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INTRODUCTION

As agriculture becomes more commercialized and land values increase, the incidence of land disputes and consequently tenure insecurity increase as well. This pattern has been documented by many scholars in several countries (Feeny, 1982, p. 95; Clark, 1969; Baron, 1978, p. 27). Agricultural development is also accompanied by an increase in land input transactions (sales, rentals), as individuals seek to adjust the land input to efficient levels compatible with other endowments, such as farming skills and family size. But as transactions increasingly involve individuals who are not closely related, uncertainty over entitlement to transfer land rights becomes a relevant factor. One institution which evolved to reduce or eliminate ownership uncertainty is the provision of official ownership certification to owners, (for example, title) and the maintenance of a legal system capable of enforcing and protecting property rights.

Insecure land rights imply increased uncertainty for farmers regarding their ability to benefit from investments designed to improve the productive capacity of their farm. With increased uncertainty, investment incentives are reduced and current consumption is preferred. With lower capital accumulation, the demand for variable inputs which are complementary to capital is also reduced. Here again, the provision of official recognition of land rights (through registration and titling) and the protection of these rights through an effective legal system are institutional developments to enhance productivity.

Secure legal titles can improve a farmer's access to a cheaper, longer-term and larger volume of institutional credit. Land has several attributes which make it a desirable collateral asset (Binswanger and Rosenzweig, 1986). Because a clear title is often necessary for the mortgaging of land, a title can provide easier access to credit, especially from institutional lenders who do not have personal or detailed information on the borrower (Dorner and Saliba, 1981, p. 23; Aku, 1986, p. 24; Feder *et al.*, 1988b). Non-institutional lenders usually base their decisions on personal familiarity with the borrower and they have alternative means for enforcing repayment (for example, social pressures) which are not available to institutional lenders. Access to non-institutional credit is therefore less affected by possession of land titles. However, such credit is usually much more expensive than institutional credit and is mostly short term. Constrained and more expensive

*The World Bank. The views expressed in this paper are those of the author and do not necessarily represent the World Bank.

credit leads to low factor/land ratios and lower productivity. Since both variable inputs and capital are lower among farmers without secure ownership, their output is expected to be lower than if they had secure ownership.

The above arguments suggest the hypothesis that ownership insecurity causes lower farm productivity because investment incentives are reduced and access to credit is limited. An extension of this hypothesis is the proposition that the market value of land which is not securely owned (for example, untitled land) will be less than that of an identical tract of land which is securely owned. This follows from the fact that the value of land reflects the stream of net incomes which it generates over a long horizon. At an aggregate level, the discussion implies that the institution of land registration and titling can have significant economic consequences in the agricultural sector. This paper reports on the results of a case study in Thailand dealing with the economic implications of land ownership security, where security is defined as possession of legal ownership documents. The results substantiate the conceptual framework outlines above.

DEVELOPMENT OF LAND RIGHTS IN THAILAND

Thailand has been a land-abundant country throughout most of its history. Widespread forest clearing and settlement of frontier areas accommodated the needs of the expanding population and were tolerated with few restrictions until fairly recent times. As land was readily available and agricultural activity was subsistence-orientated, any Thai citizen could claim land to provide for his family, and rights to use land were by custom rather than formally recorded. Labour was a binding constraint on agriculture.

In the second half of the nineteenth century there was a transition from property rights in labour to property rights in land, induced by the opening of the country to international trade and the increased commercialization of rice production (Feeny, 1982). Title documents for rice land were established in the main rice producing areas in the 1860s through the 1880s. Land laws were revised several times, including (in 1901) the introduction of the Torrens system of land titles. The system prevailing today is based on the Land Code of 1954, which defines the powers and duties of the Minister of the Interior and the Department of Lands regarding the allocation and acquisition of state land. It contains procedures for the issuance of documents recognizing title to land and the maintenance of the land register.

Lack of funds and inadequate administrative infrastructure to provide full titles to all eligible farmers, problems which afflict many less developed countries, are also characteristic of Thailand. As a result, relatively few farmers have obtained full title. Only 6 per cent of privately held land in Thailand is titled. Recently, the government undertook efforts to enhance the land titling capacity with funding from the World Bank and other aid agencies.

