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Foreign faith and rising state: An examination of state-building dynamics in late 16th-century Japan

Minzhao Wang[1], Austin Michael Mitchell[2] (iD) and Weiwen Yin[3] (iD)

[1]School of Social Sciences, Tsinghua University, Beijing, China; [2]International Economic Development Program, Hiroshima University, Higashi-hiroshima, Japan and [3]Department of Government and Public Administration, University of Macau, Macao SAR, China
Corresponding author: Weiwen Yin; Email: wwyin@um.edu.mo

Abstract
How does a ruler implement state-building at the local level? This paper examines state-building in late 16th-century Japan by focusing on Toyotomi Hideyoshi's land surveys, which were crucial for establishing a centralized regime. We argue that Hideyoshi strengthened control over the locality via land surveys as a strategic response to the perceived threats emanating from Catholic missionaries. Using various empirical strategies including spatial econometrics, sensitivity analysis, and an instrumental variable approach, we find that the presence of Catholic churches significantly increased the likelihood of a locality being surveyed. These results highlight the importance of information-gathering beyond fiscal purposes for security objectives and emphasize the role of threats from foreign religious institutions in state formation processes.

1. Introduction

How does a ruler prioritize state-building at the local level? A growing body of literature studies the causes of robust state institutions and has especially focused on whether external threats stimulate state centralization (Tilly, 1990; Kaspersen and Strandsbjerg, 2017). Although this line of inquiry initially focused on European state-building, it has since expanded to include non-European societies, such as Africa (Herbst, 2000), China (Wang, 2022b), and Southeast Asia (Paik and Vechbanyongratana, 2019). However, many studies have been critical, arguing that external threats do not explain cases outside of Europe (Centeno, 1997), that the argument is conditional on prior institutional development (Feinstein and Wimmer, 2023), and that the argument overlooks the importance of religious institutions in state-building (Grzymala-Busse, 2020, 2024).

In this paper, we enrich the existing literature by introducing another source of external threats capable of encouraging state formation processes: the presence of foreign religious institutions. This proposition presents a distinct mechanism that diverges from common explanations within the state-building literature. Previous studies on foreign missionaries often focus on the economic benefits they bring to host countries (Acemoglu *et al.*, 2014; Bai and Kung, 2015; Ma, 2021), or on their contributions to democratization via human capital development (Gallego and Woodberry, 2010; Woodberry, 2012). However, it is imperative to acknowledge that foreign missionaries also acted as agents of colonial conquests by playing a significant role in propagating imperial expansionism in the early modern

period (Said, 2012). This aspect of their impact, which may influence state formation in ways not yet fully explored, forms the basis for our investigation.

The first missionaries to arrive in Japan were Catholics from Portugal. Central rulers in Japan viewed Catholic missionaries with deep skepticism because of the expansionist goals of the Spanish and Portuguese in the Asia-Pacific.[1] Although these threats did not manifest as military invasions, they nonetheless presented considerable risks to the leadership of a state that was still in the process of consolidation. When supported by colonial powers, foreign religious institutions can jeopardize the unification of the host state and the stability of the regime through forging alliances with local forces. Such local oppositions aided by foreign powers can be even more destabilizing than external challengers: a loss in an external war may merely lead to territorial sacrifices, whereas succumbing to internal opposition supported by foreign powers could lead to the collapse of the regime, the disintegration of the state, and potentially the end of the leader's reign. Faced with such immediate and tangible threats, leaders had the incentive to prioritize implementing rigorous control in areas where Catholic missionaries were prevalent. These actions significantly accelerated the process of centralization and the rise of a bureaucratic state.

In this paper, we examine the administration of cadastral surveys in late 16th-century Japan to empirically assess the relationship between Catholicism and the process of state formation. Cadastral surveys which were implemented under the rule of Toyotomi Hideyoshi ranked among pre-modern Japan's most impactful state-building policies because these surveys catalyzed the country's transformation into a centralized state, both politically and economically. We center our analysis on the singular context of Japan under Toyotomi Hideyoshi's leadership for two primary reasons. First, it provides within-country variation in the presence of Catholic missionaries, thereby maintaining country-level variables constant. Second, it elucidates a mechanism through which foreign religious institutions emerged as threats, namely, their potential collusion with local powers and their assistance to local lords in possible confrontations against the central government. Hence, late 16th-century Japan where Toyotomi Hideyoshi progressively pursued state-building serves as an apt historical context for assessing the political impact of Catholic missionaries.

We employ a variety of complementary strategies to empirically evaluate whether the proliferation of Catholicism influenced the process of state-building in historical Japan. First, we undertake correlational analyses to address potential issues related to selection on observable variables and spatiotemporal autocorrelation through the use of various model specifications. Following this, we execute a sensitivity analysis that uses E-values to gauge the robustness of the correlational evidence against potential unobserved confounding factors (VanderWeele and Ding, 2017). Lastly, we implement an instrumental variable (IV) approach to directly address the concern for endogenous treatment and selection on unobservables. The IV we employ is the cumulative count of battles in a province prior to Japan's initial encounter with Christianity. This variable plausibly influences the probability of a province receiving a survey solely through the presence of a church. The results gleaned from all these analyses substantiate a positive association between the presence of Catholic churches and the likelihood of receiving a land survey for a locality.

The results regarding the influence of Catholic church presence on the implementation of land surveys contribute to the extensive and ever-expanding literature on state-building (Vu, 2010; Simpson, 2021; Wang, 2022a). A considerable body of literature has explored questions concerning whether external threats lead to state formation (Kaspersen and Strandsbjerg, 2017; Goenaga *et al.*, 2023), and many studies find supportive evidence in Europe and other regions (Tilly, 1990; Hui, 2005; Cederman *et al.*, 2023). On the other hand, more recent revisionist literature has sought to explain state-building by emphasizing the role of non-materialistic factors, such as social, cultural, or religious

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[1]Among the two major categories of Christian missionaries, namely Protestant and Catholic, the latter group was perceived in Japan as posing a more substantial threat (Murakami, 1981, pp. 141–142).

institutions (Gorski, 2003; Grzymala-Busse, 2020, 2024). This paper contributes to the existing literature by synthesizing these two lines of argument: state-building as a response to external threats emanating from non-military religious or cultural institutions created by foreign powers. Our analysis suggests that the influence of external threats on state-building need not be limited to their materialistic manifestation and highlights the often underappreciated role of cultural and religious variables in this context.

This paper is structured as follows. In the next section, we present the historical background of late 16th-century Japan. Section 3 provides the theoretical argument for why the foreign threat of Catholic churches influenced the implementation of Hideyoshi's land surveys. In Section 4, we operationalize variables within the context of Toyotomi Japan and introduce the data employed in our analysis. In Section 5, we conduct empirical investigations based on correlational evidence, sensitivity analysis, and an IV approach. Section 6 concludes the paper with a discussion of premodern Japan in a comparative context.

2. The land surveys under Toyotomi Hideyoshi

Japan underwent a transition from a century-long civil unrest to a unified state in the late 16th century, largely attributable to the leadership of rulers Oda Nobunaga (1534–1582) and Toyotomi Hideyoshi (1537–1598). Hideyoshi, a former servant of the Oda clan, assumed Nobunaga's mission to unify Japan through a blend of diplomatic and military strategies following the latter's demise in 1582. By 1590, Hideyoshi had effectively subdued all provinces of the country. Historians generally agree that the consolidation of a unified Japanese state and the development of Japan's state institutions were primarily achieved during Hideyoshi's reign (Hall, 1991, p. 1). Among the various tools employed to bolster state capacity, Hideyoshi's most impactful policy was the cadastral surveys, commonly referred to as *taiko kenchi* in Japanese (Nakano, 1996, p. 9). This section aims to examine the role of cadastral surveys in Hideyoshi's state-building efforts.

