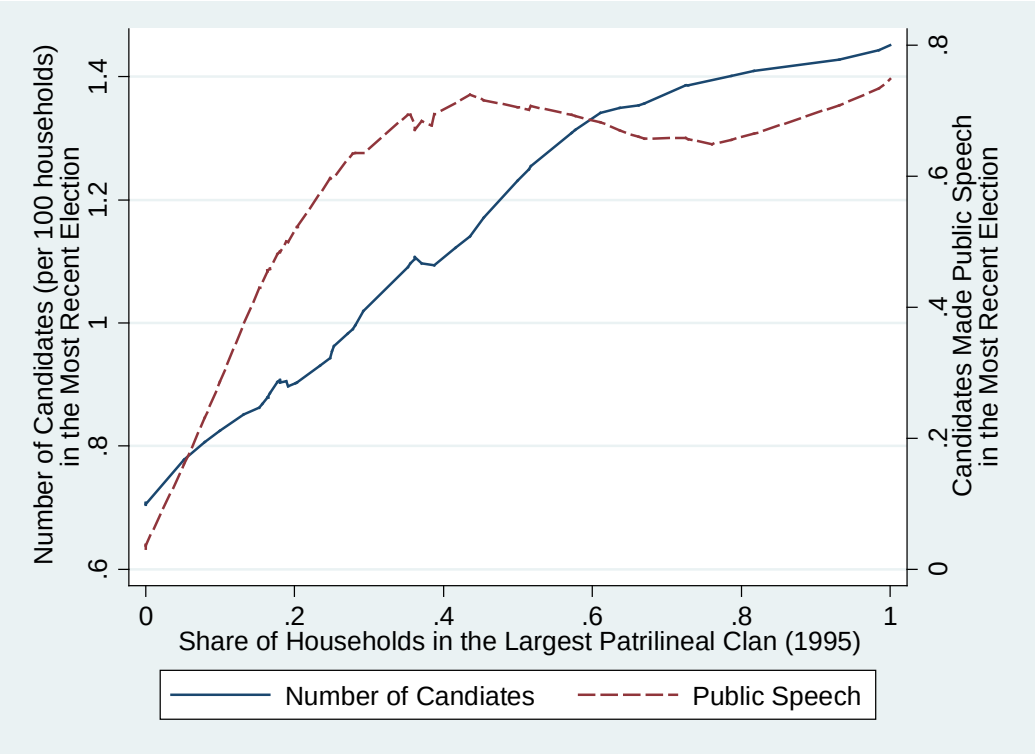
Source: RCRE Supplemental Household and Village Surveys (2004).

Figure 6
Share of Households in Largest Family Lineage Group (1995)
and Responsibilities of the Village Representative Assembly



Source: RCRE Supplemental Village Survey (2004)

Figure 7
Share of Households in Largest Lineage Group (1995) and Characteristics of the Most Recent Election



Source: RCRE Supplemental Village Survey (2004)

Table 4. Share of Laborers (Age 16-50) who Migrated for Work Outside the Home County (1995-2002)

	All	1995	1996	1997	1998	1999	2000	2001	2002
All	0.158	0.088	0.098	0.110	0.144	0.155	0.182	0.219	0.265
Men	0.204	0.121	0.134	0.146	0.188	0.202	0.232	0.28	0.332
Women	0.110	0.052	0.06	0.072	0.097	0.106	0.132	0.159	0.197
Age 16-29	0.203	0.114	0.126	0.142	0.179	0.200	0.237	0.292	0.353
Age 30-50	0.107	0.058	0.065	0.070	0.100	0.103	0.121	0.146	0.180
Less than 8 years of schooling	0.100	0.054	0.06	0.068	0.094	0.100	0.116	0.144	0.180
Eight or more years of schooling	0.200	0.118	0.129	0.142	0.181	0.193	0.229	0.268	0.319
A member of the largest patrilineal clan in village	0.159	0.085	0.105	0.116	0.140	0.173	0.172	0.208	0.263
Not a member of the largest patrilineal clan in village	0.157	0.089	0.096	0.108	0.145	0.148	0.186	0.223	0.266
With young women (age 19-24) or men (age 21-26) in household	0.163	0.105	0.108	0.115	0.155	0.16	0.184	0.214	0.261
Without young women or men in household	0.153	0.075	0.091	0.105	0.134	0.15	0.181	0.223	0.268
Obs.	56342	6705	7138	7395	6650	7444	7072	6843	7095

Table 5. Village Land Reallocation and Migration: Results from Ordinary Least Square and First-Differenced Models

