From Samurai to Skyscrapers: How Transaction Costs Shape Tokyo*

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Abstract:

We study how transaction costs of changing lot size shaped Tokyo's urban development, using a 100 m*100 m cell-level dataset spanning the 19th–21st centuries. Exploiting the 1868 release of elite samurai estates, we show these areas still have larger lots, taller buildings, higher firm productivity, and land prices 153% above nearby areas, relative to surrounding neighborhoods, even after extensive redevelopment. Our framework interprets this price gap as a lower bound on transaction costs. Before 1945, these areas were cheaper, implying the rising value of large lots with skyscraper construction—an evolution that may accompany future vertical growth in developing cities too.

Keywords: Transaction costs, historical persistence, skyscrapers, lot fragmentation, agglomeration economy, Coase theorem
JEL Codes: R14, R30, O18, N95

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1 Introduction

The Coase theorem suggests that when transaction costs are absent, private bargaining can lead to efficient outcomes regardless of the initial allocation of property rights (Coase, 1960). At the same time, the theorem also highlights that once transaction costs are present, the initial allocation of rights becomes critical, and outcomes may fail to be efficient. In such cases, alternative arrangements such as organizational production (e.g., firms) (Coase, 1937; Williamson, 1975, 1985) or the price mechanism with Pigouvian taxation may be more effective. This insight has motivated a wide range of empirical studies examining how the allocation of rights under transaction costs shapes economic behavior including research on firm boundaries (Baker and Hubbard, 2003; Forbes and Lederman, 2009; Atalay et al., 2019), emission-caps trading (Zaklan, 2023), divorce law (Wolfers, 2006; Stevenson and Wolfers, 2006; Voena, 2015), agricultural land (Hornbeck, 2010; Bleakley and Ferrie, 2016), and oil fields (Leonard and Parker, 2021).[1]

By contrast, we know little about whether the Coase theorem is relevant in the land market of a city's central business district (CBD). The CBD hosts core economic activities of modern economy within a small area and thus inefficiency caused by transaction costs will be crucial (cf. Glaeser (2011)). The inefficiency will be particularly large when the economic environment changes. For example, the development of construction technology induces a change in demand for a particular size of land. In this case, it is key to change the lot size by either split or assembly. However, transaction costs, costs to carry out transaction in addition to its price such as negotiation costs with multiple landowners to assemble land, may prevent such transactions. This makes lot size persistent and generates a huge economic loss. Such transaction costs are reported in the media and recognized by policymakers in many cities worldwide (Nelson and Lang, 2007; Kirk, 2017; Chen, 2021).

We study whether such transaction costs and lot size persistence may affect city development in the long run. We might expect that cities enjoy high benefit from optimal land use owing to agglomeration economies and thus lot size will not persist, as the Coase theorem would predict. However, transaction costs can be high in cities, possibly because they tend to have a large number of heterogeneous land owners or the potential benefits of land assem-

[1]For more detailed discussion of the history of the Coase theorem and subsequent development of the literature, see Medema (2020), Williamson (2025), or Milgrom and Roberts (1992), for example.

bly itself intensifies landowners' strategic behavior in their negotiation of land assembly. In this case, lot size persists with a huge economic loss. Understanding the relative importance of these two forces has implications for the future of cities, particularly those in developing countries, which have slums with fragmented lots (Bryan et al., 2020; Glaeser, 2021).

In addition, when transaction costs are high enough to generate lot size persistence, the consequence of such persistence can be different in various economic environments. For example, the value of large lots may be greater with the rise in tall buildings generating agglomeration economies, because tall buildings require large footprints.[2] Previous studies show mixed results on whether large lots are at a premium or are discounted, but by tracking how the large lot size is evaluated over time, we can shed light on the mechanism of the lot size effect.[3]

In this study, we analyze land use and values in Tokyo over a 150-year period. Two features of Tokyo make its setting an ideal laboratory for studying the long-run effects of the initial lot size. First, there is a natural experiment that, in our view, offers the closest analog to exogenous releases of land with larger lot sizes on a large scale throughout the central areas of a big city at the beginning of modern development. During the feudal era before 1868, 19% of the land in Tokyo was occupied by *daimyo*. Daimyo were among the top of the samurai (warrior) class in Japan and governed their local domain outside Tokyo as feudal local lords, but had to own estates in Tokyo (*daimyo yashiki*) for political reasons, which we explain later in the background section. These estates were much larger than the lots in the other areas in Tokyo. However, after a political regime change in 1868 (the Meiji Restoration), these local lords were forced to release their estates into the private market. This was a plausibly exogenous shock providing large lots to the Tokyo land market.

Furthermore, a particular central Tokyo area allows us to exploit a discontinuity in historical land use due to the central government's zoning before 1868. Specifically, around the beginning of the 17th century, the Tokugawa shogunate, Japan's feudal military government

[2]We confirm this relationship using data for Tokyo (Figure A.1(a)). In addition, we observe a similar pattern between building height and footprint for New York: using height and footprint data, we plot them in a similar manner to Figure A.1(a). The result shows a positive relationship between footprint and height. Moreover, assuming 4 m per story, the 120 m-or-higher group in New York corresponds to the 30-story-or-higher group in Tokyo, both of which have a very similar percentile of footprint (see Figure A.1(b)). These results imply that the relationship in Tokyo (Figure A.1(a)) is not solely due to earthquake risk in Japan.

[3]White (1988), Brownstone and Vany (1991), Tabuchi (1996), and Brooks and Lutz (2016), for example.

that preceded the Meiji period, designated the western half of newly developed areas to local lords' estates and the eastern half to commoners. When the Shogunate further reclaimed land to the east, the newly reclaimed land became the local lords' estate zone. These newly developed areas were in lowlands close to the seashore at the time, and therefore, are likely to share similar characteristics. Lot size can have spillover effects to surrounding cells, but by examining the effect using this boundary, we can estimate the direct effect of large lots on economic outcomes a lá Turner et al. (2014).

Second, Tokyo provides datasets covering the historical and modern periods. We can keep track of land prices or lot fragmentation over time since the Meiji Restoration, when the modern property system was introduced to determine initial lot size. These data encompass the entire process of Tokyo's transformation from a historical castle city with low-rise brick buildings to a modern megalopolis with skyscrapers. We can also measure the location and height of all buildings in today's Tokyo. This enables us to study the nature of lot persistence and transaction costs in an important city under different economic environments.

We analyze the full sample using ordinary least squares (OLS) with geographical control variables and, for a cleaner identification, we employ a regression discontinuity (RD) design using the clear zoning boundary for a particular area of the sample. The results of both approaches consistently show lot size persistence: the presence of local lords before 1868 results in larger lots in 2011. We also find that larger lots facilitate urban development today: these areas have taller and fewer buildings, and higher land prices. We observe a stark contrast between the local lords' estates zone and the control zone in the RD analysis: most of the skyscrapers are located in the local lords' estates zone, for example. This persistence and its economic effects contrast with the prediction of the Coase theorem without transaction costs (Coase, 1960), whereby the initial allocation of property rights does not affect long-run outcomes.

To investigate a potential benefit of large lots through agglomeration economies, we also examine the effect of local lords' estates on firm productivity using firm-level microdata in 2017 with OLS and RD analyses. We find a positive effect on revenue per worker, a proxy of total factor productivity (TFP). Furthermore, we find that this effect is higher in the upper quantiles, implying that the effect on firm productivity is through the agglomeration benefits channel, rather than the exit of less productive firms (the selection channel).

Next, we analyze the mechanism by which lot size affects land prices. We find a positive effect on land prices in the 2010s, but the sign of this effect may change depending on the technological environment, such as the possibility of constructing skyscrapers. To investigate this point, we examine the effect on lots and land prices before WWII, when Tokyo had no skyscrapers and industries were less knowledge based.[4] We find that local lords' estates decreased the number of lots, but had *negative* effects on land prices. We also find that the effect on land prices became zero in 1972 and turned positive in 1983, suggesting that before WWII, there were split frictions: lots in local lords' estates were too large for optimal land use, but were not split owing to split costs. However, after WWII, these large lots obtained advantages from technological change (i.e., the emergence of skyscrapers and the transition to the knowledge economy) and assembly costs. Firm productivity analysis shows a consistent pattern with this finding: quantile regression results show weaker effects on firm productivity in 1993 when buildings were shorter than in 2017. This difference between 1993 and 2017 is attenuated when we control for the height of buildings. These results suggest that the value of a large lot can change according to the technological environment (i.e., positive effects arise only after the 1970s with increased high-rise buildings).[5]

Because the effect in the highly productive area will be particular interest for policymakers, we compare the heterogeneous effects between the core area and the non-core area.[6] Lot size persistence and its related effects may not exist in the core area because the benefit of assembly by constructing high-rise buildings exceeds the transaction costs, as pointed out in Coase (1960).[7] However, the result is inconsistent with this view: we find lot size persistence and its effect on land use today only in the core area. The estimated impact on the land price in the RD analysis is 153% in the core area, which is a lower bound of the transaction costs

[4]The high-rise buildings before WWII typically had only 7 to 8 stories. A notable exception was the *Ryounkaku* Tower, which stood at 52 meters and had 12 stories. However, it collapsed during the Kanto earthquake in 1923. The first building in Tokyo to exceed a height of 100 meters is the *Kasumigaseki* Building, as further explained in the background section.

[5]This also suggests that the positive effect on land prices in the main results is not driven by time-invariant location-specific effects.

[6]For the OLS, we define the area inside the *Yamanote* loop line, which connects the major hub stations of regional and urban railway/subway services such as *Shinjuku*, *Shibuya*, and (central) Tokyo station, as the core area. Its area, 60 km^2, roughly corresponds to the area of Manhattan. For the RD analysis, we separate the border line into two parts: close to and far from the core area.

[7]Coase (1960) states that "it is clear that such a rearrangement of rights will only be undertaken when the increase in the value of production consequent upon the rearrangement is greater than the costs which would be involved in bringing it about."

to assemble land in the control group. By contrast, lot size persistence in the non-core areas had disappeared by the 1980s. The effects on lot size and land price suggest that this contrast stems from a mix of two factors: first, the non-core areas transitioned to the skyscraper age later than the core areas; second, lots in these areas were split due to economic benefits and/or inheritance among heirs. As a result, the former local lords' estates in the non-core areas were fragmented by this shift to such an extent that, by 1986, lot sizes in these areas were no longer distinguishable from those in other parts of the city—unlike in the core areas. This absence of 150-year lot size persistence in the non-core area is consistent with other studies in the rural/suburban land market examining similar periods (Bleakley and Ferrie, 2014; Finley et al., 2021; Smith, 2025).

The high assembly costs in the core area is detrimental to city growth, and can be explained by two types of channels. One is that the high potential gain of assembling land may endogenously increase transaction costs by intensifying landowners' strategic behavior in their negotiation of assembly costs, which is called the hold-out problem in the literature (Miceli and Sirmans, 2007; Brooks and Lutz, 2016; Grossman et al., 2019). Expected higher land price growth in the core area will also incentivize them to postpone the negotiation. Other characteristics than the potential benefit of assembly may play a role. For example, landowner or land use may be highly heterogeneous in the core area, and thus landowners may face difficulties in collective action (Olson, 2003; Lindenthal et al., 2017). Although we cannot quantify these channels, the results suggest a large role of transaction costs in the urban core land market, which is against the natural conjecture that the large economic potential can overcome the cost of assembly.

As robustness checks, we first examine the coefficient stability analysis (Oster, 2019), finding largely robust results against unobserved confounders. Next, we consider other potential channels to explain the main results. For example, lower transaction costs might have facilitated public infrastructure construction and increased amenities. In addition, the presence of local lords' estates might affect construction costs of buildings by road width, the size of the blocks (area surrounded by roads) or floor-area ratio (FAR) regulation. Also, the shocks in WWII such as land use change, or owner change caused after WWII might explain the reversal of fortune. Although we do not exclude these channels, we find that controlling for these factors does not change the main results qualitatively. We also further examine the robustness for alternative specification choice in regression equation or data construction using 200 m-level data, but none of these alter the results.

Our study contributes to the literature on the role of transaction costs in urban redevelopment. Past studies consider coordination problems in redevelopment (Hornbeck and Keniston, 2017; Owens et al., 2020), demolish costs (Siodla, 2015), and delays owing to litigation (Gandhi et al., 2021), for example.[8] We find that the transaction costs incurred in changing lot sizes can generate lot size persistence and affect economic activities over 150 years, particularly in the core area, which is a novel finding in the literature.[9] These results are linked to recent studies on the formalization costs of slums (Gechter and Tsivanidis, 2018; Harari and Wong, 2025b; Michaels et al., 2021). These studies discuss the role of weak property rights in slums limiting their land mobility and find its negative impact on urban development. On the other hand, our results in Tokyo suggest even if people in slums are entitled to strong property rights, it may not lead to urban development because slums, often dense and fragmented, face assembly costs at redevelopment, as Glaeser (2021) discusses.

We also contribute to the literature on historical persistence. The literature has investigated deep roots of economic growth or cultural traits (Alesina and Giuliano, 2015; Nunn, 2020; Voth, 2021). Spatial economic distribution is no exception, showing persistence due to natural endowments or man-made advantage such as infrastructure or larger population (Davis and Weinstein, 2002; Redding and Sturm, 2016; Bleakley and Lin, 2012; Michaels and Rauch, 2018; Brooks and Lutz, 2019; Allen and Donaldson, 2022; Lin and Rauch, 2022). We examine the lot size in an urban area as an underinvestigated man-made factor and quantify transaction costs to change lot size using the impact on land price. We also find a unique role of technological progress in persistence and its impact on the economy in a broader sense. Although persistence will not be survive under many changes of economic environment (Giuliano and Nunn, 2021), the comparison between the core and non-core areas suggests that rapid technological change rather helps a historical difference to be preserved. Moreover, our analysis reveals a "reversal of fortune" (cf. Acemoglu et al. (2002) and Nunn and Puga (2012));

[8] As a related study, Libecap and Lueck (2011) compare two land demarcation regimes, (1) metes and bounds and (2) the rectangular system, in Ohio and find a positive impact of the rectangular system on farmland value. Meanwhile, we examine an urban setting in which larger lots may have large benefits through the construction of tall buildings.

[9] As discussed earlier, we are not aware of studies on lot size persistence and its economic impact in the context of cities.

the effect of lot size on land price alters after the skyscraper age, implying that technological shock changes which transaction costs (split or assembly) matter.

Our study also offers a perspective on the conflicting results found in studies of lot size and land prices. Some studies find a negative premium of large lots (White, 1988; Brownstone and Vany, 1991; Henderson et al., 2025), while others find a positive premium (Tabuchi, 1996; Brooks and Lutz, 2016).[10] Our study examines the relationship between lot size and land prices based on a natural experiment and compares the relationship in different periods of the same location to shed light on how lot size premia arise.

We also contribute to the recently growing literature on building heights (Ahlfeldt and McMillen, 2018; Ahlfeldt and Barr, 2022; Liu et al., 2024). We investigate the obstacles to constructing high-rise buildings (Barr et al., 2011; Jedwab et al., 2022; Ahlfeldt et al., 2023), which is key to enhancing the benefits arising from the density of economic activities (Ahlfeldt et al., 2015). We offer a unique contribution to the literature by showing a very close link between lot fragmentation and tall buildings. This link is discussed in the previous literature (Barr, 2016), but systematic evidence is scarce. We also find that because lot fragmentation prevents the construction of tall buildings, the cost of lot fragmentation becomes more salient with the availability of construction technology for tall buildings.

