

Property Rights, Land Markets, and Land Use in Bangkok: Consequences of Siam's 1901 Land Act

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Abstract

This paper assesses the impact of Siam's 1901 Land Title Deed Act on land markets and land use in Bangkok. Using a sample of orchard title deeds issued in the 1880s, this study investigates the incidence of land transfers and subsequent land use patterns both before and after the transition from usufruct to full private ownership rights as a result of the 1901 Act. Survival analysis shows that introducing full private property rights led to an acceleration of urban orchard title transfers. In addition, qualitative analysis suggests that institutional change facilitated land use diversification away from agriculture and towards alternative economic activities.

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1. Introduction

Prior to 1901, Siamese land rights were based on usufruct rights. Households that cleared and cultivated unused land would retain the rights of use as long as they maintained the land and paid annual taxes based on the land's output (in the case of orchards) or size (in the case of paddy). King Chulalongkorn enacted the 1901 Land Title Deed Act, which essentially granted full ownership rights to land deed holders. The act coincided with the development of bureaucratic institutions to support land reform, including the opening of the Department of Land under the Ministry of Agriculture. While scholars have previously taken interest in the impact of various land rights schemes on rural land and Thai agricultural output (see Feeny (1982), Feder et al. (1988), and Chankrachang (2012)), little attention has been paid to the impact of the extension of full ownership rights on Siam's urban land market and land use.

The purpose of this paper is to assess the impact of Siam's 1901 Land Title Deed Act on land markets and land use in Bangkok, including present day Thonburi. Using a sample of garden title deeds (*ton kua chanote suan*) issued in the 1880s, this study investigates the incidence of land transfers and subsequent land use patterns both before and after the enactment of the 1901 Law. Survival analysis results indicate that land market activity increased after the introduction of full private property rights in land in 1901. In addition, a qualitative investigation of land transfers suggests that the introduction of full ownership rights and the introduction of supporting bureaucratic institutions, such as the Department of Land, facilitated land use diversification in Bangkok away from fruit cultivation and towards alternative economic activities.

This paper is organized as follows. Section 2 reviews previous literature on property rights and land markets. Section 3 introduces the history of land rights and institutions in Thailand. Sections 4 and 5 present the data and methodology used for the study. The results are presented in section 6 and section 7 concludes with a discussion of the implications of

extending private property rights on the development of land markets in a developing economy context.

2. Related Literature

The literature on the roles of property rights in economic development is extensive. North (1981) puts forward the argument that institutions are an important determinant of economic performance. Since then, much of the literature testing this theory has been focused at the macro level and has found robust connections between institutions and economic growth (see for example Acemoglu, Johnson, and Robinson (2001), Acemoglu and Johnson (2005) and Roderik, Subramanian, and Trebbi (2004)).

More recently, economists have attempted to identify specific micro-level channels through which institutions directly affect economic development and growth, including the impact of land titling on economic outcomes. Pande and Udry's (2005) article reviews several such studies, including those that analyze the impact of land titling on land markets. The theoretical connection between land titling and the evolution of land markets is clearly explained in Wallace and Williamson (2006). They argue that the presence of land and land titling are not enough to lead to land market development. While land titling is an ingredient of modern land markets, land rights must be institutionalized—both at the policy and cultural levels—before titling will facilitate the development of the land market.

Ravallion and van de Walle (2008) and Barnes and Griffith-Charles (2007) are two micro-level studies that investigate the connection between strengthened property rights and land market activities as measured by increased property transactions in St. Lucia and Vietnam, respectively. Ravallion and van de Walle (2008) find that the introduction of transferable land use rights in Vietnam has led to the development of a market for rural land. The developing land market subsequently led to increased efficiencies in the labor market since the newly landless could better utilize their human capital in alternative economic activities.

In contrast, Barnes and Griffith-Charles (2007) find that formalizing land rights in St. Lucia did not lead to a vital land market. They point to a lack of understanding among landowners regarding the registration and transfer process and an incongruence of formalized land titling with traditional land rights institutions. Barnes and Griffith-Charles (2007) do find, however, differences in the impact of land formalization and land market vitality

depending on proximity to urban areas, suggesting that opportunities for alternative land use also matters for land market development.

Thailand in particular provides an interesting case for exploring the impact of land titling on economic outcomes given the enactment of various property rights schemes over the course of the twentieth century. Feder et al. (1988) and Chankrachang (2012) investigate the impact of rural land rights formalization initiated in the 1970s on various economic outcomes. Feder et al. (1988) find that strengthening property rights in rural agricultural land led to increased investment, input use, and agricultural productivity in Thailand. In a more recent study, Chankrachang (2012) finds that the strengthening of property rights in rural land has also led to a structural shift in the labor market and a diversification of economic activities.

This study adds to the literature exploring micro-level channels through which institutions directly affect economic outcomes. In particular, this paper identifies the impact of strengthening property rights and supporting institutions on land markets and land use in a developing economy context. This is one of the few studies to evaluate the impact of transitioning from usufruct to full ownership rights on land use in an urbanizing area. This study also adds to the limited literature on land markets in Siam during the nineteenth and early twentieth centuries.

3. Land Rights and Institutional Development in Siam

From the Ayutthaya period through the nineteenth century, the Three Seals Law formed the legal basis for property rights in land in Siam. According to Chitchang's (2006) historical analysis of property rights in Siam, Thais enjoyed usufruct rights to land throughout the nineteenth century. The Siamese government encouraged the opening of new lands by granting title deeds to settlers who cleared and cultivated previously unclaimed plots. Thus, nineteenth-century land policies largely determined settlement and land utilization patterns.