Cadastral surveys entailed a series of inspections of local lords' land domains which enabled the central regime to acquire a comprehensive understanding of local conditions, such as land sizes, ownership, production output, and population at the village level. Apart from serving as an economic policy to secure revenue, Hideyoshi's land surveys also contributed to the establishment of a unified state and stable society in Japan, a feat that had not been achieved since the collapse of the Kamakura Shogunate in 1333. Although the survey results may not have accurately represented the true level of output for localities, as some of them were reported by daimyos rather than surveyed by bureaucrats within the Toyotomi regime,[2] the long-run impact of the surveys cannot be underestimated.

2.1. Economic significance

Cadastral surveys functioned as an economic policy aimed at mitigating the asymmetric information problem between the central and local authorities, thereby ensuring the extraction of local revenues. Hideyoshi's officials conducted these surveys by measuring the area of paddy and dry fields, homesteads, and wastelands at the village level (mostly) using nationally standardized units. Land was classified into three categories based on productivity, and the total output (*kokudaka*) was calculated by nationally unified measurement units. Taxes were then determined by the total output (*kokudaka*) obtained from the surveys and were collected from the peasants. Though cadastral surveys did not completely eliminate the influence of local powers,[3] these systematic surveys facilitated the central authority's comprehension of local agricultural production and extractable revenue, which

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[2]For instance, the domains of Mori, Maeda, Niwa, and Tokugawa implemented initial land surveys using their own standards and reported the results to the central government (Ikegami, 2012, p. 373).

[3]For example, survey standards were shaped by pre-existing tax collection methods, and the implementation of these surveys also necessitated the participation of local residents Ikegami (2012, p. 352).

significantly strengthened the fiscal capacity of the regime (Miyakawa, 1959, pp. 350–365). By 1598, landholdings under Hideyoshi's direct rule accounted for 12.2% of the national total, which created a robust economic base and unparalleled political influence vital for his centralization reforms (Asao, 1991, pp. 63–64).

2.2. Political implication

The successful implementation of land surveys also enabled the establishment of central-local relations akin to a bureaucratic state. Specifically, the Toyotomi land surveys resulted in the *chigyo* system, wherein Hideyoshi distributed land to his daimyo followers based on survey results, thereby fostering a sturdy master–subordinate relationship between central and local powers. These surveys effectively detached local daimyos from their long-held land estates, a prerequisite for instituting a bureaucratic system. Daimyos were no longer defined by inherited land but by their domain *kokudaka*, as determined by survey results, with land ownership and revenue rights contingent on the national leader's recognition. Consequently, each daimyo's landholding became a salary paid by the Toyotomi regime, allowing Hideyoshi to reward or punish daimyos through domain transfers (Hayami, 2003).

2.3. Social impact

In addition to their effects on economic integration and political centralization, cadastral surveys also had profound impacts on Japanese society. By reorganizing land ownership, cadastral surveys established two types of land rights: the warrior class (*samurai*) held ownership of the land and the right to extract tax revenue, while the peasant class had the right to cultivate it. Peasants remained fixed at their registered settlements, whereas warriors could be transferred to new domains along with their daimyo masters. This separation of warriors and peasants (*heino bunri*) reified a caste-based hierarchy with daimyos at the top, warriors in the middle, and peasants at the bottom. As a result, the central regime was able to enforce a highly stable social order which Japan enjoyed for the next 260 years.

   In summary, the late 16th century was indeed a critical period for Japan's institutional development. During this time, the cadastral surveys conducted by the Toyotomi regime played a crucial role in creating a fiscal state, forming a bureaucratic system, and establishing a stable social order. These developments significantly strengthened the regime's state capacity.

3. Argument: Catholic church presence as a security concern

Throughout the turbulent Sengoku Period, Japan experienced the first introduction and adoption of Christianity within its borders. This era, characterized by social unrest and unrelenting military conflicts among feudal lords, provided a suitable context that fostered the expansion of Christianity in the country. The arrival of Jesuit missionaries, spearheaded by Francis Xavier in 1549, marked the beginning of Christian influence in Japan. Supported by Portuguese and Spanish traders, these missionaries sought to disseminate their faith while simultaneously fostering relationships with influential local daimyos. As a result, some daimyos converted to Christianity, which further facilitated the spread of the religion throughout Japan. Despite Hideyoshi's early neutral stance towards Christianity, the rapid spread of Christianity was eventually viewed as a potential threat to the Toyotomi regime. This perception arose not only because the Catholic missionaries embodied the colonial ambitions of the European empires by facilitating their worldwide expansion, but also due to the potential risk of these missionaries colluding with influential daimyos to destabilize the newly established regime.

   Several factors contributed to Hideyoshi's perception of Christianity as a potential threat to his rule and the security of Japan. First, Hideyoshi harbored concerns about the intentions of the Spanish and Portuguese, as he suspected that they aimed to conquer and colonize Japan. Historical evidence, based on correspondences between leaders of the Jesuit missionaries and political figures

(including the King of Spain), indicates that these Western powers indeed had incentives to pursue territorial expansion into both China and Japan (Hirakawa, 2018, pp. 33–41). Second, Hideyoshi strongly disapproved of the slave trade conducted by Western merchants, which victimized Japanese people. Third, the destruction of Buddhist and Shinto temples—ordered by the converted daimyos within their domains—also triggered Hideyoshi's repulsion. These concerns were explicitly articulated in the 1587 *Bateren Edicts* that were designed to curb the influence of Christianity (Boscaro, 1973).

Last but not least, Hideyoshi feared that converted daimyos might collude with the Western powers to rebel against his authority, or even attempt to overthrow him. This apprehension was not entirely unfounded. For instance, during the war between Ryuzoji Takanobu and the Christian daimyo Arima Harunobu, the Society of Jesus supplied the fortified cities of Harunobu with provisions, money, as well as the raw materials for artillery shells and gunpowder. The collusion with the Society of Jesus had a "decisive influence" on Harunobu's eventual victory over Takanobu in 1584 (Kanda, 2016, pp. 141–142). There was also a threat of a Portuguese-led mobilization against Hideyoshi's regime. The Vice-Provincial of the Portuguese Mission in Japan revealed to Hideyoshi that he could rally the Christian daimyos in Kyushu and offer Portuguese battleships to support Hideyoshi's invasion of Korea (Boxer, 1967, Ch IV). These capabilities made the Christian missionaries useful allies but also potential adversaries. As a result, 6 of the 11 articles in the 1587 Edicts that were aimed at constraining the influence of Catholic missionaries specifically addressed the behavior and policy of daimyos in relation to Christianity.

These considerations incentivized Hideyoshi to implement land surveys in localities that contained Christian churches. As noted in the literature on Japanese history, whenever the Hideyoshi regime encountered security threats, such as the military failure in Korea or the internal challenge imposed by Hideyoshi's nephew and rival, Hidetsugu, it had a stronger incentive to strengthen its state capacity through conducting land surveys (Hall, 1991, p. 87; Nakano, 1996, p. 11). Thus, the prominent threats posed by the Christians should have had a comparable state-building effect, as manifested by the land surveys. By conducting cadastral surveys, Hideyoshi successfully strengthened his control over local territories and maintained a more accurate record of land ownership in those localities in which external powers could potentially ally with internal actors to challenge the unification and stability of Japan. Specifically, the information from the surveys enabled Hideyoshi to monitor the activities of Christian daimyos and clan lords, which allowed for a better assessment of potential threats to his rule. Thus, the land surveys served as a strategic tool for Hideyoshi to address the challenges posed by the growing influence of Christianity in Japan and consolidate his regime.