Our study belongs to the expanding literature that analyzes cities with historical granular datasets (Hanlon and Heblich, 2021), such as O'Grady (Januray, 2014), Hornbeck and Keniston (2017), Brooks and Lutz (2019), Ambrus et al. (2020), Heblich et al. (2020), Harari (2020), Baruah et al. (2021), Dericks and Koster (2021), Heblich et al. (2021), Harari and Wong (2025a), Baldomero-Quintana et al. (2025), Yamagishi and Sato (2025).[11] Our study offers a new phenomenon, persistent effect experiencing a reversal of fortune: historically determined lot size differences persist, but the negative effect of lot size became positive about 100 years after the original shock due to the rise of the knowledge economy and the development of construction technology.

The rest of this paper is organized as follows. Section 2 explains our conceptual framework. Section 3 provides background information on land use in Tokyo. Section 4 describes the data

[10] As a related study, Leonard and Parker (2021) find that land fragmentation decreases oil production in North Dakota because shale extraction is profitable only when a sufficient amount of contiguous land is used.

[11] See Davis and Weinstein (2002), Bleakley and Lin (2012), and Hanlon (2017) for studies using historical cross-city datasets, for example.

and the empirical strategy. In Section 5, we present the results. In Section 6, we briefly discuss policy implications. Section 7 concludes.

2 Conceptual Framework

2.1 Lot Size Persistence and Land Price Effects

To predict how local lords' estates affect lots and land prices in the long run, we set up a simple two-period framework of lot size, transaction costs of changing lot sizes, and land values by extending the framework in Brooks and Lutz (2016) as follows.

Suppose there are two commercial locations at period t, i and j, in a city. Location i has a large lot with a size of $2a$ (local lords' estates), while j has two small lots with a size of a (other land use). The value of land is given by $V_t(a) = A_t a^{\beta_t}$ where $\beta_t \geq 0$. In reality, $V_t(a)$ can take a more complicated function, and there will be an optimal a^* to maximize the value per area. However, we focus on the value of a and $2a$, and β_t is only to capture which of a or $2a$ makes the value per area higher rather than how the function V_t is shaped in the whole range. $\beta_t \lesseqgtr 1$ captures whether large lots are suitable for development: when tall and large buildings are not available, β_t will be less than one, because we need additional roads to obtain access to small buildings in a large lot, for example (lot size discount). When high construction technologies become available and important, however, β_t will be larger than one (lot size premia). A_t represents local economic potential.

The lots are owned by landowners, and developers can negotiate with the landowner to assemble the small lots in j into one big lot. This entails transaction costs, $C_{a,t}$. Therefore, when $V_t(2a) - 2V_t(a) > C_{a,t}$, small lots will be assembled. Similarly, the large lot in i can be split into two small lots with a fixed cost, $C_{s,t}$. Therefore, when $2V_t(a) - V_t(2a) > C_{s,t}$, the large lot will be split. At this point, we use a simple representation $C_{*,t}$ for transaction costs, but in the empirical analysis later, we will further consider its heterogeneity in A to interpret the results in high productivity areas and low productivity areas.

By the end of period $t = 1$, this assembly or split process ends (if any) and the lot sizes in location i and j will be carry over to the beginning of the next period $t = 2$. In our context, $t = 1$ refers the period when skyscrapers were not available, and $t = 2$ refers the period when skyscrapers became salient. Therefore, β_1 is less than one, and β_2 is larger than one.

Using this framework, we predict what will happen to the lot size distribution and land price at $t = 1$ and $t = 2$. First, we can summarize the prediction for $t = 1$ as follows.

1-1 **No Short-term Lot Size Persistence:** When split costs are small ($C_{s,1} \leq 2V_1(a) - V_1(2a)$), split happens. Therefore, initial lot size difference disappears, and land price per area will be the same between i and j.

1-2 **Short-term Lot Size Persistence:** When split costs are too high ($C_{s,1} > 2V_1(a) - V_1(2a)$), there is no split. Therefore, initial lot size persists to the beginning of $t = 2$, and larger lots have lower land prices per area (lot size discount).

Although we assume static decisions of actors for simplicity, a noteworthy discussion will be whether actors could anticipate the coming age of skyscraper ($\beta_1 < 1 < \beta_2$) at $t = 1$ and consider this option value to hold a large lot. If they could anticipate, and if the option value is much larger than the static benefit of split, large lot may be kept and have higher land price per area. Therefore, the sign of the effect on land price at $t = 1$ is informative to infer whether they incorporate such a dynamic benefit of large lot.

We now predict what will happen at $t = 2$. If the lot size difference disappears at $t = 1$ as in (1-2), there will be no long term effect at $t = 2$ as well because the lot size difference already disappeared at $t = 1$. If the lot size difference persists to the beginning of $t = 2$ as in (1-1), lot size persistence and lot size *premia* will be observed in a similar manner as at $t = 1$. Formally,

2-1 **No Long-term Lot Size Persistence:** When [1-1] happens, there is no long-term lot size persistence at $t = 2$ because the lot size difference already disappeared at $t = 1$.

2-2 **Long-term Lot Size Persistence:** When [1-2] happens and assembly costs are too high ($C_{a,2} > V_2(2a) - 2V_2(a)$), there is no assembly. Therefore, initial lot size persists to the end of $t = 2$, and larger lots have higher land prices per area (lot size premia).

2-3 **Only Short-term Lot Size Persistence:** When [1-2] happens and assembly costs are small ($C_{a,2} \leq V_2(2a) - 2V_2(a)$), assembly happens. Therefore, initial lot size difference disappears, and land price per area will be the same between i and j.

2.2 Land Price Difference as Lower Bound of Transaction Costs

This framework guides us to interpret the price difference as the lower bound of the transaction costs to change lot size. For example, in the case of [2-3], since $C_{a,2} \leq V_2(2a) - 2V_2(a)$, we can interpret the price difference $V_2(2a) - 2V_2(a)$ as the lower bound of assembly costs to change lot size ($C_{a,2}$). If transaction costs are smaller than the price difference, lot size persistence will disappear and we will not observe the price difference as discussed in Brooks and Lutz (2016).[12]

In the real data, actual lot sizes are not proportional to each other as in the above example (a and $2a$). Nevertheless, we can interpret the price difference as to change the lot shapes from small fragmented lots in one cell to larger consolidated lots in another cell. This might entail both assembly and split to modify the shape of lots, but, we use the term "assembly" when we make the lots less fragmented within a cell.

Note that lot size effect may generate externalities to adjacent areas, which complicates the interpretation of the price difference as the lower bound of transaction costs. Nevertheless, if we employ regression discontinuity design to identify the lot size effect, we can isolate the pure lot size effect from externalities applying the insight of Turner et al. (2014), as discussed below.

Consider two adjacent zones with lot size a and $2a$, respectively. Each location has available area $2a$. Let z index distance from the zoning boundary, where locations with $z \in (-\bar{z}, 0)$ face lot size a, while those with $z \in [0, \bar{z}]$ face lot size $2a$. The land value function takes the form $V(a, z) = A(z) \cdot a^{\beta} \cdot EXT(z)$, where a is the lot size and $EXT(z) = \int_{-\bar{z}}^{\bar{z}} w(|z' - z|) \cdot a(z') dz'$ captures externalities from the spatial distribution of lot sizes. The weight function $w(\cdot)$ determines how lot size at adjancent location ($a(z')$) affects land value at the location z.

Under this setup, regression discontinuity design estimates the price discontinuity: $V(2a, 0^{+}) - 2V(a, 0^{-})$. Since externalities $EXT(z)$ are continuous across the boundary, this difference equals $A(0)[(2a)^{\beta} - 2a^{\beta}]$, isolating the pure lot size effect from externality effects. This approach therefore identifies the direct impact of lot size and, as previously, provides a lower bound on the transaction costs that prevent adjustment to the preferred lot size.

[12] Brooks and Lutz (2016) distinguish "good-institution" transaction costs such as demolish costs and "bad-institution" transaction costs such as hold-out costs to define the surplus. We treat the sum of them as the transaction costs to predict the impact on the lot size and land price.

3 Background

We first describe the historical background of local lords estates and urban land market across three distinct periods (1600–1868, 1868–1945, and post-1945), and then discuss population growth in Tokyo, related regulations, and anecdotes on transaction costs.

3.1 During the Edo Period: 1600–1868

There are several noteworthy historical facts about local lords' estates during this period, as summarized below.[13]

First, Tokyo was a newly developed city, shaped by political forces. Although originally located in the middle of a marsh, it became the political capital after Tokugawa Ieyasu secured decisive victories in 1600 and 1615. Importantly, the political regime under his government (the Tokugawa Shogunate) required all local lords to maintain estates in Tokyo for political interaction.[14] Their vassals also resided in Tokyo to support them, and the private sector sustained them by transporting consumption goods from Osaka, which led to population growth. Therefore, economic factors predating the Edo period play a minimal role in this study.

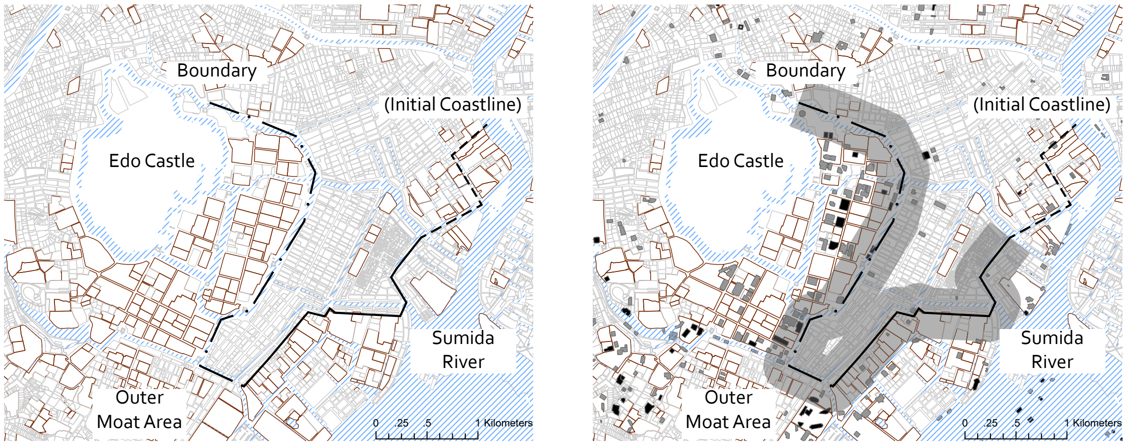
Second, there were the clear boundaries between the local lords' estates and other types of land use, which we exploit for our RD design. The Shogunate established a boundary between the commoners' zone and the local lords' estate zone on the east side of Edo Castle (the dash-dot line in Figure 1(a)). Facing increased demand for land, the Shogunate also reclaimed coastal areas and allocated additional space to local lords in the early 17th century. As a result, the initial coastline (the solid line in Figure 1(a)) became a new boundary between the local lords' estates and the commoners' zone, except in the northwestern section where some estates happened to straddle both sides of the boundary (the dashed line in Figure 1(a)). This provides an additional discontinuity for the RD design.

It is worth noting that the Shogunate also developed land outside the outer moat (the "outer area"). In this area, local lords could choose the location of their estates, but they

[13] See Kawasaki (1965), Suzuki (2000), and Matsuyama (2014) for a more detailed historical context.

[14] In particular, demand for land increased because Tokugawa mandated that all local lords (approximately 250) alternate between residing in Tokyo and in their home domains, while their families remained in Tokyo as hostages. These policies significantly raised demand for local lords' estates.

Figure 1: Zoning in the Initially Developed Area



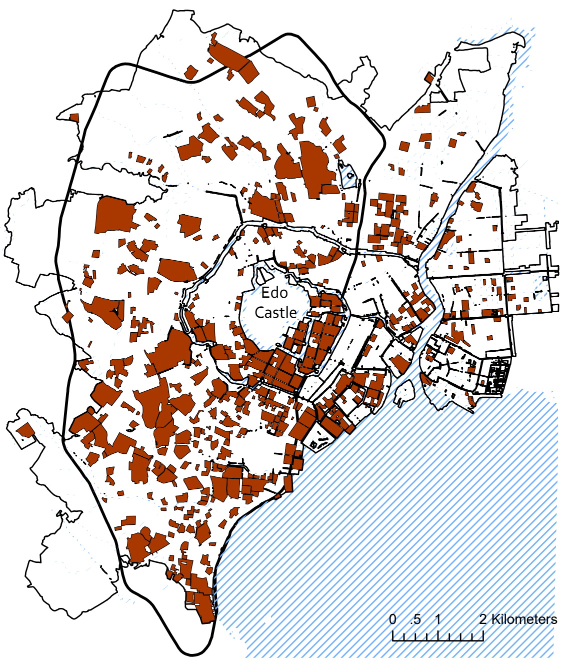
(a) (b)

Notes: Polygons with red borders are local lords' estates. The U-shaped line in both figures is the boundary between the local lords' estate zone (the outer side) and the commoners' zone (the inner side). The dash-dot part is the initial boundary between the zones. The solid and dash parts are the initial coastline. The solid part became part of the boundary after the second reclamation. The gray area in the right figure shows a 250-m buffer, which we use for the local randomization regression analysis. Another line in the right figure from south to north shows the overground railroad loop line (*Yamanote* line). In the right figure, we overlay high-rise buildings in 2011, indicated by black (more than or equal to 30 stories) and gray (15–29 stories) rectangles.

needed permission from the Shogunate to use the land. In this sense, the Tokugawa Shogunate maintained control over urban land use. However, unlike in the inner area, there is no evidence of a strict zoning policy. The location choices of local lords in the outer area were likely exogenous, conditional on locational and topographical characteristics (such as altitude), because the economy was still underdeveloped in the early 17th century. To address concerns about selection on unobservables, we complement the OLS analysis using the full sample with an RD approach.

Third, local lords constituted the wealthiest social class in Edo society. Their estates were substantially larger than other buildings, such as those of commoners, and they typically owned three estates for different purposes. As a result, approximately 20% of the land was occupied by local lords' estates, which were widely distributed across Tokyo (Figure 2).

Figure 2: Distribution of Local Lords' Estates



Notes: This map covers the whole of Edo's city area (*Sumibiki sen-nai*). Red areas represent local lords' estates. The thick solid line shows the *Yamanote* loop rail line.

3.2 Meiji Restoration and Pre-WWII: 1868–1945

Tokyo experienced significant economic and cultural growth during the Edo period, with its estimated population reaching approximately 1 million by the end of the 1860s.[15] The Meiji Restoration brought about a major political shock that profoundly affected both Tokyo's urban trajectory and the local lords' estates. For the purpose of this study, these shocks can be summarized along two main dimensions.

First, the Meiji Restoration disrupted Tokyo's premodern growth trajectory. After the collapse of the Tokugawa Shogunate, local lords were no longer required to reside in Tokyo, and many of their estates became vacant. Around half of Tokugawa's bureaucrats relocated to Shizuoka, where Tokugawa himself had been transferred—approximately 150 km from Tokyo. As a result, the samurai class, which had comprised a large share of the city's population and sustained its economy, migrated out of Tokyo. The local economy, heavily dependent on the samurai, subsequently collapsed. Moreover, part of the city became a battlefield during the civil conflict of the Meiji Restoration (notably the Battle of Ueno). Given this economic and political turmoil, it was initially uncertain whether Tokyo, Osaka, or Kyoto—three major urban centers—would be chosen as the capital. Ultimately, the new government selected Tokyo, and the city entered a phase of renewed economic growth as Japan's modern economy began to take shape. In this sense, the Meiji Restoration can be regarded as the starting point of modern Tokyo's development.

