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**Securing property rights in transition:
Lessons from implementation of China's rural land contracting law**

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Securing property rights in transition: Lessons from implementation of China's rural land contracting law

Abstract: While recent studies point towards the importance of institutions, in particular secure property rights, as key determinants of economic growth, options to foster institutional change to make property rights more secure are not well understood. Data from 800 villages all over China on the effectiveness with which a law aiming to increase households' tenure security -at the expense of local leaders' powers to reallocate or expropriate land without adequate compensation- provides an opportunity to identify such factors. Using illegal land reallocations and low compensation payments for expropriated land to identify lack of effective institutional change, we find that the impact of property rights reform is contingent on the institutional constraints imposed on leaders' power by democratic institutions and a clear legal framework, households' knowledge of the law, and to some extent presence of land certificates.

1. Introduction

While earlier theories of development focused on accumulation of capital, macro-economic policy, or natural endowments as key determinants of subsequent performance, an influential current of literature has recently emphasized the central role of institutions, in particular property rights that are broadly accessible and that allow their holders to enjoy the fruit from their investment without being challenged by outsiders, as key precondition for economic growth. One interesting aspect of this literature is that, in contrast to earlier views that viewed property rights largely as an issue amongst individuals that was independent of political structures, it builds on the insight that often the most potent threat to more secure property rights comes from the fact that representatives of the state can not credibly pre-commit to abstain from using their power to further private objectives that may not be conducive to overall welfare (Hoff and Stiglitz 2004, 2005).

This has greatly enhanced awareness of the importance of an appropriate "investment climate" and establishment of specialized surveys to collect indicators that can be used to provide an assessment of the quality of institutions and processes in a cross-country perspective (World Bank 2005a). However, even though there is near-consensus on the importance of property rights, the literature provides few insights that could give guidance to policy-makers interested in increasing the security of such rights. This is unfortunate because the wide variation in the extent of tenure security across developing countries, together with the fact that existing institutions tend to be biased in favor of the wealthy, suggests that effective policies to improve tenure security and expand the rule of the law to include these parts of the population could have considerable impact.

In this paper, we use the example of implementation of a new law in China, a country where property rights to land have traditionally been quite insecure, and where increased pressure on land resources has given rise to a series of well-publicized conflicts, to identify factors that helped to increase security of property rights. In addition to a description of the motivation for the law and the problems it aimed to address, we provide quantitative evidence on land reallocations and land takings before and after the law

had been passed, and use these to empirically identify factors that have helped to make increase objective measures of tenure security, specifically by making illegal land reallocations less likely and increasing the compensation received by land users in case their property had been taken by the government under rules of eminent domain. Our empirical information comes from a unique panel spanning the period before and after the coming into force of China's 2003 rural land contracting law (RLCL), a piece of legislation that aimed to make property rights to land for rural dwellers more secure. To explore empirically the extent to which legal change, by itself or in interaction with other factors, can help ensure greater security of property rights to land in rural areas, we use a sample of almost 800 villages with 8,000 randomly selected households plus about 700 households affected by land taking in the study period.

The remainder of the paper is organized as follows: Section two puts the topic into context by discussing characteristics of the rural land administration system in China, by linking this to the literature, and by highlighting some of the analytical questions and presenting the econometric strategy. Section three describes sampling and uses descriptive statistics to illustrate the extent to which village institutions as well as the security of property rights have changed over time, in addition to the extent to which they vary across regions. Section four provides results from testing for the relevance of different factors in bringing about institutional change. Section five concludes with implications for policy and future research.

2. Conceptual framework and estimation strategy

We start with a description of results from studies of the impact of institutional arrangements on economic performance, highlighting the evolution of China's land tenure system, focusing on a number of problems that have emerged and the way in which the RLCL addresses these. This provides the basis for discussion of our outcome variables and the empirical strategy applied to assess the impact of pre-existing village characteristics on the changes in these variables observed after coming into effect of the new legislation.

2.1 The importance of institutions and the challenge of institutional change

Based on recognition that the quality of government, as measured by a wide variety of indicators, varies systematically and in line with historical and political circumstances (La Porta *et al.* 1999), a growing literature has come to recognize the pre-eminent importance of "good" institutions¹ for economic development. As a legal system that protects contracts and property rights, either through titles or deeds (Arrunada and Garoupa 2005), is a key precondition to encourage investment and ensure effective use of scarce economic resources, it can be seen as a fundamental issue that is essential for many of the

¹ An influential paper defines "good" institutions as "... an inter-related cluster of things. There must be enforcement of property rights for a broad cross-section of society so that all individuals have an incentive to invest. There must also be some degree of equality of opportunity in society, including such things as equality before the law, so that those with good investment opportunities can take advantage of them". widely quoted definition is that (Acemoglu et al. 2004:12)

outcomes that have traditionally been identified as preconditions for economic growth to materialize. If, on the other hand, the rule of law is weak or nonexistent, private actors will need to spend resources to enforce property rights and contracts, something that will lead to much inferior and socially inefficient outcomes. In addition, it will be biased against the poor and socially marginalized those who, without a system that ensures the rule of law, may well end up in otherwise avoidable poverty traps.

Empirical support for this proposition comes from three main sources. Building on earlier work (Knack and Keefer 1995) and the seminal use of colonial settler mortality as an instrument for institutional quality (Acemoglu *et al.* 2001), a large cross-country literature has explored this issue, generally providing support to the importance of institutions as compared to other factors (Easterly and Levine 2003, Rodrik *et al.* 2004), highlighting the importance of legal origins (Beck *et al.* 2003, Levine 2005), and pointing out that in many cases inappropriate institutions underlie macro-level phenomena instability (Acemoglu 2003) or providing the basis for human capital accumulation (Acemoglu and Johnson 2005). This is consistent with case study evidence showing that jurisdictions with very similar socio-economic characteristics that were subject to exogenous institutional intervention developed in vastly different directions (Nugent and Robinson 2002, Banerjee and Iyer 2004, Acemoglu *et al.* 2004) and, as in the case of India, may fail to converge even if they subsequently become part of the same country. Although there are methodological challenges, not all of which are likely to be amenable to cross-country evidence (Przeworski 2004, Bardhan 2005), there is little disagreement that this has put institutions squarely on the policy agenda, leading among others to collection of a set of indicators of the business climate (World Bank 2005a) and opening up a new direction in the comparative economics literature (Djankov 2003).

One promising avenue to overcome the econometric and substantive limitations inherent in cross-country regressions is the use of firm level data. For Eastern European countries, the fact that firms reinvest their retained earnings in situations where property rights are strong but do not do so in environments characterized by weak property rights is interpreted as providing support to the hypothesis that property rights are more important than financing constraints (Johnson *et al.* 2002). This is in line with the much greater relevance of property rights as compared to contracting institutions on economic growth that emerged from cross-country regressions (Acemoglu and Johnson 2005). Firm level evidence from China also suggests that security of property rights is an important obstacle to firm growth in this environment, although financing constraints emerge as important as well (Cull and Xu 2005).

If institutions, especially those making property rights more secure, are indeed a precondition for economic development, ways to bring about changes of a country's property rights system assume great importance. There is clear evidence that adoption of the most appropriate and efficient institutions is far from automatic (Acemoglu 2003) as powerful interests or representatives of the state who benefit from

the status quo often have means to forestall change (Frye and Zhuravskaya 2000, Sonin 2003, Hoff and Stiglitz 2004). At the same time, there is still a dearth of empirical evidence, with available material often restricted to case studies that are difficult to generalize. Exploring the effectiveness of legal change for the case of China will be of interest not only because of the country's size and the resulting variation in social, ecological, and economic conditions, but also because land remains of critical importance to the large majority of its rural population. Economic growth and increased participation of rural dweller in (migrant) labor markets as well as rapid urbanization and large-scale conversion of land from agricultural to urban use pose considerable challenges (Chen 2004, Ho 2005).