Hypothesis: The presence of Catholic churches within a province increases its likelihood of receiving a land survey.

4. Data and variables

In this section, we first present the sample employed for our empirical analysis. Subsequently, we define the outcome variable of interest. Lastly, we introduce the operationalization of the covariates, including our treatment variable, the presence of Catholic churches, and control variables that could potentially confound the relationship between church presence and survey implementation.

4.1. Sample of analysis

We construct a panel dataset consisting of province-year units. This data structure allows us to capture the dynamics of land surveys since one province (*kuni*) may be surveyed repeatedly in different years. For example, the province of Mikawa in central Japan received surveys in 1589, 1590, and

1592, respectively. It is important to note that land surveys were all implemented at the province level, making province-year the suitable unit of analysis.

The panel data consist of 63 *ryoseikoku*, or *kuni* (provinces).[4] Provinces were the largest administrative units below the national level, which were established in the seventh century as a result of emulating institutions from Tang China. Although they ceased to be de facto administrative institutions long before the Sengoku Period, the Toyotomi surveys were still implemented province by province. The year variable ranges from 1582 to 1598. The starting year, 1582, marks the assassination of Toyotomi Hideyoshi's former master Oda Nobunaga and the beginning of Hideyoshi's effort to unify Japan. He achieved complete unification in 1590, launched two invasions of Korea in 1592 and 1597, and died in 1598 during the second invasion. Thus, the time span of this data set encompasses the entirety of Hideyoshi's rule and all significant events that occurred in Japan during this period.

4.2. Variables

4.2.1. Outcome variable

In the analysis based on the panel data set, we investigate whether church presence predicts a province's likelihood of being surveyed during the period 1582–1598. To this end, we construct a binary measure indicating whether a land survey was conducted in a province each year. The data for this variable are collected from Morisue and Ozawa (1965, p. 228). The variable takes the value of 1 if a survey was conducted within an individual year, and 0 otherwise. Figure 1c plots the total inspections for each province across the sample period.[5]

The agricultural output (*kokudaka*) in 1598 appears to be available for all provinces—including those that had never received a land survey according to our data, as seen in historical documents created in the early Edo Period, such as Oze (Unknown). A closer examination, however, reveals that these figures were not necessarily based on the result of the land surveys implemented between 1582 and 1598. There are two primary sources for these data. First, some entries were simply created after 1600. For instance, Hida Province in Central Japan was recorded with a *kokudaka* of 38,000, but this figure actually originated from a document dated 1605, which is the earliest account for that province (Matsushita, 1977). Second, in 1591, Toyotomi Hideyoshi instructed all daimyos nationwide to self-report their *kokudaka* to the emperor. For example, the daimyos in Tango Province reported a *kokudaka* of 110,784 (Matsushita, 1977). However, these reports were not necessarily based on surveys, and land surveys continued to be conducted frequently after 1591. In fact, Miyakawa 1959, a collection of first-hand historical sources related to the land surveys, contains no references to either Hida or Tango during Toyotomi Hideyoshi's reign.

Immediately after defeating Akechi Mitsuhide in 1582, Toyotomi Hideyoshi implemented surveys in three provinces in central Japan. Thereafter, the number of provinces being surveyed each year gradually increased to 20 in 1591. Since the invasion of Korea began in 1592, the yearly number of surveyed provinces decreased slightly, but it climbed back to 19 in 1595. In the last 3 years of the Toyotomi regime, i.e., from 1596 to 1598, no more than 10 provinces per year had surveys conducted.

4.2.2. Treatment variable

Presence of Catholic churches. We examine how the presence of Catholic churches impacted state-building policy in late 16th-century Japan. The locations of the churches are provided by the Detailed Japanese History Atlas Editorial Committee (2021, p. 142).[6] The locations also indicate areas where

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[4]Six tiny island provinces located in peripheral Japan are not included in the sample due to missing values for some variables.

[5]A detailed list of the provinces surveyed each year is presented in the appendix.

[6]While the atlas often serves as a supplementary resource alongside historical textbooks, the publisher of this atlas extensively produces history textbooks that must undergo and pass the review process of Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT). The atlas itself is regarded as an authoritative encyclopedia of Japanese history.
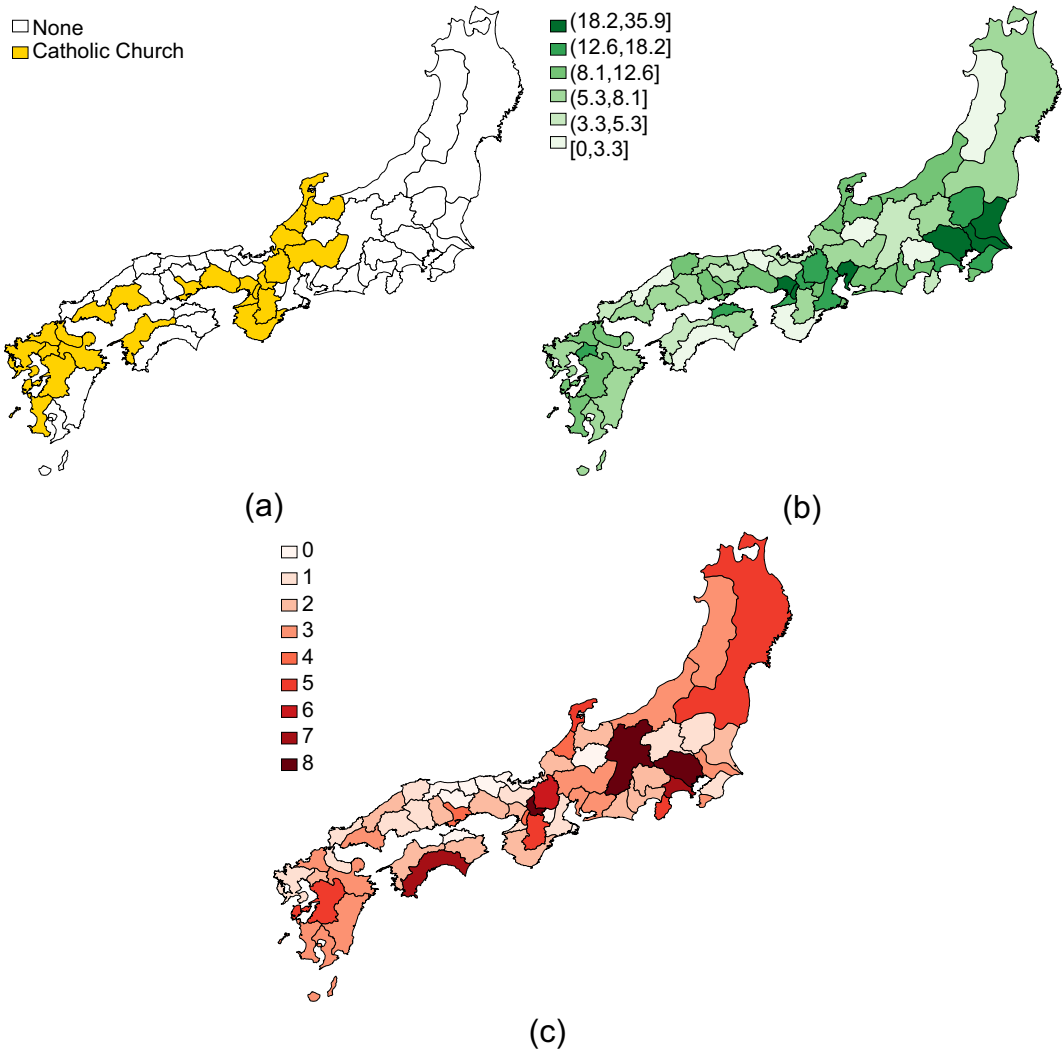
Figure 1. Geographic distribution of the treatment, a covariate, and the outcome. (a) Provinces with Catholic churches, (b) provincial mean of agricultural suitability, and (c) total number of inspections across 1582–1598.

missionaries were actively preaching. The first missionary in Japan, Francis Xavier, arrived in 1549 and began evangelization efforts in the Satsuma Province of Kyushu and subsequently in cities such as Hirado in the Hizen Province and Yamaguchi in the Suo Province (Kanda, 2016, pp. 92–94). Since then, the Jesuits established church institutions in many other provinces of the country. We create a binary variable *Catholic Church* that takes the value of 1 if a church was present in a province, and 0 otherwise (see Figure 1a). Since all churches in our sample were established prior to 1582, the presence of churches preceded the survey period and there is no temporal variation in the church variable in the panel data set.

