

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

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Abstract: Motivated by the emphasis on secure property rights as a determinant of economic development in recent literature, we use village- and household level information from about 800 villages throughout China to explore whether legal reform increased protection of land rights against unauthorized reallocation or expropriation with below-average compensation by the state. In addition to providing nation-wide evidence on a sensitive topic, we find positive impacts, equivalent increasing land values by 30%, of reform even in the short term that originated in villages where democratic election of leaders ensured a minimum level of accountability, pointing towards complementarity between good governance and legal reform. Implications for situations where individuals and groups hold overlapping rights to land are explored.

1. Introduction

While earlier theories of development focused on accumulation of capital, macro-economic policies, or natural endowments as key determinants of subsequent performance, an influential current of literature has recently postulated a central role of institutions as preconditions of economic growth. In this tradition, broadly accessible and secure property rights that allow holders to enjoy the benefits from investment without being challenged by outsiders or state agents are viewed as an important element of an environment conducive to growth. As a consequence, measures of the security of such rights are now routinely included in assessments of the “investment climate” used by multi- and bilateral donors to determine countries’ progress on policies or eligibility for external funding (World Bank 2006).

However, despite a near-consensus on the importance of property rights, the literature has little guidance to policy-makers interested in increasing the security of such rights to key economic assets, including land, especially against the state. This is important in view of evidence that state representatives who may credibly be unable to commit to abstaining from use of their power for private objectives (Hoff and Stiglitz 2004) can be the most important threat to property rights, especially in transition countries and environments characterized by rapid urbanization and associated demands for land acquisition. While this implies that policies to counter institutional bias in favor of the wealthy and prevent state representatives from using their power for personal gain could greatly strengthen tenure security, evidence of changes on the ground remains scant, and most of the debate has focused on individual property rights security.

In this paper we use the case of rural property rights reform in China, a country where property rights to land have traditionally been insecure and where increased pressure on land in peri-urban areas has given rise to a series of well-publicized conflicts. We build on the vast US literature on land takings under eminent domain to lay out key arguments relating to justification and limits of such takings and the need and desirability of a full compensation requirement. This helps us to understand not only how the magnitude and distribution of benefits and costs of land acquisition in China differs from what is found in other settings but also how the 2003 rural land contracting law (RLCL) changed these and thus should affect leaders’ behavior and overall tenure security. Higher population density, rapid recent economic

growth and, most importantly, legal constraints on acquisition of rural land for non-agricultural purposes have immensely increased the benefits from land taking, as reflected in escalating land prices. Officials' ability to apply eminent domain with little public scrutiny and to rely on readjustment (land reallocation) to acquire large tracts of land without any cash outlay further imply extensive use of land taking not only as a source of income by local government, but reportedly also for individual enrichment and corruption.

The RLCL includes a number of measures that aim to change the cost of acquiring land significantly. It does so by increasing the security of individual land use rights and enhancing individuals' ability to lodge appeals against violation of such rights. This is achieved by requiring compensation for individual loss of land and, more importantly, by tightly circumscribing the conditions under which administrative land reallocation (traditionally leaders' preferred avenue for eminent domain land acquisition) is feasible.

Although this will not alter the benefits from land conversion, we expect the RLCL to reduce the amount of land acquired under eminent domain in ways that are no longer legal and the compensation paid for land acquired legally. Our aim is to assess empirically whether (and if yes, under what circumstances) this was the case. To do so, we use a unique panel data set of almost 800 villages plus 8,000 randomly selected households for the period before and after the coming into force of the RLCL. Our indicators for enforcement of private property rights are (i) conduct of "illegal" reallocations and (ii) compensation received by those who had part or all of their land expropriated. As both of these are available from before and after passage of the law, we can assess whether the RLCL alone or in combination with other factors (e.g. distribution of land use certificates) helped to improve tenure security.

We find that, even within the short time horizon considered, legal reform had a significant and quantitatively important impact on increasing the security of property rights. Instrumental variable estimates point towards strong complementarity between democratic elections and effectiveness of legal change in the sense that legal reform had a positive impact only where the village leadership was elected. This suggests that, for legal reform to be effective, means to hold the state accountable are needed, an interpretation that is supported by the fact that village leaders' knowledge of the law had an independent impact on reducing the probability of illegal reallocation. At the same time, availability of land use certificates did not significantly reduce the risk of an unauthorized land reallocation, suggesting that such certificates will be useful only within an appropriate institutional framework.

Results for levels of compensation in case of expropriation, an issue where procedures are better defined and involvement by a range of outsiders makes it more difficult to circumvent the rules, support the notion of a positive reform impact mediated through elections. Payments for land to be used by the public sector, which had been significantly below that for land to be used by private investors before the reform, had thereafter come to equal the latter. Compensation was also higher in locations where more households

had land use certificates. This suggests that legal reform to strengthen property rights can have a significant impact that will be further enhanced by (i) mechanisms to hold leaders accountable, (ii) dissemination of the content of the law, and (iii) distribution of land use certificates if they can be enforced.

The remainder of the paper is organized as follows. Section two places the topic in context by introducing relevant aspects of the large and largely US-based legal and economic literature on takings under eminent domain, assessing key differences to the Chinese situation pre-2003, highlighting pertinent changes by the 2003 rural land contracting law, and using these to derive analytical questions and testable hypotheses. Section three describes sampling and uses descriptive statistics to illustrate variation of village characteristics and property rights over time and space. Section four describes the econometric approach and 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

While the importance of good institutions is widely recognized and a large theoretical literature discusses when the state should be able to expropriate land and how to compensate for it, there is little evidence on how to improve the security of property against the state. This section provides a conceptual framework, reviews the history of land relations in China, identifies how the rural land contracting law increased tenure security, and derives hypotheses to be explored empirically in subsequent sections of the paper.

2.1 The importance of secure property rights 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 depends on historical and political circumstances (La Porta et al. 1999), a growing literature has come to recognize the overarching importance of “good” institutions¹ for economic development. A legal system that protects contracts and property rights encourages investment and ensures effective use of scarce economic resources. It can thus be viewed as a fundamental precondition to achieving many of the outcomes often subsumed under “good governance” or “appropriate macro-economic policies”. If the rule of law is weak or nonexistent, private actors will need to spend resources to secure their property rights and enforce contracts with strangers, leading to socially inefficient outcomes. The poor may not be able to afford the associated costs at all and, without the ability to enlist the power of the state to protect their property rights, may end up in otherwise avoidable poverty traps.

¹ An influential paper defines “good” institutions as follows “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” (Acemoglu et al. 2004,12).