Second, many local lords' estates were transferred to the private sector. While local lords typically owned three estates during the Edo period, the Meiji government allowed them to retain only one estate in Tokyo and confiscated the remaining ones. In the core area of *Kasumigaseki*, the government converted these estates into administrative offices and military training grounds. The remaining properties were either sold or granted to private entities.

It is important to note that there was continuity in lot boundaries across the Edo and Meiji periods. Alongside these land redistribution measures, the Meiji government introduced a modern property rights and taxation system (*chiso kaisei*) and formalized lot boundaries based on pre-Restoration land use. As a result, the former local lords' estates generally retained their large lot sizes in the early Meiji period.

[15] There are many estimates of the population of Edo, but most range from 1 million to 1.5 million. See, for example, Kito (1989).

3.3 After WWII: 1945–

After 1945, the descendants of local lords were subjected to another significant institutional shock. Despite the regime change in 1868, former local lords had retained their elite status under the new Meiji regime as noblemen (*kazoku*), enjoying privileges such as seats in the House of Peers.

However, in 1946, the General Headquarters (GHQ) of the Allied Occupation introduced a highly progressive asset tax aimed at dismantling the political and economic elite that had supported Imperial Japan. In addition, the GHQ abolished the institutional privileges of the nobility. Numerous anecdotes describe how former local lords were forced to sell their properties to meet tax obligations (Sakai, 2016).

As a result, most of the former local lords' estates had been transferred to the private sector by this period, with the exception of those in the administrative district, which remained in government use.

A related institutional reform was the revision of the Civil Code. Prior to 1945, the eldest son inherited the entirety of household assets as the head of the family. After 1945, inheritance laws were amended to grant equal rights to all siblings. This legal change led to a widespread trend of lot fragmentation, further reshaping the urban land structure in postwar Tokyo.

3.4 Population Growth and Related Regulations

After Tokyo became the capital of Japan in 1871, its population recovered and began to grow. In the eight wards of central Tokyo, the residential population, which had been 0.89 million in 1883, rose to 2.17 million by 1920 (Tokyo Hu, 1887, 1923). Since WWII, the population became stable (in 2015, it was 1.95 million), but the daytime population (number of people present during normal business hours) has been increasing (2.95 million in 1955 vs. 4.72 million in 2015), implying that business activities have continued to expand (Tokyo To, 2015). Old Tokyo is now the center of Greater Tokyo, which has about 38 million inhabitants and is the biggest megalopolis in the world.

Post-WWII economic growth increased demand for high-rise buildings. In 1952, the government deregulated the height restriction that had prohibited buildings over 31 m since 1919. In 1968, the first skyscraper, the *Kasumigaseki* Building, was constructed. The number of buildings over 30 stories has been increasing in Tokyo's 23 wards, rising from 32 in 1990 to 86 in 2000, 260 in 2010, and 365 in 2020 (Tokyo Shobo Cho Kikaku Chouseibu Kikakuka, 1990–2020).

3.5 Anecdotes of Assembly and Split Costs

Several anecdotes suggest the presence of high assembly costs, consistent with our argument. A large conglomerate, *Mitsui*, was originally an exchange trader and *kimono* trader in the Edo period, and held a small lot as its head office in a former commoners' area in the CBD (*Muromachi*). After *Mitsui* became a large conglomerate, it planned to assemble lots nearby to expand its headquarters, but it did not succeed and faced opposition by landlords. It finally completed the planned assembly in 1969, but lots in *Muromachi* remain fragmented.

Meanwhile, a former local lords' estate area in the CBD (just about 1 km from *Muromachi*) has been owned by another large conglomerate, *Mitsubishi*, since the 1890s, when it bought the land from the government. Lots are larger than in *Muromachi*, and there have been large-scale developments such as Western-style brick buildings before WWII and skyscrapers today. Comparing these two close but different areas, Washizaki (2015) suggests that lot fragmentation is a potential reason for the low number of skyscrapers in Tokyo.

As another example, the Mori Building Company planned a large-scale (5.6-ha) redevelopment in *Akasaka* in 1967 and obtained a small lot. Although the government approved the plan, it was not until 1983 that it could obtain permission from landlords and start the construction of the building (Akasaka ARK Hills). In 1986, the building finally opened. The company also planned a similar redevelopment project in another area, and it took 17 years to open the building (Roppongi Hills, opened in 2003). The former CEO looks back on these developments as a project that would have been impossible if the company had not been family owned or long-sighted (Mori, 2009).

There are also anecdotes suggesting the split costs. When a landowner divided a large lot into small lots to construct small buildings, they had to provide private roads to each small lots for accessibility (Mitsubishi Estate Co., Ltd., 1993). Also, the urban land market had a large friction in matching sellers and buyers. In an interview to a broker about Tokyo land market in the 1920's, he recalls that he relied on community network or posting newspaper advertisements to find his transaction partner (Housing Research and Advancement Foundation of Japan, 1994). Similarly, a survey to brokers in 1947 reveal that the majority of brokers had only about 5-20 percent as sucessful land transaction rate (Institute of Social Science, the University of Tokyo, 1952). Though this fact does not directly mean that finding multiple buyers is harder than finding single but rich buyer that can afford a large lot, it indicates a large friction in land market.

4 Data

We constructed a 100 m*100 m-cell-level dataset spanning 150 years based on scanned printed maps and other electronic data.[16] We constructed the dataset within the old Tokyo's (Edo's) city area, which covers and remains the center of economic activities in Tokyo during the Edo period. Among Japanese listed firms with their headquarters in Tokyo, the headquarters of 72% of firms are located in our sample area.[17] In this section, we present a table with definitions of the main variables and their sources (Table 1) and briefly explain the sources of the main variables. Panel A in Table 2 shows the descriptive statistics. For the firm-level microdata, we do not aggregate the data at the cell level to analyze firm-level locational or entry/exit choices and/or use firm-level information (i.e., industry) as control variables. Panel B in Table 2 shows the descriptive statistics in 1993 and 2017.

Land Usage before 1868 We digitized a map showing landownership in the 1850s. This map documented the types of ownership for each lot (local lords, bureaucrats, commoners, and other owners such as temples).[18] Figure 2 plots local lords' estates, showing they are well distributed across Edo city. Based on this map, we calculated the share of land owned by local lords for each cell. [19] Similarly, we calculated the share of areas covered by sea, a big river (*Sumida* river), and unbuilt land as control variables.

[16] This cell size roughly corresponds to the median of area of local lords' estates (13845 m^2).

[17] *Source:* `http://disclosure.edinet-fsa.go.jp`. These firms with headquarters in our sample area account for 35% of the total number of firms in Japan.

[18] We used georeferenced digital images of this map for creating shapefile (APP Company, ed, 2009). The primary sources are several maps published at that time, such as (Kageyama et al., eds, 1849-1862).

[19] An alternative and perhaps more natural treatment variable is the number of lots in the 1850s, but the map describes only blocks (area surrounded by roads) in the commoners' area without lot boundaries, and thus, we cannot count the number of lots from the map. Instead, in the robustness check, we employ the maximum lot size of local lords' estates as an alternative treatment variable.

Table 1: Definition of Variables and Their Data Sources

Variable	Definition	Data Source
Main variables		
Local Lords' Estates Share	The share of areas owned by local lords in the 1850s.	APP Company, ed (2009)
Number of Lots	The number of lots located (at least a part of the lot) in a cell.	Nishikawa and Nishikawa (1880), Tokyo Shiku Chosakai (1912), Uchiyama Mokei Seizusha, ed (1931-1935), TDi (2017)
Number of Buildings	The number of buildings located (at least a part of the building) in a cell.	Tokyo Metropolitan Government (2011)
Stories	The average number of buildings' stories in a cell. *(aboveground)* counts only the stories aboveground, whereas *(including underground)* includes the stories underground.	Tokyo Metropolitan Government (2011)
Log Land Price in 2012	The average of the road-level price factor by weighting the length of each road.	Research Center for Property Assessment System (2012)
Log Land Price in 1912, and 1931	The area-weighted average of the lot land price.	Nakai, ed (1880), Tokyo Shiku Chosakai (1912), Uchiyama Mokei Seizusha, ed (1931-1935)
Log Land Price in 1972 and 1983	The average of land prices.	Tokyo-to Takuchi Tatemono Torihikigyo Kyokai (1972) and Tokyo-to Takuchi Tatemono Torihikigyo Kyokai (1983)
Other variables		
Sea, Sumida River, or Unbuilt area	The share of each area in a cell.	APP Company, ed (2009)
Ground Type	The weighted average of earthquake risk.	Tokyo Metropolitan Government (2018)
Average Road Width	The length-weighted average width of roads in a cell.	Shobumsha (2018)
Hospital, University, Park, and Utility and Service facilities Share	The share of areas used for these purposes in each cell.	Tokyo Metropolitan Government (2011).
Distance to Station in (Year)	The distance in meters to the nearest station in each year.	Ministry of Land, Infrastructure, Transport and Tourism (2024)
FAR Regulations	The average of maximum floor-area ratio.	Tokyo Metropolitan Government (2011) and Shobumsha (2018)
Block Area	The average of blocks' (areas surrounded by roads) area.	Tokyo Metropolitan Government (2011)
WWII Destruction Share	The share of area destroyed during WWII air raids on Tokyo in each cell.	Ueno (1945)
Remaining Estates Share in 1931	The share of area owned by the descendants of local lords and used as their estate. in each cell	Kazoku Kaikan (1931)
Other Lords' Land / Military Use / Non-individual Landowner's land Share in 1931	The share of area owned by the descendants of local lords not as their estate / used as military infrastructure / owned by non-individual landowners in each cell.	Uchiyama Mokei Seizusha, ed (1931-1935)
Lon and Lat controls	This includes latitude, longitude, their squared terms, and their interaction term.	Centroid of each cell

Lots Cadastral maps are available for 1873, 1912, 1931, and 2011 (Nishikawa and Nishikawa, 1880; Tokyo Shiku Chosakai, 1912; Uchiyama Mokei Seizusha, ed, 1931-1935; TDi, 2017). We digitized or used these maps to calculate the number of lots within a cell. Panel A in Table 2 shows that the number of lots has increased over time, particularly after 1931. This increase is largely due to a change in the Civil Code as discussed in the background section.

Land Prices Before 1945, land prices were available for 1912, and 1931. The cadastral maps in 1912 and 1931 list the land prices for each lot. These lists have land prices (and land rental prices for 1931) so that we can calculate the area-weighted average land price for each cell.

These land prices are based on the evaluations used as the basis for land tax. When the Meiji government introduced the land tax, they evaluated each lot by referring to the market land price used in the Edo period. However, for land owned by local lords and bureaucrats, there were no market transactions during the Edo period. For this land, the price when the land was sold to the private sector by auction was used. When such land was transferred for free, the neighbor's land prices sold by auction to the private sector were used.[20]

In 1910, the government updated the land prices in cities using market land rental prices, and the data in 1912 contained this land price. The rental price was multiplied by 10 to calculate the land price. If it exceeded the previous land price by more than 18 times, the land price was reduced to avoid a drastic increase in the tax burden for landowners. In 1929, they again updated the land prices by simply using rental prices, which are published in Uchiyama Mokei Seizusha, ed (1931-1935).[21]

After 1945, the government started to use a different tax system. It first evaluated the place value at the road level and then multiplied it by lot-specific factors such as shape. Because lot-specific factors are automatically related to lot size, the road-level price is suitable to capture the effects of lot size on economic activities. The data in 2012 (Research Center for Property Assessment System, 2012) contain this road-level price, and we calculated the length-weighted average land price data within a cell.

The official land price data before the 1980s are not easily available, and thus, we complemented the land price data in 1972 and 1983 by using alternative source in private sector (Tokyo-to Takuchi Tatemono Torihikigyo Kyokai, 1972, 1983). These maps produced by the real estate agents' association record the estimated market value of land per area at each

[20]There might be a concern that local lords' estates were priced differently for political reasons. However, this way of selling their land suggests that the land price fairly reflects the market value (Fukushima, 1962). We also analyze whether such political consideration might change our results using whether landowners are former local lords' descendants in the landowner characteristics data of 1931.

[21]Uchiyama Mokei Seizusha, ed (1931-1935) lists both the land rental price and land price. When we regress the log of rental price on the log of land price at the lot level, we obtain 1.02 as the coefficient and 0.89 as R^2, implying that the land price well reflects market value. We use the land rental price as the land price data for 1931 throughout our analysis since the data coverage is better than land price data.

place.

Buildings The Tokyo Metropolitan Government has been producing an electronic map covering all the buildings and land usage in Tokyo every 5 years since 1986 for urban planning (Tokyo Metropolitan Government, 1986, 1991, 1996, 2001, 2006, 2011). From these maps, we calculated the number of buildings, total floor area provided, and average number of stories. We also confirm the positive relationship between the number of stories and footprints of buildings using data in 2011 (Figure A.1(a)). In addition, the government has been making electronic maps for land usage, from which we calculated the share of land used for business or residence.

Since the cadaster map is infeasbile to obtain between 1931 and 2011, we use the number of buildins in 1986 as a proxy of the number of lots in 1983 when the land price is available. This proxy will capture the lot fragmentation when the high rise buildings had just became salient.[22]

Other Variables We use other geographical variables as control variables, because geography may affect the supply of buildings (Saiz, 2010) and determine the location of local lords' estates. Altitude data are available from the Ministry of Land, Infrastructure, Transport and Tourism (2024). We calculated the average and standard deviation of altitude in a cell: higher places may attract richer people and flatter places may be suitable for large-scale development. We also controlled for earthquake risk. Tokyo Metropolitan Government (2018) assesses several types of risk (e.g., building materials) at the community level, and we used the risk resulting from the type of ground to focus on purely geographical risks. We took the area-weighted average of these community-level risks at the cell level.

Firm-level Microdata To analyze firm-level productivity and firms' locational or entry/exit choices, we used a firm-level dataset in our sample area. We obtained the data from the Teikoku Databank Center for Advanced Empirical Research on Enterprise and Economy (TDB-CAREE) at Hitotsubashi University (Teikoku Databank, Ltd., 1993, 2017). Teikoku Databank is a major Japanese credit research company, and this dataset covers most Japanese

[22] When we regress the number of lots in 2011 on the number of builings in 2011, the coefficient is 0.83, and $R^2 = 0.72$. We also find that this coefficient is close to 1 when they are fragmented. See Figure A.2.

firms. These data contain basic information such as industry, locations of headquarters, and the number of workers and revenue, so that we could construct revenue per worker, a proxy of TFP. The data covers the period from 1993 to 2017.