	OLS	FD
Land Reallocation in the Village	-0.016***	-0.005*
	(0.006)	(0.003)
Male×(Time Trend)	0.010***	0.013***
	(0.001)	(0.002)
Age×(Time Trend)	0.002***	-0.009***
	(0.000)	(0.001)
Age-sq×(Time Trend)	-0.000***	0.000***
	(0.000)	(0.000)
Years of Schooling	0.012***	
	(0.003)	
Father Alive	0.021**	0.001
	(0.010)	(0.006)
Mother Alive	-0.008	-0.001
	(0.010)	(0.007)
Number of Siblings	-0.008***	-0.002
	(0.002)	(0.004)
Land per Capita (log)	0.003	0.001
	(0.008)	(0.003)
Consumption per Capita (log)	-0.001	0.002
	(0.008)	(0.003)
Working-Age Females (age 16-60) as Share of Household Size	0.055***	-0.016*
	(0.013)	(0.008)
Working-Age Males (age 16-60) as Share of Household Size	0.044***	-0.022***
	(0.015)	(0.007)
Number of Young Women (19-24)	0.006	0.001
	(0.005)	(0.002)
Number of Young Men (21-26)	0.002	0.001
	(0.006)	(0.002)
Village Population (log)	-0.056	0.047**
	(0.049)	(0.020)
Village Per Capita Income (log)	0.001	-0.005
	(0.009)	(0.005)
Village Land Per Capita (log)	0.062**	-0.004
	(0.029)	(0.008)
Number of Village Cadres	0.001	0.001
	(0.002)	(0.001)
Share of Village Cadres with High School Education or Above	0.029	0.013
	(0.028)	(0.014)
Village Land Gini Index	0.141**	0.024

	(0.071)	(0.032)
Two Years Before a Regularly Scheduled Election	-0.003	0.001
	(0.007)	(0.003)
One Year Before a Regularly Scheduled Election	-0.005	-0.002
	(0.007)	(0.004)
The Year of a Regularly Scheduled Election	(0.071)	-0.004
	-0.003	(0.003)
Time Trend	-0.013*	
	(0.007)	
Constant	0.212	0.182***
	(0.301)	(0.019)
Village Fixed Effects	Yes	Yes
Province specific year effects	Yes	Yes
Number of observations	56,342	44,576
Adjusted R2	0.160	0.017

Note: Village clustered robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects, interactions of province and year effects are included but not reported.

Table 6. Village Land Reallocation and Migration: Instrumental Variables Estimates

	First Stage	Second Stage
ΔVillage Wide Land Reallocation (t+1)		-0.043***
		(0.015)
Male	-0.001	0.013***
	(0.001)	(0.002)
Age	0.003**	-0.009***
	(0.001)	(0.001)
Age-sq	-0.000**	0.000***
	(0.000)	(0.000)
ΔFather Alive	-0.002	0.000
	(0.017)	(0.006)
ΔMother Alive	0.040*	0.000
	(0.023)	(0.007)
ΔNumber of Siblings	0.007	-0.002
	(0.015)	(0.004)
ΔLand per Capita (log)	0.012	0.001
	(0.021)	(0.003)
ΔConsumption per capita (log)	0.007	0.003
	(0.022)	(0.003)
Δ Working-Age Females (age 16-60) as Share of Household Size	-0.032	-0.017**
	(0.030)	(0.008)
Δ Working-Age Males (age 16-60) as Share of Household Size	-0.002	-0.022***
	(0.025)	(0.007)
ΔNumber of Young Women (19-24)) in the Village	0.003	0.001
	(0.010)	(0.002)
ΔNumber of Young Men (21-26)) in the Village	-0.004	0.001
	(0.012)	(0.002)
ΔVillage Population (log)	-0.092	0.046**
	(0.247)	(0.023)
ΔVillage Per Capita Income (log)	-0.305***	-0.016**
	(0.113)	(0.008)
ΔVillage Land Per Capita (log)	0.479***	0.016
	(0.173)	(0.010)
ΔNumber of Village Cadres	-0.036*	-0.000
	(0.021)	(0.001)
ΔShare of Village Cadres with High School Education or Above	0.044	0.013
	(0.291)	(0.018)
ΔVillage Land Gini Index	0.349	0.039
	(0.648)	(0.037)
ΔTwo Years Before a Regularly Scheduled Election	-0.026	0.001
	(0.070)	(0.003)

