Adoption, Inheritance, and Wealth Inequality in Pre-industrial Japan and Western Europe

YUZURU KUMON

This paper uses Japanese village censuses, 1637–1872, to measure inequality in landownership. Surprisingly, inequality was low and stable, unlike in Europe, where it was high and increasing. To explain this, I study inter-generational land transmissions. I find that Japanese households without sons adopted male heirs, thereby keeping lands in the family. In contrast, elite English male lines failed 20–30 percent of the time as adoptions were uncommon, leading to a highly unequal redistribution of their lands. Finally, the institutional differences in adoption had roots in fourth-century church policy, and this may partially explain why Europe was more unequal by 1800.

Wealth was highly concentrated in much of Western Europe by the eve of the Industrial Revolution. This was due to a gradual concentration of wealth that may stem back to the fourteenth century (Alfani 2015; Alfani and Ryckbosch 2016; Alfani and Ammannati 2017; Bengtsson et al. 2018; Alfani, Gierok, and Schaff 2022). Only the catastrophic shocks of the black death and world wars allowed wealth inequality to decline (Piketty, Postel-Vinay, and Rosenthal 2006; Roine and Waldenström 2009; Alfani 2015; Saez and Zucman 2016; Scheidel 2017; Alvaredo, Atkinson, and Morelli 2018). Such evidence has given rise to a narrative of inevitable wealth concentration over the very long run in the absence of catastrophic shocks (Scheidel 2017). However, the evidence is overwhelmingly from Western societies, so we cannot be sure whether these inequality trends are a Western or a universal phenomenon.

This paper uses new data from 584 villages to measure landownership inequality in pre-industrial rural Japan, 1640–1870. I focus on the

The Journal of Economic History. © The Author(s), 2025. Published by Cambridge University Press on behalf of the Economic History Association. doi: 10.1017/S0022050724000524

Yuzuru Kumon was a Post-doctoral Researcher, Department of Economics, Norwegian School of Economics, Helleveien 30, 5045 Bergen, Norway, and is currently a Lecturer, Department of Economics, University of Manchester, Oxford Road, Manchester, M13 9PL, United Kingdom. E-mail: yuzuru.kumon@manchester.ac.uk.

This paper was previously titled "The Deep Roots of Inequality." I acknowledge funding from the European Research Council under the European Union's Horizon 2020 Framework Program/ERC Grant agreement No. 725687, SMITE Social Mobility and Inequality across Italy and Europe, 1300–1800. I thank Satomi Kurosu and Hiroshi Kawaguchi for kindly sharing their data.

distribution of lands because it was by far the most important form of wealth in the pre-industrial context. Surprisingly, land distribution was highly equal. The Gini coefficient averaged 0.57 and 85 percent of households owned some land. Japan was a society of landowning peasants. Further, I also find landownership inequality in Japan had no trend, so this was a stable equality.

In comparison, the most comparable village-level data from pre-industrial Italy, Germany, and England show substantially higher Gini coefficients of 0.7–0.9 (Alfani 2015; Alfani and Ammannati 2017; Kumon 2021; Alfani, Gierok, and Schaff 2022) and an upward trend in inequality over time. Although not as comparable, data from other Western European societies shows much greater inequality in land and other forms of wealth (Alfani and Ryckbosch 2016; Bengtsson et al. 2018), while evidence from China suggests similarly low landownership inequality (Buck 1937). I further address data comparability concerns but conclude that such concerns are unlikely to explain differences in inequality. Overall, there is strong evidence of a divergence in inequality outcomes between England, Japan, Germany, and Italy. Further, there is suggestive evidence of a regional divergence in inequality. Western Europe converged toward societies of landless laborers since medieval times. In contrast, records from East Asia dating back to ancient times consistently show landowning peasant societies.

How did Japanese villages have such equal land distributions? I hypothesize that the key difference was in the institution of adoption, which was common in East Asia but not in Western Europe. Adoptions were used during this period as an heirship strategy when the household failed to biologically produce a son (Kurosu and Ochiai 1995). Therefore, in the absence of a biological son, an adopted son could inherit the lands and keep the land in the family. An additional benefit was the reduction of landless heirs in Japan, where impartible inheritance (primogeniture), the inheritance of lands by one heir, was the norm. The surplus sons, who were not in line to inherit lands, were often adopted into other households. Thus, this reduced the number of landless households in the next generation. Together, adoption could lead Japan and other East Asian societies to converge toward an equal landownership equilibrium.

In contrast, Western Europeans had very limited options for securing heirs due to the lack of both polygyny and adoptions. This greatly increased household extinctions. Upon household extinction, these lands were redistributed to other male lines via wills or the marriage of surviving daughters (Habakkuk 1994). Such redistributions were highly unequal. Assortative mating meant wealthy heiresses married wealthy

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

men, leading to greater concentrations of land, of which there are many examples (Clay 1968). Thus, household extinctions were a channel that generated greater inequality.

How far can adoption explain differences between Japan and Western Europe? I study this using linked household landownership data across multiple generations, which allows me to look at how lands were transmitted across generations. If adoptions were important, they should have greatly reduced household extinctions among landowning households.

I begin by showing there were no large differences in features of inheritance beyond adoption within Japanese and Western European villages. First, the fertility patterns of the rural elite in Japan were similar to their English counterparts. Thus, without adoptions, the household extinction rates would have been similar. Second, the Japanese mostly practiced impartible inheritance (or primogeniture), which leads to unequal land distributions (Bartels, Jäger, and Obergruber 2020; Wegge 2021). This institutional setting was similar to much of England but not to other European regions where partible inheritance also occurred. If anything, this feature would suggest more unequal land distribution in Japan.

I next show that adoption was motivated by the securing of heirship, which has lacked strong empirical grounding. Using the linked village data, I show that adoptions were much more likely when a household lacked a male biological heir. I use the sex of the first child as an instrumental variable to show that this was not driven by endogeneity. Therefore, adoptions were being used to reduce household extinctions, as hypothesized. This contrasts with the adoptions motivated by child welfare in Western societies today.

Finally, I show the effects of landownership on household extinction. I find that households with more than the average amount of land rarely went extinct despite having a 20 percent chance of having no male biological heir. This matches the patterns of adoption among rich households. In contrast, poorer households also had greatly reduced rates of household extinction due to adoptions but they did occasionally go extinct. This was presumably because they failed to attract an adoptee before death due to their limited amounts of land wealth.

Overall, adoption in Japan was functioning such that only 10 percent of lands needed to be redistributed due to household extinctions per century. This contrasts with data from England, where male lines went extinct at least 25 percent per generation, 1200–1800 (Russel 1948; Gobbi and Gõni 2021). This implies that 25 percent of lands were passed on and concentrated in other male lines per generation.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

Adoptions made a clear difference in landownership inequality but why did some societies have adoptions while others did not? The historical evidence shows differences did not exist preceding the fourth century, when adoption was practiced across Eurasia. Studies from both ancient East Asia and ancient Greece/Rome show adoptions were used as a means of ensuring against the significant risk of not having a son. However, the church began preaching against adoptions in the fourth century (Goody 1983; Gager 2014). The institutional change was gradual but effective, and the use of adoption beyond the early Middle Ages became rare in most of Western Europe. This led household extinctions to play a major role in land distributions in Western Europe. This finding is consistent with the higher inequality in Western Europe relative to East Asia. This novel institutional mechanism is therefore a plausible partial explanation of the observed divergence in landownership inequality between East Asia and Western Europe.

A contribution of this paper is to show a long-run regional divergence in wealth inequality. The past literature had mostly focused on sporadically available estimates of inequality. In the case of Asia, this mostly came from the eighteenth century onward. Milanovic (2018) found cross-country evidence of pre-industrial income inequality being lower in Asian societies after the eighteenth century, and this is consistent with my findings.[1] Scheidel (2017) attempted to look at a longer time scale with more fragmentary data but he concluded that all societies were converging toward high inequality in the absence of catastrophic shocks such as the world wars and the black death. In contrast, I show evidence for an alternative path of stable equality in Japan and perhaps China, which long predates the eighteenth century. This newly documented dimension of divergence in landownership inequality also adds to the well-known case of divergence in living standards across East Asia and Western Europe (Kumon 2022).

A second contribution is to show a novel mechanism that can explain differing wealth inequality outcomes across countries. I add to literature that has attempted to explain inequality through three approaches. At the macro level, studies have shown the importance of capital and its inheritance as a mechanism that generates inequality (Piketty 2011, 2014; Saez and Zucman 2016). At the micro level, studies using detailed micro-data have identified potential explanations such as differential

[1] Income inequality is measured using social tables, which exploit estimated differences in inequality between typical social classes. Milanovic (2018) finds income inequality is negatively correlated with population density. The regions with high population density were predominantly Asian, where rice production allowed for more people to subsist per area.

returns on wealth (Bach, Clavet, and Sodini 2020), taxation (Jakobsen et al. 2020), tax evasion (Alstadsæter, Johannesen, and Zucman 2019), genetics (Barth, Papageorge, and Thom 2020), or inheritance (Boserup, Kopczuk, and Kreiner 2016; Elinder, Erixson, and Waldenström 2018; Adermon, Lindahl, and Waldenström 2018). Interestingly, Japanese peasants mostly practiced impartible inheritance, which increased wealth inequality in Germany (Bartels, Jäger, and Obergruber 2020; Wegge 2021). Despite this, I show that inequality was low because adoption can significantly mitigate this mechanism.

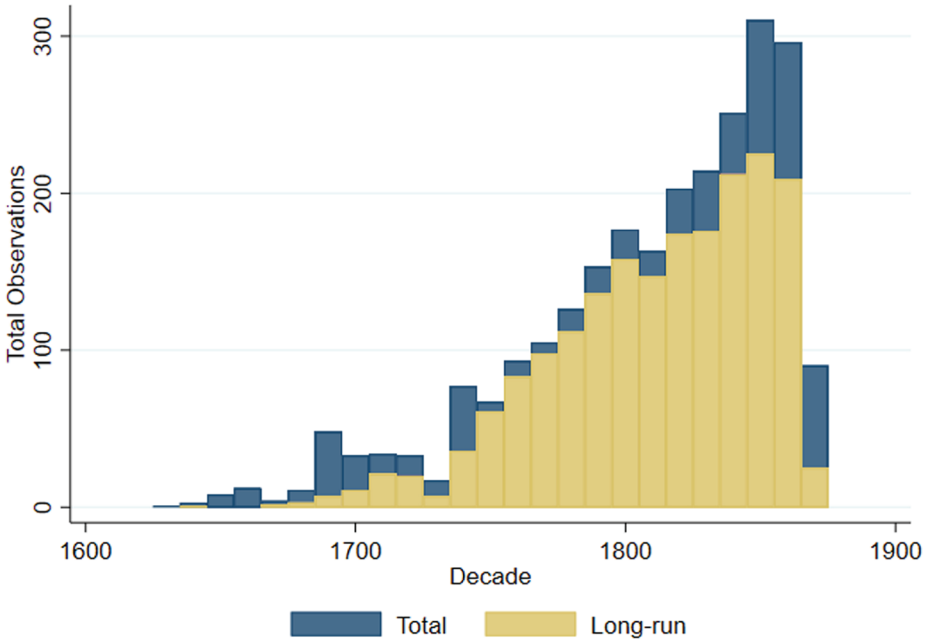
An implication of this paper is that religious institutions may have impacted economic development through their effect on inequality. This is a novel channel in a longstanding literature linking religion to economic development since the seminal book by Weber (1930). The past literature had argued religion played a major role in economic development through its effect on human behavior (Becker and Woessmann 2009; Schulz 2022; Henrich 2020), social organization (Greif and Tabellini 2017), or its effect on resource allocation (Cantoni, Dittmar, and Yuchtman 2018). This paper suggests that church reforms also affected economic development through landownership inequality.

