

Cultivate or Rent out?

Land Security in Rural Thailand

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VERY PRELIMINARY

Abstract

This paper examines the role that land rights play in the decision to either cultivate or lease a given plot. Using data from 2,874 farming households collected in 1997 in rural Thailand, we find that in villages adjacent to forest reserves, where there is a risk of expropriation, plots that are leased are more likely to be titled than those that are self cultivated. In other areas, however, land rights play no role in explaining the decision to lease land. In addition, a simple model is used to estimate an expropriation probability of 6 percent. These results indicate that tenants in frontier areas pay a premium for unsecured plots, and that government intervention may be needed to enhance the security of land owners.

1 Introduction

It is often argued that the land market plays an important role in economic development as it improves the allocation of resources in settings where the markets for other inputs do not function properly. A well functioning land market not only improves efficiency but also contributes to the development of the off-farm economy by allowing potential entrepreneurs to obtain start-up capital by selling or leasing their land (de Janvry et al. 2001).

Evidence from around the world, as documented in World Bank (2003), suggests that the extent to which land markets function properly is determined by the specific environment and the specific government policies in place.

These policies are often motivated by fears that the unrestricted operation of the land market may result in lower equity or a further encroachment into forest areas, as in the case of Thailand. However, these same policies may have unforeseen negative consequences for the functioning of the land market as they trigger insecurity among landowners.

Insecure ownership is indeed a problem faced by many farmers in developing countries. In Thailand, about half of the area is classified as forest reserve land and it belongs to the state. However, about a quarter of this land is actually under cultivation by squatters who occupy it illegally. Many of the squatters settled a long time ago, in some instances long before the land was officially declared public forest.

Irrespective of the length of the *de facto* possession, legal titles cannot be issued to plots of land located inside officially classified public forest. In fact, some households today still claim ownership of plots that fall inside and outside forest reserve areas. In some cases, the government has issued special titles that confer the rights to cultivate the land, but explicit restrictions are made to the sale and rental of such land (Feder et al. 1988). Stipulated punishments following violations of the restrictions in these special land documents may affect the household's attitude towards land rental with regards to *other* plots, especially if these plots lack formal titles.

This paper exploits the geographical variation observed in the number of beneficiaries of these special titles to identify the role that secure land rights play on the rental market in Thailand. We find that leased plots located in villages adjacent to forest areas are significantly more likely to be secured. In addition, in villages away from forest reserves, secured plots are more likely to be self-cultivated, although the effect disappears once we control for household fixed effects.

Thus, we provide evidence for the two opposing theoretical arguments that can be made regarding the role of land rights in the decision to lease land. On the one hand, if the landowners fear expropriation, then only secured plots should be leased. On the other, as implied by the empirical literature on tenancy (Bell, 1977, Shaban, 1987), if land rights are correlated with unobserved land quality, and tenancy leads to inefficiencies (as the literature shows), then *less* secured plots should be leased.

Following Shaban (1987) and Jacoby and Mansuri (2003), the econometric identification of the leasing decision is achieved by using only households that simultaneously cultivate owned plots and either lease out the rest or further cultivates leased in plots. This way, as stressed in past work, we are able to control for unobserved heterogeneity at the household level.

In addition, using data from the asking price of the plot and its rental price, we are able to estimate a probability of expropriation of 6 percent in areas close to forest reserves.

The rest of the paper is organized as follows. Section 2 gives some background information about land rights and tenancy in Thailand. In Section 3, we describe in detail the data used in the analysis. Section 4 presents the econometric specification to be estimated and a simple model of equilibrium land prices and rental rates. Section 5 presents the results and finally Section 6 concludes.

2 Background

Historically, all land in the Kingdom of Thailand belonged to the King. Throughout most of its history, population density was low and thus increases of agricultural output were obtained from clearing forests and by expanding into new areas. Little concern was given to formal ownership registration and the government did little to interfere. The opening of the country to international trade and population growth brought significant incentives for production expansion, and pressures for a more secure form of land ownership (Feeny, 1982). In 1872 King Chulalongkorn introduced procedures for the recognition of private rights in land. Title documents for the rice land were established in the main rice producing areas. Several modifications were enacted over the years culminating in the Land Code of 1954, which is still in effect today.

Nowadays, land can be classified into **private land**, extending over 19 million hectares in 1994 (40 percent of total land), and **public or government land**. There are various title deeds covering private land according to when and how they were issued. Government land covers 23 million hectares, including national parks, wildlife sanctuaries and land reform areas¹. As said before, some of the forest areas have been squatted. In 1993,

¹The land reform started in 1975 and that will be covered in greater detail in Subsection 2.3.

only 13 million hectares had forest cover as the rest had been degraded or converted into farmland (Chirapanda, 2000).

We now describe land ownership in greater detail, focusing on the distinction between private land, forest reserve areas and land reform areas.

2.1 Private Land: The Land Code of 1954

The Land Code of 1954 contains procedures for the issuance of documents recognizing title to land in non-forest areas and the maintenance of the land register. It defines different types of documents depending on whether the owner can claim occupancy, utilization or legal possession of the land. The most valuable document is the NS-4 (chanod), a full unrestricted legal title. This document enables the owner to sell, transfer and legally mortgage the land.

The documents related to land utilization are NS-3 and NS-3K, “Certificate of Use” and “Exploitation Testimonial” respectively. These documents certify that the occupant has made use of the land for a prescribed period of time. Both the NS-3 and NS-3K enable legal transfer by sale or will, and in this sense are similar to NS-4². According to Williamson (1983) and the Ministry of Agriculture and Cooperatives, banks will lend equally irrespective of whether the land has a title or a certificate of utilization³.