According to the 1954 Land Code, there are two main types of secure land documents. These correspond to two phases of land acquisition, namely, legal possession and utilization. Legal possession is documented in a full unrestricted title deed called N.S.-4. This document enables the owner to sell, transfer and legally mortgage the land. It is issued on the basis of an accurate ground survey

and is registered in the provincial land registrar, with clear identification of the property by boundary mark stones. The documents relating to the phase of utilization are N.S.-3 and N.S.-3K – 'Certificate of Use' or 'Exploitation Testimonial'. These documents certify that the occupant has made use of the land for a prescribed period of time, and they can be converted to title deed with completion of certain legal steps. There is very little difference between N.S.-3 and N.S.-3K documents for all practical purposes. In the study areas discussed below the occurrence of full title deeds (N.S.-4) is practically nil, and the N.S.-3 and N.S.-3K documents are classified as 'titled land' for the purposes of the analysis.

Like many other developing countries, Thailand is faced with the problem of illegal occupation and utilization of state-owned land by large numbers of farmers. Most of the squatters are settled in areas officially classified as forest reserves. It is estimated that at least 33 million rai of land (21 per cent of land under private occupation) classified as forest reserve land is actually under cultivation by squatters. Thus, only about half of the land under cultivation in Thailand (whether legally held or not) is covered by secure land documents.

Many of the squatters had *de facto* possession of the land for many years, but they cannot obtain titles or certificates of utilization. As squatter areas can be found side by side with the non-forest reserve areas (that is, same agro-climatic and geographic areas), it was possible to apply a cross-section farm level analysis without facing the difficulty of measuring the influence of environmental and infrastructural differences, or changes over time. Two different regions, namely, the Central and Northeast of Thailand are covered by the study reported in this paper, involving parts of four provinces: Lop Buri (in the Central Plain), Nakhon Ratchasima, Chaiyaphum and Khon Kaen (in the northeast). In each province, farmers with secure land ownership (outside forest reserve) and neighbouring farmers with insecure ownership (inside forest reserve) were sampled.

Lop Buri province is located in the Central Plain, while the other three provinces are located in the Northeast and are typical of other provinces in that region. The weather pattern in Lop Buri is more stable, the transportation infrastructure more developed and the soil more fertile as compared to the northeastern provinces which are drought-prone. For these reasons the study area in Lop Buri province is more commercialized, with most farmers growing cash crops such as cotton, sorghum, maize, tobacco and mungbeans, in addition to rice. In the northeast, farmers mostly grow rice and cassava. The latter is a commercial crop, but of low value and unstable market.

In the four provinces under study, eviction of squatters is not very common. This is indeed the pattern in most of Thailand, as socio-political constraints and the large number of individuals concerned force the government to maintain the status quo. Thus squatters are rarely evicted, yet they are not allowed to obtain legal ownership of the land they operate. A survey among farmers indicated that the most important benefit farmers perceive in titled ownership is improved access to credit (Feder *et al.*, 1988c).

LAND OWNERSHIP SECURITY AND ACCESS TO CREDIT IN RURAL THAILAND

Economic theory suggests that institutional lenders, due to the high transaction cost of acquiring borrower specific information, will be more inclined than non-institutional lenders to use land collateral as a device to reduce lending risk (Feder *et al.*, 1988b). Squatters in Thailand cannot obtain titles on lands which are formally state lands, and they cannot therefore acquire formal proof of ownership, neither can they legally sell their land. While (illegal) land sales are actually taking place in squatter areas at the same level as in legally settled areas, use of land as a collateral is not feasible for squatters. As a result, they cannot have the same access to institutional credit (duration, magnitude) which is available to farmers who provide land as collateral.

Data from the four provinces studied show that in Lop Buri province, which is more commercialized, traders are the source of about half of all loans and provide the bulk of non-institutional credit. Their role is less significant in the less commercialized northeastern provinces. The existence of many traders in Lop Buri and their active involvement in the provision of credit is compatible with the favourable agro-climatic conditions and the prevalence of high-value cash crops in the province (Feder *et al.*, 1988c). Most of the loans in the study areas are short-term (12 months or less), but almost all of the medium and long-term loans were provided by institutional lenders, and titled farmers received such loans more frequently than untitled farmers.

As predicted by theory, an overwhelming majority of the non-institutional loans were granted without collateral, while the majority of the institutional loans were covered by some type of loan security. The type of loan security utilized in borrowing from institutional lenders differed significantly between titled and untitled farmers. Lacking ability to offer land as collateral, untitled farmers were obliged to provide a collateral substitute, namely, group guarantee. Titled farmers, on the other hand, provided their land as collateral in about half of the institutional loans in the northeastern provinces, and in more than three quarters of the institutional loans in Lop Buri province. Group guarantee is less desirable to lenders than a land collateral, and data on loan magnitudes (per unit of land owned) indicated that in all provinces institutional loans covered by land collateral were larger than loans without collateral or loans with group guarantee.