Empirical support for this proposition comes from three types of studies. First, case study evidence from small samples over a long period of time suggests that jurisdictions with very similar initial 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), something that may persist even if they subsequently become part of the same country as in the case of India. Second, a large cross-country literature has explored this issue, building on indices of institutional quality (Knack and Keefer 1995) and the seminal use of colonial settler mortality as an instrument for institutions (Acemoglu et al. 2001). In general, evidence supports the importance of institutions compared to other factors (Easterly and Levine 2003, Rodrik et al. 2004), highlighting the importance of legal origins (Beck et al. 2003, Levine 2005). It also often points towards inappropriate institutions as a root cause of inappropriate policies (Acemoglu 2003) or a deterrent to human capital accumulation (Acemoglu and Johnson 2005). Adding specific information on key aspects of the regulatory environment (World Bank) has helped to open up a new direction in the comparative economic literature (Djankov et al. 2003).² This has put institutions squarely on the policy agenda, remaining methodological challenges notwithstanding (Przeworski 2006, Bardhan 2005). Third, use of firm level data provides an option to overcome the econometric and substantive limitations inherent in cross-country regressions. 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). Firm level evidence from China also suggests that insecurity 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 critical for economic development, ways to bring about changes of a country's institutions, in particular its system of property rights, assume great importance. 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), adoption of the most appropriate institutions is far from automatic (Acemoglu). Land in China is of interest for a study of the effectiveness of legal reform not only because of the country's wide variation in social, ecological, and economic conditions, but also because new legal provisions aiming to

² The indicators used measure the costs, in terms of time and resources, of starting a business, hiring and firing workers, registering property, getting bank credit, protecting equity investors, enforcing contracts in the courts, and closing a business. All of them are based on surveys of local lawyers, thereby providing a characterization of the business environment that is more precise than available cross-country indicators and that can more readily be used as a basis for reform (Djankov et al. 2005).

endow cultivators with more secure rights may be opposed by local bureaucrats who often derive considerable power and possibly material gains from their ability to control land.

While private property rights provide incentives for optimum levels of investment and land management within the confines of a given plot, a wide range of land uses such as road networks or public buildings exhibit strong public good characteristics. Demand for these tends to increase disproportionately with economic growth.³ Externalities from these and the difficulty of excluding users or set prices in line with individuals' marginal valuation of the services provided would imply that the private sector would not provide these at sufficient quantity or scale, thus providing an argument in favor of public provision (Shavell 2003, Lueck and Miceli 2006). The large amounts of land needed, together with the fact that such projects are widely known well before they get underway, implies that, contrary to private developers, the public sector will not be able to acquire land quietly and thus be subject to a holdout problem whereby individual land owners refuse to part with their land, except at highly exaggerated prices (Miceli and Segerson 2000). To prevent this from undermining or delaying projects, virtually all countries allow land to be acquired compulsorily through eminent domain 'for public purpose' and with 'fair' compensation, two requirements that have been widely debated in the literature.

Although legal scholars differ on how narrowly to define the 'public purpose' requirement (Harrington 2002), the dangers posed by an excessively wide interpretation in terms of creating incentives for corruption by private investors trying to influence processes to their own advantage are well recognized in the literature (Kelly 2006). The prevailing legal opinion is thus that expropriation under eminent domain needs to be limited to specific and well-defined projects and that the possibility for those affected to appeal to the judiciary is essential to prevent abuse of state powers by the bureaucracy.

It is well known that, in an economy with an impartial state and well-developed capital and insurance markets, requiring the state to compensate land and any improvements that are taken fully may convey perverse incentives for owners to invest beyond the socially optimal level (Blume et al. 1984, Kaplow 1986).⁴ However, such conditions rarely hold even in developed countries and are especially rare in developing ones where widespread market and informational imperfections are combined with a large potential for rent seeking and abuse of state power. Together with the fact that other mechanisms, for example, that the use of tax records or previous valuations can help to limit or eliminate such outcomes (Shavell 2003), this has led to a consensus that requiring payment of compensation will help prevent the

³ In major US cities, between 25-35% of developed land is estimated to be accounted for by public rights of way, mostly streets (Shavell 2003).

⁴ A well-known theoretical argument is that the scope of receiving compensation for land plus associated investments at market values may induce individuals to invest beyond the socially optimal level. If the deadweight loss from tax collection is high or if administrative and transaction costs incurred by the public sector are significantly above those by private agents but individuals have perfect foresight and can operate in well-functioning markets, this could be avoided by privately run insurance against land takings (Calandrillo 2003).

state (or the bureaucrats representing it) from abusing the powers of land acquisition beyond the socially optimal level merely for individual gain (Farber 1992, Shavell 2003, Giammarino and Nosal 2005).

2.2 Application to China's land tenure system

Although private use rights to rural land have become well established and a market for exchanging them has emerged, rapidly increasing demand for conversion of land from agricultural to non-agricultural uses (e.g., for infrastructure or industrial developments) poses challenges to property rights security. While property rights to urban land are relatively secure⁵ and a market for rural use rights has also evolved, the scope for conversion threatens to undermine rights to rural land that continue to be of critical importance to the vast majority of China's population as a means of production and a safety net. Recent legal reforms aim to reduce the scope for unilateral land taking from the entire community, allow an independent legal review, and require proper compensation in case land is expropriated from individual users. Before explaining these and exploring their effectiveness, we review the evolution of land policy in China.

Land policies and interventions that directly or indirectly affected the security of property rights to rural land have been a key issue throughout China's history. Before the communist revolution, most of China's farmers were poor tenants or owners of small plots. 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 for output and rural welfare, culminating 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 production, the 1978 Household Responsibility System (HRS) made households residual claimants to output and subsequently provided 15-year land use rights, setting off tremendous increases in output and productivity (McMillan et al. 1989, Lin 1992). This success prompted a recommendation to renew contracts for an additional 30 years upon expiration of original 15-year leases in the late 1990s. Both were codified in the 1998 Land Management Law (LML), which requires that farmers receive written 30-year land use contracts (Chen and Davis 1998).

However, in both cases implementation remained incomplete with expropriation through administrative land redistribution or "readjustment" posing major challenges.⁶ Readjustments came in two forms. In the course of "big" reallocation, all farmland in the village was given back to the collective and, after subtracting proportional shares for land needed for other purposes, reallocated in equal sizes among villagers. "Small" readjustments, by contrast, merely transfer land from households who experienced

⁵ In urban areas, land could be allocated by the state or long term leases could 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).

⁶ Below we use the terms of administrative reallocation, readjustment, and redistribution interchangeably.

exogenous changes, leaving the rest unaffected. Unsurprisingly, this provides considerable power to local leaders, in addition to threatening property right security and the operation of rental markets.

In the early phases of reform, leasing was prohibited,⁷ and even temporary land transfers to respond to population change and economic diversification were expected to be met by administrative reallocation rather than market-based transactions (Kung and Liu 1997). Rapid growth of the number of potential transactions made bringing about an optimal land allocation through a central planner more and more difficult and resulted in adjustments to remove earlier prohibitions on land leasing.⁸ As a consequence, decentralized land transfers quickly started to overtake administrative mechanisms (Yao 2000, Benjamin and Brandt 2002, Kung 2002b). In fact, issuance of 15-year contracts to individual cultivators can be understood as a mechanism to provide the necessary tenure security to engage in such contracts (Rozelle et al. 2002), and partly due to the fact that they were clearly more efficiency-enhancing than reliance on local leaders to reallocate land to the “best” users (Deininger and Jin 2005), market-based land transfers now completely dominate administrative reallocation.