Table 2: Descriptive Statistics

	Observation	Mean	SD	Min	Max
Panel A: Cell-level Variables					
Local Lords' Estates Share	9761	0.190	0.330	0	1
Number of Lots in 1873	5530	12.15	10.02	1	80
Number of Lots in 1912	8133	14.38	10.11	1	86
Number of Lots in 1931	7830	17.21	11.65	1	129
Number of Lots in 2008–2011	9101	55.99	36.57	1	202
Land Price in 1912 (Thousand Yen)	7122	0.0485	0.0622	5.69e-08	0.612
Land Price in 1931 (Thousand Yen)	7024	0.0391	0.0369	0.000000711	0.360
Land Price in 1972 (Thousand Yen)	6071	573.2	530.6	91.30	6640.0
Land Price in 1983 (Thousand Yen)	3276	1512.3	1492.1	249.7	22650.2
Land Price in 2012 (Thousand Yen)	8971	908.1	1516.5	98	16658.2
Stories (aboveground) in 2011	9542	5.764	4.687	0	56.00
Number of Buildings in 2011	9542	35.17	25.22	1	136
Number of Buildings $\geq$ 30 Stories in 2011	9542	0.0380	0.214	0	3
Panel B: Firm-level Variables					
Log Revenue per Worker in 2017	80473	3.363	1.167	-3.466	12.48
Log Revenue per Worker in 1993	85313	3.579	1.085	-3.020	12.04

5 Results

We first show the main results analyzing the effect of local lords' estates (an exogenous factor to explain the initial lot size difference) on the outcomes of lots, buildings, and land prices in our modern data We also present the effects on firm productivity using firm-level microdata as suggestive evidence for the agglomeration benefits generated by large lots. Then, we analyze how the effects vary with time and space to shed light on the mechanism of lot size persistence and lot size effect. Finally, we conduct robustness checks such as examining other possible mechanisms that might explain the main results.

5.1 Main Results

OLS using the full sample Figure 3 shows the baseline results from the OLS regressing the outcome variables on the bins of the local lords' estates share variable by 10 percent using no local lords estates share cells as the reference. As a baseline specification, we controls for the distance from the center (Edo Castle or today's Imperial Palace) and its squared term, the share of sea, Sumida river, and unbuilt areas in the 1850s, a polynominal function of latitude and longitude, and a dummy variable indicating the inside of the *Yamanote* loop line. This loop-line railway connects terminal stations in Tokyo, and the area inside the circular line is generally recognized as the center of Tokyo.

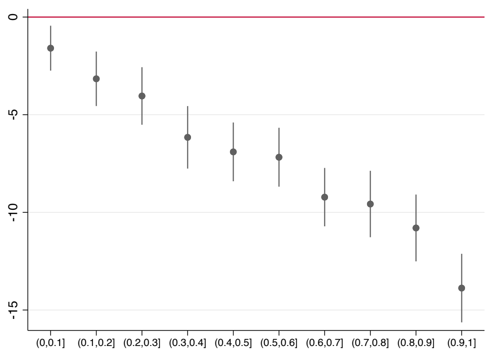
Panels A and B show that the greater the proportion of local lords' estates, the less lots are fragmented, both for 1873 and for 2008–2011. The point estimate shows that if a cell is occupied by local lords' estates, it decreases the number of lots in the 2010s by about 30, approximately, the half of the mean, implying substantial lot size persistence.

In Panels C to E of Figure 3, we find negative impacts on the number of buildings and positive impacts on the number of stories and tall buildings. Taken together, the presence of local lords' estates enable large-scale developments with greater footprints, which is necessary for constructing tall buildings. As a result, we find that land prices increase in Panel F. The point estimate shows a large impact: if more than 90% of a cell is occupied by local lords' estates, the land price increases by more than 20%. As discussed in the conceptual framework, this is the lower bound of the transaction costs to assemble land, indicating a non-negligible role of transaction costs.

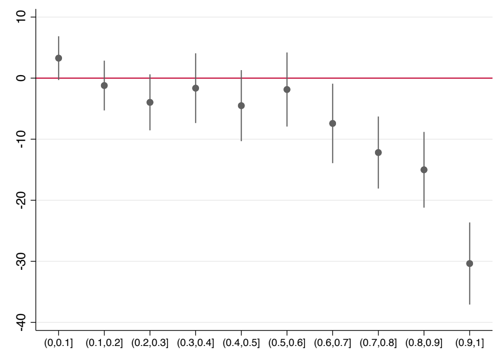
Because the relationships shown in Figure 3 are fairly monotonic, we employ a simple linear specification using the local loads estates' share variable instead of the bins for the subsequent analysis. We first check the robustness of the results. Column (1) of Table 3(a) shows the baseline results using the linear form. As a baseline specification, column (1) controls for the same set of controls as in Figure 3, showing qualitatively the same results in Figure 3. In column (2) of Table 3(a), we additionally control for the mean and standard deviation of altitude, as higher places may attract richer people, whereas flatter places may be suitable for large-scale development. In column (3), we also control for earthquake risk, which would affect the construction cost and the decision to build high-rise buildings. The results remain largely unchanged by adding these controls.

Overall, these results indicate lot size persistence and lot size premia. This corresponds to the following parameters of the conceptual framework described in Section 2: $\beta > 1$, the land value per area is increasing in lot size, and high C_a, high transaction costs to assemble

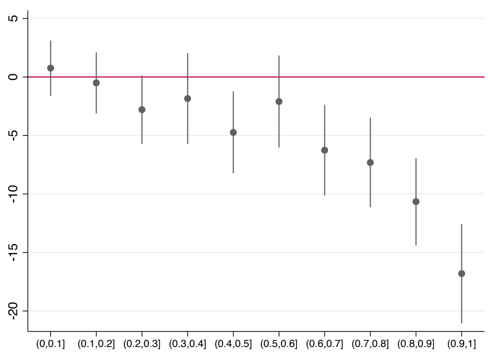
Figure 3: Main Result using Nonparametric Regression



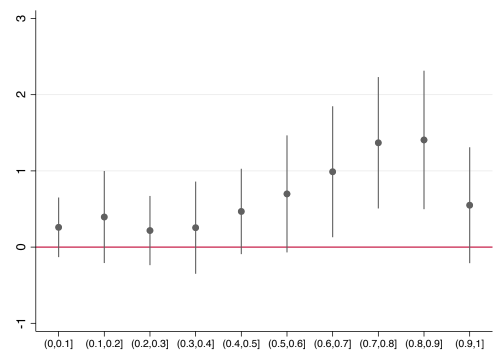
(a) Number of Lots in 1873



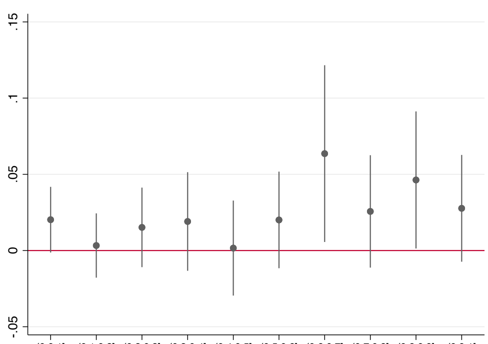
(b) Number of Lots in 2008–2011



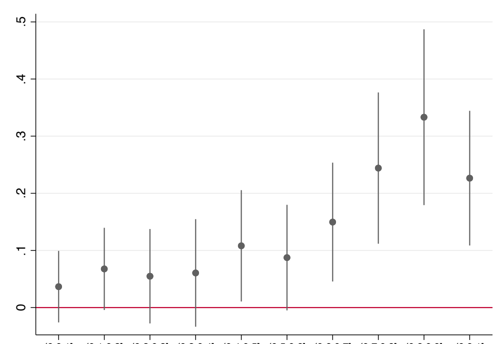
(c) Number of Buildings in 2011



(d) Stories (aboveground) in 2011



(e) Number of Buildings $\geq$ 30 stories in 2011



(f) Log of Land Price in 2012

Notes: In each panel, we regress the outcome variable indicated as figure titles on the bins of local lords' estates share with controlling for the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms. We show the point estimates and CIs allowing correlation within 300 m for each bin.

land.

Table 3: Regression Analysis with Linear Specification

	(1)	(2)	(3)
Panel A: Number of Lots in 1872 (N: 5530)			
Local Lords' Estates Share	-13.44***	-13.32***	-13.34***
	(0.884)	(0.869)	(0.874)
Panel B: Number of Lots in 2008–2011 (N: 9101)			
Local Lords' Estates Share	-25.43***	-23.49***	-23.55***
	(3.277)	(3.179)	(3.182)
Panel C: Number of Buildings in 2011 (N: 9542)			
Local Lords' Estates Share	-14.16***	-13.26***	-13.31***
	(2.046)	(2.013)	(2.013)
Panel D: Stories (aboveground) in 2011 (N: 9542)			
Local Lords' Estates Share	0.790**	0.908***	0.884***
	(0.342)	(0.346)	(0.340)
Panel E: Number of Buildings ≥ 30 Stories in 2011 (N: 9542)			
Local Lords' Estates Share	0.0321**	0.0331**	0.0321**
	(0.0158)	(0.0161)	(0.0158)
Panel F: Log Land Price in 2012 (N: 8971)			
Local Lords' Estates Share	0.240***	0.246***	0.235***
	(0.0623)	(0.0630)	(0.0588)
Baseline Controls	Yes	Yes	Yes
Altitude/Ruggedness	No	Yes	Yes
Ground Type	No	No	Yes

(a) OLS

	(1)	(2)	(3)
Panel I: Local Lords' Estates Share (N: 351)			
Local Lords' Estates Zone	0.420***	0.350***	0.354***
	(0.0409)	(0.0480)	(0.0465)
Panel A: Number of Lots in 1872 (N: 348)			
Local Lords' Estates Zone	-12.52***	-11.55***	-11.78***
	(1.866)	(2.151)	(2.109)
Panel B: Number of Lots in 2008–2011 (N: 351)			
Local Lords' Estates Zone	-25.60***	-24.48***	-23.67***
	(5.510)	(6.512)	(6.414)
Panel C: Number of Buildings in 2011 (N: 350)			
Local Lords' Estates Zone	-12.97***	-13.15***	-12.88***
	(3.529)	(3.499)	(3.511)
Panel D: Stories (aboveground) in 2011 (N: 350)			
Local Lords' Estates Zone	2.862***	2.689***	2.503***
	(0.737)	(0.886)	(0.881)
Panel E: Number of Buildings ≥ 30 Stories in 2011 (N: 350)			
Local Lords' Estates Zone	0.148***	0.151***	0.138***
	(0.0566)	(0.0543)	(0.0491)
Panel F: Log Land Price in 2012 (N: 341)			
Local Lords' Estates Zone	0.674***	0.588***	0.552***
	(0.231)	(0.190)	(0.176)
Baseline Controls	Yes	Yes	Yes
Altitude/Ruggedness	No	Yes	Yes
Ground Type	No	No	Yes

(b) Local Randomization

Notes: Standard errors are shown in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. See Table 1 for the definitions of variables. In Table 3(a), *Baseline Controls* includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms. *Altitude/Ruggedness* includes the mean and standard deviation of altitude. *Ground Type* controls for earthquake risks based on their ground type. In Table 3(b), *Baseline Controls* includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line. *Altitude/Ruggedness* includes the mean and standard deviation of altitude. *Ground Type* controls for earthquake risks based on their ground type. *Local Lords' Estates Zone* takes a value of one if the central point of the cell is in the local lords' estate zone, the outer side of the U-shaped boundary in Figure 1.

Exploiting a Historical Zoning Policy As another identification strategy, we exploit a historical zoning policy to conduct a local randomization analysis, as briefly explained in the background section. Figure 1(a) shows a part of central Tokyo area, some of which the Tokugawa shogunate developed via reclamation. At the initial declamation, the shogunate developed the land to the eastern part of the U-shaped line, the dash and solid part, which became the initial coastline. At the same time, the shogunate clearly set the dash-dot part of the U-shaped line as a boundary between the local lords' estates zone and the commoners' zone, although we are not aware of formal documents specifying this zoning. The estates shown with a red border are obviously larger than the lots to the east of the dashed line, the commoners' zone. After the increase in demand for land by local lords, the shogunate further reclaimed the area to the east of the initial coastline, reaching today's Sumida River. These areas were occupied largely by local lords. Therefore, the initial coastline became another boundary between the local lords' estate zone and the commoners' zone, and as a whole, the U-shaped line works as a boundary between the two zones except the northeastern dash part without the gray-colored buffer in Figure 1(b), where local lords' estates happened to be located in both zones. In Figure 1(b), we also overlay high-rise buildings in 2011, indicated by the black (more than or equal to 30 stories) and gray (15–29 stories) rectangles, and we observe that they are mainly located in the local lords' estate zone.

We first rely on graphical representation, as shown in Figure 4, to examine the distribution of the variables. We use cells whose centroids are within 1 km of the boundary, but exclude cells whose centroids are within 50 m of the boundary, because such cells are separated on both sides and attenuate the jump (if any) at the discontinuity. The x-axis is the distance from the boundary, taking a positive and negative value in the local lords' estate zone and the commoners' zone. Figure 4(a) shows a clear discontinuous jump in the presence of local lords' estates. Figure 4(b) and 4(c) show the mean and standard deviation of altitude, respectively. Figure 4(b) shows no clear discontinuity at the boundary in the mean of altitude. Figure 4(c) shows some discontinuity at the boundary in the standard deviation of altitude, but higher ruggedness is disadvantageous to development, and thus, the simple RD design does not overstate the positive effects on development. We check the robustness to controlling for these variables in the regression analysis. Figure 4(d)–4(f) show that the western area has fewer lots, more high-rise buildings, and higher land prices. The shape in Figure 4(f) might indicate the positive spill over effect, but as we argued in the conceptual framework, such spillover effects will not bias the coefficient.

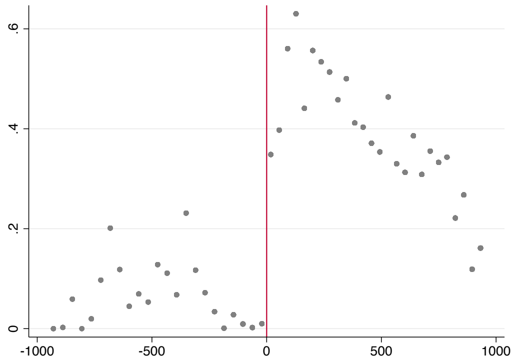
For the regression analysis, we employ a local randomization approach by comparing cells along the boundary with the set of controls, because we do not have a large sample along the boundary to estimate the jump by nonparametric approach (Cattaneo et al., 2018). We use the cells whose centroid is within 250 m of the boundary, corresponding to about one block from the boundary, which is shown as the gray-shaded area in Figure 1(b). We do not use the boundary in the northeastern part for this analysis (dashed-line without the gray-shaded buffer), because some local lords had estates along the intimal coastline. We define a *Local Lords' Estates Zone* dummy by the location of the centroid of cells and regress the outcome variable on this dummy and the other controls. Table 3(b) shows the results. In column (1) of panel I, we regress the share of local lords' estates on the *Local Lords' Estates Zone* dummy with controlling for the same set of control variables in column (1) of Table 3(a), which confirms the expected large impact.[23] Column (2) adds the controls for the other geographical variables, the mean or standard deviation of altitudes, and column (3) adds earthquake risk. The results are similar across the specifications. In panels A–F, we find a very similar pattern to that shown in panels A–F in Table 3(a) with the OLS analysis. Again, there is a negative effect on the number of lots, implying lot size persistence, and a positive effect on high-rise buildings. We also find the positive effect on land price. Another finding is that the point estimates for high-rise buildings and land prices are larger in magnitude than those in Table 3(a). This is because this area is the most central part of Tokyo and the agglomeration benefits from constructing high-rise buildings are larger.

Size of the effects To understand the magnitude of the effects in the OLS analysis, we compare them with the distance-decay function in land prices and the number of skyscrapers. By regressing the log of land prices on the distance from Tokyo station (today's center), we find, on the one hand, that the land price decreases by about 17% when 1 km from Tokyo station. On the other hand, our local lords' estate effect is about 24% (column (1) in Panel F, Table 3(a)), meaning that the effect is comparable to being about 1.4 km from the center. Similarly, we find that the effect on the number of tall buildings is comparable to being about 3.9 km from Tokyo station.