2.2 China's land tenure system

Before the communist revolution, most of China's farmers were poor tenants or owners of small plots of land. After taking over, the communist government confiscated large landlords' holdings and distributed land rights to households on an egalitarian basis (Prosterman *et al.* 1990). In the 1950s, a policy of collectivization that required farmers to surrender land to collectives was adopted, with disastrous consequences on output and the welfare of the rural population, as illustrated especially in the famines of 1958-60 in which millions of rural dwellers perished (Putterman and Skillman 1993, Yao 1999, Lin and Yang 2000). To increase food production, the 1978 Household Responsibility System (HRS) made households residual claimants to their production and subsequently gave them 15-year land use rights, something that led to tremendous increases in output and productivity (McMillan *et al.* 1989, Lin 1992).² Based on this success, villages were urged to contract land to farmers for 15 years. However, these contracts were often verbal and did not preclude reallocation of land (Oi 1999, Rozelle *et al.* 2002). On expiry of the original 15-year leases in the late 1990s, collectives were exhorted to renew contracts for an additional 30 years. In 1998, Government required that farmers receive written 30-year land use contracts and restricted the scope for readjustments (Chen and Davis 1998). Again, implementation remained incomplete; a survey found that, even though about 60% of households had received written land use contracts, only 13% of the contracts rule out future land readjustment, 25% explicitly allow for it, and the rest was unclear on whether or not such a measure would be possible. As a consequence, only 12% of farmers felt confident that their land will be safe against further readjustment, something that is likely to also affect the incentive to investment in higher value crops (Schwarzwalder *et al.* 2002). This has given rise to two types of problems.

² In urban areas, land could either be allocated by the state or long term leases be acquired by private users upon payment of a conveyancing fee. Such acquisition provided considerable advantages by giving owners the ability to participate in the secondary market, use the land as mortgage, and rent it to others. It has led to a rapidly growing land market: Between 1993 and 1998 the amount transacted annually increased from about 11,000 to almost 1.1 million ha and the amount of land mortgaged rose from about 1,000 to 884,000 ha (Ho and Lin 2003).

Insecure property rights to land have, at least initially, limited the development of lease markets because, even though population change and diversification of rural households' livelihood expanded the scope for efficiency-enhancing land transfers, such transfers were expected to be met by village leaders through administrative reallocation of land (Kung and Liu 1997).³ As the information required to bring about an optimal land allocation increases exponentially with the number of transactions, it is not surprising to find that, partly as a result of the emergence of migrant labor markets, decentralized land transfers quickly started to complement, and in most instances overtake, administrative mechanisms (Yao 2000, Benjamin and Brandt 2002, Kung 2002b, Deininger and Jin 2005). Even with land rental markets, however, the fact that renting out of land by a household engaging in migration or local off-farm activity could be perceived as a signal that the land was no longer needed and would therefore be available for reallocation, has been identified as a potential obstacle to emergence of an off-farm sector (Yang 1997).

A potentially more worrying aspect is that local officials soon started to use their considerable latitude in deciding whether to reallocate land not only to further the interests of the collective but often also for personal gain. The benefit from and thus the incentive for doing so was particularly high in case of conversion to non-agricultural land uses such as infrastructure construction and urban or industrial development the incidence of which has become increasingly widespread. Although the change to non-agricultural uses is a corollary of economic development, the fact that all conversions require land to be acquired by local government to subsequently be sold off to private investors creates a de-facto monopoly of the state that can foster rent seeking by local bureaucrats unless strong controls are available. In many cases, village officials have been reported to use land reallocation as a means to cheaply obtain the required amount of land and pocket part or all of the proceeds (Cai 2003, Brandt *et al.* 2004), something that has given rise to a large number of corruption charges.⁴ Even if no corruption was involved, local governments used their ability to acquire lands for urban expansion very liberally to supplement their budgets in a way that is not sustainable in the long run (Ding 2004, World Bank 2005b), earmarking large amounts of land for non-agricultural purposes without ever being able to carry out the planned developments. An official survey shows that 43% of requisitioned lands are left idle (Xie *et al.* 2002).⁵ While this has led to an avalanche of complaints (Guo 2001), farmers' lack of legal knowledge, absence of a well-defined process to challenge the state, and the conflict of interest arising from the fact that in

³ In fact, exchanges of land within the village were prohibited until legalized under the 1986 Land Management Law. Transfers to outsiders remained technically illegal, or at least not officially recognized, until it was allowed in the 1998 revision of this law, albeit without clarifying the specific modalities to be followed by such transfers (Li 2003).

⁴ In the 3-years between 1999 and 2002, there were more than half a million or land-related corruption cases and 3,800 officials nation-wide were put formally under investigation (Zhu 2005)

⁵ Reports indicate that, in 1996, 1.74 million mu had been converted to non-agricultural uses but could not be properly utilized. In fact, it is reported that the public monopoly over urban land markets led local governments to heavily rely on incomes from land transfer fees to supplement their regular budgets and are using land that has been compulsorily acquired as a collateral for bank loans (Cai 2003).

most cases local government who are responsible for conversions are also the first instance for resolution of disputes, all meant that in many cases local cadres violated the law with relative impunity (Zhu 2004).

To provide a more secure legal basis for households' property rights, far-reaching legislation, in the form of the rural land contracting law (RLCL), became effective in March 2003. It stipulates transferable 30-year rights to (arable) land that need to be based on written contracts between the village as collective owner and individual households, copies of which have to be registered with higher level government. The law also clarifies that, during the life of the contract, the collective can not take back land without adequate compensation and readjustment of land is prohibited, except for a "small" adjustment (i.e. involving only a subset of villagers) that is approved by two thirds of the village assembly or the village representatives as well as township government and the county unit responsible for agriculture. This was combined with a cap on land conversions, and the need for provincial or national approval for any conversion (Ho and Lin 2003), partly motivated by fears about a shortage of agricultural land.⁶ Before describing the data used in this study and illustrating how they can provide descriptive evidence to speak to some of the above issues, we present the hypotheses to be tested in our econometric framework.

2.3 Econometric approach and estimation strategy

Given the large variation of geographical and institutional conditions across China, implementation of the RLCL provides a good case study to identify factors that can help to translate such legal change into an effective strengthening of property rights. Our first objective measure for the strength of households' property rights is the incidence and extent of "illegal" land reallocations, i.e. ones that are no longer allowed under the RLCL. Predictions are guided by three hypotheses.

First, the above suggests that in many cases the interests of land users may be more aligned with those of central government against those by local leaders. In fact, it can be shown that the requirement of periodic re-election is one of the limitations that can be placed on incumbents' desire to extract rents that undermine the economy's growth potential (Benhabib and Przeworski 2005). Doing so transforms interactions between officials and farmers into a repeated game, thereby lengthening incumbents' time horizon and their accountability while reducing the scope for opportunistic action (Acemoglu 2003). In fact, although the effectiveness of local elections in China varies across regions and leaves considerable scope for procedural improvement (Oi and Rozelle 2000, Tan 2004), elections are generally considered to have significantly increased levels of accountability (Shi 1999, Cai 2003). We thus expect to see more

⁶ Any conversion requires government approval at the provincial level and reporting to the State Council and the expropriation of any primary farmland, any cultivated land greater than 35 ha, and other land in excess of 70 ha requires approval by the state council. Recent figures, based on remote sensing data suggest that alarmist notion about an impending crisis due to exponential losses of productive farmland are largely unfounded and not supported by the evidence (Deng *et al.* 2005)

secure property rights and possibly a greater impact of the legal reforms in villages where both the secretary and the director had been elected.