4.2.3. Control variables
We introduce control variables that could potentially influence the location of churches as well as the implementation of surveys. We briefly list the control variables here and include more detailed discussions, including summary statistics, in the appendix. *Agricultural suitability* represents the provincial

mean of the rice suitability index, derived from version 3.0 of the Global Agro-ecological Zones (GAEZ) (Fischer *et al.*, 2012) (see Figure 1b). *Area* is measured in 10 thousand square kilometers and represents the size of a province (Fischer *et al.*, 2012) while *population* (in millions) is the estimate from year 1600 collected from Kito (1996). Both of these two variables are proxies for total economic output. *Elevation mean* and *elevation standard deviation* are collected from the GAEZ 3 as well (Fischer *et al.*, 2012). *Distance to Yamashiro* is the log distance between each province and the capital (Berman, 2017). *Longitude and latitude* is measured at the province centroid (Berman, 2017). *Korean invasion* is a binary variable that takes the value of 1 if any daimyo within the province was directly involved in the expedition to Korea, and 0 if no daimyos within the province were sent. This variable is based on the Record of Personnel for the Expedition to Korea (*Chosen-koku Go-shuppatsu no Ninzu Cho*) (Oze, Unknown). *Years under Toyotomi* measures the temporal length since the beginning of Toyotomi's occupation of a province, with a lower bound of 0 (Morioka, 2013). *Contemporaneous and past battles* equal 1 if a battle occurred in the current period or within the past three years, respectively, and 0 if no battle took place (Anderson, 2023).

5. Evaluating the effect of Catholic churches

In this section, we empirically investigate the impact of church presence on the implementation of land surveys. Our first approach involves conducting a correlational analysis to address potential concerns regarding selection on observables and spatial/temporal autocorrelation. This is achieved through the utilization of multiple model specifications. Subsequently, we conduct a sensitivity analysis using E-values to assess the robustness of the correlational evidence in the event of potential unobserved confounding factors. Finally, we employ an IV approach to directly address the concern for endogenous treatment and selection on unobservables.

5.1. Addressing selection on observables

We first estimate logit models to evaluate the impact of church presence. Since all churches in our sample were established prior to 1582, the repeated sampling of provinces over time necessitates an estimation of standard errors clustered by province. The response variable is binary and takes the value of 1 if a province received a survey, and 0 otherwise. Given that a province may receive multiple land surveys across different years, it is plausible that previous surveys could serve as an explanatory factor. To address temporal autocorrelation within the logit models, we incorporate a cubic polynomial approximation (specifically, t, t^2, and t^3, where t represents the number of years since the last survey) into the right-hand side of the equation, as suggested by Carter and Signorino (2010).

The logit estimation results are reported in Table 1. In Models 1 and 2, the sample incorporates all province-years within the time frame of 1582–1598, while Models 3 and 4 include only those provinces that were already conquered by Toyotomi Hideyoshi. In all four models, the presence of Catholic churches is positively associated with the likelihood of administering a land survey in a province. Model 1 reports a marginal effect of church presence at 0.0748 ($p = .022$), while Model 3 reports a marginal effect of 0.0848 ($p = .019$). This implies that the existence of a Catholic church tended to increase the likelihood of a province receiving a survey by approximately 7–8 percentage points.

The inspection status of neighboring provinces may serve as a predictive factor for land surveys as well. To more rigorously account for the possibility of spatial autocorrelation, we estimate regression models that incorporate spatially lagged regressors to directly account for clustering and spillover effects. We estimate a variety of model configurations based on the inclusion of spatial lags for land survey, church presence, and errors. These different specifications thoroughly account for the multiple pathways in which spatial autocorrelation may be present. The estimation below utilizes a contiguity

Table 1. Explaining Toyotomi land surveys, logit models

Sample	(1) Full	(2) Full	(3) Partial	(4) Partial
Catholic Church	0.6429**	0.7548***	0.6494**	0.6667**
	(0.2862)	(0.2766)	(0.2819)	(0.2808)
Agricultural Suitability	0.0258	0.0217	0.0323*	0.0336*
	(0.0192)	(0.0181)	(0.0195)	(0.0195)
Area of Province	0.5370***	0.3038	0.7020***	0.6151**
	(0.1783)	(0.1979)	(0.2427)	(0.2557)
Elevation Mean	0.2661	0.5143	0.1040	0.2163
	(1.1537)	(1.1158)	(1.0474)	(1.0548)
Elevation Standard Deviation	0.9993	0.5755	1.1621	1.0040
	(1.3626)	(1.3186)	(1.3520)	(1.3662)
Distance to Yamashiro	−0.0365**	−0.0370**	−0.0277	−0.0294*
	(0.0173)	(0.0152)	(0.0184)	(0.0178)
Longitude	0.1896***	0.1439**	0.2220***	0.2084***
	(0.0720)	(0.0672)	(0.0751)	(0.0770)
Latitude	−0.4473***	−0.3222**	−0.4966***	−0.4310***
	(0.1568)	(0.1410)	(0.1460)	(0.1493)
Korea Invasion	−0.7155***	−0.6535*	−0.5073*	−0.2950
	(0.2775)	(0.3512)	(0.2693)	(0.3621)
Years under Toyotomi	0.0608***	−0.0063	−0.0065	−0.0241
	(0.0186)	(0.0446)	(0.0238)	(0.0401)
Battle in Current Year	0.1252	0.6248*	0.5956**	0.7206**
	(0.2663)	(0.3532)	(0.2882)	(0.3631)
Battle in Past 3 Years	−0.0629	0.2921	−0.1188	0.1539
	(0.2668)	(0.3262)	(0.2861)	(0.3191)
Population in 1600	0.1974	0.4217	0.0703	0.1004
	(0.8987)	(0.9001)	(0.9915)	(1.0350)
t	−0.8452***	−0.9064***	−0.7896***	−0.7799***
	(0.1505)	(0.1698)	(0.1427)	(0.1633)
t^2	0.1531***	0.1416***	0.1339***	0.1213***
	(0.0287)	(0.0314)	(0.0264)	(0.0292)
t^3	−0.0068***	−0.0058***	−0.0057***	−0.0049***
	(0.0014)	(0.0015)	(0.0013)	(0.0014)
Constant	−12.4359*	−12.6664**	−14.5918**	−15.8833**
	(6.8353)	(5.9922)	(7.3578)	(6.9328)
Year Fixed-effects	No	Yes	No	Yes
N	1071	1071	887	887
AIC	852.3869	818.9809	773.4959	770.2400
BIC	936.9848	983.2004	854.8893	928.2389
No. of provinces	63	63	63	63

Notes: The table displays logit estimates and standard errors (clustered by province). Two-tail tests. Year fixed-effects are omitted from the table.
$^*p < .10, ^{**}p < .05, ^{***}p < .01.$

matrix with row normalization based on data from Berman (2004).[7] Across all seven models, we incorporate year fixed-effects and the number of years since the last inspection. This is done in order to alleviate concerns pertaining to potential temporal autocorrelations.

