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Land Rental Market Development and Agricultural Production in China*

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Abstract

The development of a land rental market in China may help stimulate further increases in agricultural production. This paper provides a description of land rental transactions in rural China, analyzes the determinants of land supply and demand and estimates the implications land rental activity has for increasing agricultural production.

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Farmers in China face a unique set of land tenure institutions that generate tenure insecurity and discourage farmers from moving into non-grain crops. The nominal owners of farmland in China are collective groups of households or sometimes even the village itself and the leadership of the collective ownership body allocates the *use rights* for specific plots to farm households.[1] In exchange for *use rights*, farm households pay an agricultural tax and usually, but not always, are obligated to deliver a grain quota to local grain bureaus at prices predetermined by the state. This tenure structure increases tenure insecurity for farm households in rural China because the collective owners maintain the *right to reallocate* use rights among farm households and some villages and collective groups actively take advantage of this right. The *right to rent* one's use rights to another farm household, however, is increasingly common and legally sanctioned, and a small land rental market has emerged in rural China.

There is almost no research into the development of rental markets in rural China despite the fact that a well functioning land rental market could have significant implications for agricultural production, and many scholars assert that land rental transactions are insufficient to achieve allocative efficiency (the equalization of the marginal product of land across households). Most of the literature concerning farmland in China focuses on land reallocation policies and the effects these policies have on agricultural production, a legitimate emphasis because land reallocations have been the most common means of shifting land between households. While few studies address land rental transactions specifically, many studies assert, without evidence, that land rental transactions are too few to represent a well functioning market.

[1] The central government recommends that the term length of these allocations should be 30 years, but the language leaves villages with the power to end the allocation contracts if they deem it necessary.

The reasons thought to be behind sluggish land market development vary from imperfections in other markets spilling over into the land market to land tenure institutions themselves.

In this paper, we address and analyze some of the important issues concerning land rental market transactions in rural China. Using data from a survey of 830 households in 6 provinces designed specifically to collect information on land market and reallocation policies, we provide a rich description of the extent to which farm households enter the land rental market and the terms of the rental contracts. We estimate aggregate supply and demand for rental land using reduced form descriptive regression approaches to identify the determinants of renting land and the effects of rural policies and institutions on land rental transactions. We also estimate production functions and test for whether households that rent in farm land have higher marginal product of land than households that do not rent in land.

Our analysis indicates that land rental transactions are complex, vary significantly between regions, and that certain rural policies and institutions affect rental transactions in rural China. These, in turn, affect aggregate agricultural output by inhibiting the movement of land from low to high intensity users. Most of the land rental transactions in the survey are between members of the same collective group, but not necessarily between relatives and friends. The rent paid in these transactions is generally a complex combination of payments from the rentee household to the rentor household or to a third party (such as paying the agricultural tax on the land to the village government on behalf of the rentor household).[2] Rural land tenure policies also affect land rental activity. In particular, grain quota delivery obligations lower the demand for rental land or cause village leaders to discourage rental activity, while the expectation of land reallocation lowers the supply of land at any given rental rate. A very important and significant

[2] The household that is allocated use rights and then gives these rights to another household in exchange for some rental payment is the rentor household.

determinant of land supply is the extent to which households rely on migrant off-farm labor, which suggests that land rental transactions are allowing some households to specialize in off-farm labor while others can gain more land to specialize in agriculture. Households renting in land also have a significantly higher marginal product of land than households that do not rent land, indicating that land rental activity increases the allocative efficiency of land distribution and aggregate agricultural production and that further gains could be achieved if rental activity increased.

Land Management Practices in China

To guarantee rural household's access to land and provide an economic safety-net in rural areas, land rights are not fully distributed to rural households. Instead, ownership of farmland was passed from the communes to village-level collective groups (usually either the village itself or the *xiaozu*, a multi-household group within the village that is a remnant of the commune era production teams) and these groups then allocate use rights to rural households. The specific rights originally extended to farmers varied considerably and have undergone changes since the original distribution in the late 1970s and early 1980s. There are several types of land tenure categories in rural China, and some of the variation in rights is due to different tenure categories. Land that is under the same tenure category, however, is sometimes subject to different rights in different villages.

Rights to land in rural China come in several different tenure categories. The most common land tenure category in rural China is "responsibility land", land that is allocated to households and is usually subject to a grain procurement quota. In addition, households often have "ration land", which is normally allocated to households according to their need for grain.