The title deeds granted to individuals and households served two purposes. First, the deeds established use rights to a specific plot of land. Second, the deeds served as tax documents that recorded the amount of land tax owed annually. From the second half of the nineteenth century through the first decade of the twentieth century, paddy land taxes amounted to 0.375 baht per *rai* (6.25 *rai* equals 1 hectare) while orchards were taxed based on the number and variety of mature fruit bearing trees recorded on the land deed.

The property listed in the title deed would revert to the King if the household ceased cultivating the specified land or stopped paying taxes denoted in the deed. A property could also be transferred to a third party if that party claimed to physically cultivate the land and challenged the original owner's rights. Land could be mortgaged and sold, but the restrictions on land use stated in the deed, the requirement that household members physically work the land, the possibility that the King could recall the land at any time, and, as noted by Ingram (1971), Feeny (1982), and Manarungsan (1989), the general abundance of unoccupied land were all factors that likely dampened the growth of land markets in Siam during the nineteenth century.

According to Feeny (1989), several factors precipitated the strengthening of property rights in land over the nineteenth century. Feeny (1989) argues that the growth of international trade in rice and the signing of the Bowring Treaty (free trade agreement with Britain) and subsequent free trade agreements with other countries increased the value of land as a factor of production. The increase in value was then accompanied by the need for stronger property rights in that factor. At the same time, King Chulalongkorn overhauled the legal code, including laws governing land, in order to counter imperial powers who had gained extraterritorial rights through various treaties over the course of the nineteenth century.

Larsson (2012) places more emphasis on the political reasons behind the strengthening of property rights in Siam. He concludes that the introduction of private property rights was a political tool for keeping potential colonizers (British and French in particular) from encroaching further on Siam's territory in two ways. First, legal private property rights bestowed on Siamese subjects made it legally more difficult for colonizers to annex land. Second, new land deeds could be denied to foreigners who previously had extraterritorial rights bestowed upon them through prior treaties.

It is likely that both economic and political factors contributed to changes in land rights that culminated in the 1901 Land Title Deed Act. This Act effectively converted usufruct land rights to full private ownership rights. Regardless of the reasons behind the enactment of the 1901 Land Title Deed Act, it can be argued that the primary purpose of the Act was not to facilitate the orchard land market in and around Bangkok. In theory, the transition from usufruct to full ownership rights for all types of land should reduce the risk of ownership loss due to lack of crop maintenance, land use changes, and expropriation.

In order to support the changes in property rights and land titling practices, the Government created the Department of Land under the Ministry of Agriculture in 1901. The

Department of Land opened regional offices in order to facilitate the titling process. The first of these offices was established in Atutthaya on 23 September 1901. Between 1901 and 1908, additional land titling offices opened in Nakorn Chaisri, Chonburi, Chachoensao, Pitsanulok, Pichai, Suphanburi, Prachinburi, Lopburi, and Antong.

In addition to the development of institutions to facilitate formal land titling, other government institutions were created or expanded to accommodate economic and demographic change in Siam. For example, Ouyyanont (1997) argues that the Ministry of the Capital (*Krasuwong Nakornban*) was established in 1892 in response to Bangkok's growing population and accompanying need for an effective local administration. Departments under the Ministry of the Capital included the Port Health Department, Bangkok Revenue Department, Bangkok Police Department, Sanitation Department, and the Capital Department (responsible for population censuses, vital registration, and other registrations) (Ouyyanont, 1997). While the responsibilities of issuing and maintaining official land records were consolidated under the newly created Department of Land, linkages forged between the Department of Land and the Ministry of the Capital created channels to transact land through formal contractual arrangements (i.e. issuing sales agreements and mortgage contracts) and to amend land use (transfer tax jurisdiction). These synergies between government departments presumably reduced the transaction costs of transferring land titles and changing land use while increasing the security of private property rights in land.

4. Data

The records used for this study are called "garden title deeds" (*ton kua chanote suan*). Garden title deeds were issued to households with orchard lands and served as both a tax document and ownership document. King Chulalongkorn ordered a comprehensive reassessment of orchard taxes (assessed per mature fruit tree) and the reissuance of garden title deeds in 1882 (Directory for Bangkok and Siam, 1914, 1914, 40 & 61-62). The documents used in this study are the official copies of the garden title deeds issued in Bangkok between 1884 and 1889 and remained in use through 1908. The dataset includes over 2,000 garden title deeds in Bangkok on both the east and west sides of the Chao Phraya River, including present-day Thonburi. Each deed includes owner characteristics (name, title, sex, relationship to other owners), plot characteristics (location, plot dimensions, and border properties), and the total tax assessment. In addition, the deeds include details of any property transfers that took place between the issue date and 1908.

Summary statistics describing owner and plot characteristics for the properties assessed for taxes in the 1880s and the properties that were subsequently transferred between 1885 and 1908 can be found below.