An econometric analysis of credit supply and demand using a disequilibrium estimation framework confirmed that farmers providing land collateral are offered larger amounts of institutional credit than those providing other security or no security, holding all other characteristics constant (Feder *et al.*, 1988b, 1988c). The data also indicate that in Lop Buri province, the non-institutional loan amount per unit of land is substantially higher than the mean institutional loan amount for comparable collateral categories. Similarly, unsecured non-institutional loans in Lop Buri are substantially higher than comparable loans in other provinces. The abundance of non-institutional credit supply in Lop Buri and the fact that it can be obtained without a land collateral suggest that the effect of legal land titles (and the better access to institutional credit which they entail) on economic activity will be less in this province as compared to the other

provinces in the study. However, the evidence substantiates the hypothesis that farmers with secure ownership enjoy significant advantages in access to institutional credit as compared to squatters.

LAND OWNERSHIP SECURITY AND LAND VALUES

The theory discussed above suggests the hypothesis that titled land has a higher price than untitled land of identical quality. Data presented in Feder *et al.*, (1988c), pertaining to four Thai provinces, indeed show that the mean prices of titled land are substantially higher than the mean prices of untitled land (line (1) of Table 1).

TABLE 1 *Effect of land title on land value*

	Lop Buri	Nakhon-Ratchasima	Khon-Kaen	Chaiyaphum
(1) Ratio of mean titled land price to mean untitled land price in sample	1.221	2.958	2.076	1.531
(2) Ratio of titled land price to untitled land price calculated from hedonic price equation*	1.250 (5.48)	2.326 (14.29)	2.128 (11.10)	1.539 (8.52)
(3) Sample size	431	536	447	464

Note: *Hedonic price equation reported in Chalamwong and Feder (1988) and Feder *et al.* (1988c). Number in parenthesis indicates the associated t value.

Comparisons of average prices are valid only if the distribution of various attributes of land which may affect the price are identical. In order to remove this rather restrictive assumption, the data on the physical attributes of each tract provided by the farmers were utilized in a hedonic price analysis (Chalamwong and Feder, 1988). In this analysis the title status of each tract enters as a dummy variable, thus estimating the *ceteris paribus* effect of possessing a land title, controlling for differences in soil type, slope, location and so on. The estimates, summarized in line (2) of Table 1, indicate that legal title is a most significant factor in explaining the variation in land prices. However, in Lop Buri province the value of the parameter is lower than in the other provinces. This is compatible with the earlier discussion of access to credit by titled and untitled farmers in the different provinces. The hedonic price analysis confirms that the price of untitled land is substantially lower than that of titled land in all provinces.

THE IMPACT OF OWNERSHIP SECURITY ON INVESTMENT, INPUT USE, AND OUTPUT

Economic theory suggests that ownership security in the form of legal titles will induce higher rates of investment in equipment and in land improvements, both because of better incentives and because of the advantages in access to institutional credit. These propositions were investigated by Feder and Onchan (1987), who considered both capital formation (investment in equipment) and investment in two types of land improvements.

The analysis of the values of capital owned by titled and untitled farmers was done in a regression framework, controlling for the value of capital farmers had when they became decision makers on the farm they presently own and for other attributes which affect capital formation. The impact of titles on capital formation, as estimated in these regressions, is reported in line (1) of Table 2. The estimates for the Northeastern provinces confirmed that ownership security induces higher capital accumulation. In Lop Buri province the coefficient for ownership security is positive, but it is not significantly different from zero. As in the analysis of land values, this result is compatible with the ample supply of non-institutional credit available in that province.

TABLE 2 *Effects of title on investment, input use and output (expressed as percent difference between titled and untitled farmers, holding all other attributes constant)*

Variable	Lop Buri	Nakhon-Ratchasima	Khon-Kaen	Chaiya-phum
(1) Capital formation	4.4	105.0*	253.2*	55.9*
(2) Land bunding	18.4	69.5*	41.1*	2.8
(3) Clearing of stumps	12.3*	47.4*	29.3*	0.005
(4) Use of labour	14.7*	14.7*	8.2*	n.a.
(5) Use of draft power	-5.4	38.7*	26.9*	n.a.
(6) Use of other inputs	18.4	24.6*	34.8*	n.a.
(7) Output	4.5	11.8*	26.7*	n.a.

Note: *Denotes significance at a 90 percent (one-tailed) confidence level.