Ration land is intended to allow households to raise grain for their own subsistence consumption and is not subject to a quota. Some villages also have "contract land" for which a fee is paid to the collective ownership body and is sometimes put up for bid when the contract expires. Finally, households also often maintain small plots of "private land" on which they usually grow vegetables for their own consumption or for the market.

The types of tenure categories, and the specific rights associated with each category, vary from village to village. Previous research, using a nationally representative data set of 200 villages throughout China, shows that responsibility land comprises about 80 percent of cultivated land in rural China (Brandt, Huang, Li and Rozelle, 1999). Data from a 1995 survey of 31 villages in Northeast China also shows that responsibility land is the most prevalent tenure type (table 1). Nearly all villages have responsibility land (97 percent in both 1988 and 1995, row 1, columns 3 and 4), but each of the other tenure types is present only in a smaller subset of the villages (columns 3 and 4). There are some exceptions to the general rule of having a majority of land allocated as responsibility land. Seven of the 31 villages did not report any responsibility land and had no corresponding grain quota delivery obligation as well.

The different types of land tenure outlined above usually have different rights associated with them although the rights associated with each tenure type vary from village to village. For example, most villages with responsibility land allow households to rent their plots of responsibility land to other households (79 percent in 1995 and 73 percent in 1988, table 1 columns 5 and 6) but only about half of the villages that have contract land or ration land allow households to rent out those plots. In an environment without ownership rights, renting land is the only way for households to transfer land among themselves. Thus, restrictions on renting

land to other households may lower aggregate agricultural production by preventing land transfers from low to high intensity users.

The right to rent land in rural China, however, is becoming increasingly common. The rise of rental rights can be seen in table 1, a higher percentage of villages report the right to rent land in 1995 than in 1988 for each of the tenure types (columns 5 and 6). It is widely held that rental rights have also expanded significantly since 1995, although there is no data to show this. While it is believed that farm households have largely received the right to rent land, there is still widespread skepticism that land rental activity is insufficient to achieve allocative efficiency, defined as equating the marginal product of land. The reasons behind this skepticism is that even though land rental rights have been extended to farm households, a variety of institutions and policies exist that discourage households from participating in the land rental market either as suppliers or demanders.

In the following sections, we use a recently collected data set to paint a picture of land rental market development in China and the implications rental market development has for agricultural production. We describe the parties that households are renting their land to and the features of the rental arrangements. We analyze the determinants of land rental activity at the level of the collective group. Finally, we estimate production functions to test for whether land rental activity equates the marginal product of land across households or, alternatively, further rental activity has the potential to increase aggregate agricultural production in China.

1998 Survey

Discrepancies in the Data

The data used for the remainder of this paper come from a 1998 survey specifically designed to examine land tenure and rental activity in China. The survey was a collaborative effort carried out by the Ministry of Agriculture and Beijing University and covered 825 farm households from 30 villages in 5 provinces across China. Enumerators collected data on a wide range of household and village features including land reallocation activity, land rental activity , labor market participation and crop production. Enumerators not only interviewed farm households, but also carried out separate interviews with leaders of the collective groups, the nominal owners of the land.

Initial descriptive statistics, however reveal some important discrepancies in the data. For example, the percent of households renting land and the amount of land rented varies significantly who answers the question. The results from the survey of farm households versus the survey of collective leaders vary dramatically (tables 2a and 2b). The most striking difference between the two survey results is the difference in the estimates of the percent of rentee households (households that rent land in). For the respondents to the survey of collective leaders, only 7 percent of households rent in and roughly the same percent rent land out (table 2a). The percent of land rented is smaller, with only about 5 percent exchanged according to collective leaders.

Respondents to the household survey did not provide the same snapshot of rental activity in rural China (table 2b). In particular, the percent of households and percent of land rented in is far greater than that reported in the survey of collective leaders, and also greater than the percent of land rented out reported by households. There are a variety of explanations for this inconsistency and each probably explains part of the discrepancy. One possible explanation for these discrepancies is different definitions of “renting” (in this survey, the Chinese term,

"*zhuanbao*", which roughly means "transfer the contract" was used to describe "renting"). The most problematic explanation is sampling bias. In carrying-out the survey, enumerators found no one at home at some of the households on the list of randomly selected households. When this happened, they selected additional households to fill out the survey. It is hypothesized that the households with no one home likely had migrated or had full-time non-farm employment and therefore these households have a high probability of being households that rent land out. If true, then the households surveyed (where people were at home) would also have higher probability of renting in land than if they were randomly selected. This sample selection bias could explain some of the discrepancy but can not explain it all. If the collective leader's survey number is correct (7 percent of the households rent in or rent out) and if sample selection bias is behind the discrepancy between the collective leader's survey and the household survey, than this implies that roughly 65 percent of the households were not at home. While we do not know the number of households forgone because no one was home at the time of the survey, enumerators agree that is not nearly as high as 65 percent.