DATA

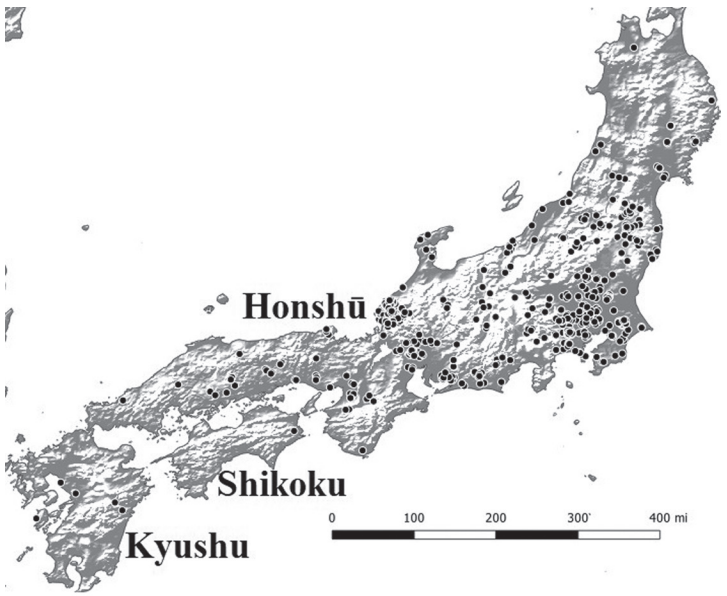
My main data source are the Japanese village population censuses (*Shumon Ninbetsu Aratame Cho*) from 584 villages with sporadic observations between 1634–1872 (Kumon 2024). The population censuses were annually compiled by all villages in Japan by order of the lords. The original motive was to use censuses to help enforce a ban on Christians by the Tokugawa shogunate. The censuses included the names, ages, household compositions, and a declaration of religion to identify Christians. Despite Christianity having almost disappeared in Japan by the eighteenth century, the surveys continued until 1870 by taking on new administrative roles. Many of these censuses began listing information on household landholdings, which was the main source of wealth at these times. Importantly, I also observe landless households, which are often not registered in tax registers as they are not taxable.

From the perspective of economists, landholdings can be interpreted as landownership because peasants had well-established rights to sell, rent, use, and inherit their lands. The lords owned land by law but in effect only taxed lands. Further, an institution separating the samurai from farmers (heinōbunri) meant the samurai class lived in urban areas and did not own lands. Instead, they earned a salary from the lords. This contrasts

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press



(a) Observations by Decade



(b) Observations Across Space

FIGURE 1
OBSERVATIONS ACROSS SPACE AND TIME

Source: Japanese inequality data.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

with the landed aristocracy of contemporary Europe. The samurai class, who earned wages, are therefore not included in the analysis. An analysis including the samurai requires studying income inequality, and a past study has shown the samurai were surprisingly poor; they earned only 20 percent more income than the average peasant (Saito 2015), which is comparable to high-wage professions such as urban carpenters and tatami makers (Yamamura 1974). The remainder of this paper will use the term landownership to refer to what has traditionally been labeled landholdings in the case of Japan and other European societies such as England.

I have collected population censuses from three sources. The first are data published in local histories, which were digitized.[2] The second is the "Population and Family History Project" database at Reitaku University. The third is the online database of Hiroshi Kawaguchi entitled DANJURO. To focus on land inequality in an agricultural setting, I drop all observations from cities, post stations, and coastal villages where non-agricultural activities are common. This leaves 2,476 village-year observations from 584 villages, which I refer to as the Japanese inequality data.[3] There are unsurprisingly fewer observations for earlier years, due to survival bias with a dip in the 1870s when the censuses ended (see Figure 1b). I also observe 84 villages over the long run, defined as multiple observations spanning more than two decades. I use this long-run data to investigate time trends. Unfortunately, the data is highly sporadic, so villages can reappear in my sample after being missing for decades. For econometric purposes, this precludes the use of many time series techniques that require complete time series.

The geographic breadth of the data is rich and representative of the main island of Honshu, with approximately 80 percent of the population (see Figure 1b). The topographic map (with white shade indicating higher elevations) shows how mountains dominate much of the landscape, amounting to approximately two-thirds of land area. Unsurprisingly, there are few observations from mountainous terrain, which only had small pockets of habitable areas. On the other hand, there are many observations in the plains where population was concentrated. The sampling for the islands of Kyushu and Shikoku in the southwest are poor and results from these areas must be interpreted with caution.

[2] This data includes other village-level administrative sources such as the "goningumi mochidaka chō'" that list all households by the five household groups who were jointly held responsible for certain problems caused by other group members. This source occasionally includes information on landownership by households.

[3] I have dropped multiple observations in a decade by keeping the year closest to the middle of the decade. A detailed list of source material is available in Online Appendix K.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

The village censuses contained information on landownership that were expressed in the value of the yield in units of koku (volume of rice grain equivalent) or mon (copper coins) and, in some rare cases, the land area. These values often came from cadastral surveys in the late sixteenth to early seventeenth centuries. These "official yields" were therefore outdated, so they failed to account for increased plot size or increased productivity. They also did not include landownership outside the village. Thus, there are sources of measurement error but how far can they affect a measure of inequality at the village level? Ideally, I want landownership to be in the value of land rent net of tax. The land rent net of tax in each year is a function of official yields, as in Equation (1).

$$land\ rent\ net\ of\ tax_{i,t} = yield_{i,0}(\Delta prod_{i,t} \times land\ rental\ rate_{i,t} - tax\ rate_{v,t})\alpha_{i,t} \quad (1)$$

The left-hand side refers to the land rent net of tax, which is the economic value of owning the land. Yield is the value of the yield in period 0 (or the official yield) when yields were measured; $\Delta prod_{i,t}$ is the change in productivity since the measurement of yield for field i in period t; and $\alpha_{i,t}$ captures other factors that cannot be controlled but affect land prices, such as yield risk. This would include any investments or depreciation on the plot that affects the value. The land rental rate is the implicit or explicit share of yield being awarded to the landowner in return for his rights. Finally, tax rate is what was paid by the landowner to the lord in proportion to the official yield.[4] As I am computing inequality measures that rely on landownership relative to total land owned, such as Gini coefficients, there is no problem if relative value is a function of the official yields multiplied by a constant or

$$\frac{land\ rent\ net\ of\ tax_{i,t}}{total\ land\ rent\ net\ of\ tax_{v}}$$

$$= \frac{yield_{i,0}((\Delta prod_{i,t} \times land\ rental\ rate_{i,t} - tax\ rate_{v,t})}{\sum_{i=1}^{N} yield_{i,0}((\Delta prod_{i,t} \times land\ rental\ rate_{i,t} - tax\ rate_{v,t})}$$

$$= \gamma_{v,t} \times yield_{i,0},$$

where $\gamma_{v,t}$ is constant within a village-year. This would hold if changes in productivity, land rental rates, and tax rates were uniform within the village. It is not possible to make the stronger assumption that $\gamma_{v,t}$ is

[4] The burden of tax went to the landowner due to the highly inelastic supply of land rental. The inelasticity was due to laborers having limits to the area he/she could cultivate.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

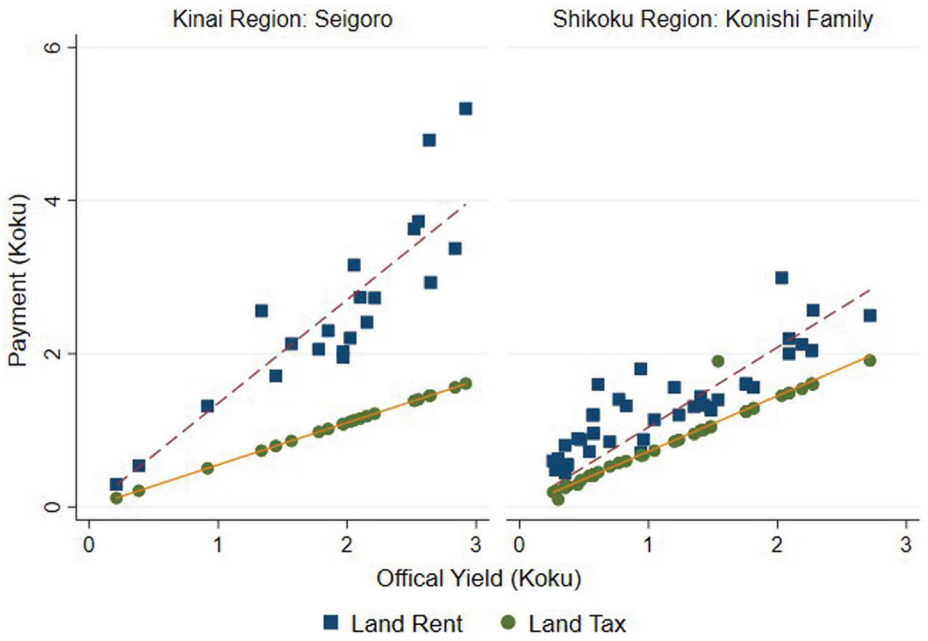


FIGURE 2
LAND RENTS AND LAND TAX RELATIVE TO OFFICIAL YIELDS

Sources: Takeyasu (1966) and Shoji (1986).

constant across villages in a given year (or $\gamma_{v,t} = \gamma_t$) due to widely differing tax rates, which precludes inequality measures beyond the village level.

The weaker assumption that $\gamma_{v,t}$ is constant within the village raises two concerns. First, did the land rent per official yield ($\Delta prod_{i,t} \times land\ rental\ rate_{i,t}$) vary across plots? Second, did tax rates per official yield vary across plots?

I can test these assumptions using land records from large landowners who recorded the land rent, land tax, and official yield of their plots. These records were made for the purposes of land rentals and land sales for which this information was required. I use records that were transcribed in Takeyasu (1966) and Shoji (1986), which come from the regions of the Kinai (centered around Osaka) and the island of Shikoku in the nineteenth century. Although the data is from a limited number of villages, the basic institutions were largely similar across Japan, so these can be considered as representative case studies. There are 64 records that have all variables, while another 63 have all data except the land tax.

Figure 2 shows both the land rent and land tax for plots of land owned by two landowners. It is immediately clear that the land tax was almost

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

perfectly correlated with the official yield.[5] The few outliers are almost certainly due to these plots being located in another village. This shows the land tax was a fixed rate based on the official yield. Therefore, it is safe to assume the tax rate was constant within any village-year.

The land rental rates (gross of tax) relative to the official yield show more variation. When I include data from the other villages, the coefficient of variation of land rents relative to the official yield is 0.3 (see Online Appendix B.1).[6] Therefore, the official yield is a decent proxy of true land incomes (especially when we consider this issue is shared by modern wealth data). Perhaps more importantly, land rental rates do not vary strongly with plot size in these two villages nor the other villages (see Online Appendix B.1).

A related concern is that productivity differences existed across landowners. If large landowners had faster technological growth, this cannot be detected by the exercise noted previously that focuses on large landowners. However, when true land values have been compared to the outdated official yield across landowners, such correlations are not observed (Takeyasu 1966). There was little reason for productivity growth to be widely different within villages when available technologies were similar.

A final issue is that censuses only recorded lands within the village. This will tend to bias my inequality estimates downward because it was large landowners who were most likely to have holdings in other villages. However, landownership outside the village would have been small due to a system of law that gave less legal protection to land rights outside of the village of residence (Nakabayashi 2013). I can also estimate the extent of land owned in other villages by looking at the proportion of land owned by non-residents in 47 villages where such data is available. The average is 15 percent, a small proportion of land. I later show this can cause a modest downward bias in my inequality estimates, which does not affect my conclusions.

In the following sections, I will compute the Gini coefficient, share landless, and share of land held by the bottom 20 percent, bottom 40 percent, top 20 percent, and top 10 percent, which are the standard inequality measures within the literature. They are all computed using standard formulae at the household level, the unit at which land was

[5] These findings are not entirely trivial because it was not individual plots but the aggregate village holdings that were taxed by the lord at this time in a system known as *muraukesei*. It was then the village's responsibility to distribute the tax burden across the plots. These findings confirm the individual tax burden was set based on the official yield of each plot.