The outcomes of the spatial analysis are reported in Table 2. Across all spatial configurations, the presence of Catholic churches shows a positive association with the probability of a province receiving a survey. According to Model 5 which is the most general specification, the direct effect of having a Catholic church on the probability of receiving a land survey is 0.065 ($p = .047$), while the indirect effect is −0.062 but statistically insignificant at conventional levels.[8] Substantively, the presence of

[7]The results remain unchanged when utilizing a spectral-normalized inverse-distance weighting matrix with min–max normalization. Please refer to the appendix for details.

[8]In spatial models, direct effects demonstrate how a change in an explanatory variable for a specific area influences the dependent variable within that same area. On the other hand, indirect effects capture the impact of a change within a specific area for the explanatory variable on the dependent variable in neighboring areas.

Table 2. Explaining Toyotomi land surveys, spatial panel models

	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Catholic Church	0.0646**	0.0591*	0.0714**	0.0659**	0.0527*	0.0663**	0.0567*
	(0.0326)	(0.0319)	(0.0323)	(0.0324)	(0.0319)	(0.0320)	(0.0320)
Agricultural Suitability	0.0033	0.0030	0.0028	0.0032	0.0023	0.0027	0.0027
	(0.0027)	(0.0027)	(0.0027)	(0.0027)	(0.0028)	(0.0026)	(0.0027)
Area of Province	0.0435	0.0468*	0.0405	0.0430	0.0445	0.0348	0.0465
	(0.0283)	(0.0278)	(0.0286)	(0.0284)	(0.0295)	(0.0282)	(0.0286)
Elevation Mean	0.1129	0.0886	0.1131	0.1134	0.0684	0.1191	0.0798
	(0.1046)	(0.1014)	(0.1057)	(0.1051)	(0.1070)	(0.1042)	(0.1038)
Elevation Standard Deviation	−0.0820	−0.0526	−0.0881	−0.0834	−0.0288	−0.0577	−0.0414
	(0.1514)	(0.1481)	(0.1540)	(0.1522)	(0.1566)	(0.1517)	(0.1515)
Distance to Yamashiro	−0.0097**	−0.0091**	−0.0104**	−0.0099**	−0.0095**	−0.0104**	−0.0093**
	(0.0041)	(0.0039)	(0.0042)	(0.0041)	(0.0043)	(0.0041)	(0.0041)
Longitude	0.0065	0.0114	0.0015	0.0052	0.0060	0.0041	0.0088
	(0.0104)	(0.0099)	(0.0086)	(0.0093)	(0.0086)	(0.0084)	(0.0091)
Latitude	−0.0277	−0.0302*	−0.0242	−0.0269	−0.0246	−0.0244	−0.0282
	(0.0175)	(0.0177)	(0.0162)	(0.0171)	(0.0168)	(0.0160)	(0.0173)
Korea Invasion	−0.0962**	−0.0951**	−0.0855**	−0.0948**	−0.0815**	−0.0839**	−0.0921**
	(0.0427)	(0.0433)	(0.0391)	(0.0420)	(0.0393)	(0.0395)	(0.0421)
Years under Toyotomi	−0.0025	−0.0021	−0.0034	−0.0027	−0.0038	−0.0050	−0.0027
	(0.0052)	(0.0052)	(0.0050)	(0.0052)	(0.0052)	(0.0050)	(0.0052)
Battle in Current Year	0.0393	0.0393	0.0380	0.0391	0.0368	0.0396	0.0384
	(0.0397)	(0.0398)	(0.0383)	(0.0396)	(0.0384)	(0.0388)	(0.0396)
Battle in Past 3 Years	0.0423	0.0425	0.0365	0.0412	0.0338	0.0364	0.0393
	(0.0298)	(0.0299)	(0.0282)	(0.0294)	(0.0283)	(0.0286)	(0.0295)
Population in 1600	0.1095	0.1059	0.0965	0.1066	0.0770	0.1091	0.0938
	(0.1103)	(0.1088)	(0.1121)	(0.1107)	(0.1155)	(0.1105)	(0.1116)
Years since Last Inspection	−0.0049	−0.0050	−0.0050	−0.0050	−0.0052	−0.0060	−0.0052
	(0.0038)	(0.0038)	(0.0036)	(0.0037)	(0.0037)	(0.0037)	(0.0038)
Constant	0.0612	−0.5176	0.6269	0.2138	0.0101	0.2728	−0.2511
	(1.0499)	(0.9497)	(0.8433)	(0.9106)	(0.8175)	(0.8305)	(0.8658)
Spatial lags							
Catholic Church	−0.0616		−0.0950**	−0.0697		−0.0744*	
	(0.0524)		(0.0442)	(0.0456)		(0.0434)	
Land Survey	−0.0562	−0.1408	0.1764***		0.1690***		
	(0.1723)	(0.1266)	(0.0389)		(0.0389)		
Error	0.2410	0.3157***		0.1893***			0.1918***
	(0.1595)	(0.1109)		(0.0402)			(0.0402)
Year Fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1071	1071	1071	1071	1071	1071	1071
AIC	752.1737	751.5680	751.7189	750.2717	754.2316	769.5226	750.6085
BIC	931.3222	925.7402	925.8911	924.4439	923.4274	938.7185	919.8043
No. of provinces	63	63	63	63	63	63	63

Notes: The table displays random-effects spatial regression estimates and standard errors (in parentheses). Two-tail tests. Year fixed-effects are included in the estimation. The spatial weights matrix used in the estimation is the row-normalized contiguity weighting matrix. To ensure a strongly balanced panel which is required for the estimation of spatial panel models, the sample includes provinces not yet ruled by the Toyotomi regime. These observations take a value of 0 for the Years under Toyotomi variable.
$^{*}p < .10, ^{**}p < .05, ^{***}p < .01.$

Catholic churches can increase a province's likelihood of receiving a survey by approximately 6.5 percentage points. This effect size is similar to the logit results reported above. In summary, both the logit and spatial models offer correlational evidence in support of our hypothesis, effectively addressing selection on observables and spatial/temporal autocorrelation.

5.2. Assessing sensitivity to unobservables

We employ the E-value measure, a nonparametric approach for sensitivity analysis, to evaluate the robustness of our findings to unobservables (VanderWeele and Ding, 2017). The E-value measures the minimum strength of association that an unmeasured confounder would need to have

Table 3. Sensitivity analysis using E-values

	Model 1, Table 1	Model 3, Table 1	Model 11, Table 2
Church presence			
RR	1.635	1.581	1.438
E-value	2.654	2.539	2.232
Agricultural suitability			
RR	1.159	1.189	1.144
E-value	1.588	1.661	1.550
Area of province			
RR	1.121	1.152	1.091
E-value	1.490	1.571	1.406

with both the treatment (i.e., church presence) and the outcome variable (i.e., land survey) to fully explain away the observed association between the treatment and the outcome, conditional on the measured covariates. Formally, if $RR > 1$, $E\text{-}value = RR + \sqrt{RR * (RR - 1)}$, where RR is the observed risk ratio. In our analysis, RR is determined by the ratio p_1/p_0, where p_1 and p_0 are the mean predicted probabilities of undergoing a land survey for the treated and untreated groups, respectively. These probabilities are adjusted for measured covariates through regression analyses. The E-value approach does not depend on any distributional or functional form assumptions. This quality has contributed to its growing popularity among various sensitivity analysis techniques.