Although NS-4, NS-3 and NS-3K are the only documents allowing the owner to transact freely and legally, there are other documents defined in the Code that support ownership. The NS-2 document is a “Preemptive Certificate” which authorizes temporary occupation of land. It does not allow legal transfer of land except by inheritance and therefore it is not used as collateral. Finally, there exists the “Claim Certificate” SK-1, which was issued during the implementation of the Code.

Still in the 1980s, the majority of the labor force in Thailand was employed in agri-

²The difference between NS-3 and NS-3K documents lies in the mapping system used. NS-3 certificates were granted between 1954 and 1972, and were mapped in isolation by tape surveys. The land was described in the certificate by metes and bounds with an approximate diagram showing the shape of the parcel. After 1972, systematic surveys using unrectified aerial photographs were introduced (NS-3K), where land is described on the certificate by a deed plan.

³Using the Townsend-Thai dataset, Giné (2004) also finds that land plots with either NS-3, NS-3K or NS-4 documents are used indistinctively as collateral in loans from formal institutions.

culture. Low real incomes in rural areas and widespread poverty motivated further land settlement. The Department of Lands (DOL) was hard-pressed to meet the demand for land records, but as Rattanabirabongse et al. (1998) suggest, with the resources and procedures available at that time, it would take 200 years to distribute title deeds to all eligible land holders.

Therefore, in 1984, the Thai government started the implementation of a World Bank funded project aiming to strengthen the capacity of the DOL to perform land surveying, registration and documentation. The main objective of the Land Titling Program (LTP) was to systematically award title documents (NS-4) to eligible landowners who had no documents or possessed preliminary documents (NS-2, SK-1) and the conversion of utilization certificates (NS-3, NS-3K) held by many landowners to titles.

Systematic registration under the LTP was undertaken on the basis of whole sub-districts. A team of surveyors would go into the field and, with the Village Head, would have land occupiers, in the presence of people with rights in adjoining land, indicating the positions of the boundary corners⁴. The documents provided by the land holder⁵ and the plot measurements would be given to the adjudicator who after revisions and checks with the cadastral maps would approve the issuance of the title⁶.

While the cost of the systematic land titling activity was largely underwritten by the government, fees for sporadic issuance⁷ of title were charged on the basis of full recovery of costs. Under the systematic registration land holders were only charged a nominal amount for the cost of corner marks - 110 baht/title (about US\$2.55).

Since the cost of registering a plot were so low, one is left wondering why were not all plots registered. The answer lies in what constitutes forest reserve. Since the Land Code

⁴There were procedures in place if disputes were to arise, however, under the LTP very few disputes that could not be settled in the field took place and few if any appeals were made to the court system.

⁵These documents include personal identity and family history information and one piece of evidence of landholdings: preemptive certificates (NS-2) and proof of use, NS3 or NS3K certificates if applying for a title, SK-1 or land tax receipts (PBT certificates).

⁶If the land holder possessed an NS-3K document, there was an automatic conversion procedure by overlaying the unrectified map with the rectified photomap. A judgment was then made on whether a title could be produced from the NS-3K certificate, and in some cases a field inspection was undertaken.

⁷Sporadic registration takes place when the land holder, out of the his or her own initiative makes an application to the land office. This application can only be accepted where there is an existing cadastral map.

regulates private land only, all titles issued under the LTP had to be located in non-forest areas.

The LTP evolved in four different phases, and although the last phase was scheduled to finish in October 2004, all the provinces in the Townsend-Thai dataset had been covered by the LTP at the time of the survey.

Table 1: Distribution of Sampled Plots by Document Type in Buriram

<i>Document Type</i>	Before LTP		After LTP	
	Agricultural	Residential	Agricultural	Residential
	Plots	Plots	Plots	Plots
NS-4	0.10	0.04	0.40	0.30
NS-3 or NS-3K	0.30	0.20	0.16	0.24
Other	0.60	0.76	0.44	0.46
N. Observations	278	171	749	1,282

Source: Data from before the LTP come from Table 1 in Chalamwong et al.(1988) study. Data after the LTP come from the Townsend-Thai data set.

Table 1 reports data from Buriram province, the only province present in the Townsend-Thai data set (post LTP) and in the survey by Feder et al. (1987, 1988a, 1988b) before the implementation of the LTP. Table 1 provides evidence of the success of the LTP⁸. While Feder et al. report that only 12 percent of legally owned land is covered by full title (NS-4) the Townsend-Thai data report a 43 percent of titles in roughly comparable regions. There is also clear evidence of the conversion from NS-3, NS-3K certificates or other documents to NS-4. However, about 45 percent of all plots still were not covered by a NS-4 or NS-3,NS-3K title even after the implementation of the LTP. As mentioned

⁸See Rattanabirabongse et al. (1998) and Heath (1999) for a more detailed explanation of the Land Titling Project.

before, some of these plots were located in either officially declared forest reserve areas or in land reform areas.

2.2 Public Land: Forest Reserve Areas

About 60 percent of all public land is forest land. It is administered by the Reserve Forest Department but like many other developing countries, Thailand has faced the illegal occupation and use of state-owned land by a large number of farmers.

Feeny (1984) estimates that forest reserve coverage dropped from 70 percent at the turn of the century to less than 30 percent in the mid 1980s. In 1961 the Thai Cabinet set a policy that 50 percent of the country be reserved for forestry. In 1964 the National Forest Reserve Act was passed, designating various areas within Thailand as gazetted forest reserves and detailing limitations on their exploitation. Agricultural cultivation within those areas was specifically prohibited. Despite government efforts, Feder et al. (1988) report that in the mid 1980s about a fifth of the land officially designated as forest reserve was permanently occupied and cultivated by squatters. It represented 21 percent of the land under cultivation⁹.