[6] There is an upward bias because some of the lands may have been in other villages, and there is variation in the year of the record, so the data is not within a village-year.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

owned, inclusive of the landless. I focus on Gini coefficients when looking at time trends but this is to avoid repetition due to the high correlation of these measures (see Online Appendix B.3). The observations will be weighted by total households-village-decade. The village-decade weight gives equal weight to each village-decade so that I am able to capture long-run fluctuations. The total household weight gives higher weight to larger villages, although I show the results do not change when I weight each village equally.

INEQUALITY ESTIMATES

Time Trends

I first estimate time-trends in inequality using long-run data from 85 Japanese villages, 1647–1872. I estimate a linear time trend using village fixed effects.[7] As there is potential regional heterogeneity, I estimate it in aggregate and by region (as defined in Online Appendix A).

Figure 3 plots the data with the regression prediction by region. It shows there is much heterogeneity in inequality trends by village due to local phenomena. However, there is no clear trend in aggregate. This is confirmed in the regression as shown in Table 1, where I find a negative but insignificant coefficient. When splitting the sample by region, the central and northeast regions have marginal significance but with opposite trends.

There are a number of concerns with this analysis. First, there may be non-linear trends in the data that are hidden when only looking for linear trends. In particular, the major famines of the 1780s and 1830s may have functioned like a "catastrophic shock" that reduced inequality and counteracted an overall increase. Although Figure 3 shows no sign of this, I formally test this in Online Appendix D.1. I show the famine years in the 1780s coincided with decreased inequality while the famine in the 1830s had no effect. However, this did not mask a general positive trend in other decades.

Second, villagers could be increasing landownership outside the village that is not included in the village census. I test this in Online Appendix D.2, where I proxy external holdings using the total land owned in each village. The total land owned is the sum of all within-village landownership by residents. The remainder of the lands were either owned by non-residents or abandoned due to depopulation or environmental reasons.

[7] Specifically, I estimate $ineq_{v,t} = \alpha_v + \beta year_t + \varepsilon_{v,t}$.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

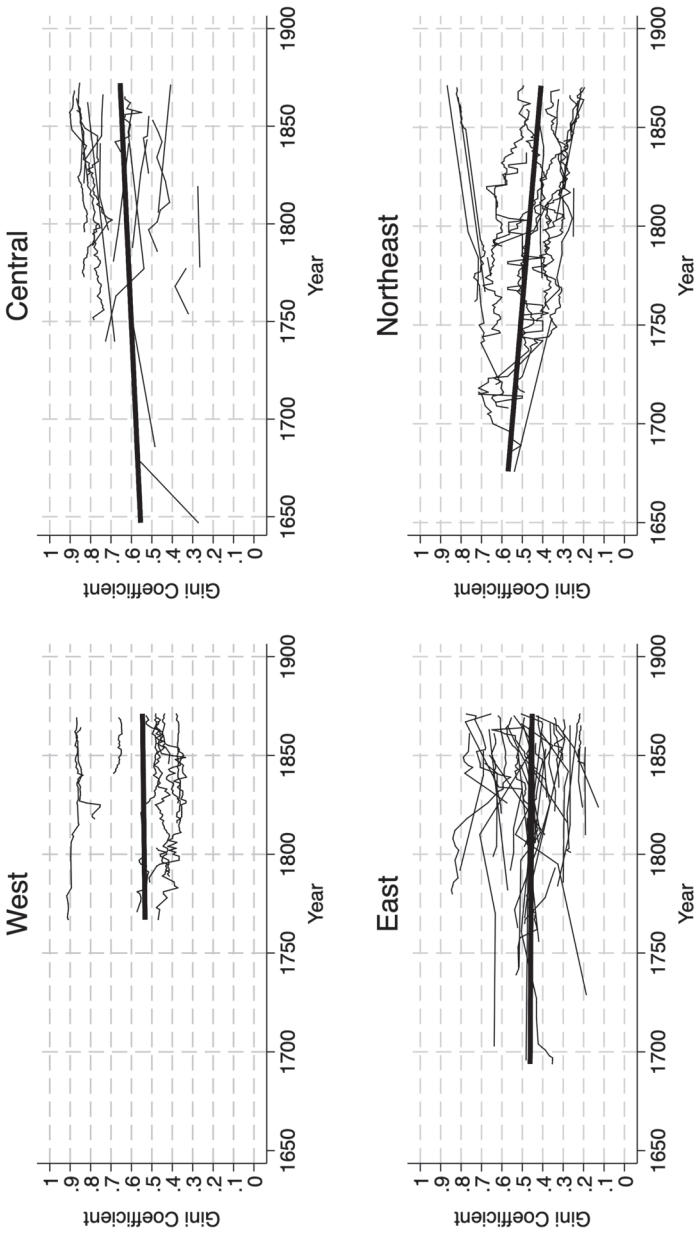


FIGURE 3
RURAL WEALTH INEQUALITY DYNAMICS IN PRE-INDUSTRIAL JAPAN

Source: Japanese Inequality Data.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

TABLE 1
LONG RUN TRENDS BY REGION

	Japan					Italy		
	(1) All	(2) West	(3) Central	(4) East	(5) Northeast	(6) Tuscany	(7) Piedmont	(8) Venice
Time	–0.035	0.012	0.044*	–0.005	–0.077	0.069***	0.062***	0.076**
	(0.032)	(0.039)	(0.024)	(0.035)	(0.051)	(0.006)	(0.014)	(0.027)
Pre-black						0.110***		
						(0.034)		
Village FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1924	458	282	387	797	99	27	26
Adj-R^2	0.913	0.981	0.941	0.804	0.847	0.646	0.840	0.589

Notes: Standard errors are in parenthesis and clustered by village. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.
Source: Japanese inequality data.

Therefore, decreasing total landownership could reflect increasing external holdings in the region. However, I find no evidence for this.

For the purposes of comparison, I can conduct similar analysis in the case of 18 rural Italian villages, 1307–1809, which were collected from tax records and made available (Alfani 2015; Alfani and Ammannati 2017). I refer to the original articles for a detailed description of the data. For the purposes of measuring village-level wealth inequality, many aspects of the data are comparable. The Italian data is based on real estate at the household level. The inequality measures are also at the village level. However, the Italian data is inclusive of housing. The distribution of housing is unknown for Italy but a detailed study from eighteenth-century Spain by Nicolini and Ramos Palencia (2016) showed non-land properties were more equally distributed than agricultural lands. Further, non-land assets were only 12 percent of the value of real estate. If these societies were similar, the real estate inequality measures for Italy would be a lower bound for land inequality, and most of the inequality would be generated by land. Another issue is that the propertyless are not included. This will decrease the measured inequality, although the available evidence suggests the bias is small (Alfani 2015; Alfani and Ammannati 2017; Alfani and Di Tullio 2019).

The differences in wealth inequality trends between Japan and Italy are large (see Online Appendix G). All villages in Italy were trending upward after the black death. The rate of increase was also very high, with a 0.07 increase in Gini points per century. Italian villages clearly had very different dynamics to Japan.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

Inequality Levels

I next estimate inequality levels for Japan as a whole. Although my observations are limited to a sample of village, there is much geographic breadth. In Online Appendix C, I use the data to show there is strong spatial auto-correlation in inequality up to 100 miles. Therefore, each observation contains information on its unobserved neighbors. These facts can be used to justify regional-level estimates.

One issue with this approach is that some regions lack any observations. In order to partially account for unobserved areas, I assume persistence in land ownership inequality between the Tokugawa period, 1647–1872, and the modern era, 1883–1895. This assumption is reasonable due to the slow-moving nature of wealth inequality combined with there being less than two decades between the two points of observation. To proxy landownership inequality in modern Japan, I use prefectural-level data on the share of farmlands under tenancy as a proxy for landownership inequality. This data was originally recorded in prefectural statistics and later compiled by Arimoto et al. (1984). The share of land under tenancy records the area of plots farmed by tenants divided by the total area.

Given this assumption of persistence, I can "backwardly project" inequality in the Tokugawa period for regions lacking observation. The estimation is conducted in two steps. First, I estimate an OLS regression of inequality measures in the two periods. Second, I predict inequality in regions with few observations. I summarize the important parts of this process here with further details in Online Appendix B.

In the first step, I coded all village locations into modern prefectures and estimated the correlation in inequality between the modern and pre-industrial periods.[8] I use the share of land under tenancy in the 1880s as my measure of modern inequality. Unsurprisingly, I find a very strong correlation except for the share landless, for which I get the correct sign but no significance. In the second step, I estimate landownership inequality in Japan as a whole by combining my sample averages with the OLS predictions of inequality in prefectures with less than three observations.

The resulting estimates reveal a society of landowning peasants (see Table 2). The share of land owned by each class of peasant sheds light on the structure of landownership. The bottom 15 percent were landless, while the next 25 percent owned 7 percent of the land. These were small landowners who would need to additionally rent large amounts of land to make a living. The middle-class peasants, from the 5th to the 8th decile of landownership, owned 32 percent of the land and would have

[8] Specifically, I estimate $Pre\ industrial\ inequality_i = \alpha + \beta Modern\ Inequality_i + \varepsilon_i$.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

TABLE 2
VILLAGE-LEVEL LANDOWNERSHIP INEQUALITY ESTIMATES FOR TOKUGAWA JAPAN

	Share		Wealth Owned by		
Region	Region	Landless	Bottom 40%	Top 20%	Top 10%
Kyushu	0.59	0.17	0.06	0.63	0.45
Shikoku	0.60	0.17	0.06	0.64	0.46
Chugoku	0.55	0.11	0.07	0.58	0.40
Kinai	0.69	0.34	0.02	0.73	0.53
Tokai	0.52	0.10	0.08	0.55	0.37
Tosanchubu	0.60	0.16	0.05	0.64	0.46
Hokuriku	0.65	0.20	0.03	0.69	0.50
Kanto	0.50	0.07	0.10	0.55	0.38
Tohoku	0.57	0.19	0.07	0.61	0.42
Japan	0.57	0.15	0.07	0.61	0.43

Notes: All prefectures are weighted by rural population in the 1870s in order to calculate overall inequality.
Source: Japanese inequality data.

been less reliant on tenancy. Finally, the top 20 percent were the large landowning class, who owned 61 percent of the land. They could rent out their surplus lands to the lower classes within the village. Despite the existence of inequalities, it is surprising that such a large share of the population owned significant amounts of land.

The regional estimates show some regional variation. Gini coefficients varied from 0.5 to 0.69, with the most equal areas being the Kanto region surrounding Edo (current-day Tokyo) and the coastal prefectures to the west of it. In contrast, the most unequal areas were the Kinai region surrounding Osaka and Kyoto and the Hokuriku region. Importantly, the next section shows that even the most unequal regions in Japan were more equal than the typical Western European village by 1800.

There are a number of concerns with the methodology that are addressed in detail in Online Appendix B. First, the weighting could be changed to give equal weight to each village. However, re-estimating inequality using this method only changes the Gini coefficient to 0.59 and is not driving the results. Second, I could alternatively use only predicted inequality from the backward projection. Such an approach leads to a lower inequality estimate of 0.54. Third, I can also include coastal villages, where fishing was an important industry and agricultural lands were less important. However, I still find a Gini coefficient of 0.58. Fourth, the lack of observations of landownership outside the village may be causing a severe downward bias. I can estimate an extreme upper bound for inequality by assuming the richest person owned all of the land outside the village. Assuming such land amounted to 18 percent of

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

TABLE 3
WEALTH INEQUALITY IN PRE-INDUSTRIAL SOCIETIES

Country	Year	Type	Unit	Gini	Landless %
East Asia					
China	1930s	Land	Rural households	0.35–0.43	17–33
Japan*	1647–1872	Land	Rural households	0.57	16
Western Europe					
England*	1720–1850	Land	Rural adult males	0.7–0.9	40–60
France+	1825	Land	Rural households	0.71	
Germany+*	1800	Real estate	Rural households	0.53	
Sweden	1750	Wealth	Rural households	0.72	50.4
Denmark	1789	Wealth	Rural households	0.87	59
Finland	1800	Wealth	Rural adult males	0.87	71
Northern Spain	1749–59	Land	All households	0.87	
NW. Italy+*	1700–99	Real estate	Rural households	0.77	
NE. Italy+*	1750	Real estate	Rural households	0.79	
Central Italy+*	1700–99	Real estate	Rural households	0.75	

Notes: + indicates propertyless are excluded. * indicates village-level estimates. Chinese estimates from the 1930s use figures for North China and South China to get a range of Gini coefficient. The proportion landless is from two different estimates for all of China in Buck (1937). English estimates are based on land areas rather than values. French estimates are based on tabulated data from Heywood (1981) as described in Online Appendix F. Northern Spain's estimates are from Palencia, Northwest Italy's estimates are from Piedmont, Northeast Italy's estimates are from the Republic of Venice, and Central Italy's estimates are from Tuscany.