Table 3 displays the E-values for a few representative models from Tables 1 and 2. Models 3 and 11 are selected due to their smaller AIC and BIC values. Following Imai and Lo (2021), we do not provide confidence intervals as our data set encompasses almost the entire population of province-years, as opposed to a random sample. The range of E-values for church presence lies between 2.23 and 2.65. The magnitude of these values suggests that an unmeasured confounder would need to have a risk ratio of about 2.23 or greater with both church presence and the probability of receiving a survey to fully explain away the observed association between Catholic church and survey implementation.

To interpret this result substantively, we compare the risk ratios and E-values pertaining to church presence with those of key observed confounders, such as agricultural suitability and area of a province. The risk ratios of these two variables are calculated from the mean predicted probabilities evaluated at the 25th and 75th percentiles, respectively. The E-values required for a potential unobserved confounder to nullify the association between church presence and survey implementation significantly exceed those for the observed confounders. Such findings suggest that the association between the presence of churches and the implementation of surveys is more robust than the associations observed between the aforementioned confounders and the survey implementation. Moreover, the association between church presence and survey implementation appears to be stronger than some well-established correlations. For example, a study in public health that examines the association between short-term exposure to air pollutants (PM10, PM2.5, etc.) and various types of mortalities find an E-value of 1.1–1.2 (Orellano *et al.*, 2020). This implies that the relationship between church presence and survey implementation is nearly twice as robust as that between air pollution and mortality. In summary, the observed association between church presence and survey implementation is unlikely to be entirely attributed to an unmeasured confounder, thereby enhancing the credibility of the correlational analysis.

5.3. IV approach

In order to effectively address the potential issue of endogenous treatment, we employ an IV approach based on the panel data. We instrument the presence of Catholic churches using the cumulative count

of battles within a province that occurred after the beginning of the Sengoku Period (1467) but before the year 1550, which marked the commencement of the Christian influence in Japan.

We adopt this IV because, first, it is a predictor of church presence, and thus satisfies relevance. There were several reasons why a high frequency of warfare facilitated the spread of Christianity. Local daimyos, embroiled in conflicts, had strong incentives to permit Christian missionaries to establish churches within their domains since these relationships often led to access to Western weaponry. In addition, both the samurai class who actively participated in wars and the commoners who bore the brunt of these conflicts were receptive to Christianity because it provided spiritual comfort and tangible support. Catholic missionaries frequently set up welfare facilities such as hospitals, shelters, and orphanages in areas devastated by war, which subsequently enhanced the effectiveness of their evangelistic efforts. For example, Luís de Almeida, a Portuguese surgeon turned missionary, successfully established several churches following the creation of orphanages and hospitals in war-ravaged areas (Namae, 1931, p. 42). In summary, Christianity found fertile ground in areas susceptible to warfare, thus making the cumulative count of battles prior to 1550 a viable candidate for an IV.

Second, the IV employed in this study also satisfies the exclusion restriction. This variable measures the frequency of battles up to the year 1550, a full 30 years prior to the commencement of the land survey. As such, its influence on contemporaneous determinants of survey implementation as well as its direct effect on the implementation is anticipated to be minimal. In other words, the substantial temporal gap between the IV and the onset of the survey implementation diminishes any potential link other than church presence, thereby arguably satisfying the exclusion restriction.

The validity of the exclusion restriction is a pivotal concern in IV analysis, as it underlies the assumption that the instrument affects the outcome variable only through the endogenous explanatory variable. We address possible threats to this validity by introducing control variables that might potentially link the frequency of battles prior to 1550 to the probability of a province receiving a land survey. First, there is a historical narrative indicating that lax governance by the Muromachi Shogunate may have concurrently led to a rise in the frequency of battles and the initiation of land surveys within a province during the subsequent Toyotomi administration. According to Hall (2008, pp. 201–202), regions such as the Kanto area, as well as Dewa and Mutsu Provinces in the northeast, and the Kyushu region in the southeast, which were geographically distant from the political epicenter of Kyoto, experienced diminished Shogunate influence. Therefore, we continue to incorporate the logged distance to Kyoto (Yamashiro) as a control variable in both the first- and second-stage specifications to mitigate any bias arising from this historical context.

Additionally, past battles could give rise to later battles, which could in turn incentivize Hideyoshi to survey and consolidate his control over provinces marked by frequent strife. Subsequent conflicts post-1550 could also lead to the emergence of formidable daimyos, necessitating vigilant surveillance by Hideyoshi (Hall, 1991, p. 1). To account for this dynamic that may invalidate the exclusion restriction, we incorporate the count of battles between 1550 and 1582 in our analysis to isolate the effects of these later conflicts. For a similar reason, we control for battles that took place within the survey year, as well as those that had occurred in the 3 years preceding the survey. In the appendix, we provide direct evidence demonstrating that battles occurring prior to 1550 do not predict battles within the survey period. Thus, it is unlikely that our IV affects the outcome by inciting recent battles.

We recognize another potential limitation within our IV approach: it is possible that earlier battles before 1550 directly fostered powerful daimyos, whom Hideyoshi might seek to subdue through land surveys. Fortunately, the risk to the validity of the exclusion restriction posed by pre-1550 daimyos evolving into great powers should be minimal. Within the Toyotomi regime, of the 10 daimyos commanding the largest *kokudaka*, only the Mori, Nagao/Uesugi, and Oda clans were in existence before 1550.[9] Moreover, none of these clans could be classified as major daimyos at that time, as they had not yet fully consolidated control within their own provinces. For these reasons, the existence of large

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[9]For the *kokudaka* of daimyos under Toyotomi rule, see Hanawa 1930.

daimyos likely posed no threat to the exclusion restriction. In the appendix, we evaluate this threat to the exclusion restriction by examining whether battles before 1550 led to the rise of these large daimyos. We find no evidence that battles prior to 1550 helped create major daimyos.

The validity of an instrument also requires conditional independence in which the instrument variable is assigned independently of the treatment and outcome variable. In observational studies, including control variables can mitigate the potential for violating this assumption (Sovey and Green, 2011). By capturing essential characteristics of the provinces, such as economic value and the logistical feasibility of conducting surveys, these covariates account for factors that would confound the relationships between historical battles and survey implementation. Hence, the inclusion of these covariates strengthens the validity of our IV results. To further ensure unconfoundedness in the first-stage estimation, we conduct an additional sensitivity analysis using E-values in the appendix.

Since the outcome variable is binary, we estimate IV probit models.[10] The second-stage results are reported in Table 4 while the first-stage results are presented in Table 5. The standard errors are again clustered by province in both stages. The sample includes all province-years in 1582-1598.[11] Model 12 presents the results without any control variables, while all other models include the duration since the last inspection. The aforementioned possible threats to the validity of independence and the exclusion restriction are addressed in Model 14. The economic values of provinces are incorporated in Model 15, while longitude, latitude, and recent battles are further added to Model 16. Finally, Model 17 adopts the full set of control variables as before. For all six models, the first-stage F-statistics surpass 10, indicating that the instruments are strong and likely to yield reliable identification.