2.3 The challenge of regulating land takings

To understand the challenges that land takings through eminent domain posed to security to property rights in China before 2003, it is useful to recall key differences to the US. First, higher population density, rapid economic growth, and urban expansion imply high demand for non-agricultural land that manifested itself in considerable land price appreciation. Given the duality between agricultural and non-agricultural land, this led to the emergence of tremendous price differentials between the two types that increased the benefits to be had from conversion. Second, as current law does not allow new land for non-agricultural uses to be obtained via negotiation among private parties, local government has a *de facto* monopoly on the supply of new land to non-agricultural uses. Third, local leaders’ ability to use takings through land acquisition as a speculative tool is enhanced by the fact that they can compulsorily acquire land even in a vague anticipation of future projects. Finally, the cost of compulsory land acquisition is reduced by the fact that in most cases land can be acquired through reallocation whereby everybody’s amount of land is reduced equally to free up a certain amount of land that can then be devoted to other uses. As local leaders were the first instance to adjudicate dispute (i.e. there was no scope for an independent appeal against perceived or real abuses of eminent domain independent of local leaders), the cost of them acquiring land was further reduced. All of this allowed officials to spread the pain from and

⁷ As renting out of land by a household engaging in migration or local off-farm activity could be interpreted as a signal that his land was no longer needed and would be available for administrative reallocation, supply was particularly affected, and it is argued that this created disincentives for farmers to take up non-agricultural jobs (Yang 1997).

⁸ 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).

resistance to land acquisition while obtaining a highly concentrated benefit, making it a very attractive proposition.

Thus, although past legal reforms had increased the security of individual land use rights and provided a basis for their exchange among private parties, conversion of land from agricultural to non-agricultural remains a source of widespread discontent. The literature indicates that in many instances local officials seem to have used their power to order land reallocations not for its original purpose of equalizing land holdings but to transfer land to non-agricultural uses, either for personal benefit (Oi 1999) or to supplement local government budgets (Ding 2005).⁹ Leaders' ability to engage in such practices is reinforced by two features of the system. On the one hand, laws require that all land for non-agricultural use be first acquired by local government and subsequently sold off to private investors, thereby creating a de-facto public sector monopoly that may encourage rent-seeking.¹⁰ Second, even if compensation is paid for agricultural land subject to conversion, the payment is not pegged to market values, but to the value under agricultural production, usually as a multiple of average annual output value, plus compensation for standing crops and structures.¹¹ Court cases charging village officials with corruption for doing so and pocketing part or all of the proceeds have mushroomed (Cai 2003, Brandt et al. 2004). In the 1999-2002 period alone, more than half a million land-related corruption cases were filed, and 3,800 officials were put formally under investigation (Zhu 2005).

In this context, it is not surprising to find that large land tracts were acquired for non-agricultural purposes without ever being able to carry out the planned developments; in fact an official survey shows that 43% of expropriated lands are left idle (Xie et al. 2002).¹² While this caused numerous complaints (Guo 2001), including violent protest (Guo 2004), draconian measures to prohibit land conversion were unable to eliminate it. Previous efforts to increase tenure security against the state such as the 1998 LML had proven largely ineffective to counter these trends, partly due to the absence of a clear legal basis, limited awareness of applicable provisions, lack of a well-defined process for appeal, and the conflict of interest arising from the fact that in many cases local governments responsible for conversions are also the first instance for resolution of disputes, all of which meant that local leaders were often able to violate laws with relative impunity (Zhu 2004). For example, in 2001 only 12% of farmers were confident that their land will be protected against administrative readjustment (Schwarzwalder et al. 2002).

⁹ In several instances, sales prices are reported to have been between one and two magnitudes higher than purchase prices, implying profits of more than ten times the acquisition price even once development and other costs had been taken into account (Ding 2005).

¹⁰ In fact, Art. 43 of the land management law stipulates that all non-agricultural land use must occur on state-owned land. As a consequence, all land intended for non-agricultural uses must first be expropriated or "taken" by the state, something that makes direct negotiation between farmers and entrepreneurs impossible.

¹¹ By law, in case of compulsory acquisition, compensation needs to be paid for land and related investments as well as resettlement.

¹² 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 rely heavily on incomes from land transfer fees to supplement their regular budgets and are using land that has been compulsorily acquired as collateral for bank loans (Cai 2003).

2.4 Main innovations introduced by the RLCL and hypotheses to be tested

Against this background, the RLCL, which became effective in March 2003, aimed to increase the security of property rights against taking by representatives of the state. Three innovations are relevant. First, the RLCL defines farmers' land rights more widely than was the case earlier and, for the first time, gives them legal status as property rights rather than merely contractual arrangements between two parties (Prosterman et al. 2006).¹³ This makes it possible to seek redress for violations through the courts rather than only through administrative means, as had been the case earlier. Second, the law clarifies that the collective can not take (back) land from individual users without providing compensation (Art. 16) even though compensation continues to be determined on the basis of the land's value in agricultural production rather than its market value under non-agricultural use. Finally, and most importantly, as land redistribution had been a prime tool to obtain land, its use is severely circumscribed. Big reallocations that involve all land in the village are completely prohibited, and small reallocations (i.e. those involving only a subset of households) require ratification by higher levels of government, for example, the township government and the county unit responsible for agriculture, as well as a two third-majority in the village assembly (Art. 27). While the approval requirement is essentially a check to ensure that social benefits exceed the cost, the latter is likely to ensure that those affected will not be worse off.¹⁴

Based on the above, the RLCL is an interesting attempt to increase the security of property rights to land and reduce the incidence of socially inefficient land conversion by subjecting such action to closer scrutiny and, by requiring compensation for any land lost, increasing its cost. Thus, while government officials will still be able to respond to independent increases in demand for non-agricultural land uses such as infrastructure, the RLCL should ensure that such conversion be undertaken only in situations where the benefits clearly exceed the associated loss of alternative opportunities for land use. Below, we aim to test empirically the extent to which the law has achieved its goals and to identify factors that helped make it effective. We do so by considering two indicators, namely whether or not a reallocation in contravention of the law did occur and the amount of compensation received by households whose land was subject to expropriation (e.g. for infrastructure or establishment of non-agricultural enterprises).

¹³ There are three reasons for this. First, land rights obtained through household contracting are a legal entitlement created under the law; the contract issuing party, namely, collective entity, is mandated to allocate such rights to individual households even if it is not willing to do so. Second, the term, scope, rights and obligations of such land rights are regulated by law, rather than by contract provisions mutually agreed by relevant parties. Third, remedies for violation of such land rights include not only damages, but equitable remedies as well, such as returning the original thing and restoring to original state (RLCL, Art. 54). Lastly, the General Principles of Civil Law include farmers' land contracting and operation rights under the category of "property ownership rights and other property rights related to property ownership rights (Chapter V Art. 80), thus creating an implication that farmers' land rights are property rights" (Prosterman et al. 2006, p22).

¹⁴ In practice, the requirement of getting approval from the village assembly seems to imply that benefits from land-related development be shared widely but also that they are made available to affected individuals in a way, such as through housing or a pension scheme that reduces the scope for moral hazard (Andolfatto 2002) and mimics the traditional safety net-function of land.

The law obviously does not exist in an institutional and economic vacuum. Urbanization and economic growth will independently increase demand for non-agricultural land to provide infrastructure and allow industry to expand. Holding such factors constant, we expect legal changes to reduce the incidence of illegal land takings and for such change to be most efficacious if the community is governed democratically, if households know about their legal rights, and if users have some form of certificate, all propositions that can be tested with our data.