Another potential problem that could result in this discrepancy is that farm households may have land contracted from the village or collective and consider this to be rented. Collective leaders would likely not consider this as *zhuanbao* land. Since households that contract land from the collective are all renting in, not renting out, than the possibility that households are considering *chengbao* (contracted) land as *zhuanbao* (rented) land could explain why the percent of households renting in land is so much higher than the percent renting out land in the household portion of the survey. There is some evidence that suggests this possibility. For example, villages in Shanxi province often contract out parcels of fruit orchards to households and this could explain why more than half of the households in Shanxi province reported that

they rented in land. In the 1995 survey in Northeast China (used in table 1), over 80 percent of the households said they do not know the details of the terms and conditions under which they are allowed to use the land. Thus many households may assume that *chengbao* land is also *zhuanbao* land and this would result in a much higher number of households renting in land than the number renting out land.

It is clear that land rental activity is not uniform among provinces. For example, the percent of households and percent of land rented out is roughly twice the survey average in Zhejiang province, a province that also stands out because it has the highest income levels and off-farm employment participation of all the provinces in the survey. Hunan province also has very high percent of households renting land, but not a significantly higher percent of land rented. In some areas, such as Zhejiang and Hebei provinces, the percent of households renting land out is greater than the percent renting in, but looking at the percent of land rented in and out in those provinces provides an indication of the underlying reasons for this inconsistency. In Hebei province, the percent of land rented in and out are the same, indicating that households may rent many plots from several households.

Despite these discrepancies, these data hold valuable information and are used for the analysis that follows and conclusions from the analysis are mindful of the effect of these discrepancies have on the statistical outcomes. In the next section, we describe the nature of the rental contracts. Using data from the households reporting a rental contract, either renting in or renting out, we examine who the parties to the contract are, the terms of the contract, the role of the collective and provide a detailed description of the rents exchanged for the land.

The Nature of Rental Contracts

Most of the contracts reported in the survey are between households within the collective and rents generally are not paid in cash but rather through a variety of obligations taken by the rentor. In 1998, over two thirds of the households reporting being a party to a rental contract said that the other party was a household in the same collective group (*xiaozu*), and almost all provinces showed this statistic to be more than 50 percent (except in the 5 rental contracts in Hebei province, table 3, row 2). The most pronounced example of this is in Zhejiang province, where 77 percent of the households in the rental market had contracts with other households in the collective (row 2, column 7). Renting outside the village, however, was very rare, with only around 10 percent of the households entering into rental contracts with households outside the village (row 4). Renting within the collective likely has lower transactions cost and also provides additional security in an environment like rural China where written documents are rarely used. Eighty-seven percent of the households reported that the rental contracts were only verbal agreements (row 10). This additional security may be even more important in rural China where renting outside the collective may invite dispossession in the next land reallocation.

Land rental contracts between households also tended to be short-term (although the length of the contract was sometimes ambiguous), and sometimes required collective approval. Of the households entering into rental contract in the survey, 42 percent said the contract was for one year only, while 22 percent said it was for more than one year and 36 percent said the term was undefined (table 3, rows 12, 13, 14). An exception to these statistics was the province of Shanxi, where 69 percent of the rental contracts were for one year and the length of tenure was undefined for only 3 percent (column 3). Shanxi also reported much higher proportion of rental contracts approved by the collective, with over 80 percent of the rental contracts approved by the collective versus only 33 percent of the rental contracts in the whole sample (row 16). In

addition, rental contracts in Shanxi were also more rigid, with 75 percent reporting that the contract cannot be terminated at any time, versus only 39 percent sample-wide (rows 18 and 19). Many of the responses from Shanxi are thought to be from households contracting fruit orchards from the collective or village, as indicated in the paper above.