We calculate the Average Marginal Effects (AMEs) of church presence on the probability of receiving a land survey.[12] In Models 12–16, the AMEs of church presence are statistically significant at 90%, 95%, or 99% levels. The AME in Model 17 has a p-value of .131, and the lack of stronger statistical significance for this model is attributed to reduced efficiency due to the inclusion of multiple irrelevant control variables. According to the IV probit estimates, the existence of Catholic churches increased the probability for a province to be surveyed in a year by approximately 20–30 percentage points. Note that the AMEs derived from the IV probit models are noticeably larger than those obtained from the ordinary logit models. This discrepancy may arise because the ordinary logit models are potentially affected by the endogeneity problem, which leads to an underestimation of the impact of church presence.

6. Discussions

In this subsection, we expand on our main analysis with multiple extensions and robustness checks. For brevity, we only summarize the results here and include more detailed information in the appendix.

6.1. Differentiating the first survey and re-surveys

Our theory suggests that provinces with Catholic churches are not only more likely to receive a survey but also more surveys, due to the threat imposed by the missionaries. Our empirical evidence is consistent with this theoretical claim. First, since time-series cross-sectional (BTSCS) data with a binary dependent variable are mathematically equivalent to grouped duration data (Beck and Tucker, 1998), we perform two survival analyses in which the outcome variables are the time until the occurrence of the first survey and that of the re-surveys, respectively. Our estimation results indicate that

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[10]In the appendix, we also report IV results based on the two-stage least-squares estimator. These results are similar to those obtained from the IV probit models.

[11]In the appendix, we present estimation results from a partial sample that includes only the provinces already ruled by Toyotomi Hideyoshi, and the results remain unchanged when using this restricted sample.

[12]The predicted probabilities are average structural function probabilities (Blundell and Powell, 2003).

Table 4. IV approach, second-stage results

	(12)	(13)	(14)	(15)	(16)	(17)
Second stage: Dependent variable is survey implementation						
Catholic Church	1.0321***	1.0330***	0.8704**	0.9051**	1.3097**	1.0691*
	(0.2751)	(0.2933)	(0.4086)	(0.4041)	(0.6379)	(0.6436)
Battle in 1550–1582			0.0100	−0.0066	−0.0000	−0.0030
			(0.0157)	(0.0179)	(0.0176)	(0.0160)
Agricultural Suitability				0.0192*	0.0028	0.0095
				(0.0104)	(0.0116)	(0.0126)
Area of Province				0.3438**	0.4161***	0.4188***
				(0.1532)	(0.1467)	(0.1314)
Population in 1600				−0.0003	−0.0008	−0.0005
				(0.0008)	(0.0010)	(0.0009)
Elevation Mean						0.3622
						(0.7509)
Elevation Standard Deviation						−0.1984
						(1.0813)
Distance to Yamashiro			−0.0042	−0.0172	−0.0134	−0.0167
			(0.0160)	(0.0151)	(0.0182)	(0.0164)
Longitude					0.1928***	0.1637**
					(0.0674)	(0.0654)
Latitude					−0.2415***	−0.2639***
					(0.0900)	(0.0856)
Korea Invasion						−0.3441*
						(0.1821)
Years under Toyotomi						0.0223
						(0.0197)
Battle in Current Year					−0.0719	−0.0272
					(0.1456)	(0.1459)
Battle in Past 3 Years					−0.1003	−0.0669
					(0.1187)	(0.1449)
Years since Last Inspection		−0.0012	−0.0032	0.0024	0.0158	0.0120
		(0.0140)	(0.0140)	(0.0149)	(0.0196)	(0.0214)
Constant	−1.3413***	−1.3380***	−1.3644***	−1.5142***	−19.1813**	−14.6255*
	(0.0916)	(0.1369)	(0.2061)	(0.2132)	(7.9486)	(7.7468)
AME of Church	0.2532***	0.2532***	0.2095*	0.2148**	0.3147*	0.2481
	(0.0779)	(0.0815)	(0.1116)	(0.1082)	(0.1749)	(0.1642)
N	1071	1071	1071	1071	1071	1071
AIC	2200.7358	2187.6945	2190.5139	2134.9036	1923.4220	1880.7164
BIC	2230.5939	2227.5053	2250.2300	2224.4778	2052.8070	2049.9122

Notes: The upper panel displays IV probit estimates obtained through maximum likelihood and standard errors clustered by province (in parentheses). The bottom panel displays the AMEs of church presence according to each model and its standard error (in parentheses). Two-tail tests. $^{*}p < .10, ^{**}p < .05, ^{***}p < .01$.

provinces with Catholic churches tended to receive both the initial survey and subsequent re-surveys earlier than provinces without churches. In other words, church presence not only affected the implementation of the first survey but also the re-surveys. Second, we estimate IV-probit models based on a cross-sectional data set, in which the outcome variable is the total number of land inspections received by a province in 1582–1598. Our results suggest that provinces with Church presence did receive more surveys in total.

6.2. Alternative mechanism: Foreign trade

Historical records clearly indicate that Japanese daimyo who had good relations with Christian missionaries also enjoyed improved access to Western products. The economic gains as a result of the so-called Nanban trade might have encouraged Hideyoshi to implement land surveys in provinces with churches as a means of maximizing revenue. We test this proposition with data on foreign trade hubs but find no evidence that foreign trade explains why provinces with Catholic churches received more land surveys.

Table 5. IV approach, first-stage results

	(18)	(19)	(20)	(21)	(22)	(23)
First stage: Dependent variable is church presence						
Battles by 1550	0.0196***	0.0186***	0.0213***	0.0205**	0.0141**	0.0140**
	(0.0044)	(0.0046)	(0.0076)	(0.0079)	(0.0070)	(0.0070)
Battles in 1550–1582			−0.0069	0.0001	−0.0032	−0.0074
			(0.0126)	(0.0133)	(0.0117)	(0.0118)
Agricultural Suitability				−0.0068	0.0043	0.0041
				(0.0075)	(0.0075)	(0.0091)
Area of Province				−0.1984***	−0.1602**	−0.1441*
				(0.0606)	(0.0726)	(0.0760)
Population in 1600				0.0003	0.0005	0.0005
				(0.0005)	(0.0004)	(0.0004)
Elevation Mean						−0.4373
						(0.2962)
Elevation Standard Deviation						0.8401
						(0.5923)
Distance to Yamashiro			0.0038	0.0126	0.0055	0.0034
			(0.0105)	(0.0102)	(0.0093)	(0.0096)
Longitude					−0.0978***	−0.0927***
					(0.0270)	(0.0280)
Latitude					0.0931	0.0804
					(0.0733)	(0.0725)
Korea Invasion						0.0316
						(0.0743)
Years under Toyotomi						0.0106
						(0.0070)
Battle in Current Year					0.0293	0.0688
					(0.0305)	(0.0414)
Battle in Past 3 Years					0.0222	0.0653
					(0.0385)	(0.0474)
Years since Last Inspection		−0.0142**	−0.0149**	−0.0172***	−0.0207***	−0.0229***
		(0.0064)	(0.0064)	(0.0063)	(0.0063)	(0.0072)
Constant	0.1535*	0.2217**	0.2300*	0.2530*	10.2052***	9.8639***
	(0.0787)	(0.0972)	(0.1333)	(0.1432)	(2.4271)	(2.6753)
N	1071	1071	1071	1071	1071	1071
F	19.8042	18.2175	16.5422	16.9850	31.3266	21.4625
p-Value for *F*	.0000	.0000	.0000	.0000	.0000	.0000

Notes: The table displays the first-stage estimates of the IV probit models. Standard errors are clustered by province (in parentheses). Two-tail tests. Note that for the IV probit estimator using maximum likelihood, which allows for clustered standard errors, the first-stage parameters are estimated jointly with the parameters of the probit equation. These first-stage estimates and their standard errors are nearly identical to those obtained using simple OLS. The *F* statistics reported here are based on these OLS estimates.
$^*p < .10$, $^{**}p < .05$, $^{***}p < .01$.