First, we expect property rights to be better protected and legal reforms to have a greater impact in villages where officials are elected compared to where they are not. The requirement of periodic re-election is a key limitation on incumbents' desire to extract rents that could otherwise undermine the economy's growth potential (Benhabib and Przeworski 2006). It does so by transforming interactions between officials and farmers into a repeated game, thus expanding the time horizon and reducing the scope for opportunistic behavior (Acemoglu). The 1988 Organic Law requires village elections to be held in all Chinese villages without specifying a modality for doing so (O'Brien and Li 2000, Kennedy et al. 2004). While no systematic information on the extent of compliance is available, it is normally held that a significant number of villages continue to have appointed leaders (Pastor and Tan 2000). Although effectiveness of local elections in China varies across regions and experts agree that there is considerable scope for procedural improvement (Oi and Rozelle 2000, Tan 2004), such elections are universally considered to have increased levels of accountability (Shi 1999, Cai 2003). We thus expect that property rights will be easier to defend against the state in locations where leaders are democratically elected.

Second, legal knowledge is critical for households to be able to recognize violations and to take proper action, such as lodging complaints with the judicial system. Similarly, officials need to be aware of the law to recognize the scope for them being subject to disciplinary action in case of non-compliance. In fact, government at higher levels put considerable effort into dissemination of the RLCL to ensure wide knowledge among the population.¹⁵ To obtain an objective measure of legal knowledge for officials and households in the sample, we administered a quiz to both groups. We expect that higher levels of knowledge or awareness of the law will increase the likelihood for the law to be implemented (i.e. for property rights to be secure against redistribution or taking without compensation).

Finally, issuance of land titles or other certificates to guarantee households' rights has received considerable attention in the recent scholarly and popular discussion (de Soto 2000, Woodruff 2001). The fact that distribution of 30-year land use rights had been a key element of the Chinese government's strategy to enhance land tenure security in the wake of the 1998 revision of the land management law can

¹⁵ 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).

be used to test whether such certificates can be relied upon to bring about the desirable outcomes normally associated with higher levels of tenure security.¹⁶ If, for example because they have validity beyond the village in case of dispute, certificates put effective constraints on leaders' behavior, we would expect them to increase tenure security and positively affect our indicators.

3. Data and descriptive evidence

This section describes the sampling methodology used to obtain reasonably representative information on land takings and reallocations.¹⁷ We also discuss the nature of complementary information on local economic and governance indicators from village and household surveys and the consistency between the different data sources. Descriptive statistics indicate that although the number of land reallocations declined after the legal change, it was not completely eliminated, and a significant number of illegal redistributions occurred even after the RLCL. By contrast, continued economic growth led to increasing incidence of land takings over the period. Although compensation levels remained close to the net present value of profits from agricultural production, their level increased slightly compared to before the RLCL.

3.1 Data sources and basic characteristics

To obtain reliable information on an issue as sensitive as that of land expropriations, we use a two-stage sampling procedure and rely on resident enumerators in the selected locations who are intimately familiar with the communities that they had covered several times for the Rural Survey Team of China's National Bureau of Statistics (NBS).¹⁸ The main element of the first stage, conducted in Oct. 2003, shortly after the promulgation of the RLCL, was a survey of 1200 villages, randomly selected from NBS' regular household survey sample, in China's 12 main provinces. Administrative records were relied upon as much as possible to obtain reliable information. A quiz with eight substantive questions on the content of the RLCL was administered to village leaders and, with questions regarding their exposure to RLCL-related dissemination activities, to the 10 households in NBS' master sample.¹⁹

Of the 12 provinces included in the first survey, the 9 with the highest levels of land market and land taking activity were selected for a follow-up survey in February/March of 2005 to assess whether the law had led to any changes in observed behavior at the village level. With the goal of providing an update on village level variables included in the earlier survey, more specific questions on takings and land reallocation since the RLCL had come into force were posed. In addition, to obtain specific information

¹⁶ As most of these documents had been issued long time ago under a different leadership, they can reasonably be considered to be exogenous.

¹⁷ In China, expropriation of land under eminent domain is referred to as "land taking". We use the two terms interchangeably throughout the text.

¹⁸ Enumerators visit sample households every two weeks, in addition to conducting an annual village survey, something that has generally led experts to consider these data as being of very good quality (Jalan and Ravallion 2001). In fact, the database generated constitutes to our knowledge the only base of information about land expropriations in China that has at least approximately national and comprehensive coverage.

¹⁹ The sample for this survey is drawn in a three-stage sampling using the 1997 Agricultural Census that covers all households residing in rural areas (excluding military camps, welfare houses, temples, prisons, and boats) as a sample frame. Within each province, first counties, and then administrative villages are drawn with probability proportional to size (PPS). Subsequently, households in each village are drawn in a simple random sampling (National Bureau of Statistics of China 2002).

on the processes involved and to provide a cross-check on the information obtained from officials, up to 4 households affected by land takings were selected for household-level interviews.²⁰

Characteristics of the sample villages (on average comprised of 427 households with some 4 members each at the regional level) are described in table 1.²¹ With 79%, the majority of households still rely on agriculture as the main source of income, a share that ranges between 90% for Southwest and only 51% in the Coast. Large differences between the Coast and the rest of the country are also visible in annual per capita income where the amount for the Coast is, with Y 4,600, about 50% above the national average (Y 3,000) and more than double the earnings in the Southwest (Y 1,980). Wealth differences are reflected by the variation of the value of village assets (Y 0.56 mn. on average), between Y 1.15 mn. on the coast and 0.26 mn in the country's central part. Average land endowments are small; per capita land available is 1.24 mu (1mu is equivalent to 1/15th of a hectare) overall, from less than 1 mu on the Coast and Southwest to 1.89 mu in the relatively land abundant North and Northeast. While this is small by international standards, irrigation allows production of two crops (e.g. rice and wheat) per year. With average yields of 413, 240 and 327 kg/mu (or 6.2, 3.6 and 4.9 tons/ha) for rice, wheat, and maize, respectively in the mid-1990s (Jin et al. 2002), access to a plot of average size provides a basis to feed a family and in addition produce at least some marketable surplus.²²

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 (collective and private) enterprises and "other" sources, each of which 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 37%.

The spread of democratic decision-making at the local level is evident from the fact that in about 70% of villages, director and party secretary had been elected in 2001.²³ Although distribution of land certificates had been mandatory since 1998, only 83% of households possessed such documents, a figure that varies from 67% in the North and Northeast to 93% in the Southwest. Our quiz to test knowledge of the law also illustrates that, despite a rather high general awareness of the RLCL, appreciation of the law's substantive

²⁰ For each of the villages where land acquisition had taken place, the goal was to interview 4 households, equally split into two who lost land before the RLCL's came into force and two thereafter. Also, in cases where land had been taken for public infrastructure and private investment, the sample was stratified to maximize the changes of including both types. For the 202 villages that had reported land takings in the 2003 survey, we obtained on average 3.3 households with usable data.

²¹ The 4 regions are defined as follows: North and Northeast region include Liaoning and Hebei provinces, Coastal includes Zhejiang and Shandong provinces, the Central region include Henan and Hubei provinces, and the Southwest includes Sichuan, Guizhou and Shanxi provinces.