Feder and Onchan (1987) analysed the adoption of two types of land-embodied investment which enhance or maintain the productive capacity of land by preventing erosion or moisture loss: (a) bunding (dividing the field into sub-plots by raised earth walls, thus allowing better water control and moisture retention); and (b) clearing of stumps (increasing the productive surface area and facilitating better and faster soil preparation utilizing mechanized power). The analysis employs a logit model, controlling for various farmer and land attributes, and representing the impact of titles through a dummy variable for those tracts of land which were titled. The estimated coefficients from the logit equations are present in lines (2) and (3) of Table 2 (translated to percentage equivalents). The probability that land will be improved by bunding is significantly higher on titled plots in two of the provinces. In the estimates for land

improvement by clearing of stumps, possession of title increases significantly the probability of adoption in three of the provinces.

With higher capital intensity, variable input use per unit of land will be higher due to the complementarity between capital and other inputs. Furthermore, when short-term credit is a binding constraint, farmers with titled land are expected to use more variable inputs as a result of their better access to cheaper short-term credit. With higher input use per unit of land, output will be higher on lands owned by titled farmers.

These propositions were studied by Feder (1987) for three Thai provinces, using reduced form regressions. The impact of titled ownership was estimated while controlling for differences in land quality and in other physical and economic characteristics of the land using a quality index derived from analysis of land values. Differences in farmer attributes were also accounted for. The results from the Feder (1987) study (translated to percentage equivalent terms) are presented in lines (4–7) of Table 2. For the northeastern provinces there are significant differences in input use and output between titled and untitled farmers: The use of labour is higher by 8–15 per cent, draft power is higher by 27–39 per cent, and the use of other inputs is higher by 25–30 per cent. Output per unit of land is higher by 12–27 per cent. In Lop Buri province, as observed in the analysis of capital formation, differences between titled and untitled farmers tend to be smaller and not statistically significant.

Given the low incidence of eviction and land disputes in most areas of Thailand and the opinions of farmers regarding the most important benefit of titles, the material reviewed above suggests that in Thailand much of the impact of secure title stems from improved access to institutional credit. This is not necessarily the case in other countries, especially in areas where eviction, disputes and other risks generating insecurity are prevalent.

POLICY IMPLICATIONS

The analysis of Thai data demonstrated that the possession of legal land ownership documents in Thailand has a substantial impact on farmers' agricultural performance. It was also shown by Chalamwong and Feder (1988) that awarding title documents to farmers lacking such status (that is, squatters), while entailing costs of surveying and adjudication, has a very high economic pay-off in most of the areas studied, as the benefits outweigh the *relatively* small costs of certifying legal ownership by a wide margin. Given the evidence that limited access to institutional credit is the main constraint affecting squatters' productivity in rural Thailand, some may argue that their problem can be resolved by enacting decrees forcing banks to relax their collateral policies. If such policies were enforceable, they would probably cause substantial costs in consequent subsidization of banking operations, because non-collateralized loans' repayment performance is worse than that of collateralized loans. Similarly, policies which provide squatters with limited formal status (for example, a non-transferable lease from the state, or usufruct certificate), yet restrict their ability to transfer or mortgage land, will not significantly improve squatters' performance. Such policies do not alter squatters' access to institutional credit. Feder *et al.*

(1988a) studied areas in Thailand where squatters were provided with usufruct certificates of the type referred to above. It was shown that such certificates, when awarded to squatters in areas where they are well established, are not an effective policy for improving their economic performance. The situation may be quite different in other countries, where squatters face significant ownership insecurity due to eviction risk and land disputes.

Some of the opposition to the granting of full ownership rights to squatters in Thailand stems from concern that such an act will increase further encroachment on the remaining forest lands. Forest depletion is a serious problem in Thailand, and this argument needs to be examined. However, the root cause of the steady decline in forest areas is population growth in rural areas and insufficient enforcement of restrictions on the use of forest lands. This dynamic process will not be much affected unless strict enforcement of forest conservation and protection measures will become a priority, with adequate budgetary allocations and political backing.

A logical policy would be to provide full ownership rights to squatters in agriculturally suitable areas that are not expected to be reforested. The effectiveness of such a policy – if adopted on a large scale – would require complementary policies affecting the aggregate supply of institutional credit to agriculture. Due care needs to be taken so as not to introduce distortions in credit markets through government interventions.

There are additional factors to consider. Some squatters have settled in areas where continuing cultivation causes environmental damage. In these areas control of the land may be better left to the state. Similarly, consideration must be given to equity issues. Experience in other countries indicates that when squatters are provided with opportunities for legal ownership, or when the land rights system is being changed by government intervention, land grabbing by wealthy or powerful elements of the society is a real risk. Therefore the design and implementation of policies providing titles and formal recognition of land rights should contain safeguards against negative equity implications, such as limiting the amount of land which can be claimed and allowing local institutions (farmer associations) to have an input.