Sources: Buck (1937), Soltow (1979, 1981), Heywood (1981), Brandt and Sands (1990), Kung, Wu, and Wu (2012), Alfani (2015), Nicolini and Ramos Palencia (2016), Alfani and Ammannati (2017), Bengtsson et al. (2018), Alfani and Di Tullio (2019), and Kumon (2021).

within-village landownership values, as implied by the available data, the implied extreme upper bound Gini coefficient will only modestly increase to 0.64. Thus, the narrative of a landowning peasantry is robust to various concerns.

INTERNATIONAL COMPARISONS

Table 3 compares a cross-section of inequality across societies as they approached industrialization. Some caution is required in interpreting the results due to the differing data and methodologies across these studies.

The most comparable data come from Germany, Italy, Japan, and England, which are measured at the village-level and wealth is in the form of real estate or lands. Like the case of Japan, these records do not include real estate outside of the village. They also do not include the

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

state, church, or feudal properties, much like the exclusion of the samurai class in Japan. However, there are a number of major differences. First, the German and Italian estimates include non-land properties. However, as stated earlier, Nicolini and Ramos Palencia (2016) showed that lands were 88 percent of the value of real estate in eighteenth-century Spain. Further, lands were more unequally distributed than non-land properties. If these societies were similar to Spain, the bias due to this difference is downward. Second, the measures for Germany and Italy do not include propertyless people (indicated by a "+" on the table), leading to a downward bias, although indicators from these studies suggest it is small. Third, the measures for England are from commons that got enclosed via parliamentary enclosure (Kumon 2021). As the commons were relatively equal, this is a significant underestimation of inequality. Fourth, the unit of measurement in England is adult males instead of households. The direction of this bias is unclear, although most adult men would have had their own household and biases are likely to be minor. Finally, the large landowners whose holdings spanned many villages appear as relatively small landowners in village-level inequality estimates. This was a small issue in Japan, where cross-village landownership was limited as explained earlier but may lead to greater downward biases in Europe, where there were fewer limitations on cross-village landownership. The overall impression is that the European village-level estimates are downwardly biased.

The measures from all other societies were made at the national level. As the national-level inequality also accounts for between-village inequality, it will upwardly bias inequality relative to my measure, although the magnitude remains unclear. However, the percentage of landless is an alternative measure of inequality that does not account for differences in levels of inequality. Therefore, it is robust to this concern. Therefore, the share landless (where available) is the key comparison measure for these societies.

With these limitations in mind, the evidence suggests East Asian societies were more equal than those in Western Europe.[9] Village-level Gini coefficients in Western Europe are generally close to 0.8, while that in Japan is closer to 0.6. Only Germany has comparable inequality, but this is explained by the catastrophic shocks that decreased its inequality, as I will explain later. As shown earlier, an upper bound estimate of Japanese village-level inequality would suggest a Gini coefficient of 0.64, which is still far lower than the Gini coefficient of most village-level inequality

[9] Eastern Europe may have been more unequal as demesnes, farms that were owned and managed by lords, dominated the lands, limiting peasant holdings (Cerman 2012).

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

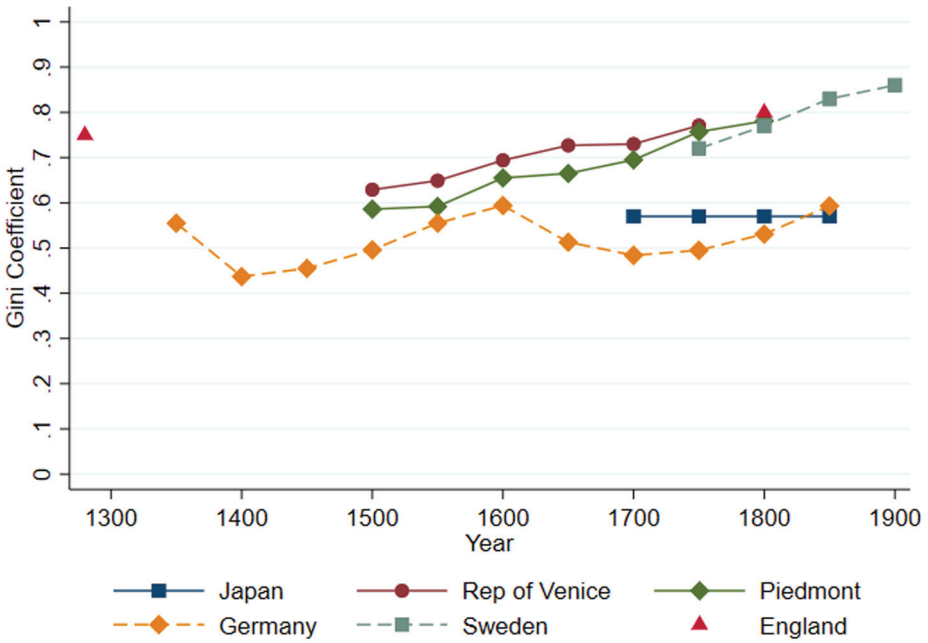


FIGURE 4
INTERNATIONAL TRENDS IN RURAL WEALTH INEQUALITY

Sources: Japanese inequality data, Alfani (2015), Bengtsson et al. (2018), Alfani and Di Tullio (2019), Alfani, Gierok, and Schaff (2022), and Kumon (2021).

estimates in Western Europe. Moreover, the other potential biases mostly work against these conclusions. The alternative measure of the share landless, which can be compared with national-level estimates, show East Asia had very low shares of landless (mostly below 20 percent), unlike in Europe, where it is generally above 50 percent. These high shares of landless in itself indicate that Gini coefficients must also have been much higher in these regions compared to Japan.[10]

Another concern is that these results are driven by the timing of observations. Western Europe was about to start an Industrial Revolution, and the underlying factors that created modern growth may have also increased inequality. However, the trends in inequality in Italy and Germany were upward long before industrialization (see Figure 4). The only exception is the catastrophic shocks of the black death and, in the case of Germany, the Thirty Years War, 1618–1648, which temporarily reduced wealth inequality. Although there is no time series for England, Campbell (2008) suggests 47 percent of the rural population were

[10] It would take the extreme assumption that the landed class had a perfectly equal distribution to conclude Japan was less equal than Western Europe. In the case that 50 percent were landless, the Gini coefficient would be 0.5.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

landless laborers in 1290, and other data from the hundred rolls in 1280 suggests land ownership inequality among peasants had a Gini coefficient of roughly 0.75.[11] Therefore, increasing wealth inequality had little to do with industrialization.

In contrast, the more patchy data from Japan and China suggest my observations are not from a time when society was abnormally equal. Rather, these societies were equal throughout the records stretching millennia. China introduced the equal fields system in 485 that was continued up to 780. Each man aged 15–59 was theoretically allocated 100 *mu* of land, although the reality was less equality due to land scarcity (Mitani 2015). This was also inherited by Japan via the *Handen* system from the seventh–tenth centuries (Iyanaga 1980). Although we know little of the context of these policies, it is likely that these policies accepted realities of relatively equal landownership rather than being a radical redistribution imposed by the state (for more detail, see Online Appendix H).

My findings also match wider findings from the literature. Lundh and Kurosu (2014) compare landownership distributions within villages in seven rural areas across pre-industrial Eurasia and find similar patterns. Another approach by Milanovic, Lindert, and Williamson (2010) uses social tables to estimate income inequality across classes. While this captures other aspects of inequality, it should be highly correlated with wealth inequality because wage inequality was relatively low. Their study finds similar regional patterns in income inequality. Importantly, Japan was relatively more equal in income inequality despite including the samurai class (Saito 2015). Thus, these results are not an artifact of the differing social structures.

Overall, the large magnitude of difference across societies lends confidence to East Asia being more equal than the West despite the differences in measures. However, we cannot be certain of the exact magnitude of difference. What we do know is that the share of landless households, where available, show East Asian households commonly owned lands, unlike their Western European counterparts. These measures also match the wider historiography of the rise of the landless class in pre-industrial England (Shaw-Taylor 2001), and Holland (Van Bavel 2006). In contrast, the East Asian literature has often focused on the landowning peasant (Huang 1990). The new puzzle that emerges is why landownership patterns differed so markedly across these two regions.

[11] Medieval English peasants did not own lands by law but had many land rights, which can be considered land ownership in the economic sense.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

EXPLAINING INEQUALITY

How can we explain the low landownership inequality in Japan relative to Western Europe? The literature on pre-industrial inequality has surprisingly few explanations. A cross-country descriptive study by Milanovic (2018) shows areas with higher population densities had lower income inequality. One prominent hypothesis, which lacks empirical evidence, is the effect of struggles between the state and peasants over land rights in Europe. The state wanted to maximize taxes while peasants resisted such efforts. Although the reasons remain unclear, serfdom emerged in the East and free peasants in the West (Brenner 1976). Episodes of struggles include the parliamentary enclosures (Marx 1867; Humphries 1990) and the Danish agrarian reforms (Boberg-Fazlić et al. 2022), among others.[12] These institutions changed existing land rights where many individuals held rights over a single plots of land (often known as commons) to private ownership by individuals. This also allowed for plots of land to be sold, which made land accumulation easier.[13] In contrast, the argument is that Eastern European peasants were repressed and lacked land rights, although there is little empirical evidence.

Where does Japan fit in terms of the struggle between the state and peasants? Despite a feudal structure, peasants had secure de-facto landownership rights that were more similar to Western Europe. Unlike in Western Europe, this was due to the state indirectly pushing for clearly defined land rights since the *Taikō Kenchi* in the sixteenth century. This allowed for land accumulation among peasants. However, Nakabayashi (2013) shows evidence that land markets were less functional in Japan due to limited land rights for holdings outside one's village of residence. This reduced the amount of land accumulation that extended beyond the home village. Therefore, part of the story of lower inequality could be attributed to the differing arrangements of landownership rights in Feudal Japan.

Other important hypotheses include the effects of regressive taxation (Alfani and Di Tullio 2019), the development of mortgage markets (Allen 2006), agricultural productivity (Clark 1998), and inheritance institutions. Regarding the last mechanism, Wegge (2021) shows areas with partible inheritance in Germany had lower inequality, although this

[12] The effect of parliamentary enclosures on inequality in England is strongly contested in the literature (Clark and Clark 2001; Shaw-Taylor 2001).

[13] While it could also be argued that these reforms directly changed land distribution, much like the modern land reforms in Latin America, reforms like the parliamentary enclosures and Danish agrarian land reforms tried to translate pre-existing land rights into private landownership. Therefore, direct effects on inequality seem minimal.

explanation has limitations due to the endogeneity of such institutions (Hrdy and Judge 1993; Huning and Wahl 2021), as can be seen in East Asia where such institutions depended on land abundance (Hirai 2003; Zhu, Son, and Seo 2015). Further, this fails to explain the case of Japan, where impartible inheritance was common (Hayami 1983).

Adoption and Inequality

This paper proposes an additional mechanism based on the use of adoption as an heirship strategy. Adoption is where a person becomes the legal parent of an adoptee and the adoptee gains the rights associated with being a biological child. Adoption affects land distributions because it gives the adoptee the rights over wealth inheritance. Unlike in the modern era, where adoption is often about the welfare of the adoptee, most adoptions in the pre-industrial era were about the continuation of male lines. Importantly, adoption was widespread in East Asia but not in Western Europe, so this institution may have contributed to differences across these regions.