The ongoing encroachment and illegal logging after the law was enacted can partly be attributed, as Feder et al. (1988) suggest, to little enforcement by forestry officials, the squatters' lack of knowledge and also the lack of clarity in the Act itself. In many instances, it was not until the distribution of NS-3K from 1972 onwards and the LTP that households learned that they could not obtain a full title for certain plots because they fell inside the forest reserve area. In addition, areas officially designated as forest reserves did not have carefully delineated boundaries, and in many cases, areas not suited for agricultural purposes were not selected. Likewise, many areas that were designated as forest reserves were already partially or fully settled. The Act arbitrarily divided forest reserve from private land in identical agro-climatic zones and in areas with similar sociopolitical structures.

In the Townsend-Thai dataset, roughly 60 percent of the villages surveyed fall on the boundary or inside forest reserves, and one finds several households with plots outside

⁹Chirapanda (2000) presents a more staggering figure. Over the 1961-1993 period, the amount of land under forest cover declined from 171 to 83.5 million rais, decreasing the forest cover area by half.

the forest reserve, for which they have full titles, and inside the forest reserve, for which they would be considered illegal squatters. Chirapanda (2000) also reports that some villages' schools and other public amenities were sometimes located inside officially declared forest areas. In these villages, while government agricultural extension agents were helping farmers grow new crops, the forestry officials could have arrested them for illegally occupying the land.

This pattern of illegal occupation left the government with little or no option but to legalize squatters. In 1981 a program was introduced by the Royal Forestry Department to recognize the rights of agricultural land holders inside forests, with a 5-year usufruct licence (STK). This certificate only covered holdings of up to 2.4 hectares but in many areas, as Feder et al. (1988b) report, squatters were not being clearly told the status of their land above the covered limit. These squatters therefore became uncertain about their continued ownership and ability to transfer land. In the Townsend-Thai data set, about a quarter of all plots with an STK licence exceeded the limit in size.

Furthermore, this certificate prohibits its conversion into a title deed (NS-4) or certificate of use (NS-3, NS-3K), it restricts transfer of holding to only by inheritance and therefore prohibits the transfer of ownership or rental. More importantly, failure to comply with these conditions could result in revocation of the usufruct rights without compensation.

As a result, Feder et al (1988b) conclude that uncertainty about their coverage and the explicit threats could have reduced the sense of security acquired by squatters after years of little inference from the authorities.

We argue that this uncertainty may lead *other* households in areas living where STK certificates were issued to be reluctant to lease out plots that are not secured with a title. The same effect may be taking place in Land Reform areas, the settlement program to which we now turn.

2.3 Public Land: Land Reform Areas

The Agricultural Land Reform Act, promulgated in March 1975 tried to remedy the high rate of tenancy in certain regions of the country, particularly the North and Central regions, the large number of landless households and the already mentioned encroachment

of public lands.

Table 2 reports the percentage of tenancy in the Central and Northeast region in 1974 and 1997. The high rates of tenancy in the Central region are due to the presence of large estates in the commercial rice-growing areas although it is low if compared to other developing countries. The prevalence of a low rate was the result of land reforms instituted by King Chulalongkorn beginning in 1874 which set a four-hectare limit on freely acquirable agricultural land and acted as a major deterrent to the accumulation of land into large estates¹⁰. Table 2 also shows a non-trivial fraction of Full Tenants or landless households constituting initially one of the major reasons for the drafting of the Act.

Table 2: Tenancy Prevalence in percentages

	Agric. Survey 1974		Townsend-Thai 1997	
	Central	Northeast	Central	Northeast
Full owners	60	89	62	78
Owners - Tenants	28	8	24	16
Full Tenants	12	3	14	6

Note: “Full owners” refer to households who do not lease in (but may lease out) land. “Owners- Tenants” are households who cultivate owned and leased-in plots. Finally, “Full Tenants” are households only cultivate leased in plots.

The legislation called for the establishment of the Agricultural Land Reform Office (ALRO) in the Ministry of Agriculture and Cooperatives to serve as the implementing agency. The objective of the law can be found in the following excerpt from Section 4 [Italics included]:

“Redistribution of land for farming and residential uses by allocating state land or, land purchased or expropriated from landowners who *do not themselves*

¹⁰Nevertheless, large holdings did exist as grants to nobles and officials. In these cases, the law provided that the uncultivated land would revert to the state after a period of three years. In the area around the capital, however, where many larger holdings were located, land could be rented out, and the land holdings therefore remained intact.

cultivate or who own land in excess of what is stipulated by the Agricultural Land Reform Act of 1975 to farmers who are landless or do not have sufficient land for cultivation, and to farmers' institutions by means of lease and sale.”

Thus the land reform law sought redistribute land to landless households and to provide title deeds to squatters in public lands. While private land was acquired voluntarily through direct purchase¹¹, public land came from encroached national forest reserves and other government land. The beneficiaries had the option to either lease or buy from the government at a discount rate.

During the implementation of the land reform there was a shift in priorities. While in the beginning the main focus was in confronting the high tenancy rates and landlessness in the Central Plains, a few years later, the government realized that the encroachment problems were serious and affected a much wider area across the country. Around 1978, the ALRO thus adjusted its focus from buying land from private hands to allocating public land.

Table 3 reports the amount of land and number of beneficiaries declared under Land Reform areas from 1975 to 2003 in previously private and public land. By the time the Townsend-Thai dataset was collected in 1996, all provinces had land reform areas¹².

Table 3 shows that the bulk of the land allocated comes from public land. As such, the land reform achieved little redistribution because in public areas it only legalized landholders in encroached forests. Most farmers, continued to cultivate the same plots they long held, although they were not allowed to sell or lease the land to another third party.

In the end, Suthiporn Chirapanda, deputy secretary-general of ALRO from 1982 until 1992, concludes that lack of political will to solve the numerous problems and a major political scandal forcing a change of government resulted in a relatively small program in terms of land allocated and number of beneficiaries¹³.