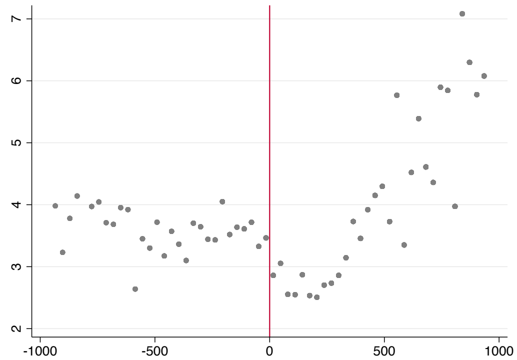
A within-city analysis is limited for assessing a city's overall impact. For example, the number of skyscrapers when we replace the commoners' zone with local lords' estates is hard to predict because our data do not tell us the aggregated demand function of skyscrapers in Tokyo. As an extreme case, demand for space in Tokyo is fixed (i.e., the demand curve is vertical), and thus, removing the transaction costs may not increase the total number of

[23] In the tables showing the RD results, we add panel I into the top of the panels so that the panel structure is the same with that in the OLS tables.

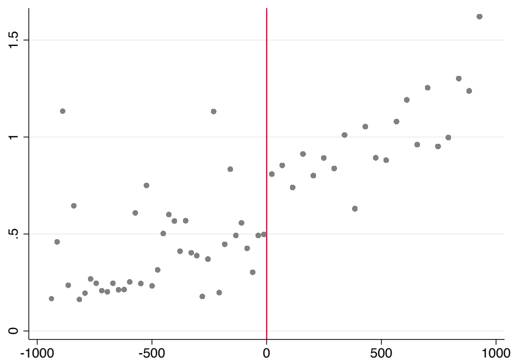
Figure 4: RD Plots around the Zoning Boundary



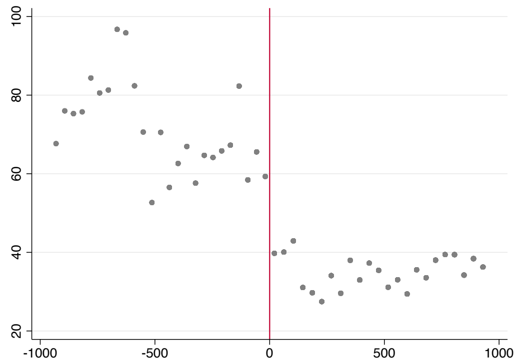
(a) Local Lords' Estates Share



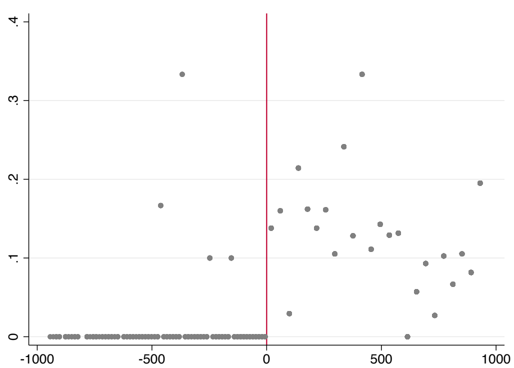
(b) Mean Altitude



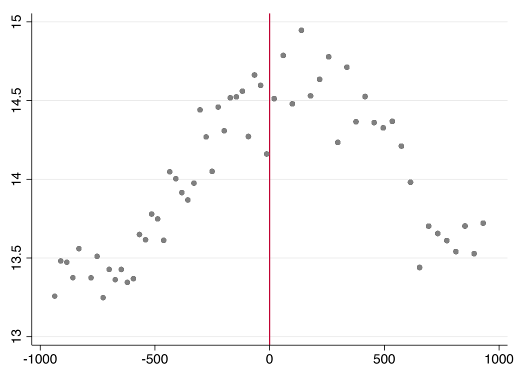
(c) SD of altitude



(d) N of Lots in 2011



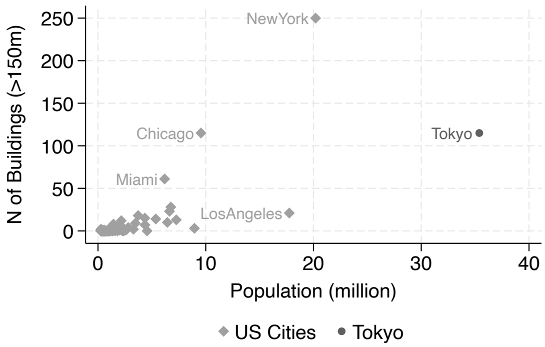
(e) N of Buildings $\geq$ 30 stories in 2011



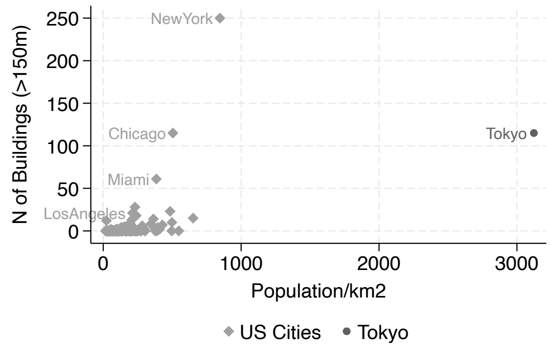
(f) Log of Land Price in 2012

Notes: We use all cells within 1 km of the boundary in Figure 1(b) excluding cells within 50 m of the boundary to avoid mechanical attenuation effects. The x-axis is the distance from the boundary, which is shown as the solid line and dash-dot line in Figure 1(b), taking a positive and negative value in the local lords' estate zone and the commoners' zone, respectively. The points show the average of each outcome variable within each bin. The number of bins is chosen using the mimicking variance evenly spaced method using spacing estimators. The lines show the fourth-order polynomial fit for each zone.

Figure 5: Skyscraper in Metropolitan Areas of the United States and Tokyo



(a) Skyscraper and Population



(b) Skyscraper and Population Density

Notes: Figure 5(a) (Figure 5(b)) shows the number of buildings over 150 m and population (population density) in 2015 in the metropolitan areas of the United States and Tokyo. Data sources are Council on Tall Buildings and Urban Habitat Tallest Buildings dataset for skyscrapers and OECD City statistics for population and population density, respectively.

skyscrapers. However, this is very unlikely because Tokyo metropolitan had lower number of skyscrapers than metropolitan areas in the United States. Figure 5(a) and Figure 5(b) shows the number of building over 150 m and population and population density in 2015, respectively, of Tokyo and the metropolitan areas in the United States. Compared with New York or Chicago, Tokyo should have had more tall buildings given its population. Los Angeles had also the small number of skyscrapers, but when we adjust it by population density, Tokyo is an exceptionally dense but low-rise city. In fact, Tokyo is increasing the number of skyscrapers after 2015 (Tokyo Shobo Cho Kikaku Chouseibu Kikakuka, 1990–2020). Therefore, removing transaction costs would have increased land prices and tall buildings at the city level.

Effect on Firm Productivity To further examine the positive effect of local lords' estates on land prices through agglomeration benefits ($\beta_{postWWII} > 1$), we analyze the impact on firm productivity using microdata. There are two channels of how local lords' estates affect local-level TFP through high-rise buildings: the selection channel in which competition becomes tougher and less productive firms exit and the agglomeration benefits channel in which firms increase their TFP by knowledge spillovers, a thick labor market, sharing common sources, and so on. If the selection channel is the main driver of the effect on land prices, it does not represent a productivity gain for firms.

To disentangle these channels, we examine the distribution of firm productivity in each cell (Combes et al., 2012). Figure A.3(a) shows the distribution of firm productivity in 2017 proxied by revenue per worker in cells whose local lords' estates share is zero and one. The selection channel generates a cutoff in the lower tail, because the least productive firm exits. Meanwhile, the agglomeration benefits channel shifts the whole distribution to the right and/or the upper tail becomes thicker when productive firms can enjoy the agglomeration benefits more. We find that the lower tail does not show a significant difference, suggesting a very weak cutoff channel, but the upper tail becomes thicker in the local lords' estates zone. We find a very similar pattern when we compare firms in the local lords' estates zone and the other zone using firms close to the boundary, as in the local randomization design (Figure A.3(b)). Quantile regression analysis including the other cells in the sample and controlling for other variables (baseline controls used in the main analysis, firm age, and industry fixed effects) confirm this pattern, with a larger effect in the upper tail (Figure A.3(c) for OLS and Figure A.3(d) for local randomization).

We further investigate the selection channel by examining firms' moving, exit, and entry using the datasets in 1993 and 2017. We find no evidence that less productive firms disappear from the local lords' estates zone through these channels.[24] These results imply that local lords' estates contribute to productivity gains for firms mainly through agglomeration benefits. This is consistent with a recent study that finds a local spillover effect between firms within 75 meters in Toronto (Baum-Snow et al., 2024).

5.2 Mechanisms

5.2.1 Role of Skyscrapers

Before the prevalence of skyscrapers or transition to an office economy, there would have been fewer agglomeration benefits and the value of land per area would be decreasing in lot size

[24] Focusing on firms that change their location from 1993 to 2017, we find that more productive firms do not significantly move into areas with a high local lords' estates share (panel A in Table A.1). Focusing on firms that exist in 2017, we find that the more productive firm is not more likely to be a new entrant after 1993 particularly in the high local lords' estates share area (panel B in Table A.1). Similarly, focusing on firms that exist in 1993, we find that the less productive firm is not more likely to exit by 2017 particularly in the high local lords' estates share area (panel C in Table A.1). These results suggest that the selection channel does not operate in these margins. As a counterpart of our local randomization design, Table A.2 analyzes the move from or to the local lords' estates zone and entry and exit from our sample area for local randomization. We find qualitatively similar results.

($\beta < 1$). In that case, smaller lots would be preferred, and if split costs (C_s) were small, large lots would be split.

To analyze this point, we use cadastral map and land price data before the 2010s when there were fewer skyscrapers. We examine how local lords' estates affected lot fragmentation and land prices in, 1912, 1931, 1972, and 1983 using the same set of specifications as in the column (1) of Table 3(a) and Table 3(b).

The results are summarized in Figure 6, showing the effect on the normalized outcomes. Figure 6(a) shows that lot size persistence throughout the sample period as expected. In Figure 6(b), we find that local lords' estates had negative effects on the number of lots before WWII, affecting land prices *negatively* before WWII. We also find the reversal of fortune in the value of local lords estates area: the effect became around zero in the transition period (1972 and 1983), when high-rise buildings started to be constructed, and in the 2010s, when there were many skyscrapers, there was a clear positive effect.[25] This is consistent with the aerial images around the boundaryl; in 1970, we do not observe any difference between two zones except for the size of lots (Figure 7(a)), while we observe a stark difference of the building heights in 2011 (Figure 7(b)).

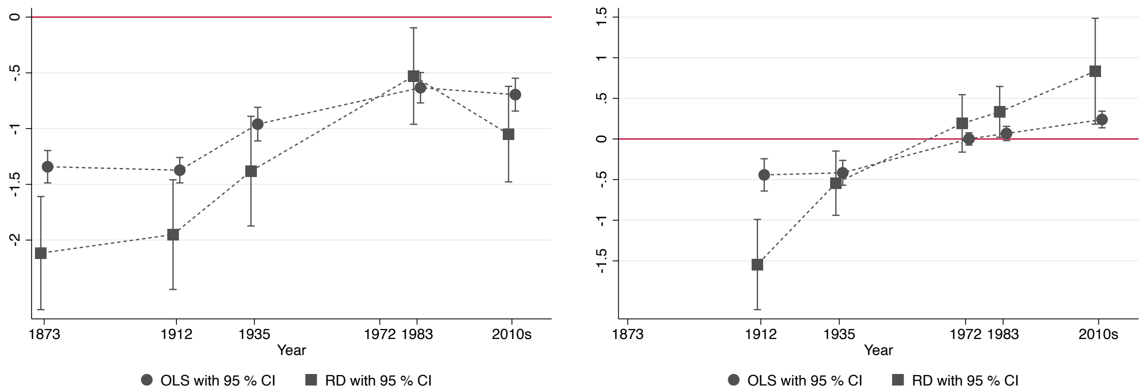
These findings suggest two insights about lot size and land price relationships: (1) before WWII, smaller lots were preferred, but there were substantial split costs ($\beta_{preWWII} < 1$ and $C_s > 0$), generating lot size persistence and lot size discount; and (2) technological progress after WWII (the development of construction technology for high-rise buildings and the transition in production from factories to offices) changed the relationship between lot size and the land value per area ($\beta_{preWWII} < 1 < \beta_{postWWII}$).[26]

Although the results in Figure 6 show a stark difference in the effect of lot size on land prices between the periods, there may be changes in those 150 years other than the emergence of skyscrapers or the knowledge-based economy to explain the difference. To investigate the role of tall buildings more explicitly, we focus on more recent changes in the height of buildings from 1993 using firm productivity data. Using the same specification as in the analysis using the 2017 data, we find that the effects are smaller in 1993 (shown as black

[25] Regression tables with the same set of specifications in Table 3(a) and Table 3(b) are in Table A.3 and Table A.4.

[26] There is anecdotal evidence that larger lots were less preferred in 17th-century Manhattan as well (Barr, 2016).

Figure 6: Role of Skyscrapers: Time Series Comparison of the Effect of Local Lords' Estates



(a) The Effect on the Number of Lots

(b) The Effect on Land Price

Notes: The circles (squares) in Figure 6(a) and Figure 6(b) show the point estimates of the effect of local lords' estates on the number of lots and log of land price with the OLS analysis controlling for the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms as in column (1) in Table 3(a). The outcome variables are normalized at the year level for comparability. As explained in the main text, the number of lots in 1983 is proxied by the number of buildings in 1986. Figure 6(b) similarly shows the result of local randomization design controlling for the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line as in column (1) in Table 3(b).

Figure 7: Areal Images around the Boundary

(a) 1970

(b) 2011

Notes: These aerial images capture the area around the boundary in 1970 and 2011, respectively. Figure 7(a) is taken from Japan Archives (`https://jaa2100.org/entry/detail/036897.html`) and Figure 7(b) is taken from Google earth. White-dash lines indicating the boundary are added by the authors.

triangles in Figure A.4(a)) than in 2017. In addition, once we control for the average number of stories, the effect of local lords' estates attenuates and the difference between 2017 and 1993 becomes smaller (Figure A.4(b)). We find a similar pattern when we employ the local randomization design (Figure A.4(c) and Figure A.4(d)). Although the point estimates are not precisely estimated and the analyses are not free from the bad control problem, they provide suggestive evidence that local lords' estates contribute to a productivity gain for firms through agglomeration benefits in high-rise buildings.

5.2.2 Persistence in the Core Area

If the persistence were present in the economically vibrant areas today, it would have a huge impact on land price and economic activities —an issue that should be of concern to urban planners. We examine this point by splitting the sample using *Yamanote* loop line for the OLS analysis. The construction of this loop line took place between 1855 and 1925, and after that, Tokyo's business activities gradually shifted from traditional business center to the area inside the loop line. When split the sample, we define the cell within 250 m-buffer of the area surrounded by the railroad line as the core area and other cells as the non-core area because stations often have business and shopping streets both in the outside and inside railroads. In Appendix, we show the kernel density plots of land prices.[27] Consistent with the shift of activities, we find that the core area had low land price in 1912, but had high land price at least by 1972 when land assembly became more relevant margin.