Adoption was useful in the pre-industrial world, where child mortality was high. Assuming similar fertility across societies, some households succeeded in producing one or many male heirs while others did not. In Figure 5, I illustrate this with a case of five households, two with two heirs, two with no heirs, and one with one heir. In Japan, a household with more than one male heir could give them up to a household in need of male heirs via adoption (see Figure 5c). This benefits the adoptee, who will own more land than if he remained in his parent's household. The overall effect is that lands were kept in the family, resulting in stability across generations.

In contrast, Western European households very rarely adopted children. When they failed to produce male heirs, the household went extinct. Thereafter, marriage and inheritance norms redistributed the lands of the extinct. If a daughter survived, she would inherit the lands and usually marry into another household, leading to greater concentration of lands. If no children survived, the lands will be redistributed via will. Most notably, rich heiresses tended to marry rich men due to positive assortative mating at this time (Kurosu and Ochiai 1995; De La Croix, Schneider, and Weisdorf 2019; Clark and Cummins 2022), leading to land concentration.

There were further problems due to the lack of an option to make surplus heirs an adoptee. If the society had impartible inheritance (primogeniture), the surplus son would become landless, which further increased

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

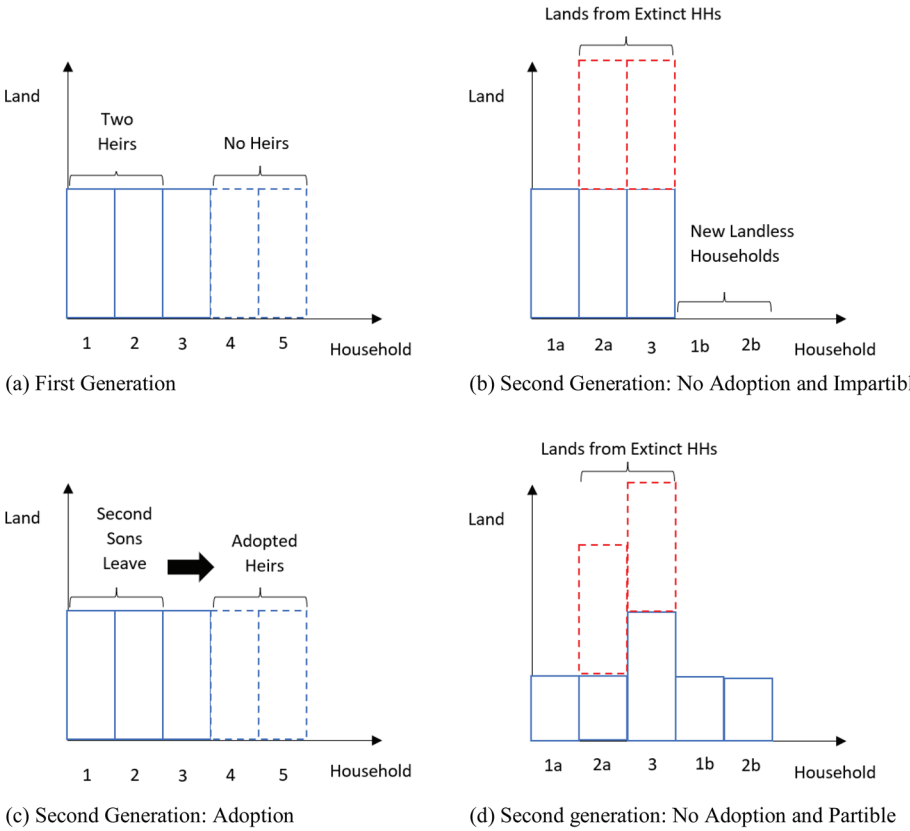


FIGURE 5
LAND DISTRIBUTION ACROSS TWO GENERATIONS

Notes: Households a and b refer to new households formed by two sons from the same household, excluding the case of adoptions.
Source: Author's illustration.

inequality (see Figure 5b). If the society had partible inheritance, there is some inequality generated by the randomness of fertility and mortality across households (see Figure 5d). These factors can lead to inequality beyond the effects of marriages and wills.

One important extension beyond the simple cases is to allow for differing inequality across households. In this case, adoption need not be practiced among all households. In fact, the extinction of landless households will reduce landownership inequality. Moreover, it is more important that the rich practice adoption because their extinction leads to greater land concentration than the extinction of a poorer household.

Adoption was not the only heirship strategy available at the time. One could marry early and have high fertility within marriage. Another strategy was polygyny, which could further increase births while also hedging against

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

the risk that the wife was infertile (Kumon and Saleh 2023). However, both strategies were unreliable due to the high variance in fertility and mortality. Moreover, adoption was special due to two factors. First, it could fully ensure against the risks of varying fertility and high child mortality. Second, other strategies had the opposite risk of creating too many children, which was expensive. Thus, institutions like polygyny were restricted to the richest in pre-industrial Japan but did not occur in peasant households. In contrast, adoption was used often among landowning peasants.

One concern with the mechanism is that adoption may have developed endogenously with inequality. Surprisingly, adoption was widely practiced across Eurasia during ancient times. In East Asia, the practice began by the Han period in China, 206 BCE–220 CE, the Nara period in Japan, 710–794, and the early Chosun dynasty in Korea, 1392–1910, as seen by genealogies or law codes (Hayashi 1988; Brown and De Crespigny 2009; Peterson 1996). The institution of adoption continued to be widely practiced into the eighteenth century. In particular, adoption is well studied for the elite class, and adoption rates were as high as 8 percent in China, 1750–1849, 21 percent in Korea, 1750–1849, and 37 percent in Japan, 1700–1799 (Moore 1970; Feng and Lee 1998; Kim and Park 2010).[14] Importantly, adoption was clearly motivated by the desire to secure an heir in these societies (Feng and Lee 1998; Kim and Park 2010).[15]

Beyond East Asia, adoption was also common in the ancient Near East and Mediterranean, such as in Babylonia, Middle Assyria, Greek and Roman Egypt, Greece, and Rome (Huebner 2013a).[16] In fact, the term "adoption" originated in ancient Rome (Goody 1969; Corbier 1991).[17] The most convincing evidence for its widespread use in ancient Europe comes from a Roman census list of 1450 individuals. For those over age 50, almost all households had a male heir, which could only have been possible with adoption in an ancient mortality regime (Huebner 2013b). This also confirms the people of ancient Rome were using adoption as a means of securing heirs. Such practices survived into the Middle Ages, where Germanic and Frankish people were known to have had various rituals for adoptions (Lynch 2019).

[14] The Chinese case is from the Qing nobility, the Korean case is from the *Bulcheonwye* families, and the Japanese case is from the samurai of a small sample of lords.

[15] The motive of securing heirship can be seen in East Asian societies where adoption increased when birth rates fell. There was some regional variation in how adoption was practiced, with Koreans and Chinese favoring the adoption of children and limiting adoptees to relatives from the male line (Kurosu 2013). This may have slightly weakened the effects of adoption.

[16] The evidence is mainly from law codes, such as the code of Hammurabi (1792 BCE–1750 BCE) or the middle Assyrian law code (1450–1250 BCE), or from adoption contracts such as those from Roman Egypt.

[17] The practice of adoption was also seen in areas practicing Hinduism but not in places practicing Islam (Leonard 2011).

Unlike East Asia, Western Europe began its general abandonment of adoption in the fourth century when the church made concerted efforts to discourage the institution (Goody 1983; Gager 2014). The institutional change was gradual but effective, and the use of adoption beyond the early Middle Ages became rare in most regions.[18] It was only in the nineteenth century that laws began to accept adoptions in Western Europe (Mignot 2019). Thus, East Asia and Western Europe had very similar adoption institutions until a policy shock led to differences emerging by the medieval period.

Why did Western Europe abandon adoptions that were a common feature of many agricultural societies? One explanation is theological. Contemporaries argued that adoption can overshadow the "divine adoption" of becoming God's child via baptism (Gager 2014). The church also discouraged emphasis on earthly concerns, such as by using adoption to determine wealth transmission after death. Despite the Bible including a few cases of adoption, such as that of Moses, the idea was that adoption motivated by wealth inheritance was wrong.

Alternatively, Goody (1983) argues that the change was motivated by the financial benefit of the church. The shift in policy happened after laws changed allowing the church to own property from the fourth century. This encouraged the church to increase its properties by accepting "God's share" of bequests from childless families who willed it to them.[19] Interestingly, both of the major explanations show there was little awareness of the potential consequences for inequality. Further, the financial incentives for the church may have led to the persistence of this policy. The consequence of this institutional change in Europe was the widespread use of marriage among heiresses and wills to redistribute the land of the extinct, which gradually generated greater inequality.

EMPIRICAL EVIDENCE: ADOPTION AND INEQUALITY

I use evidence from three Japanese villages where the annual censuses have continuously survived, allowing for the construction of annual panel data. The data includes information on landownership, household composition, the relationship of each member to the household head, and

[18] A few cases of adoption include that by Joanna II, queen of Naples, 1414–35, adopting heirs when she was childless. There were also documented cases of adoption in France and Spain (Vassberg 1998; Gager 2014). Yet, these cases are of little concern for my purposes, as it was neither widely practiced nor used as a means of securing heirship. The high rates of extinction as observed in many royal or elite lines suggest adoption was not widespread.

[19] This may have been a highly successful source of revenue, as one estimate states one-third of the productive land in France was owned by ecclesiastical hands by the end of the seventh century (Goody 1983).

the names and ages of all individuals over many generations. The use of annual observations is important for identifying adoption. Household members are recorded as adopted when they enter the household but lose this distinction if they become the household head, as they often did. The annual data also allows me to observe households that go extinct due to the lack of heirs.

Due to the need for detailed data, this is a limited sample. Two villages, Ishibushi village, with observation from 1752–1812, and Tonosu village, with observation from 1790–1859, are from the current region of Fukushima in northeast Japan, while Hanakuma village, with observation from 1789–1869, is from the current region of Hyōgo. The size of the villages was close to average with the exception of Ishibushi, which was slightly smaller. They were also relatively equal, with Gini coefficients ranging from 0.39–0.47, but these factors should not affect adoption behavior. While this is just three villages within Japan, adoption occurred throughout Japan at this time (Ōnuma 2018). If anything, the adoption rates were lower in these three villages than other villages, so I may underestimate the effects (Ōto 1996; Okada 2006) (for further details, see Online Appendix I).

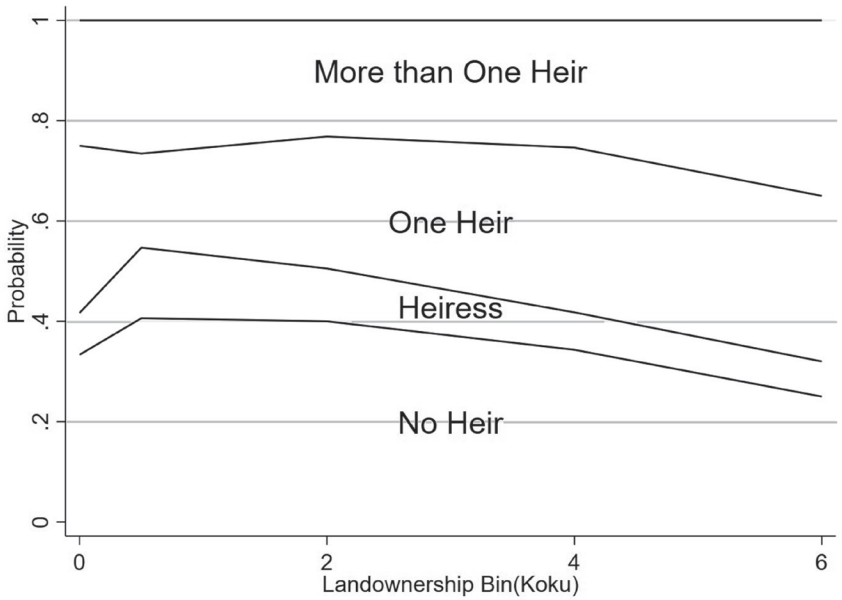
I first show how Japanese households performed at biologically producing male heirs. To do this, I take each household generation and look at the number of surviving heirs at the end of their reproductive cycle. This under counts the number of surviving heirs because I only observe male sons who are residents of the village. However, these were stem households, so it would have been rare for all sons to out-migrate and leave the household heir-less.