¹¹Although the law established the expropriation of land from from large and absentee landowners, the political will was so weak that land was never acquired through expropriation.

¹²The land reform program started in 1977 in both Central provinces and a year later in both Northeast provinces.

¹³The number of beneficiaries as a fraction of total population ranges from 6.5 percent in Sisaket to

Table 3: Land Reform Areas and Beneficiaries: 1975-2003

	Public Land			Private Land		
	A. Decl	A. Alloc	N. Benef	A. Decl	A. Alloc	N. Benef
<i>North</i>	2,364.8	845.8	377,250	26.6	25.5	8,400
<i>North East</i>	4,553.3	2,054.4	794,581	1.9	1.4	756
Buri Ram	331.6	91.2	43,608	0.3	0.2	175
Si Sa Ket	243.3	163.2	91,200			
<i>Central</i>	1,423.7	491.2	150,156	48.9	47.2	20,148
Chachoengsao	106.5	49.6	12,081	8.7	8.0	3,095
Lop Buri	78.8	45.8	11,105	4.7	4.2	1,712
<i>South</i>	1,219.3	377.2	157,019	0.3	0.2	107
Whole Kingdom	9,561.1	3,768.6	1,479,006	77.6	74.3	29,411

Note: Data come from ALRO and own calculations. Area Declared (A. Decl) is total area declared as Reform Area in 1,000 hectares. Area Allocated (A. Alloc) is actual land allocated to date in 1,000 hectares. Number of Beneficiaries (N. Benef) are individuals.

3 Data

The data used in the analysis come from the Townsend-Thai data set, a specialized but substantial cross sectional survey conducted in Thailand in May 1997. It contains a wealth of pre-crisis socio-economic data on 2,880 households¹⁴. The survey instruments collected current and retrospective information on landholding patterns, characteristics about all plots cultivated and owned. The sample is special in that it was restricted to two provinces in the relatively poor semi arid Northeast and two provinces in the more industrialized central corridor around Bangkok. Within each province, 48 villages were selected in a stratified clustered random sample at the sub-county level. The stratification, as described in Binford et al. (2003), ensured a representative sample of forested and non-forested sub-counties. Urban sub-counties were excluded. Within each village, 15 households were selected at random.

less than 2 percent in Lopburi.

¹⁴See Townsend et al. (1997) for more details on the data.

Figure 1 displays a map of the Chachoengsao province in the Central region (left) and Buriram in the Northeast (right) with the land use and geo-location of the surveyed villages. The area in yellow denotes land used for agriculture, whereas the green areas are forest cover. The map also shows in dark green the boundaries of the official forest areas according to the Forest Reserve Act. It is clear from Figure 1 that most of the land in officially declared forest areas is used for agricultural purposes. In addition, while some villages fall inside forest reserve, other are located far away from them. Villages are shown in different colors depending on whether certain titles were reported. There is a sense in which villages with at least an STK, issued to squatters inside forest reserves or SPK-4.01 title, issued in land reform areas (most inside forest areas too), are adjacent to or inside forest areas. There are however some villages whose dwellers report having an SPK-4.01 and yet are located far away from forest areas. In these villages, government land (other than forest areas) or private land bought by the government could have been allocated through the land reform program¹⁵. Thanks to the sampling scheme, villages are roughly split inside and outside forest areas, thus, it is clear that the data is well suited for understanding the effects of government policies in forest reserve areas.

Tables 5-7 report in turn the differences between villages, households and plots for different sub-samples. Although the units of observation inside forest areas appear to be different in many ways to those located outside, some of these differences are due to the fact that they are located in different provinces. The Central region is certainly richer, and this manifests itself not only in more land transactions, but also larger cultivated area, a higher density of household business and a lower fraction of farming households that reported constraints in farming. We therefore divide the sample further to compare inside and outside forest areas in the Central region and Northeast separately.

Table 5 shows that villages where land reform or forest area titles were issued were established later than those without these titles, suggesting that at least in the beginning, most villagers were squatting forest land. In any event, these villages were established long before the Forest Reserve Act of 1964, explaining why even inside officially declared

¹⁵Throughout the paper, I will denote SPK-4.01 and STK titles as special titles. In addition, for ease of reference, villages where these special titles were issued may be referred to as villages inside forest areas, although as we have seen, SPK-4.01 titles could have been issued in private land or other government land outside forest reserves.