ΔOne Year Before a Regularly Scheduled Election	-0.056	-0.006
	(0.078)	(0.004)
ΔThe Year of a Regularly Scheduled Election	-0.074	-0.000
	(0.067)	(0.004)
Share of Households in Largest Patrilineal Clan × Two Years Before a Regularly Scheduled Election	-0.455***	
	(0.154)	
Share of Households in Largest Patrilineal Clan × One Year Before a Regularly Scheduled Election	-0.346*	
	(0.190)	
Share of Households in Largest Patrilineal Clan × The Year of a Regularly Scheduled Election	0.166	
	(0.191)	
Observations	44576	
Angrist-Pischke Multivariate F-test (*p-val*)	3.53 (0.021)	
Over-Identification: Hansen J-Statistic (*p-val*)	0.968 (0.616)	
Anderson-Rubin Weak Instrument Robust Test: Chi2 (*p-val)*	8.76 (0.033)	
Anderson-Rubin Weak Instrument Robust Confidence Sets	[-0.102,-0.006]	

Note: Village clustered robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects, interactions of province and year effects are included but not reported.

Table 7 Robustness Checks: Excluding Household Characteristics

	First Stage	Second Stage
ΔVillage Wide Land Reallocation (t+1)		-0.043***
		(0.015)
Male	-0.001	0.013***
	(0.001)	(0.002)
Age	0.003**	-0.009***
	(0.001)	(0.001)
Age-sq	-0.000**	0.000***
	(0.000)	(0.000)
ΔNumber of Young Women (19-24) in the Village	0.003	0.001
	(0.010)	(0.002)
ΔNumber of Young Men (21-26)) in the Village	-0.004	0.001
	(0.012)	(0.002)
ΔVillage Population (log)	-0.092	0.046**
	(0.246)	(0.023)
ΔVillage Per Capita Income (log)	-0.304***	-0.016**
	(0.113)	(0.008)
ΔVillage Land Per Capita (log)	0.478***	0.016
	(0.173)	(0.010)
ΔNumber of Village Cadres	-0.036*	-0.000
	(0.021)	(0.001)
ΔShare of Village Cadres with High School	0.043	0.013
Education or Above	(0.291)	(0.018)
ΔVillage Land Gini Index	0.352	0.040
	(0.649)	(0.037)
ΔTwo Years Before a Regularly Scheduled Election	-0.074	-0.000
	(0.067)	(0.004)
ΔOne Year Before a Regularly Scheduled Election	-0.026	0.001
	(0.069)	(0.003)
ΔThe Year of a Regularly Scheduled Election	-0.056	-0.006
	(0.078)	(0.004)
Share of Households in Largest Patrilineal Clan ×	-0.455***	
Two Years Before a Regularly Scheduled Election	(0.154)	
Share of Households in Largest Patrilineal Clan × One Year Before a Regularly Scheduled Election	-0.344*	
	(0.190)	
Share of Households in Largest Patrilineal Clan × The Year of a Regularly Scheduled Election	0.167	
	(0.191)	
Observations	44576	
Angrist-Pischke Multivariate F-test (*p-val*)	3.51 (0.021)	
Over-Identification: Hansen J-Statistic (*p-val*)	0.882 (0.644)	
Anderson-Rubin Weak Instrument Robust Test: Chi2 (*p-val)*	8.79 (0.032)	

Anderson-Rubin Weak Instrument Robust Confidence Sets	[-0.103,-0.006]

Note: Village clustered robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects, interactions of province and year effects are included but not reported.

Table 8. Heterogeneity in the Impacts of Land Tenure on Migration (1)

	Gender		Age Group		Education	
	Men	Women	Age 16-29	Age 30 and older	Years of schooling: < 8	Years of schooling: 8 or more
ΔLand Reallocation in the Village (t+1)	-0.057***	-0.025	-0.067**	-0.020*	-0.024*	-0.054***
	(0.017)	(0.016)	(0.030)	(0.010)	(0.013)	(0.021)
Observations	22,600	21,976	22,914	21,662	19,018	25,558
Angrist-Pischke Multivariate F-test (*p-val*)	3.73 (0.02)	3.30(0.03)	3.46(0.02)	3.28(0.03)	2.70(0.05)	3.60(0.02)
Over-Identification: Hansen J-Statistic (*p-val*)	2.33 (0.32)	0.70(0.71)	1.40(0.50)	0.88(0.64)	2.16(0.34)	0.39(0.82)
Anderson-Rubin Weak Instrument Robust Test: Chi2 (*p-val)*	10.39(0.02)	4.17(0.24)	13.41(0.00)	0.37(0.94)	6.99	11.43
Anderson-Rubin Weak Instrument Robust Confidence Sets	[-0.126, -0.015]	[-0.087, 0.027]	[-0.185, -0.087]	[-0.060, 0.020]	[-0.033, 0.007]	[-0.137, -0.019]

Note: Village clustered robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Village fixed effects, interactions of province and year effects, household demographic variables and village characteristics are included but not reported. Instrument variables for land reallocation in the village are share of households in the largest patrilineal clan in the village in 1995 interacted with one year before regularly scheduled village election; and the share of households in the largest patrilineal clan interacted with two years after regularly scheduled village election. The household demographic variables valued at t-2 are used as instrument variables for the changes in the corresponding variables.