The method of payment also varied substantially among the households in the survey, but cash payments were rare in many areas. The majority of households that entered the rental market in the survey, either as suppliers or demanders, reported that payments to a third party were part of the rental agreement (table 4). These payments were generally made to either the collective or village government and include paying the agricultural tax (62 percent of the contracts, row 4), delivering the grain quota obligation (56 percent of the households, row 3) and paying local taxes and collective production costs (52 and 54 percent respectively, rows 5 and 6). A significantly smaller share of the households actually deliver payments to the rentee household, such as cash payments (34 percent, row 1) and in-kind payments (19 percent, row 2). In addition, some rentee households actually paid the rentor household to take over production on their land (4 percent, row 7), a phenomenon that is sometimes referred to as “negative rents”. “Negative rents” are thought to result from policies that either fine or expropriate land from households that do not keep their land in production. Households wanting to avoid this fine or avoid losing their land, but lacking the time to farm the land themselves, are willing to pay others to keep their land in production. It is also interesting to note that in Shanxi, nearly all of the rental contracts reported cash payments (94 percent, row 1, column 3) and relatively few reported payments to a third party, (10-16 percent, rows 3, 4, and 5). This is in keeping with the

hypothesis that many farmers in Shanxi reported fruit orchard land contracted for the village as rented land, since these contracts are usually for cash rather than for quota or other fees.[3]

Farm households renting land in rural China also generally make payments either to a third party or to the rentee household (or group), but usually not both. If households pay one of the forms of third party payments, then they are significantly more likely to pay others (table 6). For example, 62, 56 and 52 percent of the households pay the agricultural tax, the grain quota and the local tax respectively, but if the household delivers the grain quota obligation, the probability that they also pay the agricultural tax and local taxes goes up to 99 and 89 percent respectively (table 5, row 2, columns 1 and 3). Households that deliver the grain quota, however, are far less likely to pay cash rent or in-kind rent to the rentee households than the sample average (16 and 11 percent respectively – row 3, columns 5 and 6, as opposed to 34 and 19 percent respectively for the whole sample, row 1 columns 5 and 6). Indeed, households that pay cash rents are significantly less likely to make third party payments (39, 33 and 27 percent pay agriculture tax, grain quota and local taxes respectively – row 6, columns 1, 2 and 3, compared to 62, 56 and 52 percent of households sample-wide, row 1). Households that accept a subsidy from the rentee household (last row), however, also are significantly more likely to pay third party payments and, interestingly, deliver an in-kind payment to the rentor household. The cash value of the subsidy, therefore, does not represent the true value of the subsidy for many households because one must first subtract the value of the grain delivered to rentor household.

Determinants of Supply and Demand in China's Rural Land Rental Market

[3] The percent paying cost share taxes is slightly higher than other third part payments in Shanxi, but one would expect this with orchard land that has high water delivery infrastructure maintenance and other collective costs.

The perception that land is not rented to the point of equating the marginal product of land across households is common among China scholars and economists studying China (Prosterman, Hanstad and Ping, 1995; Yao, 2000). The reasons households do not want to, or cannot, rent land in or rent land out, however, are still subjects of debate and there has been no empirical inquiry into this question to date. A variety of explanations have been discussed in the literature including rigidities in the labor market (Yao, 2000) and the threat of land expropriation (Lohmar, 2000). In this section, we estimate descriptive regressions to reveal whether various rural policies affect the demand or supply of the land market.

Low levels of rental activity may be due to village land reallocation policies. It is commonly believed (although still debated) by scholars inside and outside of China that renting land to other households exposes the land to dispossession in the next land reallocation carried out by the collective or village. If true, then renting land out may be discouraged by this policy. The extent to which collective and village leaders actually do take land away from households that rent it out depends on many factors. In some cases, it may be explicit village policy. In other cases, it may be simply due to political considerations: it is politically less costly to take land from households that are not using it. Villages may also have policies whereby if land is rented with collective approval, or to another member of the collective, then tenure is more secure than if they rent it without approval or to a household outside the collective. In addition, land reallocation activity may also affect the demand for land. In villages that have actively reallocated land in the past, the reallocations may have served to transfer land from low intensity to high intensity users and thus act in lieu of a land market, reducing overall demand for land (Benjamin and Brandt, 1999).