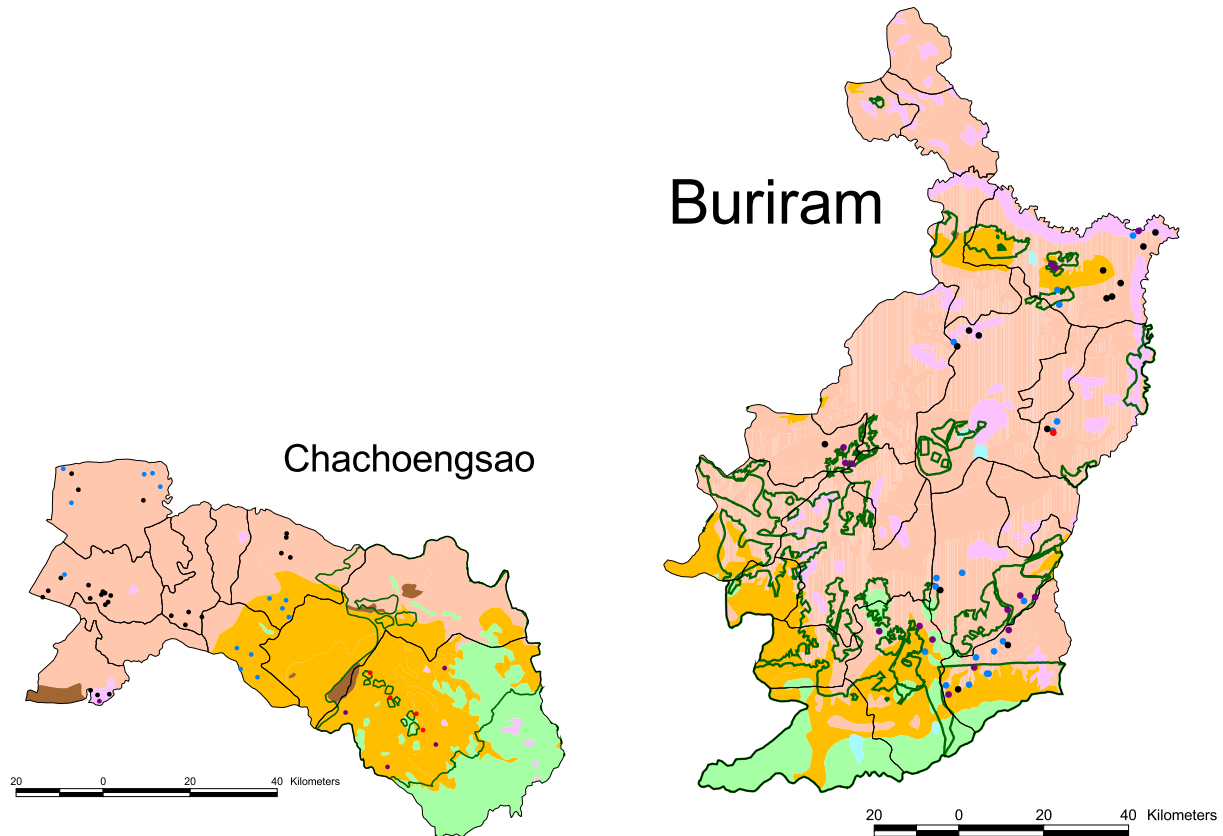


Figure 1: Land Use

forest areas most of the land is used for agriculture. Across all provinces, villages with special titles tend to have on average a lower percentage of their land title. In addition, although the differences are not significant, villages in forest areas are located farther away from the main road, as the last row in Table 5 shows.

[Table 5 here]

Although there are no differences in population size, it appears that villages inside forest areas are more ethnically mixed, especially in the Northeast. Also in this region, landless households tend to concentrate in villages where land reform titles were issued, although we lack pre-reform evidence to assess whether the land reform successfully redistributed land to these households, as it originally intended.

Table 6 reports the characteristics of households for different sub-samples. While in the Central region there are significant differences in the amount of land that households

own and cultivate between villages inside and outside forest reserves, these differences disappear in the Northeast. However, the basic identification strategy in this paper can be seen in the next two rows. While in villages without special titles households tend to rent unsecured plots, the opposite happens in villages where these titles were issued. The difference in the fraction of titled plots that are own-cultivated and rented is always significant. Despite the apparent role that land titles play in forest areas, the proportion of households that sold land in the past 20 years is roughly similar inside and outside forest areas, but not across provinces. This suggests that within provinces, land markets may be equally active.

To explore further the impact that forest areas may have on land markets, we compute the number of farming adults per hectare, and find that labor is more intensely used outside forest areas although the difference is only significant in the Central region. If farmers are subject to the same technology, it would seem that land markets function worse outside forest areas and in the Central region, as they cannot fully adjust labor to the optimal scale, rather counterintuitive hypothesis. A glance at Plot Type columns in Table 7 reveals that in the gazetted areas in the Central region there are relatively more plots (and area) devoted to field crops than paddy, requiring less labor. Thus, by looking at the allocation of family labor we cannot say much about efficiency of land markets in both provinces.

However, we can compute a measure of inequality in total land cultivated and owned per farming adult for those households that only grow paddy¹⁶. Table 4 reports the Theil index decomposed into Central/Northeast and whether households live or not in villages where special titles were issued.

The Theil index for owned land is always larger than that of cultivated land, suggesting that rental markets help in redistributing land. There seems to be more redistribution in the Central region than the Northeast, and also in non land-reform and forest areas. This may suggest that land markets in land reform areas may not function properly.

¹⁶Roughly two thirds of the farming households grow only paddy, 15 percent only field crops and the remaining 15 percent grow both.

Table 4: Cultivated and Owned Land per Adult Inequality

	<i>Central</i>	<i>Northeast</i>	Total
<i>Land Reform and Forest Areas</i>			
Total Cultivated Land	0.28	0.35	0.37
Total Owned Land	0.93	0.53	0.58
<i>Non Land Reform and Forest Areas</i>			
Total Cultivated Land	0.23	0.37	0.32
Total Owned Land	0.66	0.52	0.57
<i>Total</i>			
Total Cultivated Land	0.26	0.35	0.34
Total Owned Land	0.73	0.53	0.58

Note: Data come the Townsend-Thai dataset. A sample of 1,415 farming households only growing paddy is used.

4 Econometric Framework

The discussion in the previous sections highlights the fact that the decision to lease land may differ depending on whether or not the landlord lives in a village where special land reform or forest reserve titles were issued. In these villages, since there is uncertainty about the boundary between private and public land, the landowner may face expropriation if unsecured plots are leased, and thus, she will try to avoid leasing out these plots.

In villages where expropriation risk is not an issue, the land owner may prefer to lease unsecured plots if these are of lower quality and tenancy is inefficient.

Therefore, theory suggests a differential treatment of untitled plots regarding leasing decisions depending on how important the fear of expropriation is.

The basic regression model we use to explain whether plot i by household j is leased (in or out) or self-cultivated is the following:

$$L_{ij} = \alpha_j + \delta_F F_j \times NT_{ij} + \delta_{NF}(1 - F_j) \times NT_{ij} + X'_{ij}\beta + \epsilon_{ij}, \quad (1)$$

where L_{ij} denotes the leasing decision with value 1 if the plot is leased, α_j captures the household fixed effect, F_j is a dummy with value 1 if household j lives in a village close to a forest area and NT_{ij} takes value 1 if plot i cultivated and/or owned by household j

is unsecured. Finally, X_{ij} are plot level characteristics.