Second, it is often noted that, in addition to pressure from below, the ability to appeal to a higher authority to counter mis-behavior by low-level bureaucrats is important to make property rights effective. The ability of a strong central government to counter attempts by local factor suppliers to establish monopolies and extract rents has been identified as an important source for the stronger economic performance of China as compared to Russia after the fall of socialism (Parente and Rios-Rull 2005).⁷ Knowledge of the law is a precondition for officials to be aware of possible sanctions in case of misbehavior and for households to recognize violations of the law that can then form the basis for lodging complaints with higher level authorities or even invoke the criminal justice system. Targeted dissemination activities are an effective way for central authorities to accelerate implementation, and appear to have been used for this purpose in the Chinese context (Deininger *et al.* 2006b). We thus expect specific legal knowledge, as identified by a quiz asking, among others, about the conditions under which a small redistribution continued to be allowed, to increase farmers' ability to assert their rights.

Finally, issuance of certificates that guarantee households' 30-year land use rights has constituted a key element of the Chinese government's strategy to enhance land tenure security ever since the 1998 revision of the land management law. The extent to which these certificates can increase tenure security will depend on whether, in case of a dispute about reallocation, they will have validity beyond the realm of the village so as to pose an effective constraint on leaders' behavior. In this case, we expect availability of certificates to increase tenure security, although the empirical case is more ambiguous a priori.

The independent variable used to test these hypotheses is information on whether or not a land reallocation explicitly prohibited in the RLCL, i.e. without consulting the village assembly was conducted as well as the area affected in case it happened.⁸ For governance, we use an indicator representing the extent to which village leaders were accountable to their constituency, a variable proxied by whether or not they had been democratically elected by then. The share of households who held land certificates in 2001 (to avoid counting certificates that had been issued in response to the new law) was obtained from village records, and knowledge of the law's substantive provisions is measured separately for leaders and sample households based on their responses to a quiz.

⁷ Indeed, case studies suggest that local politicians are often perceived to have perverted the intention of central policies which are appealed to by aggrieved peasants (Guo 2001).

⁸ As we do not know whether village leaders who had convened a village meeting had actually obtained the consent of two-thirds of village representatives as required by the law -a question that is impossible to verify reliably in the absence of attendee lists from these meetings- this approach may categorize takings as legal (i.e. held after consulting with the village committee) although, due to the failure to establish the quorum, they were not.

Indexing villages by j and time by t , let R_{jt} be a dummy that is one if an illegal reallocated had taken place in t and zero otherwise and A_{jt} the amount of land reallocated in an illegal redistribution in village j at t . Then our estimating equation (Probit or Tobit model corresponding to R_{jt} or A_{jt}) can be formally written as

$$R_{jt}/A_{jt} = \alpha + \beta D_t + \gamma \mathbf{G}_j + \delta(D_t \times \mathbf{G}_j) + \rho \mathbf{K}_j + \theta T_j + \eta \mathbf{E}_j + \zeta \mathbf{P}_j + \varepsilon_{ijt} \quad (1)$$

where D_t is a legal reform dummy that equals one if the observation is from after the new RLCL had become effective and zero otherwise, \mathbf{G}_j and \mathbf{K}_j are vectors of village-level governance indicator and knowledge of the law, T_j represents the share of households who have certificates, \mathbf{E}_j is a vector of village level economic characteristics that might affect the pressure to reallocate, \mathbf{P}_j denotes provincial dummies, $\alpha, \beta, \gamma, \delta, \rho, \eta, \theta, \zeta$ are parameters or vectors of parameters to be estimated, and ε_{ijt} an error term. Empirically, \mathbf{G}_j is a dummy for whether director and secretary in the village are both elected. As more than just superficial knowledge of the law will be needed to protest an illegal reallocation, we include in \mathbf{K}_j the share of villagers who were able to correctly identify the conditions under which a small redistribution is allowed and a dummy for whether the village leader was able to do so. To assess the extent to which land certification contributes to greater security of property rights, T_j represents the share of households who have received certificates guaranteeing their 30-year land ownership rights, \mathbf{E}_j includes mean village income and the share of households with agriculture as their main income source in 1999 to test whether higher levels of development will increase or reduce pressures for reallocation. As the legal reform, governance, knowledge about the law and land certificate should all increase tenure security, we expect the coefficients $\beta, \gamma, \rho,$ and θ to be negative. By testing the significance of β as compared to δ , we can explore the extent to which reform is effective on its own or only if the institutional environment is appropriate. Likewise, by testing the significance of γ as compared to δ , we can examine the extent to which governance is effective on its own or only if the legal support is in place.

Although cases where conversion from agricultural to non-agricultural land use is of relevance will be more limited than those where individuals' land holdings are threatened by redistribution, the notion that takings increased with economic development makes in-depth investigation of factors affecting the amount of compensation received of interest. A further motivation is that failure to provide "appropriate" levels of compensation is a primary motivation for peasant protests, reports of which are becoming quite frequent (Guo 2004), thus causing increased concern by policy makers. While in theory any lump sum compensation may lead to optimal outcomes, the conditions for this result are unlikely to hold,⁹ and

⁹ This result holds only if there is no moral hazard by government and if, in case property rights will be taken, prior private investments have no social value.

governments may be tempted to neglect the true social costs of their decisions, providing a strong argument to demand market value compensation in case of expropriation (Giammarino and Nosal 2005).

As defining a “market value” in cases where land can not be traded and compensation comes in a wide variety of forms is difficult, we use our data to test the extent to which the compensation paid can be explained by observable plot characteristics, and, in particular, whether, after accounting for observable plot characteristics and attributes of the takings process, legislative reform, possibly in interaction with pre-existing institutional characteristics, has been associated with a systematic change in the amount of monetary compensation paid. Combining plot level data from specific takings as reported by the affected households with village level characteristics, we let C_{ijt} denote the amount of compensation paid for plot i in village j at time t so that our reduced form regression for the amount of compensation paid becomes:

$$C_{ijt} = \alpha + \beta D_t + \mu \mathbf{Z}_{ij} + \nu \mathbf{X}_{ij} + \varphi (D_t \times \mathbf{X}_{ij}) + \gamma \mathbf{G}_j + \delta (D_t \times \mathbf{G}_j) + \rho \mathbf{K}_j + \theta T_j + \eta \mathbf{E}_j + \zeta \mathbf{P}_j + \varepsilon_{ijt} \quad (2)$$

where \mathbf{Z}_{ij} is a vector of plot characteristics including the value of agricultural production derived before the acquisition and its level of infrastructure access, \mathbf{X}_{ij} denotes attributes of the compensation process, in particular whether the land was acquired by a private investor or a public entity, whether the taking resulted in generation of any local jobs, and the amount of land received by affected farmers relative to what was lost. The remainder of the right hand side variables is as in equation (1). Given the fact that the amount of compensation (C_{ijt}) is censored at value zero, equation (1) is estimated as a Tobit model. In addition to testing for reform effects, possibly conditional on presence of specific institutions, this allows us to test whether the use to which land is put will affect levels of indemnity. If, as has been hypothesized, public entities are cross-subsidized by getting free or near-free access to land (Zhu 2005), ν will be significant with its sign depending on how the dummy is defined and $\nu + \varphi = 0$, a testable proposition, would imply that legal reform helped to eliminate such advantages. We also expect more comprehensive compensation packages that include land and the prospect of jobs, to reduce monetary compensation and governance variables are expected to be positive. Finally, like in the case of redistribution, by testing the significance of β as compared to δ , we can explore the extent to which reform is effective on its own or only if the institutional environment is appropriate. And by testing the significance of γ as compared to δ , we can examine the extent to which governance is effective on its own or only if the legal support is in place.