Table 1. Summary Statistics

Variable		Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
	Measurement	Original Deeds			Transfer Properties		
Owner Characteristics							
Nobility and Civil Servants	0/1	2190	0.067	0.250	299	0.134	0.341
Chinese	0/1	2188	0.038	0.192	299	0.094	0.292
Married	0/1	2190	0.461	0.499	299	0.331	0.471
Single Listed Owner	0/1	2190	0.278	0.448	299	0.428	0.496
Single Listed Female Owner	0/1	2190	0.133	0.340	299	0.191	0.393
Single Listed Male Owner	0/1	2190	0.135	0.342	299	0.227	0.420
Single Listed Child Owner	0/1	2190	0.010	0.100	299	0.010	0.100
Sibling Owners	0/1	2190	0.111	0.314	299	0.054	0.225
Multi-generational Owners	0/1	2190	0.150	0.357	299	0.110	0.314
Owns Multiple Properties	0/1	1842	0.131	0.338	178	0.163	0.370
Property Characteristics							
Borders Canal	0/1	2190	0.411	0.492	299	0.398	0.490
Borders River	0/1	2190	0.022	0.146	299	0.047	0.212
Borders Road or Bridge	0/1	2190	0.036	0.187	299	0.054	0.225
Borders Irrigation Canal	0/1	2190	0.137	0.344	299	0.094	0.292
Borders Village or Temple	0/1	2190	0.054	0.226	299	0.064	0.244
Total Rai	Rai	2190	3.817	3.155	299	4.046	3.135
Total Taxes	Thai baht	2190	9.091	11.212	299	12.582	13.227
Tax Per Rai	Thai baht	2114	2.875	3.338	293	3.763	4.043
Transactions							
Transferred Properties	0/1	2190	0.137	0.343			
Transferred after 1901 policy	0/1				299	0.696	0.461
Change in land use to mill	0/1				299	0.030	0.171
Macroeconomic variables							
Rice Exports	In ten thousands of metric tons	24	55.811	23.184			
Terms of Trade	Index (1882 = 100)	24	131.99	16.27			

Notes: Author's calculations from the garden title deeds except for rice exports (Feeny, 1982, 128) and terms of trade (Huff and Caggiano, 2008, 330).

4.1 Owner Characteristics

The land deeds provide rich details about the nature of landownership in late-nineteenth century Bangkok. The deeds list the owner's title, name, and in some cases a suffix denoting marital status or relationship status with other owners. The title carries information about the sex and the social class of the owner. For instance, the titles *nai* and *amdaeng* denote married males and females, respectively, who are ordinary citizens. The

titles also specify whether owners are members of the aristocracy and/or civil servants. Finally, the title often indicates the ethnic origin of the owner, including *jeen* for first generation Chinese residents.¹

To get a sense of what is meant by “ordinary,” it is helpful to compare the population covered by the land deeds to the total population of Bangkok and surrounding areas in the late nineteenth century. There are approximately 10,000 garden title deeds in the collection that likely cover about 8,500 households in and around Bangkok.² Assuming that each household has five family members, the land deeds represent properties that supported approximately 42,500 people.³ Although estimates of Bangkok’s population during the late-nineteenth century are not very reliable, the 1883 postal census indicates there were approximately 120,000 residents in Bangkok and the surrounding area (Oouyanont, 1997, 243). This means that orchard landowners possibly made up around 35 percent of Bangkok’s population. The summary statistics in table 1 indicate that the majority of landowners are ordinary citizens with only 7 percent of the properties owned by the aristocracy and/or civil servants. Given these figures, I argue that landownership was not the exclusive right of the aristocracy and government officials, which is likely a direct result of usufruct land rights in the nineteenth century.

Analyzing ownership patterns is difficult due to Thai naming conventions used during the nineteenth century. During this time period, Thais generally used only a given name unless they were a part of the aristocracy.⁴ This poses a challenge when matching multiple properties with a single owner. Given the fact that land rights were initially based on usufruct (i.e. requiring the owner to physically work his or her land) and that there was a lack of transportation infrastructure during the period, it was likely difficult to tend orchards in disperse locations across Bangkok. Thus, it is assumed that a single owner could own multiple properties in the same village, but not across villages. This is not an unrealistic assumption since it is clear in the data that multiple plots owned by a single owner tended to be located next to each other. Under this assumption, 87 percent of households owned only one plot and 13 percent owned two or more plots.

¹ In addition to Chinese owners, the deeds indicate if the owner is *khaek* (likely Indian or Malay in origin) or *farang* (European or American in origin). There are only a few such records in the current dataset.

² This study will be expanded to include all 10,000 deeds in the future. The estimate of 8,500 households is based on the summary statistics calculated from the current dataset.

³ The estimate of five persons per household has been used by various government and foreign officials during the nineteenth century, although no official numbers from that time period can confirm this estimate. Zimmerman’s (1931) household survey confirmed that this is a fair estimate of household size for the early twentieth century in agricultural areas just outside of Bangkok.

⁴ In 1913, King Vajiravudh (Rama VI) mandated that Thais use both a given name and a family name.