I plot the number of surviving heirs against landownership in bins in Figure 6a.[20] The data shows that the land poor class, with less than 1 koku of holdings, had a 34 percent chance of having no male heir, while the land rich had a slightly lower chance of 24 percent. Therefore, landownership could increase fertility and lessen the probability of having no heir but this also had its limits. This was equally true for other societies, including the elite of England in normal years and times of calamity (see Figure 6b).[21] I find that 28 percent of English elite households had no

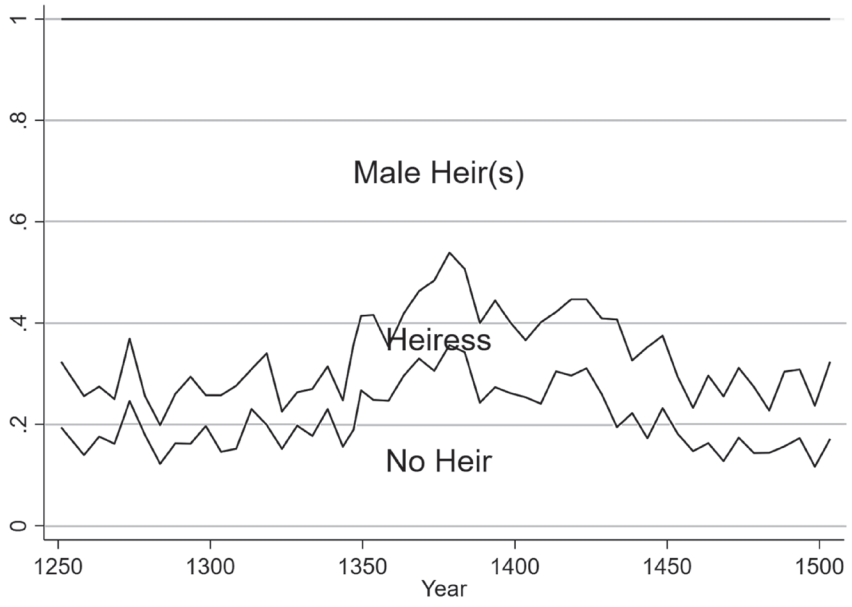
[20] The end of reproduction was usually when the wife was age 45 but could be earlier due to the mortality of one member of the couple. The average landownership was 4 *koku* (a local unit measuring value in volume of rice). The bins are 0, 0 to 1, 1–3, 3–5, and 5+ in koku units. Those below 1 koku can be considered land poor and those within the 6 *koku* bin can be considered land rich.

[21] I use data from the Inquisition post-mortem as collected by Russell (1948) to plot the number of male heirs who inherited the land upon the death of an elite class, the tenant in chief, who held feudal land tenure from the king. Only single male heirs were recorded, and if none existed, all female heiresses were recorded.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press



(a) Japanese Heirship by Landownership



(b) English Elite Heirship over Time

FIGURE 6
SHARE OF HOUSEHOLDS BY BIOLOGICAL HEIRSHIP

Notes: I use the number of biological heirs listed in the sources at the end and reproduction (Japan) or at the point of death (England).
Sources: Japanese inequality data and Russell (1948).

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

male heir during normal years, and an even larger 42 percent failed to have a male heir during the century after the black death when mortality rates rose. This relationship was highly stable over many centuries, and we know the later elites did no better at securing heirs (Gobbi and Gõni 2021). Therefore, the securing of male heirs was a common issue for these societies due to (1) half of children being female and (2) the high mortality rate during this era meant approximately one-third of children died before adulthood (Wrigley et al. 1997).

Adoption was an institution that could resolve the issue of heirship. The Japanese peasants often adopted adult men to marry into their households. The adoptee would usually be the surplus sons of other peasants, who were not in line to inherit lands. They did not have to be relatives, as in other societies, although this was preferred. In the extreme, the next generation could be composed of total strangers (Kurosu and Ochiai 1995; Kurosu 2013). Adopting adults had the advantage of reducing the risk associated with mortality at younger ages.

Unlike modern Western-style adoption, where child welfare is a key motive, the Japanese adopted in order to preserve the male line. Therefore, adoption was not coincidentally solving the issue of heirship in some households. Rather, it was expressly used to resolve the issue of heirship. I can causally show this by testing whether parents had adopted a male heir by the end of their reproduction, conditional on their success at biologically producing male heirs as shown in Equation (2).

$$Adopted\ Male\ Heir_i = \alpha_v + \beta_1 Biological\ Male\ Heir_i + \beta_2 landownership_i + \varepsilon_i \quad (2)$$

The dependent variable is a dummy for whether the parents adopted a son by the end of their reproductive cycle. This will capture a subset of adoptions that eventually occurred. The key independent variable is either a dummy of whether a male heir exists or the number of male heirs. I instrument this with the sex of the child for the first observed birth, which is exogenous.[22] As controls, I use village fixed effects and the quantity of landownership.

Table 4 shows the instrument of the sex of the first child is highly correlated with male heir-ship. Using the instrument, I show that the lack of heir increased the chance of adoption by 0.44, which is much higher

[22] Although infanticide was common at the time, it would have been extremely rare for this to occur on the first birth. Moreover, there was no sex bias in infanticide but instead, there was sex balancing (Drixler 2013). In line with this, 82 of 177 observed first births were male, which is slightly less than 50 percent.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

TABLE 4
ADOPTION AND MALE HEIRSHIP

	(1)			(2)		
	OLS	1st Stage	2nd Stage	OLS	1st Stage	2nd Stage
=1 if no bio. heir	0.231***		0.443**			
	(0.044)		(0.196)			
Number of heirs				–0.107***		–0.201**
				(0.019)		(0.095)
Landownership (Koku)	0.002	–0.000	–0.001	0.002	0.006	0.000
	(0.003)	(0.009)	(0.005)	(0.003)	(0.019)	(0.006)
=1 if first child male		–0.201***			0.444***	
		(0.062)			(0.131)	
Village FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	350	177	177	350	177	177
Adj-R^2	0.103	0.060	0.149	0.077	0.047	0.032
First stage F-stat			10.674			11.478

Notes: Huber-White robust standard errors in parentheses. *$p < 0.1$, ** $p < 0.05$, ***$p < 0.01$. The dependent variable is whether there is an adopted heir within the household at the end of reproduction. Heir refers specifically to male heirs. Koku is a local unit measuring value in volume of rice.
Source: DANJURO database.

than the OLS-based estimate. I get a similar result if I change the independent variable to the number of heirs. I can also account for the ages of the children and their chances of survival to adulthood, or whether any sons have left the village, but the results remain the same (see Online Appendix J). The magnitude of these results shows the lack of male heirship was the key driver of adoption in Japan at this time.

How did this affect household extinctions? To answer this, I reorganize the data and take one observation at the point of household succession (when the household head changes) or extinction. I estimate how landownership affected household disappearances and extinctions.

$$Extinction_i = \alpha_v + \beta_1 landownership_i + \varepsilon_i \quad (3)$$

The dependent variable is household extinctions. As household extinctions are not explicitly mentioned in the census, they can be liberally defined as cases in which households disappear from the village census. However, this definition may also capture migration (although household migration was rare), so I also make a conservative definition based on households that both disappear and have no potential heirs. The main explanatory variable is landownership measured by the value of the land in *koku,* as explained earlier. I use village fixed effects to control for village heterogeneity.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

TABLE 5
LANDOWNERSHIP AND EXTINCTION

	(1) Household Disappearances			(2) Household Extinctions		
	OLS	1st Stage	2nd Stage	OLS	1st Stage	2nd Stage
Landownership	–0.022***		–0.022***	–0.007***		–0.009***
	(0.004)		(0.005)	(0.003)		(0.003)
20 YR lagged landownership		0.871***			0.871***	
		(0.049)			(0.049)	
Village FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	336	336	336	336	336	336
Adj-R^2	0.113	0.655	0.113	0.018	0.655	0.016
First stage F-stat			321.655			321.655
Mean dep. var.	0.095	3.346	0.095	0.039	3.346	0.039

Notes: Huber-White robust standard errors in parentheses. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$. The dependent variable is whether a household went extinct at the point of succession. Heir refers specifically to male heirs. Koku is a local unit measuring value in volume of rice.
Source: DANJURO database.

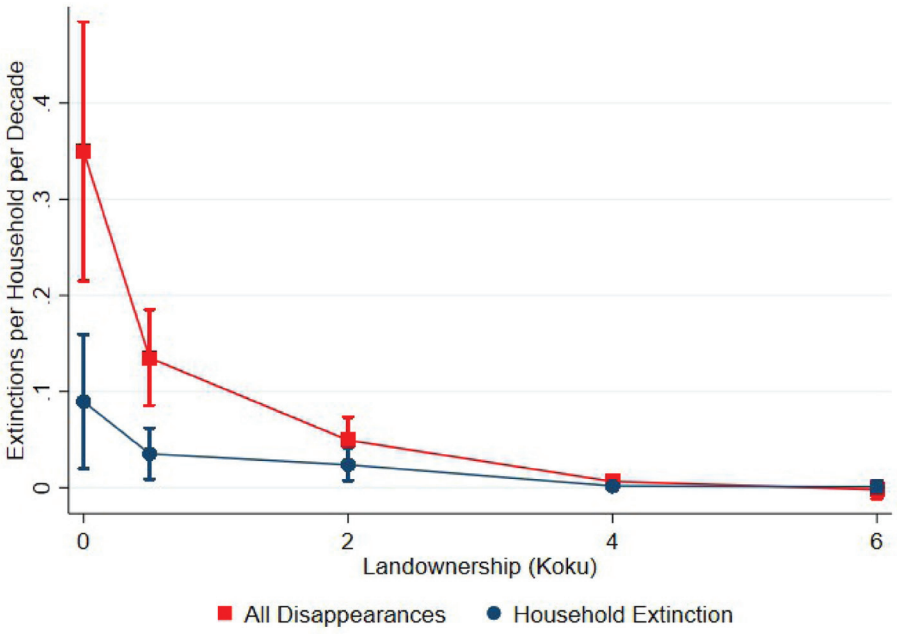
One concern is that households deciding to go extinct may have slowly sold off their lands, leading to reverse causality. I therefore instrument landownership with a 20-year lagged landownership, which should precede the decision to sell off lands and address reverse causality.

I find that regardless of the definition of household extinction, landownership had a strong negative effect (see Table 5). The magnitude appears small but this is because only 14 percent of households disappeared and only 4 percent went extinct per generation. Therefore, landowners ensured household continuity by adopting. As explained earlier, the negative correlation between household extinction and landownership should theoretically have decreased landownership inequality.