One econometric issue in estimating equation (1) and (2) is the potential endogeneity problem of the election variable (G_j) and any interaction terms involving G_j . The 1988 Organic Law requires that village election be practiced in all villages in China although the process and mode of elections were not specified (Pastor and Tan 2000; O’Brien and Li 2000; Kennedy et al. 2004). However, the implementation of the Law remains far from certain. While the exact number of villages that have not yet

promoted village election is hard to know due to lack of data, it is guesstimated that significant number of villages are selected their leaders through appointment (Pastor and Tan, 2000; Zhang et al. 2004). To large extent, whether village election is adopted is determined by village characteristics. In our case, endogenous problem arises if there exists unobserved factors that affect both village election decision and the land reallocation decision (in the case of equation 1) or compensation decision (equation 2). To deal with this problem, we will also estimate equation (1) and (2) using instrumental variable (IV) approach, and compare the IV estimators to those from standard probit or tobit estimation. Similar potential endogenous problem associated with China's village election was also discussed in other studies (Kennedy et al. 2004, Zhang et al. 2004, Yao and Shen 2006). The key to this problem is to find identifying variables that are correlated with election decision but not with the outcome variables, we use previous leaders' length of tenure, its squared term and its interaction term with reform dummy.¹⁰ The non-linear terms are included to help identify the interaction term of election variable and the reform dummy, which is motivated by the discussion in Wooldridge (2001).

3. Data and descriptive evidence

Availability of a sample much larger than what has been used in most existing studies of land relations in China allows us to provide quantitative insights as to the relevance of land in the broader context of these villages, local governance structures, the incidence of land reallocations and takings, and how these have changed over time. To the extent that officials may lack knowledge or incentives to provide truthful and accurate information on individual land takings, the ability to complement their account with data from the individuals affected by land takings is of particular interest.

3.1 Data sources and basic characteristics

Our data come from a village level and associated household survey implemented by the Rural Survey Team of China's National Bureau of Statistics (NBS) in collaboration with the World Bank. The first stage, conducted in Oct. 2003 shortly after promulgation of the RLCL, was based on a village questionnaire which aimed to obtain information on general village characteristics, as well as all incidents of land reallocation and land takings since 1999 based on village records. The sample included China's 12 main agricultural provinces within which all villages included in NBS' regular rural household survey were canvassed. In the context of administering this instrument, a quiz with eight substantive questions concerning the content of the RLCL was also administered to village leaders and 10 randomly selected households included in NBS' master sample. From these, the 8 provinces with the highest levels of land market activity and land takings were selected for a follow-up survey in February/March of 2005. The purpose of doing so is threefold, namely to (i) provide an indication of the extent to which there had been

¹⁰ Zhang et al. (2004) use the length of tenure for the current leaders.

changes in the variables included in the earlier survey; (ii) assess whether the law had led to any changes in observed behavior at the village level; and (iii) follow up with interviews of randomly selected households affected by takings to obtain a more detailed, and possibly truthful, response on specific incidents than might have been forthcoming from village officials.¹¹

Table 1 describes basic characteristics of the sample villages, at the regional level.¹² On average, a village comprised of 427 households with slightly less than 4 individuals each. With 79%, the majority of households in the sample still rely on agriculture as their main source of income, a variable that varies considerably between 90% for the South and Southwest but only 51% in the Coast. Large differences between the Coast and the rest of the country are also visible in other economic indicators such as average annual per capita income, which amounts to about Y 4,600 in the Coast, about 50% higher than the national average of Y 3,000 and more than double the amount earned in the Southwest (Y 1,980). Wealth also differs across regions, as reflected in the fact that the average value of village assets in the sample is Y 0.56 mn., from Y 1.15 mn. in the coast, to 0.25 mn in the country's central part. At the same time, average land endowments are small; per capita available land varies from 1.24 mu (1mu is equivalent to 1/15th of a hectare) overall, ranging from less than 1 mu in the Coast and Southwest to 1.89 mu in the relatively land abundant North and Northwest.

Village accounts highlight the importance of revenue from land takings as a major source of village income: in fact, with 37% of the total, land-related revenue, mainly the mark-up from sales of lands that had been acquired compulsorily, is the single biggest source of own revenue by villages in our sample. This is followed by income from enterprises (collective and private) and "other" sources which each contributes some 27%. Although they make up only about 8% of own revenue in general, taxes and fees are of overriding importance in the center where they account for almost 40%.

The spread of democratic decision-making at the local level is evident from the fact that, in about 70% of villages, both director and party secretary had been elected in 2001.¹³ Although distribution of land certificates to all households had been mandatory since 1998, only 83% possessed such documents according to our data, a figure that varies from 67% in the north and northwest to 93% in the south and southwest. Results from a quiz to test specific knowledge about the law also illustrate that, despite a rather high level of general awareness of the RLCL, knowledge of the law's substantive content remains

¹¹ The goal was to interview, for each of the villages where land acquisition had taken place, 4 households, 2 who lost land before the RLCL's came into force and 2 thereafter. The sample was stratified by takings for public and private purposes. For the 202 villages that reported land takings, we obtained on average 3.3 households with usable data.

¹² The four regions are defined as following: North and northwest region include Liaoning and Henan province, coastal region includes Zhejiang and Shandong provinces, the Central region include Hubei province and the South West includes Sichuan, Guizhou and Shanxi provinces.

¹³ As it is difficult to determine whether the director or the secretary is the main decision-maker and we focus on accountability, we require both to be elected to categorize a village as "democratic". Note that, while the director is elected by all villagers above 18 years, only party members participate in elections for the secretary (Morduch and Sicular 2000).

limited. Only slightly more than half of leaders and households knew that big adjustments are no longer allowed under the law and less than one fifth were able to correctly identify the conditions under which small readjustments are permissible, suggesting considerable scope for focused dissemination activities to educate villagers on key aspects of the legislation. In the aggregate, differences of knowledge between villagers and leaders are not too pronounced.

3.2 Incidence of different types of land reallocations

As village leaders' ability to initiate land reallocations has long been identified as a prime reason not only of tenure insecurity but also of rent seeking, the new law's impact on this variable will be of obvious interest for our analysis. Incidence and scope of reallocations undertaken during the 2002-2004 period vary across regions and over time (Table 2). The share of villages that experienced at least one land reallocation during the period is, with almost one third (29%), surprisingly high given that the majority of villages was expected to have undertaken a readjustment of land holdings in the context of issuing 30-year contracts around 1998 when the original 15 year land use contracts issued in the years after 1978 had expired. The incidence of reallocation varies between more than 40% in the coastal region where the pressure for conversion of land to other uses through large-scale projects is highest (Seto and Kaufmann 2003) and less than 20% in the Southwest. Variation across provinces is even more pronounced, both within and across regions; while almost two third of villages in Shandong experienced a reallocation, less than 20% were affected in Zhejiang. The importance of policy factors in determining the incidence of reallocation is illustrated by the fact that, in Guizhou province, where a policy of 'no more redistribution' was enacted in the 1980s (Kung 2002a, Deininger and Jin 2003), only 5.4% of villages carried out reallocation, compared to 34% in Liaoning province.¹⁴

It is important to note that, even where reallocations took place, their size in terms of area and the number of affected households varied widely; in the 240 sample villages that experienced a redistribution during the period, an average of 746 mu and 152 households, i.e. in both cases about one third of the total village area and population were involved. This figure ranges from 1,418 mu and 222 households in the North to 382 mu and 115 households in the coastal regions where land is more scarce. The variation across provinces in the amounts of land redistributed and the number of households affected is even more pronounced.¹⁵ Proponents argue that reallocation is not necessarily a bad thing, pointing to the fact that, if carried out in a transparent fashion, the ability to reallocate land provides considerable flexibility to plan land use in a rational way and respond to needs for non-agricultural lands. Clearly, however, in the 5.3%

¹⁴ The share of villages who experienced a reallocation in different provinces is 33.7% in Liaoning; 18.6% in Zhejiang; 64.8% in Shandong; 30.4% in Henan; 22.7% in Hubei; 23.7% in Sichuan; 5.4% in Guizhou; and 26.7% in Shanxi.