Low levels of land rental activity may also be due to grain quota delivery policy and other related taxes. For example, because they lower the returns to land, and limit the freedom to plant cash crops, grain quota delivery obligations may cause farmers to not want to rent land that they otherwise would want to rent if it had no quota obligation associated with it. In some villages, strictly adhering to the policy of sowing the grain delivery quota on the land associated with it is enforced, while in other villages, farmers can grow cash crops on the land and pay the quota in cash or with grain purchased on the market. To do this, some villages may require permission from collective or village leaders, while others may not. Village leaders are also responsible for the collection of grain quota delivery obligations and agricultural taxes and this may affect their willingness to allow land rental activity in their village. Due to transaction costs of collecting a myriad of fees and taxes separately, village leaders often group them together and collect them once or twice a year, often when a household delivers its quota obligation. But when collecting fees, some of which are tied to household's land allocation, or grain quotas from households that have rented land out, the collectors are often told that the rentee household is responsible for the fee, or some portion of it, and the quota delivery. Because independent land transfers hamper the collection of local fees, taxes and quotas in this way, leaders in villages with high tax and quota obligations may actively discourage independent land rental transaction.

To examine whether rural policies and institutions affect land rental activity, we carried out a series of descriptive regressions. Because of the differences in the number of households renting in versus renting out in the household level interviews, we used the collective group responses for this part of the analysis. The dependent variable is the percent of households renting land for the demand side, and the percent of households renting out their land for the supply side. Explanatory variables include grain quotas, land reallocation activity, agricultural

taxes, labor migration and other control variables (including village dummies). The regressions are estimated using Generalized Lease Squares to control for village level cluster effects. These regressions are still preliminary, there are several econometric issues that need to be addressed and controlled for, but they offer initial insight into whether and which policies affect land rental activity in rural China.

The empirical analysis into the effect of village policies and institutions on land rental activity indicates that land rental activity is affected by unique features of China's rural economy (table 6). On the demand side, the magnitude of the grain quotas are negatively associated with the percent of land rented in, as is land reallocation activity (as indicated by the number of full reallocations carried out in the village since the early 1980s). Reallocation activity is also negatively correlated with the supply of land, as conjectured above. In addition to these policy effects, collective level labor migration is positively correlated with both land supply and demand, which suggests that land rental market activity arises as labor leaves the village for work elsewhere. This finding supports anecdotal evidence from Wanzai County in Jianxi Province (Murphy, 2000). Agricultural taxes are positively correlated with both land supply and demand. There is no clear explanation for why this might be, but villages with high taxes tend to be villages with high agricultural output, so the agricultural tax may be picking up the effects of high productivity villages.

Effects of Land Renting on Agricultural Production

The impediments to land rental market activity identified by the above analysis suggests that land is under used because it is being farmed by low-intensity users rather than being transferred to high-intensity users. Policies and institutions that discourage the transfer of land

from low to high intensity users contribute to the allocative inefficiency of China's land distribution. Reforming these policies to encourage more land transfers would then, hypothetically, increase aggregate agricultural production in China.

Differences in the marginal product of land between low and high-intensity users would suggest that efficiency gains could be achieved by reallocating land. To test for marginal product differences between low- and high- intensity users, we estimated agricultural production functions on the 1422 grain plots reported in the survey (table 7). Since different types of grain are grown on different plots, we aggregate the grains by using the value of output as a dependent variable, a technique that is common in analysis of production in low income rural economies. The production function models are estimated using GLS to control for village cluster effects. Models that allow for substitutability of land and labor are also presented. In addition to the traditional factors of production, the models include a dummy variable for whether the household rents in land. A positive coefficient on the rent in dully would suggest that these users are more productive. We also estimate models that interact this variable with land and labor inputs to investigate whether there are differences in the marginal product of land and labor for households that rent in land.

Results from these estimated production functions provide strong evidence that households renting in land achieve higher land productivity than households that do not rent in land, indicating that land rental transactions can increase aggregate agricultural production in China (table 7). The coefficient on the land rental dummy and land size interaction term variable, are positive and significant in each of the four specifications. Taking the last of the specifications as an estimate, we find that households renting in land have a marginal product of

land that is 47.6 *yuan/mu* higher than households that do not rent land, representing a 16.5 percent higher marginal product of land for households that rent land.

Conclusions

This paper is among the first to address some important questions concerning land rental market development in China. In this paper, we make use of a 1998 household-level survey to describe the extent of land rental contracting in China, the types of contracts used, the institutional effects on land rental market activity and the implications land renting has for agricultural production in China. We find that land rental activity is widespread but not across all regions in China. Part of the variation in land rental activity may be due to other tenure policies that tend to encourage or discourage land rental activity, such as grain quota obligations and village land reallocation activity.