If households living in boundary areas feel that unsecured leased plots may be expropriated by the state, we should expect $\delta_F < 0$ as titled plots are more likely to be leased in these areas. Likewise, if expropriation is not an issue, and land rights proxy for unobserved land quality and tenancy may be inefficient, we would expect $\delta_{NF} > 0$ as untitled plots are more likely to be leased.

Since we have data on the asking and rental price of some leased plots¹⁷, we can further explore the possibility that land owners fear expropriation by using a simple pricing model.

Consider an agent considering whether to lease or sell a given plot. A simple arbitrage argument suggests that selling the plot today or renting it today and selling it tomorrow should yield the same return. In other words, if markets function well, prices and rentals rates should adjust to leave the agent indifferent between the two options. Suppose in addition that if the plot is rented, there is a probability ϕ that it will be expropriated as the landowner is not herself cultivating it. In this case, the no arbitrage condition states that,

$$R_t + \frac{q_{t+1}}{1+r}(1-\phi) = q_t,$$

where R_t is the rental price in period t , q_t the sale price of land in period t and r the interest rate.

Simple manipulation of the expression above yields,

$$\frac{R_t}{q_t} = \frac{r+\phi}{1+r} + \frac{1-\phi}{1+r} \frac{q_t - q_{t+1}}{q_t}$$

where $\frac{R_t}{q_t}$ is called capitalization rate (cap rate) and it is commonly used in the real estate literature. The expression above indicates that the cap rate is a function of the interest rate r , the probability of expropriation ϕ and the rate appreciation in market value.

In the steady state where $q_t = q_{t+1}$ we obtain that

$$\frac{R}{q} = \frac{r+\phi}{1+r}.$$

¹⁷The survey asked the current value of the plot but not the rental value if it was leased. However, the income and expenditure section of the survey are very detailed so payments from renting land as revenue or expenditures were recorded. Since the amounts reported were totals for all plots, we focus on those households that lease in or out at most one plot.

Therefore, the cap ratio is positively related to ϕ and r . Since the probability of expropriation is highest for unsecured plots located in regions close to forest areas, we estimate the following regression.

$$\log \left(\frac{R}{q} \right)_{ij} = \gamma_0 + \gamma_r SI_j + \gamma_\phi F_j \times NT_{ij} + \gamma_{NT} NT_{ij} + \epsilon_{ij} \quad (2)$$

where SI is a dummy indicating access of household j to a given financial institution that collects savings either because such institution is present in the village or because it reports having savings in that institution. If there is expropriation risk, we should expect $\gamma_\phi > 0$. In addition, if as suggested by Chalamwong et al. (1988), land value of titled plots are worth more than the expected discounted stream of rents because they can be used as collateral, we include the dummy NT_{ij} by itself. Evidence of this claim should be reflected in $\gamma_{NT} > 0$.

It would seem that there is some difficulty in testing the proposition because land in forest areas cannot be legally sold since it is government property. However, as Feder et al. (1988) suggest, in practice all land in Thailand, including forest reserve land is traded.

5 Results

Table 8 presents the estimation results for the regression in (1). We consider two different specifications depending on whether fixed effects are included at the village or household level. When village fixed effects are included, we control for households characteristics but the coefficients are not reported due to lack of space. We run each specification using the sample of all plots and, alternatively, only agricultural plots because most residential are not leased out, a fact that could affect the results. For each regression the estimated coefficient and the implied marginal effect evaluated at the sample mean are reported.

Across specifications, leased plots tend to be of larger size and farther away from the house. Also, when residential plots are dropped, rice paddy and field crop plots tend to be leased, while tree plots and plots left idle are not.

The estimated role of land rights accords with what theory suggests. In the village fixed effects specification, land rights in forest reserve areas only matter for the sample of agricultural plots, however, in other areas land rights may be proxying for land quality as

unsecured plots are more likely to be leased out. This effect disappears, however, when we control for household fixed effects. In this specification, land right do matter in enhancing the rental market in areas close to a forest reserve.

We now turn to the estimation results of specification (2) as reported in Table 9. We find evidence of a larger cap rate for unsecured plots in frontier areas, indicating that the cap rates include an expropriation probability. A back of the envelope calculation from the estimated coefficients provides an estimate of the probability of roughly 6 percent¹⁸. Using a range of interest rates from 5 to 10 percent, this expropriation rate would range from 5 to 12 percent. In a very different context, Jacoby et al. (2002) estimate a median (mean) hazard rate of 10 (16) percent.

It is also noteworthy to point out that households with access to savings in commercial banks or the BAAC are estimated to be able to perceive a higher interest rate for their savings.

6 Conclusions

This paper addresses the role of land rights in the rental market in Thailand by exploiting the geographical variation in the number of beneficiaries of special titles issued by the government as part of its land policy in public land areas.

Feder et al. (1988) suggest that the issuance of land reform titles or STK titles that provide limited formal status to squatters is not an effective policy for improving their economic performance. The reason for its ineffectiveness are found in the restrictions to transfer or mortgage land imposed in these titles.

We go a step further and find that these policies have unforeseen negative consequences to the existing rental markets, as they trigger a sense of insecurity in land-owners.

A logical policy would then be to provide full right of ownership to squatters in these areas, which for the most part have long been settled are suitable for agriculture and do not pose a threat to the environment. In frontier areas where continuing cultivation causes damage to the environment, the control may be best left to the government. The point more generally is that instead of issuing special titles which lead to uncertainties,

¹⁸The probability ϕ can be expressed as $\phi = r[e^{r\phi} - 1]$

full titles should be given to squatters and the resources should be directly allocated to the enforcement of forest conservation.