¹⁵ The detailed figures by province are 2077.6 mu and 270.2 households in Liaoning; 310.2 mu and 203.9 households in Zhejiang; 335.4 mu and 91.2 households in Shandong; 746.9 mu and 181.9 households in Henan; 578.9 mu and 137.3 households in Hubei; 140.5 mu and 81.9 households in Sichuan; 6.6 mu and 17.8 households in Guizhou; and 715.8 mu and 197.7 households in Shanxi.

of villages where, on average, reallocation had been implemented each year without even consulting the village assembly or village representative meetings, such minimum standards of accountability were not met and after the RLCL's coming into force, these were outright illegal.¹⁶ Across regions, such takings were most prevalent in the Center (12%), followed by the North (6%), the center (4%), and the Southwest (3%). At least *prima facie*, the legal change was associated with a clear decrease in the incidence of illegal reallocations; from 6% to 3.5% in the aggregate a change that is mirrored in all the other regions with the possible exception of the North.

Although truthfully eliciting the precise reason for a land reallocation is difficult, the extent to which leaders link such an action directly to either population growth or land taking is of analytical interest because the RLCL explicitly outlaws large reallocations in response to population growth. On the other hand, reallocations to spread losses pain from land taking more equally among all villagers seem to have been quite common in the past (Brandt *et al.* 2004). Survey data show that, with about 45% of cases, population change is quoted by village leaders as the most frequent reason for land reallocation, followed by takings (25%), policy change (20%), and "other". Even though there is a slight increase in the share of takings attributed to policy changes after the RLCL coming in force, this can be spurious as leaders may just refer to a higher policy to justify their action. More importantly, we can not reject the hypothesis that the relative frequency of reasons given for land redistribution is not different after the policy change than before.

At the same time, as illustrated in the bottom panel of table 2, we find significant differences in the nature of land reallocations that are attributed to takings as compared to other reasons. Even though the share of taking-related reallocations remains more or less constant at 25% of the total, both the mean area (118 mu) and the number of households (35) are significantly different from the much larger figures, 606 mu and 129 households, in the case of land reallocations related to population change or other reasons. More interestingly, even though the rather small numbers imply that differences are not statistically significant, the data suggest a downward trend in the area and number of households involved in taking-related land redistribution as compared to an increase in the number of households and area affected by redistribution justified with other reasons, from 119 to 162 households and 498 to 952 mu, respectively. This suggests that the two phenomena may be different from each other and should therefore be analyzed separately.

3.3 Aggregate and household level information on land takings

¹⁶ Even acknowledging that in a "small" reallocation will generally not affect all of a village's land, having such reallocations in more than 5% of villages is a high figure that should have significant impact on land prices according to standard models of expropriation risk (Jacoby *et al.* 2002). Whether and to what extent the big drop in the incidence of illegal takings was due to pre-emptive action before the new law came into force can not be determined with the existing data.

Even though, in the context of rapid expansion of urban areas and non-agricultural land use, the incidence and impact of land takings has recently attracted considerable interest, obtaining reliable information on the modalities under which these take place is a critical precondition for ascertaining their impact on the well-being of affected households. To obtain such information in a consistent way, we report village-level information from interviews with leaders and village accountants in table 3 with responses from up to 4 households per village in table 4.

Aggregate figures, as reported in table 3, illustrate that land taking was particularly pervasive in the coast and Southwest where 41% and 34% of villages were affected, compared to only about 19% in the country's northern and central regions. On average, 103 mu from 88 households were affected, with the area and number of households involved per taking lowest in the Southwest and center and highest in the coastal region. We note that the RLCL did not stop the increasing trend of land takings associated with China's economic growth; splitting the sample into equal time periods before and after the RLCL became effective suggests that less than 17% of villages were affected before and 23 % after that point, a trend that was observed across all regions.

At the same time, the nature of takings varied across provinces. While, in the aggregate, about equal amounts (51% and 49%) of takings are related to infrastructure such as highways and commercial development, this balance varies with about two thirds of takings related to commercial development in the coastal region compared to less than one third in the Southwest, something that illustrates higher levels of commercial activity and an already better infrastructure network in the former compared to the latter. While it is not surprising to find 81% of infrastructure-related investments having been initiated by officials from the county level or higher, government involvement is substantial even for commercial developments almost half of which, 45% overall and 65% in the central region, are initiated by higher levels of government, and less than one third of which in the coastal and central region are taken forward by the private investor directly. This need for private investors to obtain land through the public sector has variously noted to increase transaction costs, make owners's rights less secure, and generate opportunities for corruption (Zhu 2004, Cai *et al.* 2005).

An interesting aspect and often a key benefit from land conversion is that, in about a third of all cases, or two thirds of commercially motivated ones, it resulted in generation of new jobs, either within the village or beyond. The number of jobs created within the village was, with almost 40 on average for takings involving job creation (14 overall), quite large, although it would have provided jobs for less than half of affected households even if all of the jobs had been reserved for these. An even larger number of jobs (almost 200 per taking) were created outside the village. While they provide support to the notion that in some cases speculative land acquisition, i.e. without being able to actually develop it, was widespread,

our data suggest that, at least according to village officials, this phenomenon was concentrated in the coastal region where less than 60% of the projects on land that was taken had been completed and work had started on only about 80%, against an average of almost 90% in the other regions.

Taking was followed by land redistribution in about 28% of cases. The fact that this figure ranges from 19% in the coastal region where the incidence of takings was highest to almost 50% in the center where few takings took place suggests that takings are unlikely to be a key factor leading to land reallocation. With a total of 82%, the share of takings involving monetary compensation was higher than 80% in every region except the North. Monetary compensation was, with 91% as compared to 78% of cases, much more likely to be paid in cases involving commercial ventures as compared to public infrastructure needs. At some 15,000 Y/mu on average, compensation levels were significantly higher, both overall and in each of the regions, after as compared to before the legal reform with an average increase of 33%. Still, the amounts paid vary across regions; the post-reform level in the coastal region is, with more than 28,000 Y/mu more than double what was paid in the Southwest (11,600 Y/mu) and more than and four times the level observed in the North and the central regions (both about 7,500 Y/mu).

To either prevent unwise spending of the windfalls received by individuals or to spread the benefits more widely, almost 40% of villages retain at least part of the compensation received, a share that is, with almost 60%, highest in the coastal region, in line with many other corporate schemes (Zhang *et al.* 2004), followed by the center (42%), the North (31%) and the Southwest (18%). In fact, 15% of villages (24% in the center and the coast) retain more than half of the compensation received. We also note that only 56% of villages overall, and only 44% in the coastal region, pay monetary compensation only to those who were directly affected as compared to distributing it more widely among all villagers. This clearly implies that, to assess the adequacy of compensation as well as the broader welfare impact of the taking on those directly affected, household-level information is needed.