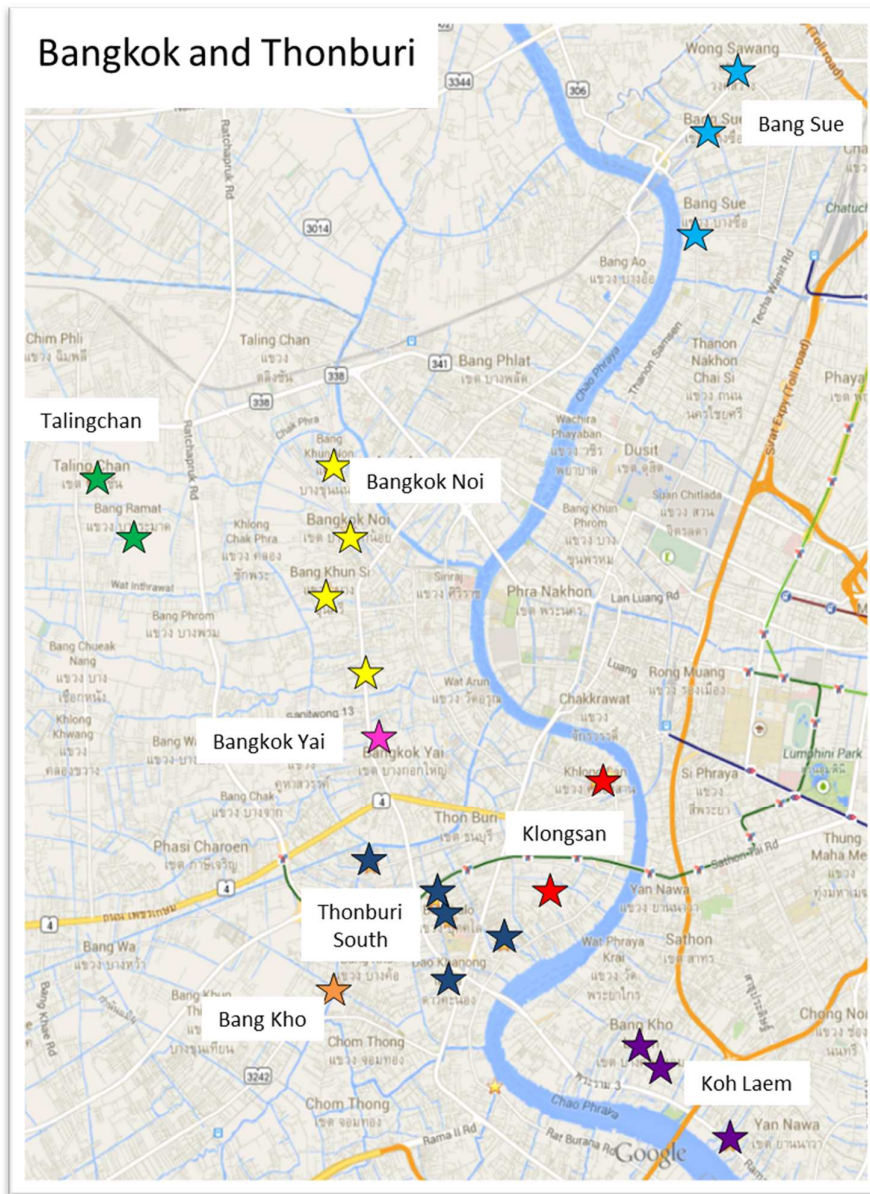
The owners' titles and suffixes listed on the deeds make it possible to determine marital status (such as bachelor or widow) and the relationships between multiple owners (such as siblings, mother-child, grandparent-grandchildren, etc.). Married couples make up almost half of the property owners. Interestingly, single males and single females each make up about 13 percent of landowners, indicating that there were few barriers to landownership based on gender. Siblings and multi-generational owners (i.e. mother-child, father-child, grandparents-grandchildren, etc.) make up about one-quarter of landowners. Overall, the picture of landownership is very diverse and not concentrated within the social elite or male heads of household.

4.2 Plot Characteristics

The sample covers 2,190 plots located in eight districts around Bangkok, including Talingchan, Bangkok Noi, Bangkok Yai, Thonburi South, Klongsan, and Bang Khlo on the west side of the Chao Phraya River, and Bang Sue and Koh Laem on the east side of the Chao Phraya River.⁵ A map indicating the property locations can be found in figure 1.

⁵ For convenience, the properties are grouped according to modern district boundaries.

Figure 1. Bangkok Property Locations in Bangkok and Thonburi



The mean orchard plot size is 3.82 *rai* (0.61 hectares), which is substantially smaller than Feeny's (1982) estimate of approximately 15 *rai* (2.4 hectares) for an average paddy plot in the Central Plain rice growing areas. The plot sizes vary by area, with the largest average plots found west of the Chao Phraya in Talingchan (mean of 5.2 *rai*) and the smallest average plots found north of the city walls in Bang Sue (mean of 3.12 *rai*).

The deeds list border properties in the four cardinal directions, including orchards, rice fields, villages, temples, and geographic features. Geographic features, such as canals and rivers, are the most important transportation ways in Siam during this period. Thus, bordering a waterway may have implications for the value of properties since the waterways

provide easier access to markets compared to those that do not. In total, 45 percent of the properties border a transportation way, including canals, roads, and the Chao Phraya River. Similarly, irrigation canals, which border 14 percent of properties, can have implications for land productivity and thus land values.

As mentioned earlier, the garden title deeds have two purposes. The first is to establish ownership and the other is to assess taxes. Taxes on orchard lands were collected based on the number of mature fruit trees located on the property, not the size of the property.⁶ This means that the tax per *rai* is an indirect measure of each plot's agricultural productivity. The average tax collected annually per *rai* was 2.87 baht (0.287 pounds sterling).⁷ Tax per *rai* fluctuated widely between the different areas of Bangkok. Klongsan, which is located on the Chao Phraya River and the closest district to Bangkok's population center, had the highest average taxes of 7.19 baht per *rai*. The two districts that are located furthest from the center—Talingchan and Bang Sue—had the lowest average taxes of 1.09 and 1.42 baht per *rai*, respectively.