The findings of this paper support Banerjee (1999) argument that allocated land should be allowed to be leased. If forest or land reform titles allowed the possibility for the land to be sold or leased, we would not observed the inefficiencies associated with restrictions in the land rental market.

Despite equity arguments in favor of the land reform, historically there has been little land inequality in Thailand. In addition, as we have seen in the past decade, land reform is subject to land grabbing and rent seeking by the wealthy, and thus it may seem that the government was doing more harm, by reducing efficiency in the land rental market, than good, by redistributing.

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Table 5: Villages Characteristics

	Whole Sample		Central		Northeast			
	Mean	SD	LR&F	non LR&F	LR&F	non LR&F	LR&F	non LR&F
Years since establishment of Village	97.7	76.2	76.4	127.8	65.2	129.6	84.1	124.8
Village Population	741.6	932.4	682.3	823.1	771.2	995.8	620.7	535.3
Language concentration index	0.83	0.21	0.80	0.89	0.83	0.92	0.78	0.88
Percentage of Landless households	0.21	0.24	0.20	0.22	0.21	0.32	0.19	0.05
Percentage of titled land	0.62	0.44	0.40	0.93	0.39	0.91	0.42	0.95
Formal Bank present in Village (1 = yes)	0.52	0.50	0.56	0.46	0.47	0.42	0.62	0.53
Cooperative present in Village (1 = yes)	0.19	0.40	0.17	0.23	0.13	0.18	0.20	0.30
River present in Village (1 = yes)	0.12	0.32	0.11	0.13	0.09	0.18	0.12	0.03
Canal is present in village (1 = yes)	0.21	0.41	0.16	0.29	0.16	0.42	0.17	0.07
Kms from village to main road	2.70	4.54	3.26	1.91	4.27	2.12	2.59	1.57
<i>N. of Observations</i>	191		111	80	45	50	66	30

Table 6: Household Characteristics

	Whole Sample		Central		Northeast			
	Mean	SD	LR&F	non LR&F	LR&F	non LR&F	LR&F	non LR&F
<i>Land Characteristics</i>								
Total Land Owned in hectares	2.70	4.69	3.24	1.94	3.98	1.64	2.72	2.45
Total Land Cultivated in hectares	3.15	4.63	3.71	2.37	4.98	2.23	2.82	2.61
Pct. Of Own Plots with full rights title	0.60	0.47	0.38	0.91	0.35	0.90	0.40	0.93
Pct. Of Rented Plots with full rights title	0.65	0.47	0.47	0.88	0.43	0.90	0.51	0.81
Pct. Of Household with mixed titles	0.17	0.38	0.22	0.10	0.13	0.10	0.28	0.10
Pct. Of Household that sold land	0.13	0.33	0.12	0.13	0.16	0.17	0.10	0.07
<i>Household Characteristics</i>								
N. Adults per Hectare	1.25	1.58	1.12	1.47	0.73	1.42	1.36	1.52
N. Relatives in Village	3.83	3.40	3.98	3.63	3.80	3.41	4.10	3.99
N. Children outside Village	1.47	1.96	1.40	1.57	1.09	1.49	1.62	1.70
Size of Household	4.57	1.96	4.56	4.58	4.31	4.63	4.74	4.50
Pct. Of Members in Farming	0.48	0.38	0.52	0.42	0.49	0.32	0.55	0.59
Years of Residence in Village	34.58	19.31	31.05	39.54	29.19	39.61	32.35	39.43
Sex of Head (1 = Male)	0.77	0.42	0.80	0.73	0.79	0.73	0.80	0.74
Age of Head	51.42	13.64	49.97	53.45	49.52	54.47	50.29	51.74
Education of Head	4.12	2.62	3.92	4.39	3.88	4.48	3.95	4.25
Business Ownership (1 = Yes)	0.21	0.40	0.15	0.28	0.22	0.35	0.11	0.16
Member of Committee Village (1 = Yes)	0.09	0.29	0.10	0.08	0.08	0.07	0.11	0.09
Loan from Com. Bank or Baac (1 = Yes)	0.16	0.37	0.14	0.20	0.14	0.16	0.14	0.26
Savings from Com. Bank or Baac (1 = Yes)	0.70	0.46	0.68	0.73	0.80	0.79	0.61	0.64
Household Wealth in Million Baht	0.07	0.14	0.05	0.09	0.08	0.12	0.03	0.04
Agricultural Wealth in Million Baht	0.02	0.07	0.02	0.02	0.03	0.02	0.02	0.02
<i>Constraints in Farming (1 = Yes)</i>								
Related to the Tenant	0.58	0.49	0.62	0.52	0.54	0.46	0.67	0.59
Related to the Landowner	0.26	0.44	0.30	0.21	0.25	0.14	0.33	0.33
	0.20	0.40	0.23	0.14	0.19	0.11	0.27	0.20
<i>N. of Observations</i>	2874		1678	1196	688	748	990	448