Proceeding to specific cases of taking, table 4 illustrates that the average area lost, 1.23 mu per household involved, is less than the mean land endowment. Of those affected, 41% overall, from about 50% in the North to about one third in the central and coastal regions, were at least partly compensated in the form of land; in fact for those who received in-kind compensation, the size of the land received amounted to 87% of what had been lost. Also, 82% of affected households received monetary compensation of, on average, Y 7,900 per mu, a value that ranged between Y 4,100 in the central and Y 10,200 in the coastal region. Part of this variation can be explained by pre-existing differences in land productivity as illustrated by the fact that the net income obtained from the land in its previous use varied between Y 527 per mu in the North and Y 1,148 per mu in the coastal region. Disaggregating by time we find that monetary

compensation had increased significantly, from 6642 to 8950 Y/mu, following passage of the new law with the highest increase, about 60%, observed in the coastal region.

In view of the concerns about land takings leading to impoverishment of peasants and rural unrest, it is of interest to ascertain opinions about the perceived impact of land takings by those affected. Doing so produces two interesting results. First, regionally, those perceiving taking to have worsened their situation outnumber those who think it improved well-being in the coast and the North, by 20% against 12% and 24% against 20% respectively, in line with the much higher incidence of (illegal) takings in these two regions. The opposite is the case in the center and the Southwest where 32% against 11% or 16%, respectively, think that the taking has improved their situation. Second, while subjective perceptions of the impact of land taking are less negative than expected, the main reason for a positive assessment is the amount of economic activity generated rather than the level of compensation paid for the land. As the bottom panel of table 4 illustrates, about 23% of those affected perceive their welfare to have increased following the land taking, compared to 18% who think it has worsened as a result. Although inadequate compensation is the main reason for households' dissatisfaction with the land taking,¹⁷ the main reason for households to consider having benefited from this measure relates to positive externalities, in particular the creation of jobs, associated with the taking project.

4. Econometric results

Although we find that the legal change had a very significant impact on reducing the relatively high levels of expropriation risk, this result is driven by villages with democratic elections. While knowledge of the law tended to reinforce this effect, we can not reject the hypothesis that presence of land use certificates did not appreciably reduce the propensity of local leaders to reallocate land in a way counter to the law - although it helped to increase the amount of compensation paid in case of land taking. Finally, the legal change helped to bring compensation levels in case of taking by the public sector to those observed in cases of private entrepreneurs.

4.1 Determinants of illegal land reallocation

Results from estimating equation (1) are reported in table 5 where columns 1-3 and 4-6 present results from probit and tobit equations, respectively. While columns 3 and 6 are the results estimated using instrumental variable approach, the rest are results based on standard probit and tobit approach. The base model contains only a dummy for legal reform and village characteristics (columns 1 and 4), then it is augmented by adding a village election dummy and the interaction of the election dummy and the reform dummy. Tests for a significant impact of governance variables post-reform ($\gamma+\delta=0$) and a significant

¹⁷ The share of those who quote inadequate compensation as the main reason for their dissatisfaction exceeds 50% of the dissatisfied in all regions except the center.

reform impact in villages with democratically elected representatives ($\beta+\delta=0$) are reported in the bottom panel.

The coefficient on the reform dummy in the base models (columns 1 and 4) provides support for the hypothesis that reform had a significant impact on reducing the probability of illegal land redistribution. However, reform dummy becomes insignificant in both the probit and tobit model when village election and its interaction with reform dummy are added (columns 2 and 5). This together with the rejection of joint tests for $\beta+\delta=0$ supports the hypothesis that it was not legal reform by itself but rather such reform combined with villagers' ability to hold their leaders accountable, that helped to bring about an increase in the security of property rights. Similarly, the statistical insignificance of election dummy and the rejection of joint test for $\gamma+\delta=0$ also suggesting that it was not democratic governance alone but the interplay of democratic governance and legal reform significantly reduced illegal reallocation.

Finally, the IV estimators (columns 3 and 6) are performing well with the over-identification test confirm the validity of the identifying instrumental variables. The IV results are also consistent with those from standard probit/tobit; neither law nor governance alone has significant impact on reallocation decision but rather the interaction of the two makes the difference. The magnitudes of impact based on two estimation approaches are different to some extent. For example, the standard probit results indicates that implementing a legal reform in communities with elected leaders would cut down the probability of having land reallocation by 2.8%, compared to 3.8% based on IV probit estimation. The difference is more pronouncing for the post reform governance effect. While IV estimation shows that having election post law reform would reduce the probability of having land reallocation by 17%, standard probit estimation indicates a 3.8% reduction. The difference however is smaller for the tobit results.

The signs of coefficients on variables that would affect the security of property rights independently are largely as expected. First, the negative and significant (at 10%) coefficient on villagers' knowledge of the law in the probit regression supports the importance of villagers' ability to independently monitor leaders' compliance with legal provisions. From a policy perspective, this provides a strong justification for dissemination activities, in line with findings from other countries where legal knowledge emerged as an important factor in its own right (Deininger *et al.* 2006a). Second, although only of marginal significance, the positive coefficient of share of agriculture variables suggest that the propensity to reallocate land is higher in villages that depend more on agriculture as their main source of income. Finally, quite surprisingly in view of the importance often attributed to certificates (Palomar 2002), the share of households who hold a certificate is insignificant at all. This would imply that land use certificates are not an effective means to protect against expropriation of property rights by the state, a result that could have far-reaching policy implications.

4.2 Determinants of land compensation

Results from tobit regressions of the level of compensation received by households, holding land characteristics, the type of taking, and governance variables, respectively constant, are reported in table 6. Column 1 is the base model without interaction terms of law reform and other variables of interest. Column 2 corresponds to the augmented model where interaction of law reform and village election and the interaction term of law reform and public land use dummy are added. Column 3 is the IV estimators for the augmented model. The IV results are consistent with the standard non-IV tobit results. The instrumental variables used to identify the endogenous village election dummy pass the over-identification test with the test statistics equal to 1.61.

We note that there is a strong link between land characteristics and the value of compensation received, suggesting that both past and future potential affect the level of compensation. The value of production obtained from the land before it was subject to taking is highly significant and of considerable magnitude, with an elasticity ranging from 0.61 to 0.71 depending on the specifications or estimation approaches. Similarly, location of land next to a major road also contributes to a significant increase in the amount of monetary compensation paid, according to some estimates leading to more than a doubling of the latter. In view of the fact that compensation can come in kind or cash, it is not surprising to find that the share of compensation received in kind, i.e. the size of land received relative to what was lost is highly negative. The result that farmers whose land was used by a private investor receive compensation more than double of what was paid for land destined for government use provides support to the notion that, in cases where private entrepreneurs are involved and can directly negotiate with affected farmers the latter were better off, thereby allaying fears that that government intervention would be required to ensure a “fair” deal.

The positive and highly significant value of β in the base model, the coefficient on the reform dummy, suggests that the RLCL led to an increase of the amounts of compensation received by farmers of about 68%, slightly lower than the premium for land that is located next to a national or provincial road. Interestingly, like in the case of reallocation, the significance of this coefficient vanishes once an interaction between the reform and village election dummy is introduced. On the other hand, our hypothesis that the law reform is effective in communities with democratic governance is supported by the rejection of joint test for $\beta+\delta=0$. Similarly, our hypothesis that democratic governance is effective post reform is also borne out; as indicated by insignificant coefficient of election dummy is insignificant in the IV equation (though significant in tobit model) and the rejection of joint test for $\gamma+\delta=0$. Finally, the rejection of joint hypothesis test for $v+\varphi=0$ suggests that the law has independent effect on eliminating discrimination in favor of land takings by the state that seems to have existed in the system earlier. From

a policy perspective, this would imply that, if there is a need or desire to increase the levels of compensation paid to users, e.g. by bringing them closer to land values under non-agricultural land use, a more general look at practices of land valuation would be needed.