4.3 Property Transfers

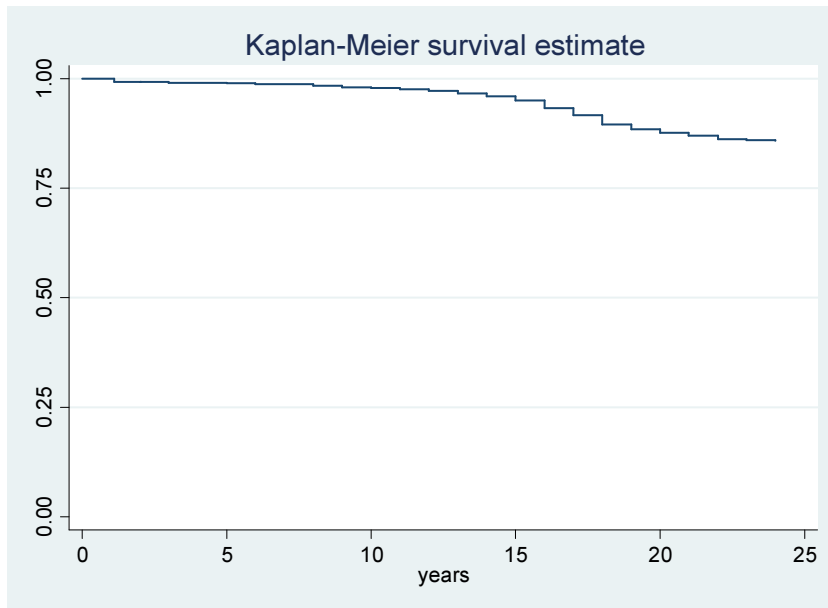
Approximately 14 percent of the properties in the sample were transferred to new owners between 1884 and 1908 with about 69 percent of those transfers occurring after the enactment of the 1901 Land Title Deed Act.⁸ The Kaplan-Meier survival curve, displayed in figure 2 below, shows an acceleration of property transfers occurring around year 15, which coincides with the turn of the twentieth century.

⁶ Taxes were collected annually on mature areca nut, mango, mangosteen, durian, *maprang*, and *langsai* trees, in addition to betel leaf vines.

⁷ The exchange rate between baht and pounds sterling for 1885-88 is 10 baht per pound sterling. The exchange rate comes from Appendix D in Ingram (1971, 337).

⁸ Transfers can be the result of a sale, loss of land due to unpaid mortgage loan, a bequest, or a dispute.

Figure 2. Kaplan-Meier Survival Function



In addition, the land transfers are not distributed equally geographically, as indicated in table 2 below.

Table 2. Distribution of Properties and Transfer Properties in Bangkok and Thonburi

Area	Number of Properties	Number of Properties Transferred	Percent of Properties Transferred
Thonburi South	179	48	27%
Klongsan	231	57	25%
Koh Laem	312	67	21%
Talingchan	185	24	13%
Bang Kho	176	19	11%
Bangkok Noi	415	37	9%
Bang Sue	638	42	7%
Bangkok Yai	52	3	6%

Less than 10 percent of properties are transferred in Bangkok Noi, Bangkok Yai, and Bang Sue, which are located relatively far from Bangkok’s population center. In contrast, over 20 percent of properties were transferred between 1884 and 1908 in Koh Laem, Klongsan, and Thonburi South, all of which border the Chao Phraya River.

4.4 Macroeconomic Environment

It is important to take into consideration the macroeconomic environment as it can be correlated with property sales. However, controlling for the macroeconomic environment in Siam prior to 1900 is challenging. Since no annual GDP estimates are currently available, two alternative measures of macroeconomic activity are used. Since rice was Siam's primary export during the latter half of the nineteenth century and drove much of the economic activity in the economy (i.e. investment in canals, rice milling, etc.), I use annual quantities of rice exports (in tens of thousands of metric tons) as a real measure of the macroeconomic environment. Alternatively, I use a terms of trade index constructed by Huff and Caggiano (2008) as a proxy for the macroeconomic environment.

5. Methodology

This paper identifies the impact of property rights on urban land market activity by exploiting the exogenous change from usufruct to private property rights in land that accompanied the enactment of the 1901 Land Title Deed Act. To test whether or not the act led to the expansion of the Bangkok land market, survival analysis is used to measure the relative risk of a property transfer before and after the act is implemented, controlling for owner, plot, and macroeconomic variables. A higher relative risk of a property transfer after 1901 is an indicator that the transition to full ownership rights in land facilitated the development of the Bangkok land market, leading to an acceleration of land transfers.

A Cox proportional hazard model is employed to estimate the impact of the change in land policy—as well as plot characteristics, owner characteristics, and the macroeconomic environment—on the risk of a property transaction. The Cox model is estimated using the following equation:

$$h(t|\mathbf{x}_j) = h_0(t)\exp(\mathbf{x}_j\boldsymbol{\beta}_x)$$

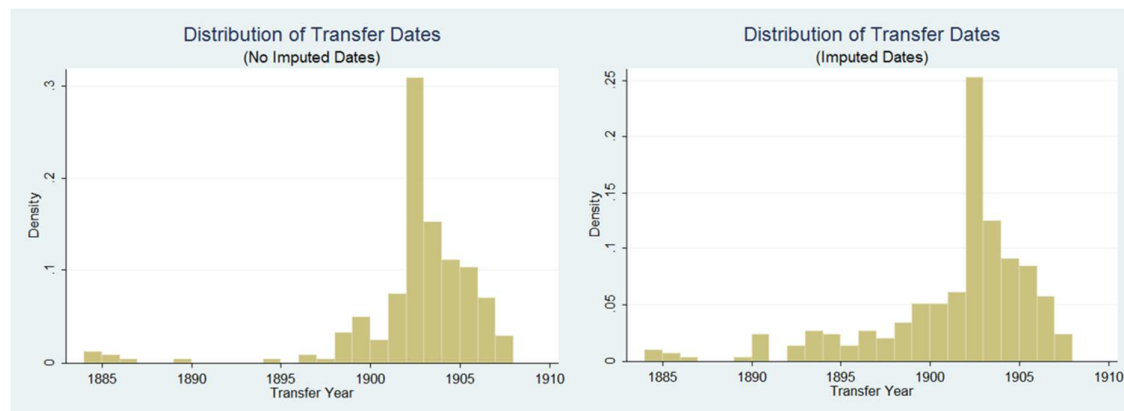
This equation estimates the instantaneous hazard rate of transfers at time t for plot j . The expression $h_0(t)$ is the baseline hazard rate, \mathbf{x}_j is a vector of plot characteristics for plot j , and $\boldsymbol{\beta}_x$ is a vector of coefficients estimated from the data collected from the garden title deeds. The origin time is the year in which the property was registered by a government official during the tax reassessment (between 1884 and 1889 in most cases). Properties are observed

in each year until they are a) transferred to another party or b) censored in 1908 when the records go out of use.⁹

In most cases, deeds denoting a transfer recorded who the land was transferred to and the date the transfer was registered by a government official. Fifty-four deeds, however, do not include the transfer date. It is clear that most deeds that do not list a transfer date were written by the same government official who wrote the original deeds in the 1880s. This official's handwriting does not appear in any transfers that are dated after 1901. If all of the undated transfers are in fact from the period before 1901, this poses a problem for estimation. Excluding these deeds from the estimation will result in overstating the impact of the 1901 Land Title Deed Act on the risk of a property transaction.

To solve this problem, it is conservatively assumed that all deeds with undated transfers occurred between 1890 and 1900, or after the bulk of deeds are registered during the tax reassessment and before the enactment of the 1901 Land Title Deed Act. Using a uniform distribution, each undated transfer record was randomly assigned a transfer year between 1890 and 1900. The distributions of transfer dates for the two alternative datasets (one excluding the undated transfers and the other including imputed transfer dates) are shown figure 3 below.

Figure 3. Distribution of Transfer Dates



The estimation is based on the dataset represented in the panel on the right. Estimation results are presented in the next section.

⁹ The current analysis is based on the first transfer of a property. Some properties are transferred multiple times, thus the author plans to expand the analysis to allow for multiple failures.

6. Results

6.1 Impact of 1901 Land Title Deed Act on the Bangkok Property Market

Four Cox proportional hazard regressions estimate the relative risk of a property transfer given the prevailing property rights law, owner characteristics, plot characteristics, and the macroeconomic environment. All four models include the policy variable (which equals 1 for years on or after the land law was enacted in 1901 and 0 otherwise), owner characteristics (social class, relationship between owners, and land wealth), plot characteristics (border properties, size, and productivity) and property locations within Bangkok. Regressions 2 through 4 add two different controls to proxy for macroeconomic conditions, including volume of rice exports and a terms of trade index. Regression 4 includes interaction terms between the plot characteristics and the policy variable in order to capture any changes in the relative importance of plot characteristics before and after the enactment of the 1901 Act. The exponentiated estimated coefficients from the Cox regressions are reported in table 3 below.

*Table 3. Relative Risk of Bangkok Property Transfer
Cox Proportional Hazard Regression*

VARIABLES	(1)	(2)	(3)	(4)
Policy (equals 1 after 1901)	3.40*** (0.958)	2.55*** (0.854)	3.18*** (0.848)	3.28*** (1.108)
Rice Exports (per 10,000 metric tons)		1.01* (0.007)		
Terms of Trade (1882 = 100)			1.03*** (0.009)	1.03*** (0.010)
Tax Per Rai (baht)	1.02 (0.020)	1.02 (0.020)	1.02 (0.020)	1.08*** (0.027)
Borders Irrigation Canal	0.68 (0.166)	0.68 (0.166)	0.68 (0.167)	0.69 (0.297)
Borders Transportation Way	1.26* (0.166)	1.26* (0.166)	1.25* (0.165)	0.82 (0.195)
Borders Village or Temple	1.03 (0.270)	1.02 (0.269)	1.01 (0.265)	0.39 (0.285)
Policy*Tax per Rai				0.91*** (0.031)
Policy*Borders Irrigation				0.98 (0.506)
Policy*Borders Transportation				1.84** (0.525)
Policy*Borders Temple of Village				3.25 (2.515)
Chinese	0.27** (0.156)	0.27** (0.157)	0.27** (0.157)	0.27** (0.158)
Nobility and Civil Servants	1.18 (0.291)	1.16 (0.286)	1.13 (0.279)	1.13 (0.280)
Single Listed Owner	1.16 (0.182)	1.16 (0.182)	1.16 (0.181)	1.16 (0.181)
Sibling Owners	0.75 (0.181)	0.75 (0.182)	0.76 (0.183)	0.76 (0.183)
Multi-generational Owners	1.19 (0.212)	1.19 (0.212)	1.20 (0.213)	1.22 (0.216)
Owns Multiple Properties	1.28 (0.225)	1.28 (0.226)	1.29 (0.227)	1.29 (0.228)
Total Rai	1.01 (0.019)	1.01 (0.019)	1.01 (0.019)	1.01 (0.019)
Koh Laem	0.81 (0.177)	0.82 (0.178)	0.83 (0.181)	0.83 (0.181)
Bang Kho	0.47** (0.148)	0.47** (0.149)	0.47** (0.149)	0.47** (0.149)
Thonburi South	1.07 (0.246)	1.08 (0.247)	1.06 (0.242)	1.07 (0.244)
Bangkok Yai	0.15*** (0.109)	0.15*** (0.108)	0.14*** (0.106)	0.14*** (0.101)
Bangkok Noi	0.31*** (0.079)	0.31*** (0.079)	0.30*** (0.077)	0.30*** (0.076)
Talingchan	0.52** (0.158)	0.53** (0.158)	0.54** (0.161)	0.53** (0.160)
Bang Sue	0.23*** (0.060)	0.23*** (0.059)	0.23*** (0.058)	0.22*** (0.057)
Observations	38,330	38,330	38,330	38,330