6.3. Alternative mechanism: Christian education

In many countries, the arrival of foreign missionaries created educational benefits with profound economic and institutional implications (Acemoglu *et al.*, 2014; Bai and Kung, 2015; Chicheng, 2021). However, there are major reasons why Catholic missionaries in the 16th-century Japan did not contribute to state capacity building through education. First, unlike Protestant missionaries, their Catholic counterparts generally did not engage in mass education (Gallego and Woodberry, 2010; Woodberry, 2012). Second, in the few instances where schools were established (e.g., the Arima Seminary, the first European secondary education institution in Japan), the student body was quite small, with most attendees eventually joining the Society of Jesus rather than pursuing careers as bureaucrats (Hall, 1991, p. 334). Third, since Japanese elites in the 16th century were already proficient in reading and writing Japanese, learning to read Portuguese in missionary schools would offer little to no additional value for bureaucratic administration in Japan. Overall, it seems unlikely that the presence of Catholic churches facilitated the implementation of surveys through its educational contributions, which might not have been extensive after all.

6.4. The role of pre-existing state capacity

The level of state capacity that existed prior to the implementation of the surveys may have influenced their quality. This pre-existing capacity to extract information and revenue from a province can be represented, inversely, by the number of strongholds owned by local elites, which reflects the strength and extent of local autonomy (Chen *et al.*, 2025).[13] Therefore, we estimate the logit, spatial, and IV-probit models using the logged number of castles and strongholds (*jo kan*) that existed in the *Muromachi* and *Sengoku* periods as a control variable, and interact it with church presence in the model specification. We find that church presence remains a significant predictor of survey implementation, while the proxy variable for pre-existing state capacity does not explain the outcome nor moderate the effect of church presence.

6.5. The role of urbanization

Urban residents may exhibit a heightened demand for religion, a factor that could not be accounted for merely by controlling for the total population. The influence of Catholic churches might also be stronger in provinces with higher urbanization rates. We construct a proxy variable for the urbanization rate of each province based on the number of castle towns (*jokamachi*) per thousand square kilometers. We test the robustness of our findings to controlling for the density of castle towns. We find that the overall effect of church presence is still positive and statistically significant, with a magnitude of effect similar to that in the previous analyses. Moreover, its impact remains consistently positive across the entire spectrum of castle town densities, with no significant variation in magnitude.

6.6. Different levels of exposure to Christianity

Our treatment variable of church presence is binary, which may not be able to capture the variation in the exposure to Christian influence. To reveal the dose-response relationship between church presence and survey implementation, we split provinces with Catholic churches into two categories, namely provinces with *strong* Christian influence, and those with *moderate* influence.[14] Based on this categorization, we create two corresponding dummy variables and estimate their effects on the likelihood of receiving a land survey. There is some evidence suggesting that provinces with strong Christian influence are more likely to be surveyed compared to those with moderate influence, while the latter are more likely to be surveyed compared to provinces without any church presence.

6.7. Excluding the capital area from the analysis

The maps in Figure 1 indicate that there is a high concentration of surveys in the capital area of Yamashiro (present-day Kyoto). As a robustness check, we exclude Yamashiro and its six adjacent provinces in our sample. The results are consistent with the main analysis, which indicates that the findings are not driven by the provinces near the capital.

7. Conclusion

What factors influence a ruler's strategy in unifying disparate localities under a singular political system? Our empirical analysis, grounded in the case of Toyotomi Japan, suggests that rulers prioritize

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[13]As a result, right after his unification of Japan, Tokugawa Ieyasu issued the One Province One Castle Order, allowing daimyos to own only one castle per territory.

[14]The former category includes provinces with Nanban ports (e.g., Hizen Province with Nagasaki), famous churches (e.g., Suo Province with Daido-ji Temple), charity facilities (e.g., Bungo Province with Christian hospitals and orphanages), or ruled by important Christian daimyos (e.g., Hizen Province by Omura Sumitada and Arima Harunobu). See Namae (1931, pp. 40–55), Murakami (1981, pp. 136–139), Kishine (2004, pp. 154–156), and Kanda (2016, pp. 97–134).

establishing state capacity in areas with perceived security threats. Historical accounts suggest that Catholic missionaries were viewed as significant threats by Toyotomi Hideyoshi, primarily because they served as conduits between colonial empires and local powers that had the potential to destabilize the Toyotomi regime. Through the application of correlational statistics, sensitivity analysis, and an IV approach, our study reveals that provinces that held Catholic churches were indeed more likely to be surveyed. Our findings highlight an underexplored source of external threat that contributes to state formation: the threats that incentivize state-building need not be solely military or materialistic in nature; rather, they can encompass cultural or religious institutions originating from foreign lands that wield significant influence in local politics.

In this study, we examine Toyotomi-era Japan as an informative counterfactual to the political developments of Europe and China. Although medieval Japan and Europe shared certain similarities of decentralized governance,[15] Japan under Hideyoshi's rule successfully centralized power through the implementation of policies such as land surveys. In contrast, Europe maintained its political fragmentation and ultimately developed representative governance (Stasavage, 2020; Higashijima and Mitchell, 2024). This divergence can be partially attributed to the feasibility of executing state-building policies such as land surveys.

Geographical and climatic constraints, including a large variance in agricultural output, made it difficult to collect information about local revenues in Europe. This challenge persisted even after influential leaders, such as Napoleon, had militarily subjugated localities (Ahmed and Stasavage, 2020). Consequently, European local elites gained considerable power before the establishment of a comprehensive bureaucratic system in the 19th century, effectively preventing the rise of a war machine capable of conquering Europe. In contrast, the predictability of agricultural output in East Asia, coupled with the relatively small geographical size of Japan, rendered land surveys a feasible undertaking. Japan's land surveys, which were implemented partly in response to the presence of a foreign religion, facilitated the development of a mature bureaucracy and led Japan onto a distinct political trajectory.

When juxtaposed with China during the same epoch, the threat posed by foreign powers via missionary churches was markedly pronounced in the decentralized Japan. China had pioneered and executed cadastral surveys several centuries prior to Japan or Europe (Lin *et al.*, 2015). By 221 BCE, the Qin Dynasty had achieved national unification under an absolute monarchy, implemented a comprehensive system of land surveys, and established a bureaucratic administration capable of levying land taxes (Jiao and Hurni, 2021). When Christian missionaries made their advent in China in the 16th century, the state had long attained unification by integrating local elites into its administrative apparatus (Yin, 2020; Chen *et al.*, 2025). As such, foreign missionaries did not constitute a significant threat to the centralized Chinese state, which meant that the arrival of Christians did not critically impact further state-building in China.

These comparative analyses further underscore the significance of studying cadastral surveys in medieval Japan as a pivotal case for understanding state-building (Ferejohn and Rosenbluth, 2010). The surveys facilitated centralization and potentially provided protection from foreign threats in Japan, a phenomenon that did not transpire in a similarly fragmented Europe. Conversely, in the context of China where cadastral surveys and centralization had been previously accomplished, the advent of Christian missionaries had minimal impact. In essence, Japan represented an intermediary case situated between a fully decentralized Western Europe and a fully centralized China (Mukoyama, 2023). This divergence contributed to long-run variations across these three regions (Sng and Moriguchi, 2014; Mitchell and Yin, 2022; Debin and Rubin, 2024).

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[15]Both regions had experienced feudalistic forms of vassalage, though Japan's more strict fealty of single master loyalty meant greater concentrations of power compared to the European system that allowed contracts with multiple lords (Bloch, 1975, p. 212).

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