²² With an average annual per capita grain consumption of 220 kg, one mu produces enough grain for about 3 persons (Huang and Rozelle 1998).

²³ 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).

content remains 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 identify correctly the conditions under which small readjustments are permissible. This suggests considerable remaining scope for focused dissemination activities to educate villagers on key aspects of the legislation.

3.2 Incidence of different types of land reallocation

Consistent with the literature that has identified village leaders' ability to initiate land reallocations as a main manifestation of rent seeking and a key reason for tenure insecurity, our data illustrate that incidence and scope of reallocations undertaken during the 2000-2004 period vary across regions and over time (Table 2). The share of villages that experienced at least one land reallocation during this period is, with almost one third (29%), surprisingly high as villages were at most expected to have had a "final" readjustment, issuing 30-year contracts when the original 15 year land use contracts issued in the early 1980s had expired around 1998. The incidence of reallocation varies between more than 40% in the coastal region where pressure for conversion of land to other uses through large-scale projects is highest and less than 20% in the Southwest. Variation across provinces is even more pronounced; while almost two third of villages in Shandong experienced a reallocation, less than 20% were affected in Zhejiang. The impact of policy is illustrated by the fact that in Guizhou, which had a policy of 'no more redistribution' since the 1980s (Kung 2002a, Kung 2006), only 5.4% of villages carried out reallocation, compared to 34% in Liaoning.²⁴ Even if reallocations took place, their size in terms of area and households affected varied; in the 240 sample villages with a redistribution during the period, an average of 746 mu and 152 households (i.e. about one third of the village area and population) were involved. Figures range from 1,418 mu and 222 households in the North and Northeast to 382 mu and 115 households in more land-scarce coastal regions. Amounts of land redistributed and the number of households affected vary even more across provinces.²⁵

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. In the 6.15% of villages, most of them on the Coast (12%), followed by the North and Northeast (6%), the Center (4%), and the Southwest (3%), where reallocation had been implemented each year without consulting the village assembly or representative meeting before the RLCL, such transparency was not adhered to. After the RLCL's coming

²⁴ The share of villages that 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.

²⁵ 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.

into force, such reallocations were outright illegal,²⁶ and *prima facie*, the law did lead to a decrease in their incidence to 3.5% overall, a change that is observed in all regions, although at very different rates.

Although eliciting the precise reason for a land reallocation may be difficult, it is of interest as the RLCL explicitly outlaws large reallocations in response to population growth. On the other hand, reallocations to spread the pain from the losses associated with land taking more equally among all villagers seem to have been common in the past (Brandt et al. 2004). With about 45% of cases, population change is still quoted by village leaders as the most frequent reason for land reallocation, followed by takings (25%) and policy change (20%), which may just be an attempt to try and to justify it with reference to a higher authority. We cannot reject equality in the frequency of reasons given for land redistribution before and after the RLCL.

3.3 Aggregate evidence on land takings

In the context of rapid expansion of urban areas and non-agricultural land use, the incidence and impact of land taking has attracted considerable attention. To obtain reliable information on the incidence and modalities of land taking, information on the same incident was collected independently from the affected (table 4) and from village leaders or accountants (table 3). In addition to allowing us to cross-check validity of responses, this is also justified as each of these has access to slightly different types of information (e.g. households may know the amount of money received by them but not the total compensation involved).

Aggregate figures 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 (table 3). 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. Splitting the sample into equal time periods before and after the RLCL's effectiveness points to an increasing trend in all regions with less than 17% and 23% of villages affected before and after. This is in line with the notion that land takings not outlawed by the RLCL are associated with economic growth and that the law should affect the way in which they are handled rather than their occurrence.

The nature of takings varied across provinces according to their economic development. In the aggregate, about equal shares (51% and 49%) of takings are due to infrastructure such as highways and commercial development, but the importance of commercial development is much higher (almost two thirds) in the coastal region and less than one-third in the Southwest, illustrating higher levels of commercial activity

²⁶ Even acknowledging that 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.

and an already better infrastructure network in the Coast. 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, however, high even for commercial developments, almost half of which (45% overall and 65% in the central region) is initiated by higher levels of government, and only about one third by private investors. While the need for private investors to cede initiative to public servants has been noted as a possible source of higher transaction costs and opportunities for corruption (Zhu 2004, Cai et al. 2005), our survey provides one of the first opportunities to test the validity of these claims on a broader basis.

The fact that only 89% of projects on expropriated land had been started and less than 66% completed may point to speculative land acquisition, a phenomenon that appears to have been more pronounced in the coastal region where less than 60% of projects had been completed and work had started on only about 80%. Often a key local benefit from land conversion is the generation of new jobs, within or beyond the village. Jobs were created in about a third of all and two-thirds of commercially motivated cases. With an average of almost 40 and 200 jobs for takings involving job creation within and beyond the village, respectively, this could indeed be a major source of compensation for affected households.

Taking was followed by administrative land reallocation in 28% of cases, only 19% in the coastal region where the incidence of takings was highest and almost 50% in the central region where few takings took place. With 82%, the majority of takings involved monetary compensation although receipt of cash was more likely for commercial ventures (91%) than public infrastructure (78%). After the RLCL, compensation levels increased significantly and consistently across regions to 17,500 Y/mu, although amounts paid vary from 28,000 Y/mu at the Coast, 11,600 Y/mu in the Southwest, and some 7,500 Y/mu in the North and Central.

Either to prevent unwise spending of the windfalls received by individuals or to spread the benefits more widely, almost 40% of villages retain part of the compensation received, a share that is, with almost 60%, highest at the Coast followed by the Center (42%), North and Northeast (31%) and Southwest (18%). In fact, 15% of villages (24% in the Center and the Coast) retain more than half of the compensation and only 56% (44% at the Coast), pay cash compensation exclusively to those who were affected by the taking compared to distributing it among all villagers. Thus, assessing the adequacy of compensation and possible broader welfare impacts of taking on those affected will require household-level information.

3.4 Household level information on land takings

Table 4 illustrates that the average area lost, 1.23 mu per household involved, is significantly less than the mean land endowment. Of those affected, 41% (between about 51% in the North to about one-third in the central and coastal regions) were at least partly compensated in the form of land with the mean size of the

land received amounting to 87% of what had been lost. Also, 82% of affected households received monetary compensation of Y 7,700 per mu on average, a value ranging between Y 4,100 in the central and Y 9,600 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. We find that both the share of events in which compensation was provided and levels of monetary payment had increased significantly. Before passage of the RLCL, 80% the takings received monetary compensation with the average level of monetary of 6642 Y/mu, while afterwards the figure is are 86% with an average payment of 8950 Y/mu. The level of compensation increased consistently across regions with the largest increase, about 60%, observed in the coastal region.

Given concerns about land takings leading to impoverishment of peasants and rural unrest, we included a question about subjective wellbeing to ascertain the perceived impact of land takings by those affected. Responses suggest that a small majority (23% as compared to 18% of those affected) consider welfare to have increased after taking of land. Negative responses outweigh positive ones in the Coast and North where illegal taking is most frequent. While inadequate compensation is a key reason for dissatisfaction,²⁷ the main reason for a positive effect is in positive externalities, in particular creation of jobs.