Notes: Standard errors in parentheses; Klongsan is the omitted location; ordinary Thai is the omitted social class; married is the omitted relationship variable.

*** p<0.01, ** p<0.05, * p<0.1

A coefficient greater than 1 indicates that a covariate is associated with an increase in the likelihood of a property transfer. All four specifications provide evidence that the risk of property transfer increased significantly after the enactment of the 1901 Land Title Deed Act. In the first model, which does not control for the macroeconomic environment, the policy coefficient indicates that a property is 3.4 times more likely to be transferred in each period after 1901. While this seems like a substantial impact, the fact that the enactment of the 1901 Land Title Deed Act coincides with an acceleration in economic growth at the turn of the twentieth century raises concern that the policy variable is largely picking up the economic environment. To solve this problem, regressions 2, 3, and 4 include two proxies for the macroeconomic environment—volume of rice exports and a terms of trade index. The coefficients on the macroeconomic variables are greater than 1 and significant, indicating that transfers in land are positively correlated with increases in trade and economic activity. As expected, the inclusion of the macroeconomic variables has a dampening effect on the policy variable. Although the policy coefficient is attenuated, the 1901 Land Title Deed Act is still associated with an increase in the hazard rate of a deed transfer by 2.55 to over 3 times. These results are statistically significant at the 1 percent level.

The regressions include variables capturing the social class of the owners, including dummy variables for the nobility and/or civil servants and for Chinese owners. The excluded category is “ordinary Thais”, which is defined as non-titled and non-Chinese. The results suggest that the Chinese have a 74 percent lower hazard of transferring property than Thai owners. The Thai aristocracy and civil servants, on the other hand, are just as likely to transfer property as ordinary Thais in every period. It is unclear why there exists an ethnic difference in likelihood of keeping property. Other owner characteristics, including relationships between owners listed on the land deeds and whether owners own multiple plots, are not associated with differences in property transfer patterns.

The results of the Cox regressions confirm that some of the plot characteristics are correlated with the likelihood of a property transfer. Regressions 1 through 3 indicate that plot size (*rai*) and productivity (measured as taxes per *rai*) were not important determinants of a change in ownership. However, the fourth regression, which interacts productivity with the policy variable, indicates that plot productivity was associated with a higher likelihood of transfer before the enactment of the 1901 Land Title Act, but not afterwards (the combined direct effect and interaction term is 0.98). For every additional baht of tax assessed per *rai*, a property had an 8 percent higher likelihood of transfer before the enactment of the 1901 Act.

The boundary properties also matter. The first three Cox regressions show that properties bordering transportation ways—including canals, roads, and the Chao Phraya River—had a 25 percent higher hazard of transfer than properties that do not have immediate access. However, when the policy variable is interacted with properties bordering transportation ways, the results show that bordering a transportation route did not impact the probability of a transfer prior to the enactment of the Act. After 1901, the coefficient for the combined effect is 1.51, indicating that properties bordering transportation routes were at a 51 percent higher risk of transfer than properties that did not border transportation routes. Thus, it appears that land productivity was an important determinant of a property transfer before 1901 and that ease of access to markets was a determinant of a property transaction after 1901.

Finally, location matters. The excluded location is Klongsan, which is located on the west side of the Chao Phraya River closest to Bangkok’s population center. Properties in Koh Laem and Thonburi South, which also border the Chao Phraya River, are no more likely to be transferred than properties in Klongsan. Properties that do not border the Chao Phraya River and are located further from Bangkok’s population center had much lower hazards of being transferred than Klongsan.

6.2 Implications of Private Property Rights and the Introduction of Supporting Bureaucratic Institutions on Land Use in Bangkok

The survival analysis in the previous section shows that properties were more likely to be transferred after the enactment of the 1901 Land Title Act. In addition, it appears that plot productivity declined in importance while proximity to transportation ways increased in importance in determining the likelihood of a property transfer. This section takes the discussion a step further and explores the roles of bureaucratic institutions in concert with the 1901 Act in facilitating land market activity and land use change.

Feeny (1989) argues that government revenues declined in the mid-nineteenth century due to the breakup of the government’s monopoly over Siam’s export trade after signing the 1855 Bowring Treaty. This led the government to find new sources of revenue internally. As a result, many productive activities were taxed in nineteenth- and early twentieth-century Siam. For example, agricultural activities such as paddy cultivation, non-tree gardens, and orchards were taxed separately by different government departments at different rates. As mentioned earlier, paddy land was taxed at a rate of 0.375 baht per *rai* while orchards were taxed on a per tree basis. Once a land deed was written, the owner was responsible for paying

the amount listed on the deed annually. The important point here is that taxes and the original claim to the land were based on the particular productive activity listed on the deed, leaving little room for landowners to shift their production to more lucrative alternatives. After the shift from usufruct rights to full private ownership rights in 1901 the land claims were theoretically no longer tied to specific land use. The tax system, however, was not changed. This means that taxes for orchard properties were still based on the orchard production listed on the original deed.