Figure 8(a) and Figure 8(b) show regression results graphically. Dark gray triangles and diamonds show the point estimates in the core area. If we focus on the result in 2011, we can observe the lot size persistence and reversal of fortune only in the core area. Similarly, when we separately estimate the effect of boundaries close to the core area and non-core area in RD analysis, we find persistent effect only in the core boundary (Figure 8(c) and Figure 8(d)). The land assembly cost is huge in the core area to generate the 153% land price difference. This is much larger than the effect in the OLS result using the core area in Figure 8(b), possibly due to the fact that the core boundary in the RD analysis is the most prosperious area with in the core area used in the OLS analysis. Overall, the effect varies arross time and location, city planner should consider this nature of transaction costs at regulating urban

[27]See Figure A.5. We also show the kernel density plots of local lords' estates share and lot sizes.

land market.[28]

The conceptual framework suggests the three possible reasons for the absence of the effect in the non-core area. First, the non-core area may have lower transaction costs for land assembly ($C_{a,2}$ is higher in the core area), and thus persistence disappears by assembly in the non local lords' estates area in $t = 2$. Secondly, the local lords' estates in the non-core area may have been so extensively subdivided in $t = 1$ due to the low split costs ($C_{s,1}$) that there is no observable difference compared to areas without such estates. Third, in the core area, the shift from lot size discount to lot size premia may have occurred earlier than in the non-core area, preserving the local lords' estates as large lots when the shift took place. If so, in the gap period during the shift in both regions, only the non-core area lost persistence due to split driven by economic net benefits or succession among heirs, which may be a stronger force to break the persistence than assembly.

The empirical pattern shown in Figure 8 is consistent with the third explanation. The shift in the land price effect from 1931 to 1972 was more pronounced in the core area. Since the effect on lot size in the core area changed only modestly, this implies a rapid shift in how the market valued lot size in that area. In line with this pattern, all nine first-generation skyscrapers constructed by 1990 are located near the major stations along the loop line. Meanwhile, Figure 8 does not support the first and second explanations. The persistence in the non-core area had already disappeared by 1986, when skyscraper construction was not as widespread as it is today.[29] Therefore, splitting, not assembly as in the first explanation, seems to be the driving force behind the disappearance of persistence in the non-core area. Furthermore, the effect on lot size before 1931 did not differ significantly between the core and non-core areas, which contradicts with the second explanation.

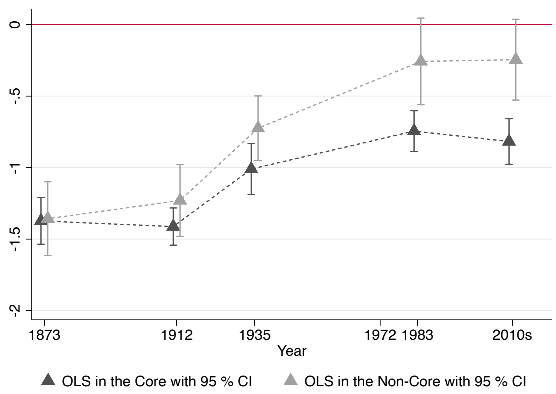
5.2.3 Discussion: Comparison with Other Studies

The results so far suggest that substantial transaction costs are incurred in changing lot size in Tokyo's CBD, generating lot size persistence over 150 years and lot size premia. In addition,

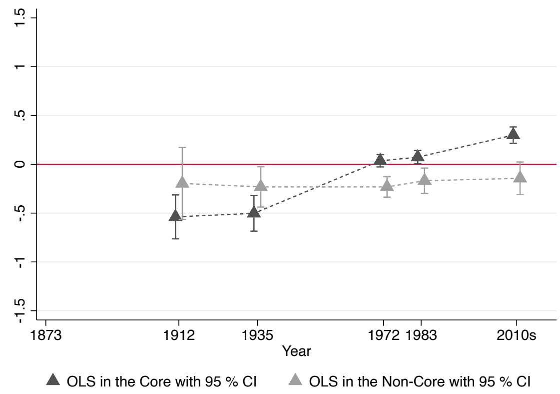
[28] Corresponding regression tables are in Table A.5 (OLS) and Table A.6 (RD). Corresponding RD plots are in Figure A.6 (Core) and Figure A.7 (Non-Core).

[29] The point estimate in the RD results suggests that the lot size discount in non-core areas disappears by 1931. While this result may appear surprising, it could be explained by a sufficient supply of small lots through subdivision. This is not inconsistent with the third explanation, as large lots could still be divided through inheritance after 1945, even in the absence of economic incentives.

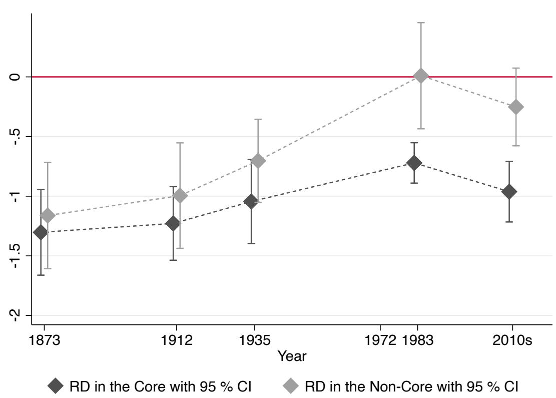
Figure 8: Time-varying Effects of Local Lords' Estates in the Core and Non-Core Areas



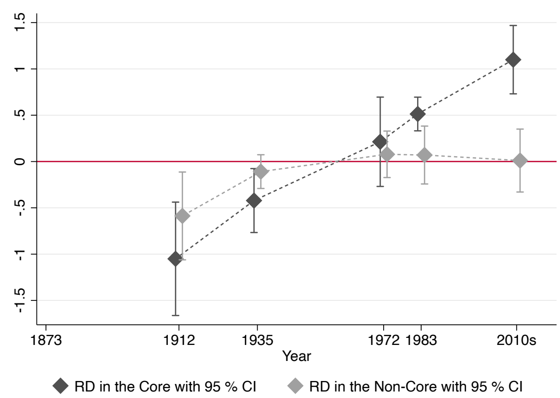
(a) OLS, the Effect on the Number of Lots



(b) OLS, the Effect on Log of Land Prices



(c) RD, the Effect on the Number of Lots



(d) RD, the Effect on Log of Land Prices

Notes: The dark (light) gray triangles in Figure 8(a) and Figure 8(b) show the point estimates of the effect of local lords' estates on the number of lots and log of land price using the core (non-core) sample with the OLS analysis controlling for the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms as in column (1) in Table 3(a), respectively. The dark (light) gray diamonds in Figure 8(c) and Figure 8(d) show the point estimates of the core local lords' estates zone and non-core local lords' estates zone on the number of lots and log of land price with RD analysis controlling for the distance from the Edo castle, its squared term, and a dummy variable indicating whether the cell is inside the *Yamanote* loop line as in column (1) in Table 3(b), respectively. The outcome variables are normalized at the year level for comparability. As explained in the main text, the number of lots in 1983 is proxied by the number of buildings in 1986. Regression tables with the same set of specifications are in columns (1) and (4) in Table A.5 (OLS) and Table A.6 (OLS).

such results are observed only in the core area, and lot size persistence disappeared in the non-core area. This is consistent with the results of other studies using rural/suburban areas (Bleakley and Ferrie, 2014; Finley et al., 2021; Smith, 2025), which also don't find 150-years lot size persistence. Our results suggest that the core urban areas show a distinctive pattern of lot size persistence and its land price effect driven by agglomeration economy in tall buildings.

Our results suggest that the rise of skyscrapers generates the value of large lots, resulting in the change of the case from $\beta_{preWWII} < 1$ to $\beta_{postWWII} > 1$. By contrast, some previous studies find lot size discount, not premia, by hedonic regression (White, 1988; Brownstone and Vany, 1991; Henderson et al., 2025). However, these studies focus on residential areas, where both the optimal lot size and the distribution of lot sizes differ from those in commercial areas. For example, White (1988) and Brownstone and Vany (1991) study suburban residential areas in the United States and report mean lot sizes of 0.71 and 0.64 acres, respectively—approximately three times larger than the median lot size of 0.2 acres for single-family housing in the U.S. (Song, 2025). Similarly, Henderson et al. (2025) examine residential areas in Dar es Salaam, where typical plot sizes are 0.1, 0.2, and 0.4 acres. Therefore, split would be preferred over assembly in their case, corresponding to the case of $\beta < 1$.

5.3 Robustness Checks

Unobserved Confounders To assess the potential influence of unobserved confounders on the reduced-form estimates in Figure 8, we employ the method in Oster (2019). We compare a "short" specification with baseline controls to a "long" specification that additionally includes altitude, ruggedness, and ground type. This approach yields either a bias-adjusted coefficient or the implied value of $\bar{\delta}$—the degree of selection on unobservables relative to observables—required to attenuate the estimate to zero. We find that the significant results are either strongly robust ($\bar{\delta} \geq 1$) or moderately robust ($1 > \bar{\delta} \geq 0.5$) to unobserved confounding (see Table A.7 for OLS and Table A.8 for RD), and our qualitative conclusions remain unchanged.

Alternative Channels for Heterogeneous Effects The results in Figure 8 support the view that local lords' estates keep lot size large persistently in the core area, turning its effect on land price from negative to positive after the rise of skyscraper in the core area. In the non-core area, there will be less demand for skyscrapers even after 1960, finding no such a reversion in the effect on land price and no lot size persistence. We consider alternative channels to explain these patterns.[30]

First, public use may affect the outcomes. For example, large lots may facilitate the construction of transportation infrastructure (proximity to railroad stations) or buildings for the public sector (hospitals, universities, and parks), which would increase the land price. We consider these channels by controlling for the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, and the of land used as parks for both the OLS and the RD analyses.[31] We compare the result in the main specification and the result controlling for these factors in columns (1) and (2) or columns (3) and (4) in Table A.9, finding qualitatively similar results.

Second, local lords' estates may facilitate skyscraper construction, but not through lot size. We consider the size of blocks (not the size of each lot, but the area surrounded by roads), width of roads (wider roads are advantageous for delivery to construction sites) the FAR regulation as an alternative construction costs.[32] Because these variables, particularly the FAR, will be endogenously determined by the economic benefit lot size generates, a preferred specification will be using historical determinants for these variables, the share of area specified as commercial area by regulation that do not change so much since the first regulation in 1919, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. We add these variables into the main specification in Table A.9 (OLS) and Table A.10 (RD). We find that the main qualitative results remain largely unchanged.[33][34]

Finally, we consider four alternative historical shocks that might explain why we observe

[30]See "Other variables" Table 1 for the data sources of the variables used to account for alternative channels.

[31]Demolished stations can have persistent effects, as shown in Brooks and Lutz (2019).

[32]Before 1919, there were no height restrictions or FAR regulations. However, in response to rapid city growth, in 1919, the government established height regulations, and in 1961, the government switched from height regulations to FAR regulations.

[33]FAR regulations depend on the land use zones established under urban planning laws and the width of the roads that the buildings face under construction laws. Specifically, when road width x is equal to or more than 12 m, the maximum FAR is equal to that set by land use zones (FAR_{zone}). When x is less than 12 m, the formula $\min\{FAR_{zone}, x * k * 100\}$ determines the maximum FAR, where $k = 0.6$ ($k = 0.4$) when the land is commercial (residential). For example, suppose that the land use zone regulation specifies 500% as the maximum ratio. If the road in front of the land is 6 m and the land is commercial, the maximum FAR is reduced to 360%. Although there are some special cases in which $k > 0.6$ due to policies by local municipalities, in the regression analysis, we calculate the road-level maximum FAR using the formula above and use its weighted mean using the length of each road segment as the control variable.

[34]RD in the non-core area shows a weak effect on the number of lots in 1876 when controlling for historical proxies of construction costs. We find that the average block size in the 1850s and the local lords' share are highly correlated, which makes it hard to separetely identify the effect of lots size from block size.

persistence only in the core area or the sign of the effect on land price changes. First, destruction might be concentrated in the non-core area. It may affect lot size persistence and the change in the land price after WWII as well.[35] Second, we consider the change in land use caused by the end of WWII. Before WWII, the descendants of local lords still used a part of the estates to live on or for military infrastructure. There should be a significant change in land use in those areas after WWII, which may explain the difference between the core and non-core areas or in the sign of the effect on local lords' estates. Third, land owned by local lords' descendants in 1931 might have been priced lower than its market value for political reasons, as discussed in the data section. After WWII, lords were deprived of their political privilege; they might have sold their land and their land might have been highly valued. Fourth, land owned by individual land owners may be split quickly for inheritance among heirs after the change of Civil Code in 1947, and local lords estates may be owned by individual land owners in the non core area due to weaker potentials of land development. To address these concerns, we control for the destructed area, the descendants' estates or their other land for high-ranked family and other family separately, military infrastructure, and land owned by non-individual owners such as firms, and their interaction terms with the core dummy in the regression analysis. However, the empirical pattern we find in the main specification does not alter by controlling for these factors in columns (5) and (11) and all of the three channels discussed so far in columns (6) and (12) in Table A.9 (OLS) and Table A.10 (RD).

Other Concerns We also investigate the robustness of the main results against more specification issues such as the functional forms or choice of parameters in data construction in the main analysis. As for the OLS analysis, we first restrict the sample to the cells where we can observe the outcome variables both in 1912 or 1931 and 2012 because the data in 1912 and 1931 does not cover a particular zone (See Figure A.8). Second, we increase the threshold for spatial correlation in standard errors from 300 m to 500 m or 1000 m. Third, we employ alternative treatment variable, the size of local loads' estates in the regression analysis. These modification does not change the results qualitatively (Table A.11, Table A.12, Table A.13,

[35]Harada et al. (2024) investigate the long-term effect of this bombing on local communities and their livelihood in residential areas.

and Table A.14 respectively). We also constructed 200 m-level, not 100 m-level, data set and conducted the same analysis in Table A.9. Because a single local load estate can be spanned into multiple cells, our choice of the unit of observation may affect the results. We find that the effect on land price is amplified with the 200 m-level dataset suggesting spillover effects, but the pattern of heterogeneous effects in time and location do not change. (Table A.15). As for local randomization, we implement donuts hole approach by using the cells slightly far from the boundary Table A.16 and parametric approach using polynomials of the distance to each boundary using 500, 750, or 1000 m windows (Table A.17, Table A.18, and Table A.19).

To deal with remaining concerns for the core-and-non-core comparison, we implement two additional analyses for the robustness of the OLS results. First, we employ different methods in defining the core area and non-core areas. Instead of relying on the Yamanote-line to divide the sample into the core and non-core area, we use the land price data to estimate local economic potential in each era to define these areas, finding strong effects in the core area as in Table A.9 (Table A.20).[36] Second, as indicated in the kernel density plot in Figure A.5, the share of local lords' estates were larger in the core area. This suggests that the size of local lord estates may be different, and this may drive the heterogeneity in the effect between the core and non-core areas. We control for the number of local load estates because it will capture how much local lords estates are fragmented conditional on the share of local lords estates area. However, the difference between the core area and non-core area unchanged qualitatively in Table A.21.