If the administrative capacity to consistently maintain land records is limited, and if the ability to protect those who have official recognition through an efficient legal system is lacking, a policy of titling will not be sustainable: within a few years after implementation, the official record will become useless, and the cost and effort invested in implementing the system will be wasted. A long term commitment and a realistic assessment of the limitations of the administrative and legal system are required before titling policies are undertaken.

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DISCUSSION OPENING – SUTHAD SETBOONSARNG

I will divide my discussion of this paper into two parts: the general implication of land titling and the specific policy recommendation for Thailand.

General implication of land titling

(1) The paper systematically shows the linkage between land and the credit markets. This relationship in the factor market is less understood than that between land and labour or capital and labour. The main contribution of this paper is to highlight the role of land titling in the demand and supply of credit to the farmer.

On the demand side, security of ownership shifts the demand for land investment. Higher investment and use of inputs will increase the value of land.

On the supply side, titled land is a good collateral and land title deeds also serve as a means to monitor repayment. Titling will shift the supply of credit to the land owner. This will also lead to higher input use and land values.

The evidence in the paper shows that titled land has higher value and higher input uses. Since there is low incidence of eviction, the author concludes that the benefit of titling is attributed to the supply side, that is, it enhances the access to credit. This conclusion is partly supported by the result in Table 1 which shows that in the area where the credit market functions well, the price of titled land is not much higher than the price of untitled land.

In the study of the rural credit market in Thailand, Siamwalla (1988) found that the supply of loanable funds in the rural area is abundant but there is a lack of monitoring device which will make these funds available to the farmer. This phenomenon in the rural credit market supports the conclusion of the paper.

(2) Since the failure of the market here is the imperfection of the credit market,

the improvement of the non-institutional credit market seems to be a more direct way to correct the market failure. It is interesting to note that the price ratio of titled and untitled land differs between the four sample areas. The cross-sectional inspection of these ratios with respect to the proportion of non-institutional loans in each area could yield additional insight on the role of non-institutional credit in the land market.

(3) The use of a dummy variable to represent title status in the hedonic price function may reflect the underlying objective of the study to determine the benefit of the issuance of land title deeds but it does not allow enough structure to reflect the impact of various kinds of holding status. It leaves out the potential benefit which could come from other types of holding status and gives no insight into the dynamic impact of land titling.

(4) The paper argues that there is under-provision of land titling because the benefit is large and the cost of issuance is small. Therefore, increase in the provision of titling is recommended. The social cost of titling was not taken into account here. Indeed, the private property right in land can impose the cost on the rest of the community, for example, accumulation of land by the rich.

Specific application to Thailand

(1) The discussion of the evolution of land rights in Thailand will be incomplete without recognizing the role of the Protection and Reservation of Forest Act of 1938 which was repealed and replaced by the National Forest Reserve Act of 1964. This Act empowered the Royal Forestry Department to declare areas without legal ownership as reserve forest areas. Since the enactment of this Act, 'reserved forest' areas increased steadily in spite of rapid population growth in the 1960s and 1970s. Even in recent years, the official reserved forest area increased from 38 per cent of total land area of the country to about 40 per cent in 1985 (Thailand Development Research Institute, 1987, p. 182). The expansion of the national forest reserve was made possible partly by taking away land from farmers who were occupying this land without registering it. These farmers became 'squatters'. At present, one quarter of the cultivated area in the country is classified as reserved forest and the number of squatters grows each year. Once the land is classified as reserved forest, its utilization goes under the jurisdiction of the Royal Forestry Department. It is out of the jurisdiction of the Land Code. This is an invasion of the Royal Forestry Department over private land.

Each year the Royal Forestry Department allows some of the reserved forest lands to be used for cultivation either by issuing the STK, or renting them out, or enabling some farmers to have legal title. This is very small compared to the land that is taken up as reserved forest. In the more recent years, some of these lands were appropriated by large commercial enterprises under the National Forest Policy to reforest the country.

To improve the efficiency of land utilization, the first priority is to amend the National Forest Reserve Act, then legal titling can be used as a tool to improve land utilization in specific areas.

(2) Thailand is just emerging from being a relatively land-abundant country. Institutional arrangements in land utilization are still at an early stage of development. As the society gradually develops the tenure and land holding arrangements will adjust. Land titling will certainly have a role in arranging the allocation of land but it is not necessarily the only social institution to perform the task. Other institutional arrangements have to be recognized.

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