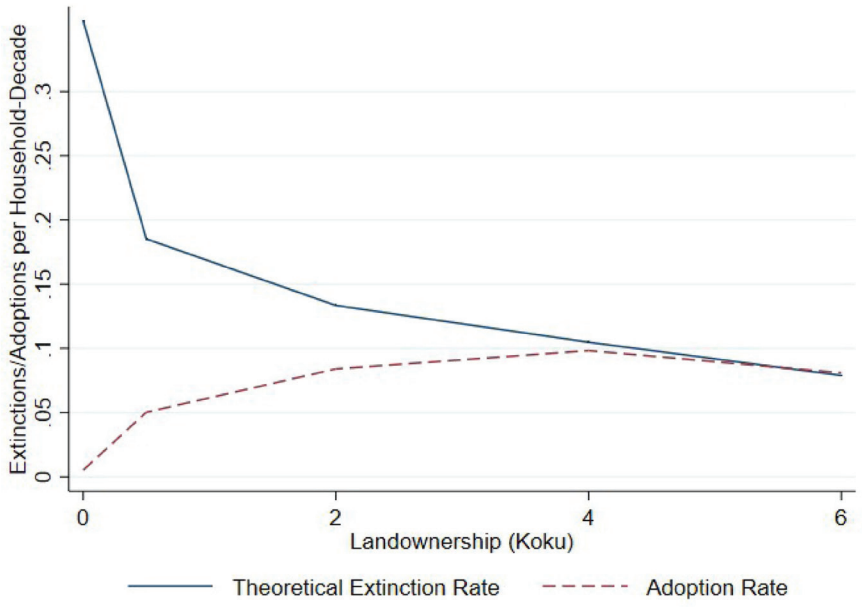
Another way of addressing the effect of adoption is to look at which households adopted or went extinct. To do this, I take each household-year as an observation and estimate the effect of landownership on extinction, which I show in Figure 7a.[23] The striking finding is that households with the average (3.5–4 *koku*) or above in landownership were not going extinct. This was clearly driven by adoption, defined as the number of cases where an adoptee succeeded the household as plotted in Figure 7b. Adoption rates were much higher among the rich, which is consistent with findings from Kurosu (2013) for other villages in contemporary Japan. Adoption also functioned close to its theoretical ideal of preventing all household extinctions. This is not surprising, as both the adopter and

[23] I use village fixed effects and landownership bins of 0, 0–1, 1–3, 3–5, and 5+.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press



(a) Extinction Rates



(b) Adoption and Theoretical Extinction Rates

FIGURE 7
RATES OF EXTINCTION AND ADOPTION PER DECADE BY LANDOWNERSHIP

Source: Japanese inequality data.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

adoptee had much to gain from the relationship. Adoption also functioned, but to a lesser degree, among poorer households. Most notably, it was land poor households with lands worth less than 1 *koku* or those that were landless that had the highest rate of extinction. While some of these households succeeded in finding adoptees before death, others failed due to the small amounts of landownership. However, the extinction of the landless must have decreased inequality because poor households tended to disappear, decreasing the share of the poor within villages.

How effectively did adoption insulate lands from being redistributed via social mechanisms? One measure of this is the share of lands owned by households that went extinct. I find extinctions led to only 10 percent of lands being redistributed per century. Such lands were taken by relatives or passed to village organizations, who at times found families to take over the land (Okada 2006). This contrasts with the English data in Figure 5b, where 20–30 percent of the richest male lines were going extinct per generation. These lands were then transmitted to other male lines. Although there is no comparable data to track landownership in England, there is no shortage of documented cases of households becoming rich due to strategic marriages to heiresses (Clay 1968; Habakkuk 1994; Payling 2001; Broad 2004).[24] The assortative matching involved in marriage meant the lands of the rich generally stayed among the rich (De La Croix, Schneider, and Weisdorf 2019; Clark and Cummins 2022).

Finally, was there greater equality in Western Europe preceding the fourth century? While this would be a desirable piece of evidence, there is little evidence for land inequality from Ancient Europe. What exists comes from Roman Egypt (Bagnall 1992). The first is from 216 CE in the village of Philadelphia in the Fayum, where the Gini coefficient was 0.53 for private lands excluding the landless. The second is from 308/309 CE in the village of Karanis, where the Gini coefficient for private lands was 0.43, excluding the landless. These are similar numbers to post-black death rural Italy, when inequality was unusually low due to the catastrophic shock. It is also comparable to Japan, 1640-1870. While these are two small case studies, these findings are consistent with a relatively equal society.

CONCLUSION

This paper began by questioning whether high wealth inequality was a universal or Western phenomenon. The first section of the paper showed

[24] For example, Broad (2004) documents the rise of the Verney family from the seventeenth century as a consequence of three generations of eldest sons marrying heiresses with no evidence of initial sentimental attachment.

https://doi.org/10.1017/S0022050724000524 Published online by Cambridge University Press

that high wealth inequality seems to have been a Western phenomenon. Detailed data from 584 villages in Japan, 1640–1870, showed no trend in landownership inequality. Moreover, an estimate of landownership inequality for Japan as a whole shows low inequality with Gini coefficients of 0.57. This low landownership inequality was not limited to the time and place. Fragmentary evidence from over a millennium across East Asia is also consistent with a very long-run equilibrium of low inequality. This contrasts with the finding in the literature that Western Europe converged toward high inequality in landownership, with Gini coefficients above 0.7. This trend was also a long-run phenomenon that preceded the black death. The West converged toward societies of landless laborers, while the East converged toward societies of land-owning peasants.

I then proposed a new mechanism explaining why Japanese land inequality was different from Western Europe. I showed how adoption played a critical role in securing male heirs and led to lands being kept in the male line in East Asian societies. In the particular case of Japan, I showed that similar to Western Europe, households with all levels of wealth struggled to secure biological heirs. However, adoption was used as insurance against the lack of biological heirs. Adoption functioned very effectively at keeping land within the male line. Almost no households with more than the average amount of land went extinct. It was only land poor and landless households with marginal amounts of land that went extinct.

In contrast, land transmissions were very different in Europe. Although comparable landownership data is not available, the genealogies of the rich suggest household extinction occurred in 20–30 percent of cases per generation. Therefore, within a century, over three-quarters of the lands must have been inherited outside the male line via social mechanisms, such as the marriage of an heiress or will. This led to a gradual concentration of land among households that inherited the lands of extinct households.

Finally, I discussed the validity of this mechanism for explaining the different outcomes observed in Western Europe and East Asia. I show that institutions were very similar across Eurasia in ancient times. It was the Christian church's teachings against adoption, beginning in the fourth century, that led to a gradual divergence in the use of adoption. By the early Middle Ages, adoption became rare in Western Europe while it continued to be practiced in East Asia. One implication is that high inequality in Western societies may have been an unintended consequence of church policy stemming from the fourth century.

REFERENCES

Adermon, Adrian, Mikael Lindahl, and Daniel Waldenström. "Intergenerational Wealth Mobility and the Role of Inheritance: Evidence from Multiple Generations." *Economic Journal* 128, no. 612 (2018): 482–513.

Alfani, Guido. "Economic Inequality in Northwestern Italy: A Long-term View (Fourteenth to Eighteenth Centuries)." *Journal of Economic History* 75, no. 4 (2015): 1058–96.

Alfani, Guido, and Francesco Ammannati. "Long-Term Trends in Economic Inequality: The Case of the Florentine State, c. 1300–1800." *Economic History Review* 70, no. 4 (2017): 1072–102.

Alfani, Guido, and Matteo Di Tullio. *The Lion's Share: Inequality and the Rise of the Fiscal State in Preindustrial Europe*. Cambridge: Cambridge University Press, 2019.

Alfani, Guido, Victoria Gierok, and Felix Schaff. "Economic Inequality in Preindustrial Germany, ca. 1300–1850." *Journal of Economic History* 82, no. 1 (2022): 87–125.

Alfani, Guido, and Wouter Ryckbosch. "Growing Apart in Early Modern Europe? A Comparison of Inequality Trends in Italy and the Low Countries, 1500–1800." *Explorations in Economic History* 62 (2016): 143–53.

Allen, Robert C. "English and Welsh Agriculture, 1300–1850: Outputs, Inputs, and Income." Oxford University Research Archive, Open Access Publications from University of Oxford, Oxford, England, January 2006.

Alstadsæter, Annette, Niels Johannesen, and Gabriel Zucman. "Tax Evasion and Inequality." *American Economic Review* 109, no. 6 (2019): 2073–103.

Alvaredo, Facundo, Anthony B. Atkinson, and Salvatore Morelli. "Top Wealth Shares in the UK over More Than a Century." *Journal of Public Economics* 162 (2018): 26–47.

Arimoto, Masao, Tomohiro Nakayama, Kumiko Kimura, and Akira Nishimura. "Gunshibetsu Kosakuchiritsu no Shiteki Bunseki." *Hiroshima Daigaku Bungakubu* (1984): 1–191.

Bach, Laurent, Laurent E. Calvet, and Paolo Sodini. "Rich Pickings? Risk, Return, and Skill in Household Wealth." *American Economic Review* 110, no. 9 (2020): 2703–47.

Bagnall, Roger S. "Landholding in Late Roman Egypt: The Distribution of Wealth." *Journal of Roman Studies* 82 (1992): 128–49.

Bartels, Charlotte, Simon Jäger, and Natalie Obergruber. "Long-Term Effects of Equal Sharing: Evidence from Inheritance Rules for Land." IZA Discussion Paper No. 13665, Bonn, Germany, September 2020.

Barth, Daniel, Nicholas W. Papageorge, and Kevin Thom. "Genetic Endowments and Wealth Inequality." *Journal of Political Economy* 128, no. 4 (2020): 1474–522.

Becker, Sascha O., and Ludger Woessmann. "Was Weber Wrong? A Human Capital Theory of Protestant Economic History." *Quarterly Journal of Economics* 124, no. 2 (2009): 531–96.

Bengtsson, Erik, Anna Missiaia, Mats Olsson, and Patrick Svensson. "Wealth Inequality in Sweden, 1750–1900." *Economic History Review* 71, no. 3 (2018): 772–94.

Boberg-Fazlić, Nina, Markus Lampe, Pablo M. Lasheras, and Paul Sharp. "Winners and Losers from Agrarian Reform: Evidence from Danish Land Inequality 1682–1895." *Journal of Development Economics* 155 (2022): 102813.

Boserup, Simon H., Wojciech Kopczuk, and Claus T. Kreiner. "The Role of Bequests in Shaping Wealth Inequality: Evidence from Danish Wealth Records." *American Economic Review* 106, no. 5 (2016): 656–61.

Brandt, Loren, and Barbara Sands. "Beyond Malthus and Ricardo: Economic Growth, Land Concentration, and Income Distribution in Early Twentieth Century Rural China." *Journal of Economic History* 50, no. 4 (1990): 807–27.

Brenner, Robert. "Agrarian Class Structure and Economic Development in Pre-industrial Europe." *Past & Present* 70, no. 1 (1976): 30–75.

Broad, John. *Transforming English Rural Society: The Verneys and the Claydons, 1600–1820*. Cambridge: Cambridge University Press, 2004.

Brown, Miranda, and Rafe De Crespigny. "Adoption in Han China." *Journal of the Economic and Social History of the Orient* 52, no. 2 (2009): 229–66.

Buck, John L. *Land Utilization in China: A Study of 16,786 Farms in 168 Localities, and 38,256 Farm Families in Twenty-Two Provinces in China, 1929–1933,* vol. 2. Chicago, IL: University of Chicago Press, 1937.

Campbell, Bruce M. S. "Benchmarking Medieval Economic Development: England, Wales, Scotland, and Ireland, c. 1290." *Economic History Review* 61, no. 4 (2008): 896–945.

Cantoni, Davide, Jeremiah Dittmar, and Noam Yuchtman. "Religious Competition and Reallocation: The Political Economy of Secularization in the Protestant Reformation." *Quarterly Journal of Economics* 133, no. 4 (2018): 2037–96.

Cerman, Markus. *Villagers and Lords in Eastern Europe, 1300–1800.* London, UK: Palgrave Macmillan, 2012.

Clark, Gregory. "Commons Sense: Common Property Rights, Efficiency, and Institutional Change." *Journal of Economic History* 58, no. 1 (1998): 73–102.

Clark, Gregory, and Anthony Clark. "Common Rights to Land in England, 1475–1839." *Journal of Economic History* 61, no. 4 (2001): 1009–36.

Clark, Gregory, and Neil Cummins. "Assortative Mating and the Industrial Revolution: England, 1754–2021." CEPR Discussion Paper No. 17074, Washington, DC, 2022.

Clay, Christopher. "Marriage, Inheritance, and the Rise of Large Estates in England, 1660–1815." *Economic History Review* 21, no. 3 (1968): 503–18.

Corbier, Mireille. "Divorce and Adoption as Roman Familial Strategies." In *Marriage, Divorce, and Children in Ancient Rome*, edited by Beryl Rawson, 47–78. New York: Oxford University Press, 1991.

De La Croix, David, Eric B. Schneider, and Jacob Weisdorf. "Childlessness, Celibacy and Net Fertility in Pre-industrial England: The Middle-Class Evolutionary Advantage." *Journal of Economic Growth* 24, no. 3 (2019): 223–56.