We also note that villages with higher levels of income are more likely to pass on compensation payments to the concerned land users and that compensation payments are higher in villages where greater advances have been made in distribution of land use certificates, in line with the expectation that farmers' awareness of the longer duration of their land rights, which is explicitly mentioned on the certificate, will allow them to demand more appropriate levels of compensation. At the same time, neither leaders' nor households' knowledge of the detailed provisions of the law is estimated to make any difference, something that is consistent with the hypothesis that such knowledge is more necessary to prevent arbitrary expropriation by village leaders (for taking or other purposes) than to ensure that appropriate compensation is paid.

5. Conclusion and policy implications

If, as suggested by an increasing literature, secure property rights that are broadly distributed can increase economic growth and broader development, ways for countries to cost-effectively increase the outreach and security of their property rights system become of high relevance (Miceli *et al.* 2002). By exploring the extent to which adoption of a new law has increased land users' security against expropriation and the amount of compensation they can expect in case of land taking allows a number of insights that will be relevant for China and other countries where either demand for non-agricultural land is rapidly increasing or where state actors threaten the security of individuals' property rights.

First, our finding that the amount of compensation paid in cases of private investment where villagers had an opportunity to directly negotiate with investors, was significantly above what was, at least pre-reform, received in cases for public takings, suggests that the requirement of having government actually acquire the land in each and every case of land use conversion is not an effective way of protecting land users. To the contrary, it may do more harm than good by creating a conflict of interest and ample rent-seeking opportunities. Finding ways to limit the role of the state in cases of land use conversion to that of a regulator who ensures a level playing field, and has clear rules and service standards to adhere to, is likely to have many advantages.

Second, we find that, in an environment where rent seeking by local poses a challenge to the security of individuals' property rights, legal reform to put such rights on a more secure footing can be an effective way to make property rights more secure by reducing officials' opportunities to exercise their power in a discretionary way. The effectiveness of legal reform strongly depends on the institutional environment;

while we find a strong effect of legal reform in communities where leaders had been democratically elected and the council was more representative of all groups, we can not reject the hypotheses that in places where these two conditions were not in place, legal reform did not have any impact. Knowledge of the law's content also helped to increase the security of property rights.

Finally, the impact of having land use certificates, a document comparable to titles in other contexts, remains ambiguous; while we find some impact on the amount of compensation received in case the land is taken, certificates are not an effective means of protecting against illegal land redistributions. This supports the view that property rights can not be divorced from the broader social and institutional context within which they operate, suggesting that, in an environment where opportunities to hold officials to account -either through internal mechanisms such as elections or because the certificates have external validity- attempts to 'formalize' property rights merely by issuing certificates may be futile.

It is important to note that this does not imply that, in such environments, higher levels of tenure security would not be desirable; to the contrary, the high incidence of illegal land redistributions in our sample suggests that effective ways to reduce the risk of individuals' property rights being challenged by the state could yield large direct and indirect benefits. Building on the sample used here is likely to provide ample opportunities to assess the magnitude as well as incidence of such benefits, an issue that is left for future research.

Table 1: Basic village characteristics

	Total	Region			
		N & NW	Coastal	Central	SW
General characteristics					
No. of households	427.04	507.55	327.02	423.17	439.90
Population	1575.24	1813.61	1064.30	1762.00	1701.25
Agricultural households (%)	78.61	80.20	51.02	86.91	90.14
Per capita income (Yuan)	2989.54	2940.13	4596.84	2525.17	1983.21
Per capita cultivable land (Mu)	1.24	1.89	0.97	1.17	0.94
Structure of village income					
Total village income in 2003 (10,000 Y)	22.41	15.66	58.25	9.55	4.87
.. of which from collective enterprises (%)	21.02	24.82	20.42	21.40	16.15
.. of which from private enterprises (%)	5.77	0.97	7.71	3.65	2.54
.. of which from taxes and fees (%)	7.98	14.17	2.86	37.13	15.77
.. of which from land compensation (%)	36.53	38.97	37.16	10.47	45.59
.. of which other (%)	28.69	21.07	31.85	27.34	19.95
Total expenditure (10000Y)	17.62	13.41	40.97	11.27	5.17
Value of village assets (10,000 Y)	55.62	48.57	114.82	25.77	26.81
Governance and Knowledge about the law					
Leaders elected (%)	70.18	70.11	75.72	64.89	68.16
Households holding land certificates (%)	82.81	66.50	86.86	84.36	93.04
Leaders know the conditions for big Readjust. (%) ^a	53.41	67.93	38.73	39.36	58.74
Leaders know the conditions for small Readj. (%)	17.80	13.04	17.34	25.53	18.83
Households know the conditions for big Readj. (%)	53.31	65.52	40.26	33.51	60.78
Households know the conditions for small Readj. (%)	19.32	19.62	23.66	26.49	12.90

Source: Own computation based on 722 villages from the 2005NBS/WB survey.

^aThe data in the last four rows (Leaders and household's knowledge on the content of the law with regard to conditions under which the big and small adjustments are allowed) are based on the test results of leaders and farmers' understanding of RCLC.

Table 2. Incidence and characteristics of administrative reallocations

	Total	Regions			
		N & NW	Coastal	Central	SW
Overall characteristics					
Had at least one reallocation since 2000 (%)	28.67	31.50	40.32	23.23	19.41
Annual average before law came into force	13.18	13.78	18.96	12.11	8.69
Annual average after law came into force	8.31	10.27	9.89	6.32	6.36
Total area affected (mu)	745.74	1417.57	382.21	655.02	443.56
No. of households affected	151.9	221.6	115.0	137.3	131.7
Annual rate of illegal reallocations (%)					
Before RLCL in force (%)	6.15	5.75	12.10	4.04	2.74
after RLCL in force (%)	3.46	4.00	6.99	1.01	1.27
Rationale and variation over time					
Main reason population change (%)	45.42	43.48	47.78	50.00	41.51
Main reason land taking (%)	24.88	22.22	22.67	13.64	37.78
before policy change	25.00	22.73	22.03	15.79	38.24
after policy change	24.49	21.05	25.00	0.00	36.36
Mean area affected by taking-related reallocation	117.7	194.4	47.5	27.4	171.4
before policy change	130.5	214.9	52.0	31.7	212.5
after policy change	77.1	147.0	30.9	0.0	44.4
Mean # of hhs affected by taking-related change	34.8	42.6	27.6	23.8	41.1
before policy change	36.5	44.8	30.0	27.5	42.1
after policy change	29.2	37.5	19.0	0.0	37.8
Mean area affected by other change	606.3	1259.4	293.1	627.4	203.5
before policy change	497.7	938.7	297.4	620.2	206.1
after policy change	951.8	2002.2	277.0	673.0	195.2
Mean # of hhs affected by other change	129.0	195.0	96.3	135.5	88.0
before policy change	118.7	173.1	100.5	135.8	70.5
after policy change	161.8	245.8	80.9	133.7	141.8

Source: Own computation based on 722 villages from the 2005NBS/WB survey.