6 Policy Implications

Policymakers recognize that lot fragmentation is an important obstacle to urban development (Nelson and Lang, 2007). In fact, some areas in Tokyo have related regulations such as minimum lot size requirements. Furthermore, the Urban Redevelopment Law allows execution of large-scale redevelopment plans with the agreement of landowners representing more than two-thirds of the land area. Our results indicate, however, that substantial transaction costs remain for urban redevelopment requiring land assembly. This may be because minimum lot

[36]A concern of this approach is that land price is affected by local lord estates and thus will have a bad control problem. Therefore, we first regress land price in cells without local loads estates on the set of baseline controls used in the main analysis and obtain predicted land price for the full sample by extrapolation.

sizes are too small (i.e., 300 m^2) compared to the typical footprint of skyscrapers (3,000 m^2, as shown in Figure A.1), resulting in a large number of landowners and high negotiation costs for assembly.

In addition to these contemporaneous implications, our results indicate the long-run effects of lot fragmentation. This is particularly relevant to today's growing cities in developing countries (Bryan et al., 2020), which often have poor urban slums in core areas. The provision of property rights in urban slums to enhance economic development has been discussed and implemented in practice. Various studies analyze whether such entitlements increase investments in housing (Field, 2005; Field and Torero, 2006; Henderson et al., 2021). Our results imply that entitling property rights may have unintended consequences for productivity through lot fragmentation in rapidly growing cities when such areas need to be transformed into business or residential zones with high-rise buildings soon as it happened in the core area, echoing the view in Glaeser (2021).[37] Because the demand for slums will decrease as people become wealthier (Alves, 2021), such transformation is a likely scenario for cities in developing countries.

To obtain a more policy-relevant parameter, we conduct a back-of-the-envelope calculation using local lords' estates as an instrument to estimate the impact of additional lots in 1873 on the land prices of today. We find that additional lots in 1873 decrease the land price in 2012 by 1.6–1.8%. Because the standard deviation of the number of lots is about 10, this suggests a substantial negative impact of initial lot fragmentation on the land price. Although this parameter is heterogeneous across cities, it is a benchmark for policymakers in rapidly growing cities in developing countries.

7 Conclusion

In this study, we investigate whether transaction costs in the urban land market generate lot size persistence and hinder efficient land use. We construct a 100 m*100 m-cell-level dataset spanning 150 years and use a plausibly exogenous release of large lots (local lords' estates) to the private market in 1868. Using OLS and local randomization designs, we find that cells

[37] Similarly, Harari and Wong (2025b) and Michaels et al. (2021) show that upgrading amenities in slums may result in lower land prices and shorter buildings by increasing formalization costs.

used as local lords' estates formerly have larger lots even after 150 years, particularly in the core area. We also find that previous local lords' estates generate agglomeration benefits in the 2010s: there are more skyscrapers, higher land prices, and productive firms. We further confirm that the effect on firm productivity does not come from the moving, exit, or entry of firms. Meanwhile, before WWII, former local lords' estates had larger lots than other areas but lower land prices. This opposite result on the land price from the 2010s means that previous local lords' estates were too large for optimal land use and discounted due to land split costs.

These findings imply that the prediction of the Coase theorem without transaction costs is not relevant in the urban land market, particularly in the CBD, and initial lot sizes have substantial impacts on economic activities even after 150 years. City planners in developing countries, who may face the demand for high-rise buildings near future, should take account of these results when entitling property rights to fragmented areas such as slums. At the same time, further research is needed to identify specific mechanisms and policies that can effectively reduce transaction costs in land markets to facilitate urban redevelopment.

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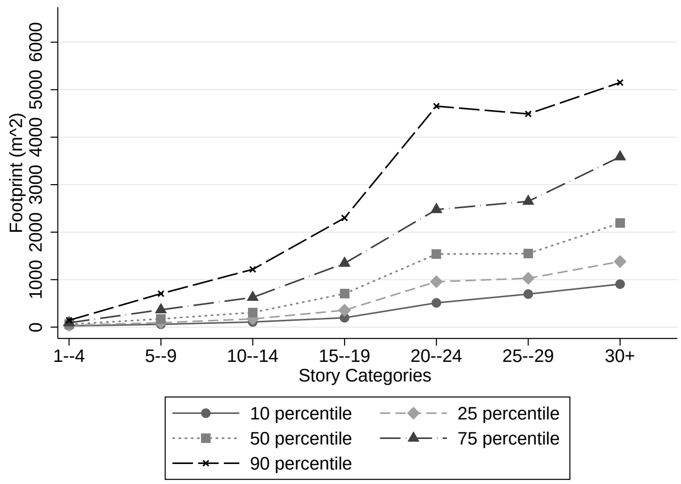
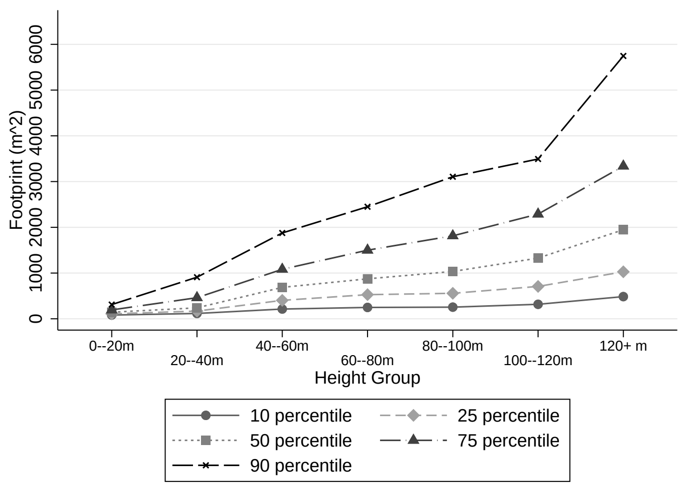
Appendix Not for Publication

Figure A.1: Building Heights and Footprint



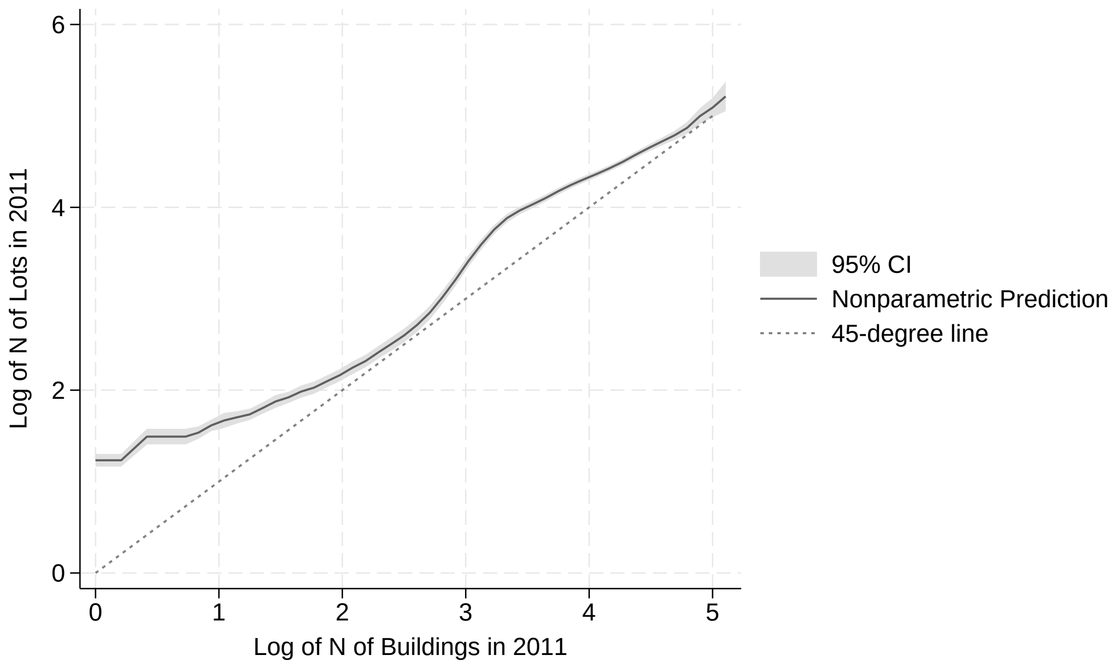
(a) Tokyo



(b) New York City

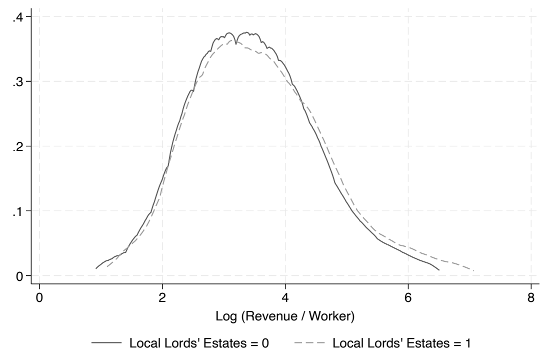
Notes: Figure A.1(a) shows the distribution of footprint of buildings located in Tokyo's 23 wards in 2011 (Tokyo Metropolitan Government, 2011). See the main text for the details of the dataset. We show the percentiles of footprint conditional on the building-story group. Figure A.1(b) shows the distribution of footprint of buildings located in New York City (Syracuse and Manhattan) in 2017 (Microsoft, 2017). We show the percentiles of footprint conditional on the building-height groups

Figure A.2: Buildings and Lots

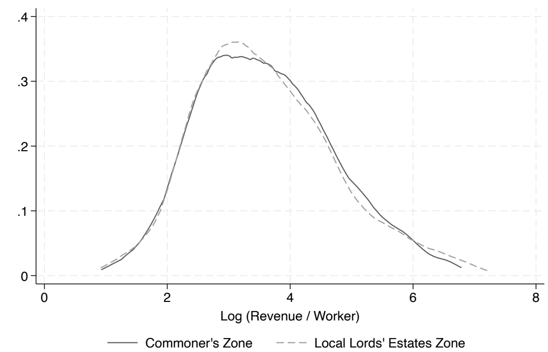


Notes: This graph shows the relationships between the number of lots and buildings in 2011 by nonparametric regression in our sample area.

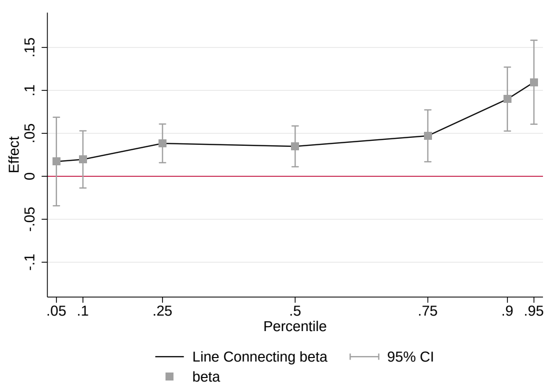
Figure A.3: The Difference in Firm Productivity between the Local Lords' Estate Areas and Other Areas



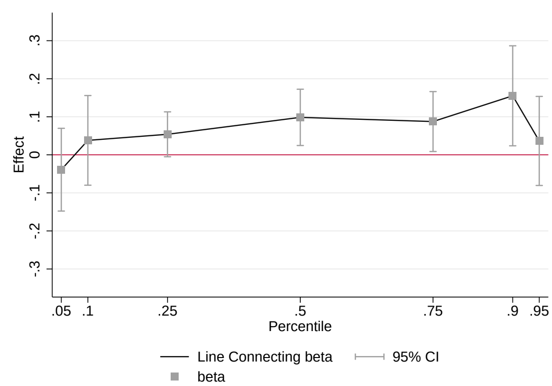
(a) Firm Productivity (OLS Sample)



(b) Firm Productivity (RD Sample)



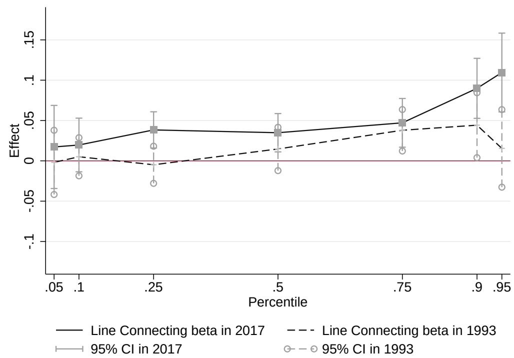
(c) Quantile Regression (OLS Sample)



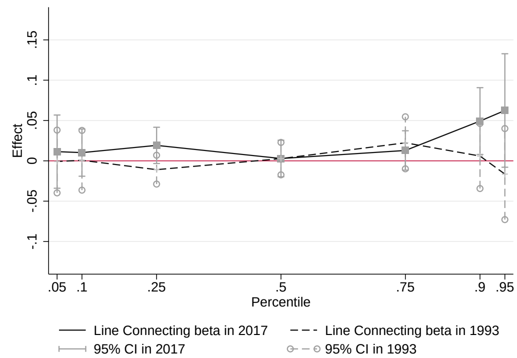
(d) Quantile Regression (RD Sample)

Notes: Figure A.3(a) shows the distribution of firm productivity in 2017 proxied by revenue per worker in cells whose local lords' estates share is zero and one (solid line and dash line, respectively). Similarly, Figure A.3(b) shows the distribution of firm productivity in 2017 proxied by revenue per worker in the local lords' estates zone and the other zone within the sample, respectively, for the local randomization design. Figure A.3(c) shows the coefficients when regressing the log of revenue per worker on local lords' estates share, conditional on the baseline controls in Table 3(a), firm age, and industry fixed effects. The solid line connects the point estimates for each percentile using the sample in 2017 . Figure A.3(d) shows the coefficients when regressing the log of revenue per worker on the local lords' estates zone variable, conditional on the baseline controls in Table 3(b), firm age, and industry fixed effects.

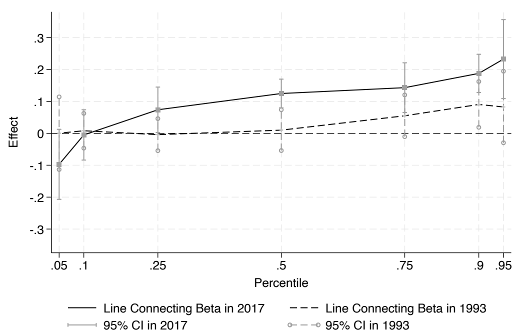
Figure A.4: The Effect on Firm Productivity: Comparison between 1993 and 2017



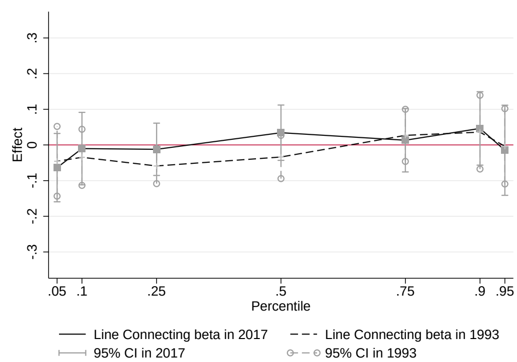
(a) OLS Sample with Controls



(b) (a) + Controlling for Stories



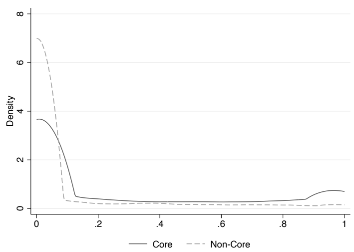
(c) RD Sample with Controls



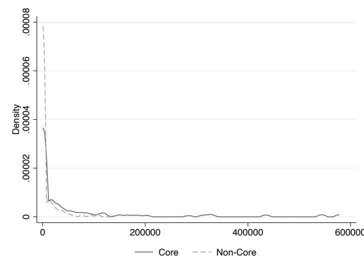
(d) (c) + Controlling for Stories

Notes: (a) shows the coefficients when regressing the log of revenue per worker on local lords' estates share, conditional on baseline controls in Table 3(a), firm age, and industry fixed effects. The solid (dash) line connects the point estimates for each percentile using the sample in 2017 (1993). (c) shows the result when regressing the log of revenue per worker on the local lords' estates zone variable, conditional on baseline controls in Table 3(b) and industry fixed effects. (c) and (d) show the results when we add the mean of stories (aboveground) as an additional control variable to the analysis in (a) and (b), respectively.