Table 7: Plot Characteristics

	Whole Sample		Central		Northeast			
	Mean	SD	LR&F	non LR&F	LR&F	non LR&F	LR&F	non LR&F
<i>Type of Title</i>					Mean			
NS-4	0.42	0.49	0.25	0.69	0.24	0.72	0.26	0.66
NS-3	0.15	0.35	0.12	0.19	0.10	0.16	0.14	0.23
NS-3K	0.02	0.15	0.02	0.03	0.02	0.03	0.02	0.02
SK-1	0.03	0.16	0.03	0.02	0.00	0.03	0.05	0.01
SPK - 4.01	0.11	0.32	0.19		0.23		0.16	
STK or in Forest Area	0.01	0.10	0.02		0.01		0.02	
Tax (Por Bor Tor)	0.09	0.28	0.14	0.01	0.22	0.01	0.08	0.01
No Document	0.09	0.29	0.12	0.05	0.05	0.04	0.17	0.06
<i>Mode of Acquisition</i>								
Purchased	0.27	0.45	0.29	0.26	0.34	0.28	0.25	0.22
Inherited	0.47	0.50	0.43	0.53	0.29	0.45	0.53	0.64
Cleared	0.04	0.19	0.05	0.01	0.05	0.01	0.06	0.01
Allocated (land reform)	0.02	0.14	0.03		0.05		0.02	
<i>Type of Plot</i>								
Residential	0.37	0.48	0.36	0.40	0.37	0.44	0.35	0.34
Paddy	0.36	0.48	0.34	0.40	0.16	0.27	0.45	0.56
Field	0.14	0.35	0.20	0.05	0.35	0.08	0.10	0.02
Distance to House	1.54	5.35	1.65	1.37	1.73	1.53	1.59	1.16
Size of Plot (hectares)	1.33	2.39	1.48	1.08	2.02	1.15	1.11	0.98
Years of Possession of Plot	18.04	13.58	17.30	19.23	15.99	18.77	18.09	19.76
<i>Value of Plot per Hectare (1,000 baht)</i>								
Residential	1,325.5	2,315.0	770.2	2,113.8	1,104.3	2,867.5	536.8	834.5
Agricultural	522.3	1,320.8	272.6	935.0	481.0	1,614.5	130.5	189.0
<i>N. of Observations</i>	7927		4827	3100	1967	1765	2860	1335

Table 8: Determinants of Plot Rental

	All Plots		Agricultural Plots		All Plots		Agricultural Plots	
	Coef.	Marginal Effect	Coef.	Marginal Effect	Coef.	Marginal Effect	Coef.	Marginal Effect
<i>Plot Characteristics</i>								
No land Rights x Village in Forest Area	-0.121 (0.158)	-0.004 (0.005)	-0.364** (0.183)	-0.018 (0.014)	-1.346*** (0.359)	-0.281*** (0.061)	-1.405*** (0.491)	-0.305*** (0.094)
No land Rights x Village outside Forest Area	0.503** (0.23)	0.017* (0.01)	0.519* (0.266)	0.026 (0.022)	0.448 (0.404)	0.093 (0.085)	1.009 (0.716)	0.219 (0.16)
Distance from House	0.034*** (0.009)	0.001*** (0.000)	0.029*** (0.009)	0.001 (0.001)	0.056*** (0.015)	0.012*** (0.003)	0.048*** (0.014)	0.01*** (0.003)
Plot for Agricultural Purposes	0.428 (0.362)	0.015 (0.013)			-2.549*** (1.044)	-0.531*** (0.217)		
Size of Plot in Rai	0.079*** (0.022)	0.003*** (0.001)	0.083*** (0.023)	0.004 (0.003)	0.053** (0.025)	0.011** (0.005)	0.049** (0.025)	0.011* (0.006)
<i>Type of Crop</i>								
Pasture			2.506** (1.095)	0.125 (0.13)	3.179*** (1.146)	0.663*** (0.241)		
Rice Paddy	0.738** (0.363)	0.026* (0.015)	3.294*** (1.031)	0.164 (0.154)	4.681*** (1.048)	0.976*** (0.224)	1.689*** (0.559)	0.366** (0.168)
Field Crops	0.848** (0.37)	0.029* (0.016)	3.45*** (1.04)	0.172 (0.159)	4.713*** (1.059)	0.982*** (0.226)	2.029*** (0.567)	0.44*** (0.177)
Tree Crop	-0.958** (0.426)	-0.033* (0.017)	1.496 (1.058)	0.075 (0.097)	2.868*** (1.089)	0.598*** (0.229)	-0.184 (0.618)	-0.04 (0.13)
Vegetables	0.059 (0.433)	0.002 (0.015)	2.652*** (1.063)	0.132 (0.134)	3.792*** (1.092)	0.791*** (0.231)	0.621 (0.652)	0.135 (0.155)
Fish Farming	-0.411 (0.424)	-0.014 (0.015)	1.982* (1.06)	0.099 (0.113)	3.243*** (1.077)	0.676*** (0.226)	-0.411 (0.65)	-0.089 (0.132)
Idle	-2.685*** (1.097)	-0.093** (0.046)					-2.102* (1.191)	-0.456* (0.236)
Other	1.078** (0.497)	0.037* (0.021)			2.132*** (0.826)	0.444*** (0.177)		
Fixed Effects	Village		Village		Household		Household	
N. Observations	4907		3244		2252		1151	
LR Chi2	581.95		361.16		566.64		155.44	

Note: SE in parenthesis. * significant at 10%, ** significant at 5% and *** significant at 1%. Dropped crop type categories due to no observations.

The regressions with village dummies include household controls described in Table 1.

Table 9: Determinants of the cap ratio

	No Controls	Village	Household
<i>Plot Characteristics</i>			
No land Rights x Village in Forest Area	0.886* (0.487)	0.832* (0.451)	0.879* (0.479)
No land Rights	0.015 (0.482)	0.032 (0.452)	0.146 (0.467)
<i>Savings Institution</i>			
Commercial Bank or BAAC branch in village		0.682*** (0.21)	
Savings Cooperative in Village		-0.777*** (0.292)	
Village-level Microfinance Institution		1.131*** (0.218)	
Household has savings in Com. Bank or BAAC			-0.198 (0.237)
Household has savings in Cooperative			-0.689** (0.31)
Household has savings in village-level institution			1.003*** (0.355)
Constant	-4.572*** (0.14)	-4.997*** (0.191)	-4.554*** (0.225)
N. Observations	478	478	405
R-Squared	0.04	0.10	0.07