Table 3. Land Takings: Village level information

	All		Regions		
	China	N & NW	Coastal	Central	SW
Incidence of land taking					
Villages with land taking (%)	29.47	19.10	40.56	19.00	34.18
Total area taken	103.10	176.23	106.75	91.82	66.93
... of which irrigable (%)	83.21	62.20	100.00	88.79	79.50
No. of households affected by takings	88.14	94.51	116.87	52.05	65.24
Taking before RLCL in force (2000/1-2003/3) (%)	16.59	10.38	23.08	12.39	17.60
Taking after RLCL in force (2003/4-2004/12) (%)	22.52	13.68	31.62	16.81	23.97
Purpose and job-market impact of taking					
Infrastructure (%)	51.39	52.94	35.94	48.48	69.37
.. of which initiated above village (%)	81.33	96.30	84.78	75.00	75.32
Commercial (%)	48.61	47.06	64.06	51.52	30.63
.. of which for private sector (%)	47.77	66.67	36.59	35.29	67.65
.. of which initiated by higher level government (%)	44.59	33.33	53.66	64.71	20.59
Taking generated jobs (%)	28.01	30.71	31.43	26.32	24.33
No of jobs generated within village	13.49	14.24	13.82	16.70	12.16
No of jobs generated total	64.10	39.21	25.14	20.74	116.62
Project has been completed	65.84	72.55	59.84	81.82	64.86
Project has started	88.54	94.12	79.69	96.97	93.69
Compensation					
Taking followed by reallocation (%)	27.95	35.29	18.75	48.48	29.09
Amount of compensation paid (Y/mu)	15054.8	6729.9	24798.8	6478.1	9956.5
Amount of compensation before reform (Y/Mu)	13177.6	6056.7	21805.8	4881.8	8988.5
Amount of compensation after reform (Y/Mu)	17557.8	7627.4	28463.6	7648.7	11643.6
Taking involved monetary compensation (%)	82.37	72.44	82.08	89.47	85.88
Any compensation retained by village	39.01	31.37	59.38	42.42	18.02
> 50% of compensation retained	14.86	9.80	24.22	24.24	3.60
Payment to those who lost land only (%)	56.35	60.78	43.75	66.67	65.77

Source: Own computation based on 722 villages from the 2005NBS/WB survey.

Table 4. Information on taking by affected households

	All				
	China	N & NW	Coastal	Regions Central	SW
Project level indicators					
Amount of land lost (mu)	1.23	1.52	1.33	1.06	1.05
Net income from land before taking (Y/mu)	780.95	526.69	1148.08	616.14	639.01
Received monetary compensation (%)	82.37	72.44	82.08	89.47	85.88
Received land as compensation	41.25	51.18	35.24	35.09	42.59
if yes, size relative to amount of land lost (%)	86.79	92.98	86.59	81.01	84.35
Monetary compensation received (Y/mu)	7729.9	4908.9	9635.1	4128.5	8240.9
...before policy change (Y/mu)	6642.2	4258.7	7272.1	2655.3	7669.4
...after policy change (Y/mu)	8949.8	5649.8	11642.4	5003.3	9154.0
Distance to county center (km)	20.15	16.89	19.71	23.90	21.31
Nearby national road (%)	14.31	16.54	11.91	5.26	17.11
Negotiation directly with private investors (%)	21.16	23.62	20.48	21.05	20.53
Perceived impact of land taking					
Perceives taking to have improved welfare	22.91	19.69	12.04	31.58	31.66
... due to compensation	16.77	30.77	18.42	19.05	10.98
.... due to job creation	55.69	50.00	63.16	52.38	54.88
.... due to both	27.54	19.23	18.42	28.57	34.15
Perceives taking to have worsened welfare	18.36	24.41	19.91	10.53	15.83
... due to compensation	60.00	62.86	50.91	33.33	75.61
... due to compensation & harmful effects	40.00	37.14	49.09	66.67	24.39

Source: Own computation based on 665 households affected by takings from the 2005 NBS/WB survey.

Table 5: Determinants of illegal land reallocation at village level

	Illegal reallocation dummy			Amount of land illegally reallocated		
	Probit			Tobit		
	OLS	IV		OLS	IV	
Reform dummy (β)	-0.020** (2.30)	-0.004 (0.30)	0.088 (0.78)	-2.742** (2.38)	-0.721 (0.40)	3.410 (0.50)
Director and secretary elected (γ)		-0.009 (0.86)	-0.048 (1.04)		-0.977 (0.76)	-6.262 (1.02)
Director & secretary elected*Reform dummy (δ)		-0.024 (1.49)	-0.126 (1.13)		-3.388 (1.44)	-9.451 (1.01)
Leaders' knowledge of law	-0.019* (1.72)	-0.018* (1.65)	-0.019 (1.56)	-2.553* (1.68)	-2.460 (1.62)	-2.735 (1.55)
Households' knowledge of law.	0.011 (1.02)	0.011 (1.04)	0.004 (0.35)	-1.795 (1.40)	-1.729 (1.36)	0.315 (0.20)
Share of households with land certificate	-0.015 (1.43)	-0.014 (1.36)	-0.011 (1.01)	1.182 (0.84)	1.189 (0.85)	-1.486 (1.05)
Village per capita income	-0.009 (0.85)	-0.005 (0.51)	-0.004 (0.36)	-1.070 (0.74)	-0.627 (0.43)	0.364 (0.22)
Share of agriculture	0.027* (1.77)	0.023 (1.58)	0.017 (0.82)	3.285 (1.58)	2.908 (1.40)	2.022 (0.90)
Test for Reform Effect						
$\gamma + \delta = 0$		-0.033**	-0.174**		-4.365**	-2.852**
$\beta + \delta = 0$		-0.028***	-0.038**		-4.109***	-6.041**
Wald Test of Exogeneity, $\chi^2(2)$			3.31			0.85
Observations	1917	1917	1785	1917	1917	1785

Robust z statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. Province dummies included but not reported. An illegal land reallocation is defined as one that did not involve the village committee.

Table 6: Determinants of compensation received by households

	OLS		IV
Reform dummy	0.680**	1.016	-0.017
(β)	(2.16)	(1.62)	(0.01)
Director & secretary elected (DSE)		1.433***	4.279
(γ)		(2.86)	(1.19)
DSE*Reform dummy		0.130	1.939
(δ)		(0.19)	(0.52)
Value of production before taking (Y/mu)	0.609***	0.639***	0.711***
	(4.06)	(4.28)	(4.20)
Land taken irrigable	0.123	0.339	0.978**
	(0.33)	(0.90)	(1.98)
Distance to county (km)	-0.003	-0.002	-0.002
	(0.34)	(0.29)	(0.25)
Land next to national/provincial road	0.898**	1.127***	1.556**
	(2.11)	(2.63)	(2.27)
Share of land received	-2.211***	-2.329***	-2.562***
	(5.88)	(6.27)	(5.72)
Village income (log)	2.102***	1.916***	1.806***
	(5.34)	(4.80)	(2.77)
Public land use dummy	-0.791**	-1.781***	-1.305*
(ν)	(2.12)	(2.98)	(1.91)
Public land use*Reform dummy		1.509**	0.662
(φ)		(1.99)	(0.76)
Share with certificates	0.782*	0.810*	1.179**
	(1.71)	(1.78)	(2.02)
Leaders' knowledge of the law	0.421	0.443	0.629
	(0.91)	(0.97)	(1.24)
Household's knowledge of the law	-0.059	-0.268	-0.180
	(0.13)	(0.59)	(0.36)
Constant	-16.650***	-16.657***	-18.792***
	(5.15)	(5.15)	(4.90)
$\gamma + \delta = 0$		1.563***	6.218***
$\beta + \delta = 0$		1.146***	1.922**
$\nu + \varphi = 0$		0.272	-0.643
Wald Test of Exogeneity, $\chi^2(2)$			1.61
Observations	608	607	595

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Absolute value of t statistics in parentheses *, **, and *** denote significance at 10, 5, and 1%, respectively. Province dummies and constant included but not reported.

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