Perhaps our most important conclusion is that land rental activity increases aggregate agricultural production by transferring land from low intensity farm households to households willing to farm the land more intensively. The marginal product of land for households renting land in is 50-90 *yuan*/*mu* higher than for households that do not rent land. Policies that discourage land rental activity, such as grain quotas and arbitrary reallocation policies, indirectly hold back agricultural production increases through their effects on land rental activity. Interestingly, agricultural taxes encourage households to rent out their land, presumably to seek higher payoff economic activities, thus agricultural taxes serve to increase agricultural production by encouraging land transfer from low to high intensity users.

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Table 1. Land Tenure Categories and Rental Rights in Northeast China

	Land in Tenure Category		Villages Reporting the Given Tenure Type		Villages Reporting the Right to Rent for the Given Tenure Type*	
	1995	1988	1995	1988	1995	1988
	(percent of land)		*(percent of villages)*		*(percent of villages)*	
Responsibility Land	76	86	97	97	79	73
Ration Land	10	3	32	13	56	40
Private Land	4	5	45	52	92	87
Contract Land	9	4	77	52	48	44
Other**	1	1	13	13		

* Only for the villages reporting the particular tenure category
** Usually reclaimed wasteland and this is often given to the households that participate in the reclamation effort.
Source: 1995 Survey of 780 households in Hebei and Liaoning Provinces by World Bank, RCRE and CCAP.

Table 2a. Collective-Level Land Rental Market Activity in 6 Provinces in 1998

	Survey Average	Hebei	Shanxi	Anhui	Hunan	Sichuan	Zhej'ng
			(*percent of households*)				
Renting In	7	1	5	5	12	6	7
Renting Out	7	4	2	5	12	5	13
			(*percent of land*)				
Rented In	5	2	7	3	7	3	5
Rented Out	5	2	1	3	9	3	11

Table 2b. Household Survey Averages of Rental Activity for 6 Provinces in 1988

	Survey Average	Hebei	Shanxi	Anhui	Hunan	Sichuan	Zhej'ng
			(*percent of households*)				
Renting In	24	2	51	12	26	25	33
Renting Out	5	1	2	2	6	4	16
			(*percent of land*)				
Rented In	13	2	26	42	15	11	28
Rented Out	2	1	1	0	3	4	4

Table 3. Description of Rental Contracts for 1998 MOA Data

	Survey Average	Hebei	Shanxi	Anhui	Hunan	Sichuan	Zhej'ng
			(*number*)				
N	245	5	67	20	47	41	65
			(*percent of contracts*)				
Other Party in Contract							
Collective Member	67	20	64	75	53	76	77
Village Resident	20	80	10	10	43	10	17
Outside of Village	10	0	17	10	4	13	6
Immediate Family	16	20	3	5	11	29	29
Close Relative	13	20	4	15	9	22	20
Distant Relative	6	20	4	15	6	7	3
Friend	11	20	3	5	28	17	8
Other	49	20	79	55	47	17	40
Type of Agreement							
Oral	87	100	85	70	96	85	86
Written	13	0	15	30	4	12	14
Length of Contract							
1 year	42	40	69	5	28	20	51
More than One Year	22	20	28	35	9	12	25
Undefined	36	40	3	60	62	68	22
No answer	1	0	0	0	2	0	3
Contract Approved by Collective							
Yes	33	0	81	30	0	15	26
No	64	100	16	70	100	80	74
Contract Can be Terminated at Any Time							
Yes	60	80	25	70	83	73	65
No	39	20	75	25	17	22	35
	1	0	0	5	0	5	0

Table 4. Rents for Rural China in 1998

Rental Arrangements*	Survey Average	Hebei	Shanxi	Anhui	Hunan	Sichuan	Zhej'ng
			(*percent of contracts*)				
Payments To Rentee							
Cash	34	60	94	0	4	22	12
In-Kind (Grain)	19	0	4	10	60	17	11
Payments to Third Party							
Quota Delivery	56	60	13	80	53	73	72
Agricultural Tax	62	60	10	80	60	76	80
Local Tax	52	60	16	80	38	71	77
Cost Share	54	20	24	80	49	68	74
Payments To Rentor							
Subsidy (Negative Rents)	4	0	0	5	0	2	11