Table 9. Heterogeneity in the Impacts of Land Tenure on Migration (2)

	Risk of Land Reallocation 1		Risk of Land Reallocation 2	
	Household with young men (age 21-26) or women (age 19-24)	Household without young men (age 21-26) and women (age 19-24)	Member of the largest patrilineal clan	Not a member of the largest patrilineal clan
ΔLand Reallocation in the Village (t+1)	-0.050*	-0.040***	-0.047*	-0.068**
	(0.029)	(0.015)	(0.028)	(0.027)
Observations	20182	24,394	12087	32,468
Angrist-Pischke Multivariate F-test (*p-val*)	3.40 (0.02)	3.49 (0.02)	1.38(0.26)	2.50(0.07)
Over-Identification: Hansen J-Statistic (*p-val*)	0.69(0.71)	0.83(0.66)	0.87(0.65)	0.52(0.77)
Anderson-Rubin Weak Instrument Robust Test: Chi2 (*p-val)*	7.18(0.07)	6.43(0.09)	13.36 (0.00)	3.58(0.31)
Anderson-Rubin Weak Instrument Robust Confidence Sets	[-0.162, 0.003]	[-0.101, 0.006]	[-0.079, -0.022]	[-0.173, 0.033]

Appendix: Regulations Related to the Organizational Structure and the Timing of Village Election: Anhui, Henan, Jiangsu, and Shanxi

Document Name	The Organization Structure of Village Election	
	Leading Group for Village Elections	Villagers' Election Committee
"Procedures of Anhui Province on the Elections of Villagers' Committee" (January 27, 1999) (This document replaces the 1992 "Regulations of Anhui Province on the Implementation of the (Temporary) Organic Law of Villagers' Committee of People's Republic of China")	Article 7. Counties, townships, ethnic minority townships should establish a leading group to supervise elections in their administrative district……. Leading groups are charged with the task of planning village elections. They are also responsible for implementing the working plan and organizing elections.	Article 8. Each village shall establish a villagers' election committee. Article 9.2 Villagers' election committee shall determine and announce the exact time, date and place of the election.
"Temporary Procedures of Henan Province on the Elections of Villagers' Committee" (March 22, 1998) (This document replaces the 1992 "Regulations of Henan Province on the Implementation of the (Temporary) Organic Law of Villagers' Committee of People's Republic of China")	Article 5. County and township governments are responsible for organizing village elections. The leading groups (of village elections) in various governments shall be hosted in the bureau of civil affairs. The bureau of civil affairs is responsible for the overall work of village elections.	Article 6. Each village shall establish a villagers' election committee…….Villagers' election committee is in charge of voter registration, checking voter eligibility, announcing names of voters, organizing the recommendation of candidates, deciding and announcing the exact date of voting, organization of vote, and announcing the voting result.
"Procedures of Jiangsu Province on the Elections of Villagers' Committee" (August 26, 2000) (This document replaces the 1992 "Some Regulations on the Elections of Villagers' Committee")	Article 6. During the time of villagers' committee election, the government of city, county and township shall establish a leading group …….The leading group shall plan, organize and guide the elections of villagers' committees…….The leading group at the county level or above shall have a branch in the bureau of civil affairs at the township level.	Article 9. Villagers' election committee (in each village) shall…announce the exact date, place and method of election.
Procedures of Shanxi Province in the Implementation of Organic Law of Villagers' Committee of the People's Republic of China (September 26, 1999) (This document replaces the 1991	Article 5. The offices of civil affairs in the county or above-county governments are in charge of implementing the Organic Law of Villagers' Committee and this regulatory document.	Article 16. The main responsibilities of village election committee include: …….determining and announcing the exact time and date of election…….

“Procedures of Shanxi Province on Organization of Villagers’ Committee”.)	Article 14. Under the leadership of the provincial government, at the time of the election of villagers’ committee, county and township shall establish leading groups, organizing and supervising elections in their administrative district.	