The Ministry of the Capital (*Krasawong Nakornban*) was established in 1892 as a part of King Chulalongkorn's major administrative reforms. The Ministry of the Capital became Bangkok's administrative authority and raised revenues through collecting taxes and fees on various non-agricultural economic activities within Bangkok. According to Ouyyanont (1997, 254) the taxes included the Chinese poll tax, house and rent shop taxes, slaughterhouse fees, and license fees for various means of transportation, including rickshaws, cars, and trams. The Ministry of the Capital also issued legal contracts, including employment, loan, pawn, and various other agreements (Ouyyanont, 1997, 253).

In 1901, the newly created Department of Land took over the administration of the orchard land deeds in addition to being charged with issuing title deeds for new claims based on cadastral surveys. In addition to its role in issuing new title deeds, it is clear that the Department of Land interfaced with the Ministry of the Capital to facilitate various property transactions. Several land transfers that date after 1901 include notes regarding sales contracts issued by the Ministry of the Capital. An example of a note detailing a property sale from 1905 is below:

18 January R.S. 124

The transfer of this title deed is executed following the Ministry of the Capital document number 100/10913, written 18 November R.S. 124, saying that the owner of the orchard, Mr. Plaek, wrote a sales contract and the city has transferred ownership to the buyer, Mrs. Iyam.¹⁰

In addition, it appears that a procedure was established to apply for a change in land use from orchard to an alternate economic activity. In the following case, an official at the Department of Land indicates on the deed that the owner has changed the land use and that the tax authority has been transferred from the Department of Land under the Ministry of

¹⁰ Department of Land Museum, Bangkok bundle 9, book 1, page 20. R.S. stands for "Rattanakosin Era" and April was the first month of the year during this time period. Thus, January R.S. 124 refers to January 1906 and November R.S.124 refers to November 1905.

Agriculture to the Revenue Department under the Ministry of the Capital. The text reads as follows:

16 March R.S. 126

We have been informed that a sawmill has been established [on this property] according to Revenue Department document number 469/1833, written on 13 March R.S. 126.¹¹

In another example, the Department of Land official details both a transfer of land brokered through the Ministry of Religious Affairs and a transfer of tax authority to the Revenue Department under the Ministry of the Capital due to a change in land use from orchard to mill.

13 November R.S. 124

Land deeds 1005-1006, dated 8 November R.S. 124, along with land deeds 126-128 are issued to Bukkalo Temple and Mr. Li Tai Hua (Chinese). Mr. Li Tai Hua entered into an agreement to transfer ownership of plots 126-128 to the Ministry of Religious Affairs in exchange for the ownership of plots 123-124.

5 March R.S. 124

We have been informed that a sawmill has been established [on this property] by Mr. Li Tia Hua according to Revenue Department document number 311/1355, written on 28 February R.S. 124.¹²

Overall, 3 percent of all orchard properties in the sample and 7 percent of riverfront properties applied for a land use change from orchard to mill. All of the changes occurred after the enactment of the 1901 Land Title Act and involved coordination between the Department of Land and the Bangkok's Revenue Department.

Given the evidence found in the land deeds, I argue that the emergence of private property rights in land were not enough to spur the property market and diversify land use in Bangkok. Rather, the divorce of ownership rights based on agricultural production in addition to the emergence of and coordination between bureaucratic institutions to issue legal contracts (sales and mortgage) and transfer tax authority (from the Ministry of Agriculture to the Ministry of the Capital) were all important factors in developing the land market and diversifying land use in Bangkok.

7. Conclusions

There is much interest in the literature regarding the impact of securing property rights in land on economic outcomes. This paper adds to the discussion by assessing the

¹¹ Department of Land Museum, Bangkok bundle 9, book 1, page 37.

¹² Department of Land Museum, Bangkok bundle 9, book 3, page 25.

impact of a change from usufruct land rights to full private ownership rights on the land market and land use in Bangkok at the turn of the twentieth century. This study finds evidence of a significant increase in Bangkok land market activity after the enactment of the 1901 Title Deed Act. While agricultural productivity was an important factor that predicted land transfers prior to 1901, transfers were concentrated among properties with direct access to transportation ways (and therefore markets) after the enactment of the Act.

There is evidence from the land title deeds themselves that the increase in market activity was not only due to the change from usufruct land rights to full private property rights. Emerging cooperation between bureaucratic institutions—specifically the newly established Department of Land and the existing Ministry of the Capital—facilitated the development of the land market through issuing legal contracts for mortgages and sales. In addition, these bureaucratic institutions likely aided the diversification of land use away from agriculture and into alternative economic activities through developing procedures to cancel land taxes based on agricultural production and transfer the tax authority to the Revenue Department to assess taxes on non-agricultural activities.

The results of this paper suggest that securing land rights is not enough to increase land market activity. The development of supporting bureaucratic institutions is necessary to facilitate the formalization of land rights, the recognition of land rights by the populace, and the reduction of transaction costs. Thus, in a developing economy context, policies aimed at granting private property rights in order to induce economic activity (through improving the land, increasing land market activity, encouraging work outside the home, etc.) should be considered in conjunction with the development of bureaucratic institutions to support such policies.

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