Drixler, Fabian. *Mabiki: Infanticide and Population Growth in Eastern Japan, 1660–1950*. Berkeley, CA: University of California Press, 2013.

Elinder, Mikael, Oscar Erixson, and Daniel Waldenström. "Inheritance and Wealth Inequality: Evidence from Population Registers." *Journal of Public Economics* 165 (2018): 17–30.

Feng, Wang, and James Lee. "Adoption among the Qing Nobility and Its Implications for Chinese Demographic Behavior." *History of the Family* 3, no. 4 (1998): 411–27.

Gager, Kristin E. *Blood Ties and Fictive Ties: Adoption and Family Life in Early Modern France*. Princeton, NJ: Princeton University Press, 2014.

Gobbi, Paula E., and Marc Gõni. "Childless Aristocrats: Inheritance and the Extensive Margin of Fertility." *Economic Journal* 131, no. 637 (2021): 2089–118.

Goody, Jack. "Adoption in Cross-Cultural Perspective." *Comparative Studies in Society and History* 11, no. 1 (1969): 55–78.

———. *The Development of the Family and Marriage in Europe*. Cambridge: Cambridge University Press, 1983.

Greif, Avner, and Guido Tabellini. "The Clan and the Corporation: Sustaining Cooperation in China and Europe." *Journal of Comparative Economics* 45, no. 1 (2017): 1–35.

Habakkuk, John. *Marriage, Debt, and the Estates System: English Landownership, 1650–1950.* Oxford: Oxford University Press, 1994.

Hayami, Akira. "The Myth of Primogeniture and Impartible Inheritance in Tokugawa Japan." *Journal of Family History* 8, no. 1 (1983): 3–29.

Hayashi, Noriaki. "Nihon Kodai Shakai no Yōshi." In *Gisei Sareta Oyako*, edited by Hideo Otake, Akira Takeda, and Yoshikazu Hasegawa, 19–52. Tokyo, Japan: Sanseido, 1988.

Henrich, Joseph. *The WEIRDest People in the World: How the West Became Psychologically Peculiar and Particularly Prosperous.* New York: Farrar, Straus and Giroux, 2020.

Heywood, Colin. "The Role of the Peasantry in French Industrialization, 1815–80." *Economic History Review* 34, no. 3 (1981): 359–76.

Hirai, S. "Kinsei Nōson ni Okeru Setai no Eizokusei." *Japanese Journal of Family Sociology* 15, no. 1 (2003): 7–16.

Hrdy, Sarah B., and Debra S. Judge. "Darwin and the Puzzle of Primogeniture." *Human Nature* 4, no. 1 (1993): 1–45.

Huang, Philip C. *The Peasant Family and Rural Development in the Yangzi Delta, 1350–1988.* Redwood City, CA: Stanford University Press, 1990.

Huebner, Sabine R. "Adoption and Fosterage in the Ancient Eastern Mediterranean." In *The Oxford Handbook of Childhood and Education in the Classical World,* edited by Judith Evans Grubbs and Tim Parkin, ch. 25. New York: Oxford University Press, 2013a.

———. *The Family in Roman Egypt: A Comparative Approach to Intergenerational Solidarity and Conflict*. New York: Cambridge University Press, 2013b.

Humphries, Jane. "Enclosures, Common Rights, and Women: The Proletarianization of Families in the Late Eighteenth and Early Nineteenth Centuries." *Journal of Economic History* 50, no. 1 (1990): 17–42.

Huning, Thilo R., and Fabian Wahl. "The Origins of Agricultural Inheritance Traditions." *Journal of Comparative Economics* 49, no. 3 (2021): 660–74.

Iyanaga, T. *Nihon Kodai Shakai Keizaishi Kenkyu*. Tokyo, Japan: Iwanami Shoten, 1980.

Jakobsen, Katrine, Kristian Jakobsen, Henrik Kleven, and Gabriel Zucman. "Wealth Taxation and Wealth Accumulation: Theory and Evidence from Denmark." *Quarterly Journal of Economics* 135, no. 1 (2020): 329–88.

Kim, Kuentae, and Hyunjoon Park. "Family Succession through Adoption in the Chosun Dynasty." *History of the Family* 15, no. 4 (2010): 443–52.

Kumon, Yuzuru. "Wealth Inequality in Pre-industrial Rural England." IAST Working Paper No. 124, Toulouse, France, October 2021.

———. "The Labor-Intensive Path: Wages, Incomes, and the Work Year in Japan, 1610–1890." *Journal of Economic History* 82, no. 2 (2022): 368–402.

———. "Adoption, Inheritance, and Wealth Inequality in Pre-industrial Japan and Western Europe." Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2024-12-04. https://doi.org/10.3886/E212482V1

Kumon, Yuzuru, and Mohamed Saleh. "The Middle-Eastern Marriage Pattern? Malthusian Dynamics in Nineteenth-Century Egypt." *Economic History Review* 76, no. 4 (2023): 1231–58.

Kung, James K.-s., Xiaogang Wu, and Yuxiao Wu. "Inequality of Land Tenure and Revolutionary Outcome: An Economic Analysis of China's Land Reform of 1946–1952." *Explorations in Economic History* 49, no. 4 (2012): 482–97.

Kurosu, Satomi. "Adoption and Family Reproduction in Early Modern Japan." *Keizai Kenkyu* 64, no. 1 (2013): 1–12.

Kurosu, Satomi, and Emiko Ochiai. "Adoption as an Heirship Strategy under Demographic Constraints: A Case from Nineteenth-Century Japan." *Journal of Family History* 20, no. 3 (1995): 261–88.

Leonard, Karen I. "Family Firms in Hyderabad: Gujarati, Goswami, and Marwari Patterns of Adoption, Marriage, and Inheritance." *Comparative Studies in Society and History* 53, no. 4 (2011): 827–54.

Lundh, Christer, and Satomi Kurosu. *Similarity in Difference: Marriage in Europe and Asia, 1700–1900*. Cambridge: The MIT Press, 2014.

Lynch, Joseph H. *Godparents and Kinship in Early Medieval Europe*. Princeton, NJ: Princeton University Press, 2019.

Marx, Karl. *Das Kapital. Kritik der Politischen Oekonomie*. Hamburg, Germany: Verlag von Otto Meisner, 1867.

Mignot, Jean-François. "Child Adoption in Western Europe, 1900–2015." *Cliometrics of the Family* (2019): 333–66.

Milanovic, Branko. "Towards an Explanation of Inequality in Premodern Societies: The Role of Colonies, Urbanization, and High Population Density." *Economic History Review* 71, no. 4 (2018): 1029–47.

Milanovic, Branko, Peter H. Lindert, and Jeffrey G. Williamson. "Pre-industrial Inequality." *Economic Journal* 121, no. 551 (2010): 255–72.

Mitani, Yoshiaki. "Kodai no Tochi Seido." In *Nihon Rekishi,* vol. 4, edited by Toru Otsu, Eiji Sakurai, Jyōji Fujii, Yu Yoshida, and Sonshi Ri, 143–76. Tokyo, Japan: Iwanami Shoten, 2015.

Moore, Ray A. "Adoption and Samurai Mobility in Tokugawa Japan." *Journal of Asian Studies* 29, no. 3 (1970): 617–32.

Nakabayashi, M. *Nihon Keizai no Nagai Kindaika - Tochi to Shijyō, Soshite Soshiki*. Nagoya, Japan: Nagoya Daigaku Shuppankai, 2013.

Nicolini, Esteban A., and Fernando Ramos Palencia. "Decomposing Income Inequality in a Backward Pre-industrial Economy: Old Castile (Spain) in the Middle of the Eighteenth Century." *Economic History Review* 69, no. 3 (2016): 747–72.

Okada, A. *Kinsei Nōson Shakai no Ie to Setai Keisho: Kazoku Ruikei no Hendō to Kaiki*. Toyko, Japan: Chisen shokan, 2006.

Ōnuma, H. "Minji Kanrei Ruishu kara miru Kindai Ikoki Nihon no Yōshi Kanko." *Gengo to Bunmei* 16 (2018): 65–83.

Ōto, M. *Kinsei Noson to Ie Mura Kokka: Seikatsushi Shakaishi no Shiza Kara*. Tokyo, Japan: Yoshikawa Kobunkan, 1996.

Payling, S. J. "The Economics of Marriage in Late Medieval England: The Marriage of Heiresses." *Economic History Review* 54, no. 3 (2001): 413–29.

Peterson, Mark. *Korean Adoption and Inheritance: Case Studies in the Creation of a Classic Confucian Society*. Ithaca, NY: Cornell University East Asia Program, 1996.
Piketty, Thomas. "On the Long-Run Evolution of Inheritance: France 1820–2050." *Quarterly Journal of Economics* 126, no. 3 (2011): 1071–131.
———. *Capital in the Twenty-First Century*. Cambridge, MA: Harvard University Press, 2014.
Piketty, Thomas, Gilles Postel-Vinay, and Jean-Laurent Rosenthal. "Wealth Concentration in a Developing Economy: Paris and France, 1807–1994." *American Economic Review* 96, no. 1 (2006): 236–56.
Roine, Jesper, and Daniel Waldenström. "Wealth Concentration over the Path of Development: Sweden, 1873–2006." *Scandinavian Journal of Economics* 111, no. 1 (2009): 151–87.
Russell, Josiah C. *British Medieval Population*. Albuquerque, NM: University of New Mexico Press, 1948.
Saez, Emmanuel, and Gabriel Zucman. "Wealth Inequality in the United States since 1913: Evidence from Capitalized Income Tax Data." *Quarterly Journal of Economics* 131, no. 2 (2016): 519–78.
Saito, Osamu. "Growth and Inequality in the Great and Little Divergence Debate: A Japanese Perspective." *Economic History Review* 68, no. 2 (2015): 399–419.
Scheidel, Walter. *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First Century*. Princeton, NJ: Princeton University Press, 2017.
Schulz, Jonathan F. "Kin Networks and Institutional Development." *Economic Journal* 132, no. 647 (2022): 2578–613.
Shaw-Taylor, Leigh. "Parliamentary Enclosure and the Emergence of an English Agricultural Proletariat." *Journal of Economic History* 61, no. 3 (2001): 640–62.
Shoji, U. *Kinsei Nōson ni okeru Shijō Keizai no Tenkai*. Tokyo, Japan: Dōbunkan, 1986.
Soltow, Lee. "Wealth Distribution in Denmark in 1789." *Scandinavian Economic History Review* 27, no. 2 (1979): 121–38.
———. "Wealth Distribution in Finland in 1800." *Scandinavian Economic History Review* 29, no. 1 (1981): 21–32.
Takeyasu, S. *Kinsei Hōkensei no Tochi Kozo*. Tokyo, Japan: Ochanomizu Shobou, 1966.
Van Bavel, Bas J. "Rural Wage Labour in the Sixteenth-Century Low Countries: An Assessment of the Importance and Nature of Wage Labour in the Countryside of Holland, Guelders and Flanders." *Continuity and Change* 21, no. 1 (2006): 37–72.
Vassberg, David E. "Orphans and Adoption in Early Modern Castilian Villages." *History of the Family* 3, no. 4 (1998): 441–58.
Weber, Max. *The Protestant Ethic and the Spirit of Capitalism.* London: Allen & Unwin, 1930. English translation by Talcott Parsons.
Wegge, Simone A. "Inheritance Institutions and Landholding Inequality in Nineteenth-Century Germany: Evidence from Hesse-Cassel Villages and Towns." *Journal of Economic History* 81, no. 3 (2021): 909–42.
Wrigley, E. A., R. S. Davies, R. Schofield, and J. Oeppen. *English Population History from Family Reconstitution 1580–1837*. Cambridge: Cambridge University Press, 1997.
Yamamura, Kozo. *A Study of Samurai Income and Entrepreneurship*. Cambridge, MA: Harvard University Press, 1974.
Zhu, Mei, Byunggiu Son, and Byungtae Seo. "Family Strategy of Economic Inequality among Brothers in Korean Rural Society, 1690–1795." *History of the Family* 20, no. 2 (2015): 291–307.