4. Estimation strategy and econometric evidence

We find that legal change had a significant impact on reducing relatively high levels of risk of illegal land redistribution and increasing compensation received in case of expropriation. This result is, however, due to villages who conducted democratic elections. While legal knowledge by village leaders reduced the probability of reallocation, land use certificates did not appreciably affect this variable. At the same time, the presence of certificates helped to increase the amount of compensation paid in case of land taking, a variable that was not significantly affected by knowledge.

4.1 Empirical strategy

To explore reform impacts on compensation levels, we regress the value of monetary compensation for a specific plot (in logs) on plot and village attributes, the nature of the expropriation process, and a number of policy variables that include a dummy for legal reform and its interaction with elections. Given the censoring in the data, a Tobit regression is used. Let C_{ijt} denote the amount of compensation paid for plot i in village j at time t ; then the equation to be estimated can be written as

$$C_{ijt} = \alpha + \beta D_t + \mu Z_{ij} + \nu X_{ij} + \omega Y_{ij} + \varphi(D_t \times X_{ij}) + \gamma G_j + \delta(D_t \times G_j) + \rho K_j + \theta T_j + \eta E_j + \zeta P_j + \varepsilon_{ijt} \quad (1)$$

²⁷ 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.

where D_t is a dummy for whether the observation pre- or post-dates effectiveness of the RLCL (i.e. March 2003), Z_{ij} is a vector of plot characteristics, X_{ij} represents the use of taken land, Y_{ij} denotes other attributes of the taking process, G_j and K_j represent governance and knowledge of the law, T_j indicates whether the household had a land use certificate, E_j denotes village characteristics, P_j provincial dummies, $\alpha, \beta, \mu, \nu, \omega, \varphi, \gamma, \delta, \rho, \theta, \eta$ and ζ are parameters or vectors to be estimated, and ε_{ijt} is an error term. For both indicators, availability of observations from before and after promulgation of the RLCL for the same communities allows us to use a time dummy to assess the impact of the law while the interaction of this dummy with other variables of interest helps to identify factors that improved quality of implementation.

In cases such as the one considered here where land cannot be traded and compensation comes in a wide variety of forms, defining a “market value” for land is not straightforward. To deal with this we use, for each plot subject to expropriation, the profit from agricultural cultivation before it was transferred to non-agricultural uses, a value that is included in the vector Z_{ij} . The variable X_{ij} is a dummy for whether the land was acquired for public use. The vector Y_{ij} includes indicators for whether the taking generated local jobs and the amount of in-kind compensation in the form of land, relative to what was lost, received by affected farmer. The interaction of D_t and X_{ij} allows us to test whether legal reform had a more pronounced effect on specific types of land expropriation. If, as has been hypothesized, public entities are cross-subsidized by getting free or near-free access to land (Zhu), ν will be positive and $\nu + \varphi = 0$ would imply equality of compensation levels between the two types of takings after the reform.

The variable G_j indicates whether the director and secretary in the village are elected to measure their accountability and, as above, we interact these variables to test whether legal reform is more effective in ‘democratic’ villages. Both G_j and its interaction with D_t were instrumented using the previous leader’s length of tenure as an identifying instrument (see below). The significance and magnitude of β, γ and δ allow inferences on the extent to which legal change and good governance, individually or jointly, affected observed outcomes. Specifically $\gamma > 0$ would indicate higher compensation in villages where leaders are elected irrespective of the legal change, $\beta > 0$ that adoption of the RLCL raised levels of compensation in all villages no matter how democratic, and joint significance of $\beta + \delta > 0$ would point towards synergy, such that legal reform has been (more) effective in raising the level of compensation in villages with elected leaders. In addition, K_j is a dummy for whether leaders were aware of the conditions under which a small reallocation was legally allowed, a variable that was obtained from the quiz included in our survey and that is highly correlated with the level of households’ level of knowledge. T_j denotes the share of households with a land certificate in the village in 2001, a variable exogenous to the individual household and, as it refers to the tenure of the previous government, excludes certificates that may have been issued in the context of the debate surrounding the passage of the new law.

Our second indicator to measure the impact of legal reform is whether a reallocation of land explicitly prohibited by the RLCL (i.e. without consulting the village assembly) had been conducted and, in case it did, the area affected.²⁸ Contrary to the level of compensation, which is observed only if an expropriation took place, information about redistribution, both before and after the reform, is available for all villages in our sample, thus reducing possible concerns about selectivity. Formally, we index villages by j and time by t , let R_{jt} be a dummy that is one if an illegal reallocation had taken place at time t and zero otherwise and A_{jt} the amount of land reallocated in an illegal redistribution in village j at t . Then the estimating equation in a probit or a Tobit model for R_{jt} and A_{jt} , respectively, can be written as

$$R_{jt} \text{ or } A_{jt} = \alpha + \beta D_t + \gamma G_j + \delta(D_t \times G_j) + \rho K_j + \theta T_j + \eta E_j + \zeta P_j + \varepsilon_{ijt} \quad (2)$$

with most of the right hand side variables defined in the same way as above for (1). Insofar as legal reform, governance, knowledge, and access to certificates increase tenure security, we expect β , γ , ρ , and θ to be negative. Again, by testing the significance of β , γ and δ , we can explore the extent to which reform or good governance had an impact on their own or in combination with each other.

From an econometric point of view, use of elections as a right hand side variable in (1) or (2) raises concerns as unobserved village characteristics that determine the propensity to hold village elections may also affect land use and reallocation decisions. To deal with concerns about endogeneity, we adopt an instrumental variables (IV) approach (Zhang et al. 2003, Shen and Yao 2008). The length of leaders' tenure was used as an instrument by Zhang et al. (2003) as this variable is highly correlated with village elections having been held but has little independent impact on economic outcomes. We follow these studies but note that the current leadership may still be correlated with economic outcomes. To avoid this concern, we use the length of tenure of the village leader before the last election cycle. Following Wooldridge (2002), we include the square of this variable and its interaction with the reform dummy to help identify interactions between election and reform variables.

4.2 Determinants of compensation received

Results from Tobit regressions of the level of compensation received by households are reported in table 5. Column 1 displays the base equation without the endogenous election variable while columns 2 and 3 report OLS and IV results that include instrumented variables for elections and their interaction with the legal reform dummy. Instrumental variables used to identify the latter comfortably pass the Wald test of exogeneity, the test statistic for which is indicated in the bottom of column 3.

²⁸ 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 reallocations as legal (i.e. held after consulting with the village committee) although, due to the failure to establish the quorum, they were not.

One notes 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, more than doubling the latter according to the IV estimates. As 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. We also note that the use to which land was put had a significant impact on the amount of compensation; even after all the other factors are accounted for, the amount of compensation paid for land to be used for public purposes is estimated to have been significantly lower than land to be used by private investors. This supports the notion that, in cases where private entrepreneurs are involved, farmers losing land were significantly better off, thereby allaying fears that government intervention would be required to ensure a “fair” deal. It suggests that direct negotiation between entrepreneurs and farmers would not make the latter worse off. Also, villages with higher income levels are more likely to pass on compensation payments to the concerned land users.