*Arrangements are not mutually exclusive

Table 5. Complementary Structure of Rent Payments in Rural China, 1998

	Agriculture tax	Grain Quota	Local Fee	Share cost	Cash rent	Grain rent	Cash Subsidy
	(percent of contracts reporting given type of rent payment)						
Sample Average	62	56	52	54	34	19	4
Of the Contracts Reporting Ag. Tax Payment (n=115)		91	81	84	25	11	5
Of the Contracts Reporting Grain Quota Delivery as Payment (n=111)	99		89	86	16	12	6
Of the Contracts Reporting Local Fee Payment (n=100)	100	94		97	13	13	6
Of the Contracts Reporting Cost Share Payment (n=60)	98	95	95		12	13	3
Of the Contracts Reporting Cash Rent Payment (n=84)	39	33	27	32		5	0
Of the Contracts Reporting In-Kind Rent Payment (n=29)	48	48	18	52	14		14
Of the Contracts Reporting Subsidy Payment (n=9)	78	78	78	78	0	44	

Table 6. Determinants of Aggregate Demand and Supply in Rural China's Land Rental Market, 1998

Dependent Variable:	Demand: Percent of Land Rented In		Supply: Percent of Land Rented Out	
	(1)	(2)	(3)	(4)
Land Features				
Mu per Capita	-0.22	-0.36	-1.00	-1.05
	(1.01)	(0.98)	(1.16)	(1.16)
Number of Plots	0.09	0.03	0.09	0.06
	(0.21)	(0.20)	(0.24)	(0.24)
Rent	0.01	0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Other Features				
Agricultural Income	0.04	0.04	0.01	0.01
	(0.35)	(0.03)	(0.04)	(0.04)
Labor Migration	9.20**	10.4***	26.56***	27.00***
	(6.01)	(5.87)	(6.69)	(6.71)
Land Tax	0.05***	0.06***	0.06***	0.06***
	(0.03)	(0.03)	(0.04)	(0.04)
Grain Quota	-0.015***	-0.02***	-0.001	-0.001
	(0.01)	(0.01)	(0.01)	(0.01)
Population change	2.41***	2.78**	2.31***	2.43***
	(1.22)	(1.19)	(1.37)	(1.37)
Tenure Insecurity				
Full Reallocation Activity		-2.31***		-1.13
		(1.01)		(1.16)
Partial Reallocation Activity	-0.32	-0.02	-0.95***	-0.79*
	(0.44)	(0.44)	(0.49)	(0.51)
Expected Reallocation	-1.83	-1.14	0.87	1.09
	(2.56)	(2.50)	(2.71)	(2.72)
R-square	0.15	0.21	0.26	0.27

All regressions are GLS regressions controlling for village level cluster effects. Standard errors are in parenthesis
Asterisks *, **, *** represent significance at the 10, 5 and 1 percent level respectively.

Table 7. Production Effects of Land Rental Activity

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-219.4	-179.3	-178.8	-4.7	-4.8
	(1.31)	(1.07)	(1.07)	(0.03)	(0.03)
Factor of Production					
Land	346.9***	341.4***	341.1***	289.2***	289.1***
	(24.09)	(23.70)	(23.65)	(17.91)	(17.90)
Labor	2.9***	2.6***	2.6***	-1.7	-1.7
	(3.09)	(2.77)	(2.72)	(1.49)	(1.50)
Fertilizer	3.5***	3.4***	3.4***	3.5***	3.5***
	(5.15)	(5.05)	(5.06)	(5.28)	(5.29)
Interactive Effects					
Land * Land	-1.4***	-1.9***	-1.9***	-3.4***	-3.4***
	(17.87)	(12.92)	(11.81)	(12.82)	(12.37)
Labor * Labor	-0.001	-0.001	-0.002	-0.005**	-0.01**
	(0.77)	(0.74)	(0.86)	(2.55)	(2.52)
Land * Labor				1.1***	1.1***
				(6.77)	(6.75)
Land tenure					
Rent Dummy	44.1	-274.3**	-285.5***	-141.3	-146.1
	(0.67)	(2.57)	(2.62)	(1.32)	(1.34)
Rent * Land		92.1***	86.1***	50.0**	47.6*
		(3.78)	(3.20)	(2.02)	(1.75)
Rent * Labor			0.55		0.23
			(0.53)		(0.22)
Village dummies	Yes	Yes	Yes	Yes	Yes
R-Squared	.67	.67	.67	.68	.68

T-statistics are in parenthesis, asterisks *, **, *** represent significance of 10, 5 and 1 percent respectively