The positive and highly significant value of β , the coefficient on the reform dummy in the base model, suggests that the legal change through the RLCL increased amounts of compensation received by farmers of about 68%. Interestingly, the significance of this coefficient vanishes once an interaction between the reform and village election dummy is introduced, both in the OLS and the IV specifications. On the other hand, the highly significant coefficient on $\beta+\delta$, as reported in the bottom panel, suggests that, in villages with elected leaders, legal reform did have a highly significant and positive impact on the variable of interest. We cannot reject the hypothesis of reform not having had any impact in villages without elections, pointing towards a complementary relationship between legal reform and good governance.

A second finding of interest concerning the impact of reform relates to levels of payment made for land acquired for public use ($v+\phi$). As illustrated in the bottom panel of table 5, the RLCL helped to eliminate discrimination against those who had land acquired for public purposes. First, our finding that the amount of compensation paid in cases of private investment where villagers had an opportunity to negotiate directly with investors, was significantly above what was, at least pre-reform, received in cases for public takings, suggesting 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.

Finally, compensation payments are higher in villages where greater advances have been made in distribution of land use certificates, in line with the notion that farmers' ability to have physical proof of their land rights, together with the fact that the longer duration of these rights is in most cases mentioned on the certificate, will allow them to demand higher 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, in line with the hypothesis that, rather than increasing compensation, knowledge may be more useful to prevent arbitrary expropriation by village leaders, the topic to which we now turn.

4.3 Determinants of illegal land reallocation

Results from estimating equation (2) are reported in table 6 with probit and Tobit results in columns 1-3 and 4-6, respectively. As before, columns 1 and 4 containing the base model without the endogenous election variable while columns 2 and 5 and 3 and 6, respectively, display OLS and IV results with elections and their interaction. We note that the instruments pass the test for exogeneity for both probit and tobit and report coefficients for the combination of coefficients on whether an elected leadership had a significant impact post-reform ($\gamma+\delta$) and for the impact of reform in villages where leaders had been elected ($\beta+\delta$) and their significance in the bottom panel.²⁹

The coefficient on the reform dummy in the base models (columns 1 and 4), which will not be affected by possible endogeneity of elections, provides support for the hypothesis that reform significantly reduced the probability of an illegal land redistribution. In addition, we find that reallocation is significantly (at 10%) less likely in settings where village leaders are well aware of the content of the RLCL and more likely in settings more dependent on agriculture. 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. 2008). By contrast, the coefficient on households' possession of land certificates, while having the expected negative sign, is not significantly different from zero. Quite surprisingly in view of the importance often attributed to certificates (Palomar 2002), this would imply that although they may be appropriate for defending "private" claims, certificates on their own may not be the most effective means to protect against expropriation of property rights by the state.

Similar to what was observed in the case of compensation payments, the coefficient on reform becomes insignificant once village elections and their interaction with the reform dummy are added. This, together with the rejection of the hypothesis that $\beta+\delta=0$, supports the hypothesis that it was not legal reform *per se*

²⁹ One possible concern about the validity of our results could be that since land reallocation is not an instantaneous process, inclusion of reallocations that happened only shortly before or after the law became effective in 2003 may contaminate our estimates. To deal with this concern, we re-estimated the model dropping observations from 2003 (i.e. including only reallocations that happened in either 2003 or 2004). The fact that results (not reported) show little substantive change in either magnitude or the significance levels of coefficients suggests that our main conclusions are quite robust.

but rather reform with villagers' ability to hold their leaders accountable through elections that helped to bring about an increase in the security of property rights. Reform by itself is estimated to have contributed to a two percentage point reduction in the probability of an illegal land reallocation, a point estimate that is similar to the estimated coefficient on the leader's knowledge of the law (0.019). With 3.8%, the IV estimate for the reform-induced reduction of the probability of expropriation in villages with elected leaders is much larger, suggesting that in these circumstances, reform more than halved the redistribution risk that had prevailed before the passage of the RLCL. To assess what this may mean in terms of land values, note that without considering any investment effect, land value V is given by $V = \pi / (r + \psi)$ where π is the value of profits, r is the discount rate, and ψ the probability of losing the plot in any given year. Using values from our data (i.e. a 6.15% probability of an illegal reallocation that is reduced to 2.35%), we note that, where leaders are elected, the reform would be predicted to increase land values by slightly more than 30% and complete elimination of the expropriation risk would result in another 31% increase.

5. Conclusion and policy implications

If, as suggested by an increasing literature, secure property rights that are broadly distributed can increase economic growth and foster economic development, ways for countries to increase the outreach and security of their property rights systems cost-effectively become of high relevance. However, assessing the impacts of legal reform in this area is often difficult because the associated changes are often complex, extend over a long period of time, and will affect a wide range of outcomes. Even in cases where a clear structural break would allow us to address identification issues, the fact that survey respondents are unlikely to reveal 'illegal' behavior implies a need for careful empirical work to assess any impacts.

After a series of gradual reforms through guidelines and other circulars that were not binding on any of the parties, the RLCL marks a clear increase in property rights security against the state. Despite the short time period of only slightly more than one year between the implementation of the RLCL and the survey used, our results suggest that reforms can have a significant and quantitatively large impact on observed outcomes. They highlight that, in addition to an independent role of knowledge of the law, the institutional environment will have a strong bearing on the effectiveness of legal reform through a highly complementary relationship between good governance and legal provisions. This suggests that emphasizing either of these two factors on its own will allow the realization of at best a small percentage of the benefits that can be attained if both are pursued in tandem.

While they have clear implications for China, our results will also be of relevance for a wide range of other settings. Most of the immense legal and economic literature on takings under eminent domain is at the conceptual level, implying that we add important empirical evidence. Many countries are undergoing

a shift from group-based to individual land rights in a variety of forms (Benjaminsen and Lund 2002, Woodhouse 2003, Rozelle and Swinnen 2004). Studies show that, although it responds to broad considerations of resource availability in a spontaneous manner, this transition is affected by political considerations (Bassett and Crummey 1993, Berry 1993, Sjaastad and Bromley 1997) and will have far-reaching implications on poverty as well as productivity (Andre and Platteau 1998, Goldstein and Udry 2006). While this complex process cannot be managed by trying to transfer patent recipes from one region or country to the other, two main results from our study seem to have direct applicability. First, legal reform will be more effective if local leaders are accountable to constituents and if awareness of the contents of the law creates incentive structures favoring implementation. Second, certificates are relevant if rules are clearly defined and can be enforced but may have more limited effectiveness in preventing expropriation where such conditions do not hold. Together, this suggests that strengthening property right institutions and making them more accountable is as (and possibly more) important as issuing certificates and should be part and parcel of any effort at property rights reform.

Even though it marks a clear change, the RLCL is not free of shortcomings, e.g. with respect to the compensation to be paid. Furthermore, increased tenure security and the variables used to proxy for it in here are of interest not as an end in themselves but because there is strong reason to believe that they will increase incentives for land-related investment and help reduce costs of engaging in land transfers. These outcomes in turn are likely to increase productivity of land use and household welfare. Our results suggest that while passage of the RLCL helped to establish the pre-conditions for such outcomes to materialize in due course, they provide little indication of the magnitudes involved, their distribution across types of households and regions, underlying causal relationships, and the scope for improvements through further reform. Exploring all of these in more detail is a task that is left for further study.

Table 1: Mean characteristics for villages in the sample

	Total	By region			
		N & NE	Coastal	Central	SW
General characteristics					
Number of households in village	427.04	507.55	327.02	423.17	439.90
Village population	1575.24	1813.61	1064.30	1762.00	1701.25
Share of agricultural households in village (%)	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
Mean village expenditure (10000Y)	17.62	13.41	40.97	11.27	5.17
Mean value of village assets (10,000 Y)	55.62	48.57	114.82	25.77	26.81
Governance and knowledge about the law (%)					
Villages with 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
Villages w leaders knowing conditions for big readjustment(%)	53.41	67.93	38.73	39.36	58.74
Villages w. leaders knowing conditions for small readjustment (%)	17.80	13.04	17.34	25.53	18.83
Households knowing conditions for big readjustment (%)	53.31	65.52	40.26	33.51	60.78
Households knowing conditions for small readjustment (%)	19.32	19.62	23.66	26.49	12.90

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

^aThe data in the last four rows (Leaders' and households' 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

	All		By region		
	China	N & NE	Coastal	Central	SW
Total and illegal reallocations					
Share of villages w.at least one reallocation since 2000 (%)	28.67	31.50	40.32	23.23	19.41
Average share with land reallocation before RLCL (%)	13.18	13.78	18.96	12.11	8.69
Average share with land reallocation after RLCL (%)	8.31	10.27	9.89	6.32	6.36
Total area affected by reallocation per village since 2000 (mu)	745.74	1417.57	382.21	655.02	443.56
Total number of hhs affected by reallocation per village	151.9	221.6	115.0	137.3	131.7
Share of villages affected by illegal reallocations before RLCL (%)	6.15	5.75	12.10	4.04	2.74
Share of villages affected by illegal reallocations after RLCL (%)	3.46	4.00	6.99	1.01	1.27
Rationale for reallocations (affected villages only)					
Population change (%)	45.42	43.48	47.78	50.00	41.51
Land taking (%)	24.88	22.22	22.67	13.64	37.78

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

Table 3: Details on land takings in sample villages (village level information)

	All		By region		
	China	N & NE	Coastal	Central	SW
Incidence of land taking					
Share of villages with land taking (%)	29.47	19.10	40.56	19.00	34.18
Total area taken in an average village(mu)	103.10	176.23	106.75	91.82	66.93
... of which irrigable (%)	83.21	62.20	100.00	88.79	79.50
Average number of households in village affected by takings	88.14	94.51	116.87	52.05	65.24
Share of villages with takings before RLCL in force (2000/1-2003/3) (%)	16.59	10.38	23.08	12.39	17.60
Share of villages with takings after RLCL in force (2003/4-2004/12) (%)	22.52	13.68	31.62	16.81	23.97
Purpose and impacts of taking (%)					
Infrastructure as main reason for taking	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 as main reason for taking	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
No. of project has been completed	65.84	72.55	59.84	81.82	64.86
No. of project has started	88.54	94.12	79.69	96.97	93.69
No. of takings 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
Compensation for land taken					
Share of takings 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
Share of takings 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 2005 NBS/WB survey.

Table 4: Details on land takings in sample villages (household level information)

	All		By region		
	China	N & NE	Coastal	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
... before policy change (%)	79.67	75.38	76.70	82.61	82.74
... after policy change (%)	85.57	69.35	86.92	94.12	91.58
Received land as compensation if yes, size relative to amount of land lost (%)	41.25	51.18	35.24	35.09	42.59
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 compensation received by households subject to land taking

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

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

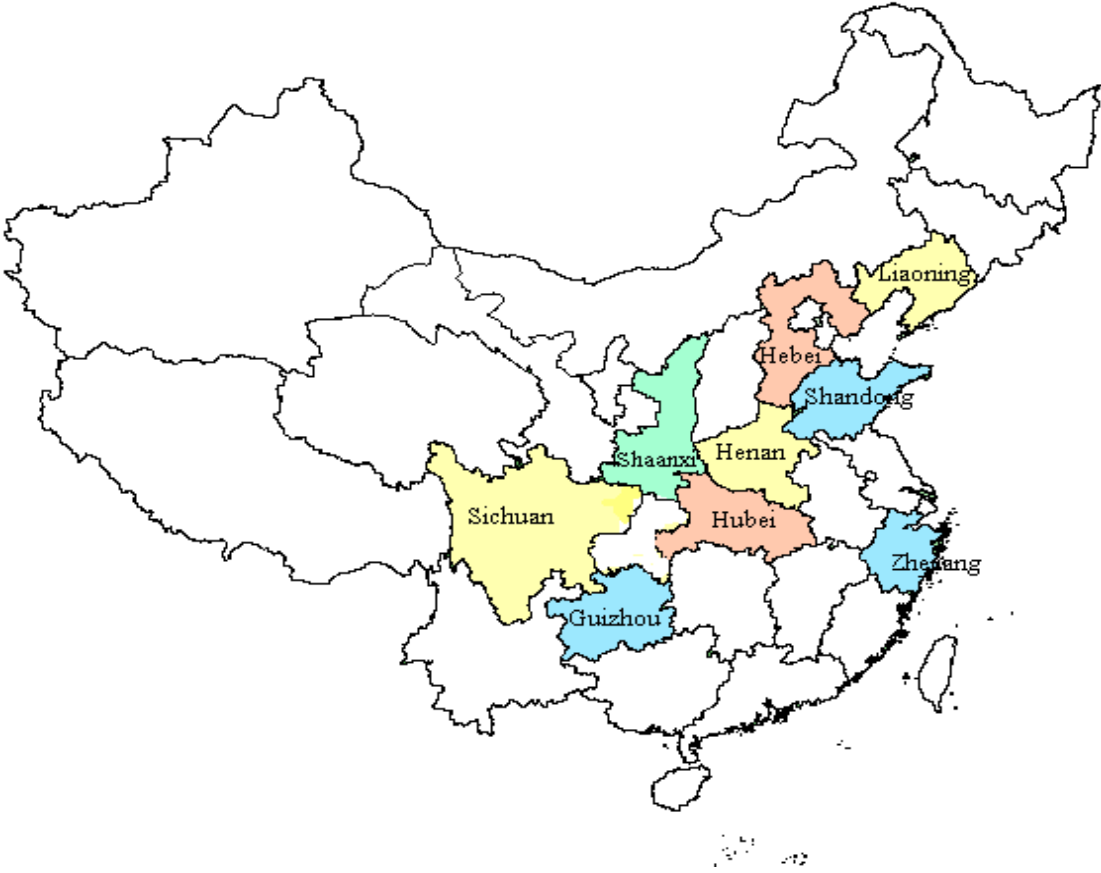
Table 6: Determinants of illegal land reallocation at village level

	Illegal reallocation dummy - probit			Amount of land reallocated		
	Probit	Probit IV		Tobit	Tobit 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)
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)
$\beta + \delta$		-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.

The coefficients from Probit and Probit IV have been converted to marginal probabilities.

Figure 1. Geographic location of sample provinces



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