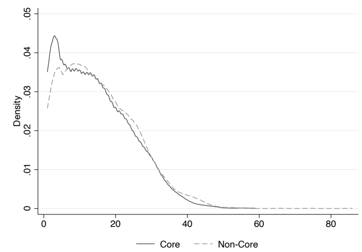
Figure A.5: Core Area and Non-Core Area



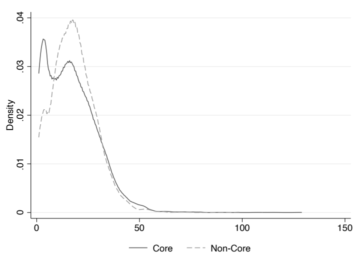
(a) Local Load Estates Share



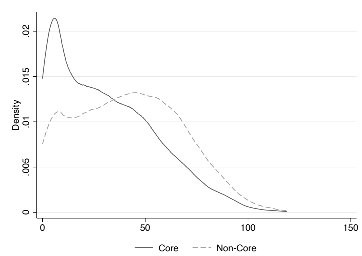
(b) Max Local Lords' Estates Size



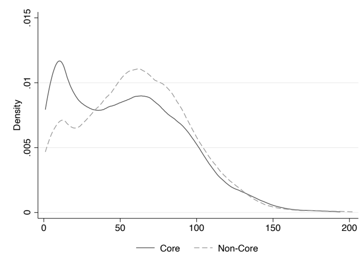
(c) Number of Lots in 1912



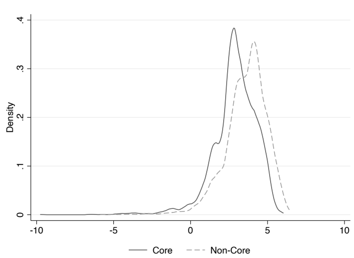
(d) Number of Lots in 1931



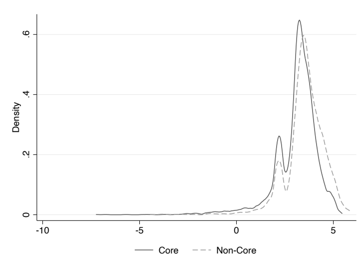
(e) Number of Buildings in 1986



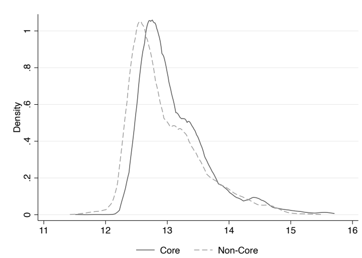
(f) Number of Lots in 2011



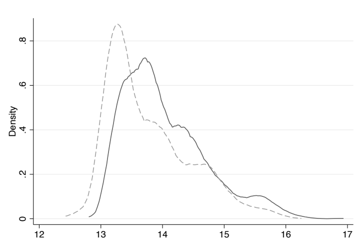
(g) Log Land Price in 1912



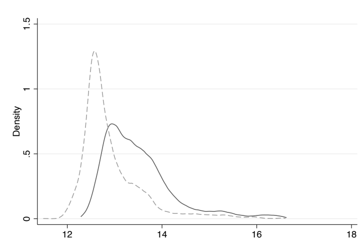
(h) Log Land Price in 1931



(i) Log Land Price in 1873



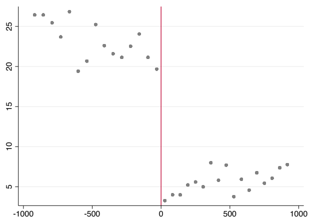
(j) Log Land Price in 1983



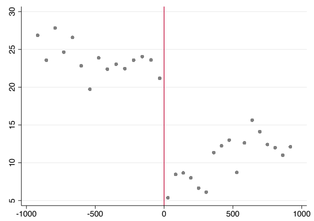
(k) Log Land Price in 2012

Notes: Each figure shows kernel density plots for each variable in the core (solid line) and non-core areas (dash line), defined by the 250 m buffer of *Yamanote* loop line as in Figure 8.

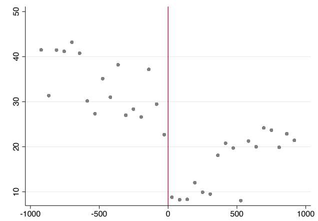
Figure A.6: Number of Lots and Land Prices along Zoning Boundary in the Core Area from 1912 to the 2010s



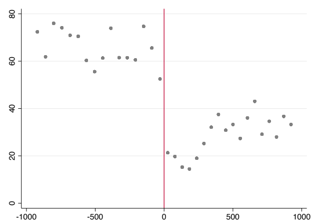
(a) Number of Lots in 1912



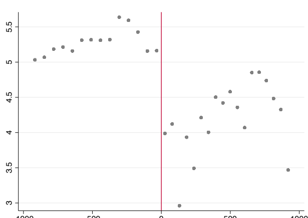
(b) Number of Lots in 1931



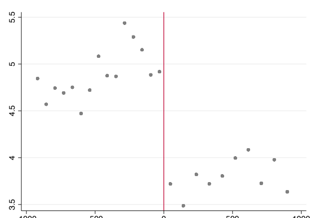
(c) Number of Buildings in 1986



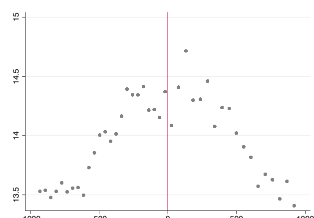
(d) Number of Lots in the 2010s



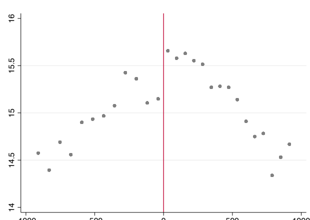
(e) Log Land Price in 1912



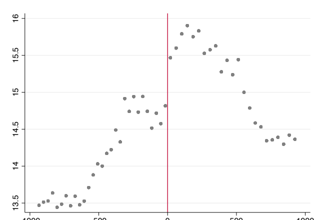
(f) Log Land Price in 1931



(g) Log Land Price in 1972



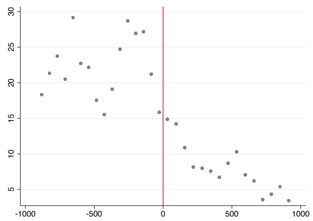
(h) Log Land Price in 1983



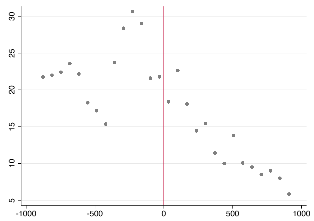
(i) Log Land Price in 2012

Notes: We use all cells within 1 km of the core boundary (dash-dot line in Figure 1) excluding cells within 50 m of the boundary to avoid mechanical attenuation effects. The x-axis is the distance from the boundary taking a positive and negative value in the local lords' estate zone and the commoners' zone, respectively. The points show the average of each outcome variable within each bin. The number of bins is chosen using the mimicking variance evenly spaced method using spacing estimators.

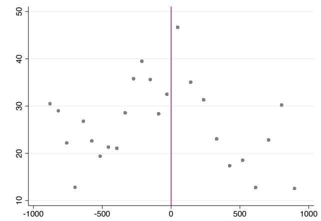
Figure A.7: Number of Lots and Land Prices along Zoning Boundary in the Non-Core Area from 1912 to the 2010s



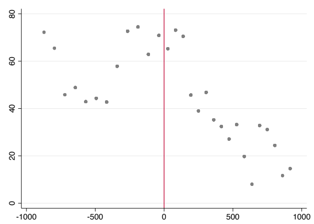
(a) Number of Lots in 1912



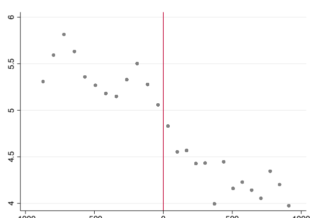
(b) Number of Lots in 1931



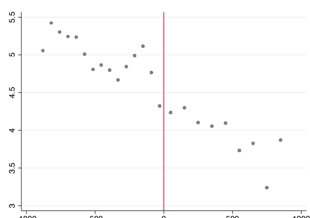
(c) Number of Buildings in 1986



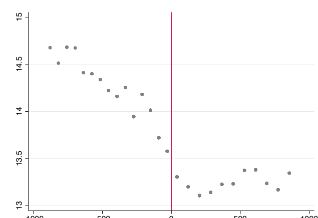
(d) Number of Lots in the 2010s



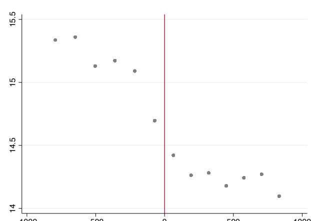
(e) Log Land Price in 1912



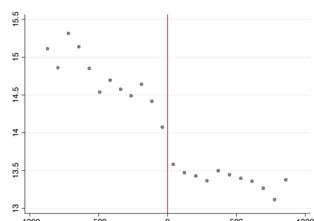
(f) Log Land Price in 1931



(g) Log Land Price in 1972



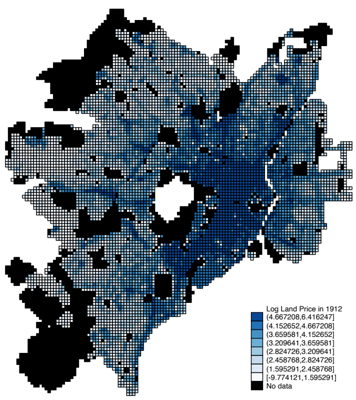
(h) Log Land Price in 1983



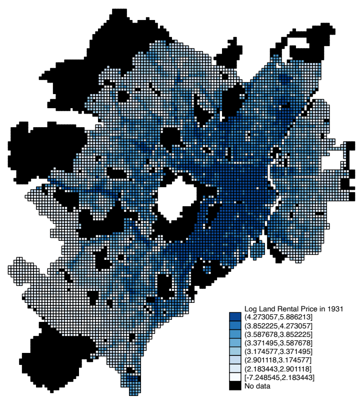
(i) Log Land Price in 2012

Notes: We use all cells within 1 km of the non-core boundary (solid line in Figure 1) excluding cells within 50 m of the boundary to avoid mechanical attenuation effects. The x-axis is the distance from the boundary taking a positive and negative value in the local lords' estate zone and the commoners' zone, respectively. The points show the average of each outcome variable within each bin. The number of bins is chosen using the mimicking variance evenly spaced method using spacing estimators.

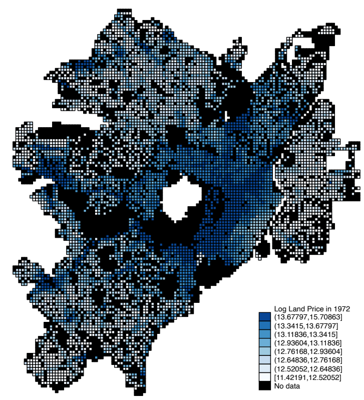
Figure A.8: Coverage and Pattern of Land Price Data



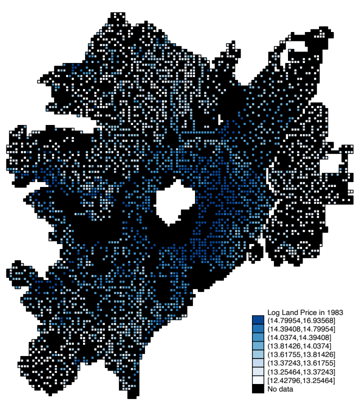
(a) 1912



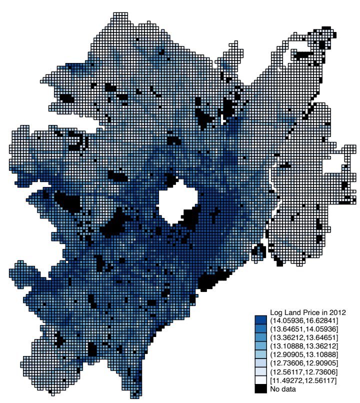
(b) 1931



(c) 1972



(d) 1983



(e) 2012

Notes: These maps show the pattern of land price data within our sample defined by the border of old Tokyo city. Black cells indicate missing values.

Table A.1: Selection Channel (OLS Sample)

	(1)	(2)	(3)
Panel A: Sorting of Movers			
	Δ Local Lords' Estates		
Log Revenue per Worker in 1993	0.00134	0.00317	
	(0.00335)	(0.00395)	
Industry FEs	No	Yes	
Observation (Firm)	12309	12309	
Panel B: Entrant (Outcome: Entrant Dummy)			
	Sample: Full in 2017		
Local Lords' Estates Share	0.0148	0.00774	
	(0.0171)	(0.0166)	
Local Lords' Estates Share * Log Revenue per Worker in 2017	0.00166	0.00143	-0.00151
	(0.00495)	(0.00480)	(0.00524)
Baseline Controls (* Log Revenue per Worker in 2017)	Yes	Yes	Yes
Industry FEs	No	Yes	Yes
Local Lords' Estates Share * Industry FEs	No	No	Yes
Observation (Firm)	76510	76510	76510
Panel C: Exiter (Outcome: Exiter Dummy)			
	Sample: Full in 1993		
Local Lords' Estates Share	-0.00422	-0.00605	
	(0.0196)	(0.0194)	
Local Lords' Estates Share * Log Revenue per Worker in 1993	0.00194	0.00271	0.000222
	(0.00524)	(0.00521)	(0.00578)
Baseline Controls (* Log Revenue per Worker in 1993)	Yes	Yes	Yes
Industry FEs	No	Yes	Yes
Local Lords' Estates Share * Industry FEs	No	No	Yes
Observation (Firm)	85307	85307	85307

Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Δ indicates the variable in 2017 minus 1993. Panel A uses firms that change their cells within our sample area. In panel B (C), the outcome variable is a dummy variable that takes the value one if a firm exists only in 2017 (1993). *Baseline Controls* includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms.

Table A.2: Selection Channel (RD Sample)

	(1)	(2)	(3)
Panel A: Sorting of Movers			
	Δ Local Lords' Estates Zone		
Log Revenue per Worker in 1993	0.0140	0.0179	
	(0.0136)	(0.0175)	
Industry FEs	No	Yes	
Observation (Firm)	1341	1341	
Panel B: Entrant (Outcome: Entrant Dummy)			
	Sample: Full in 2017		
Local Lords' Estates Zone	-0.0234	-0.0224	
	(0.0253)	(0.0250)	
Local Lords' Estates Zone * Log Revenue per Worker in 2017	0.00475	0.00581	0.00543
	(0.00726)	(0.00718)	(0.00784)
Baseline Controls (* Log Revenue per Worker in 2017)	Yes	Yes	Yes
Industry FEs	No	Yes	Yes
Local Lords' Estates * Industry FEs	No	No	Yes
Observation (Firm)	7159	7159	7159
Panel C: Exiter (Outcome: Exiter Dummy)			
	Sample: Full in 1993		
Local Lords' Estates Zone	0.0541	0.0625*	
	(0.0333)	(0.0331)	
Local Lords' Estates Zone * Log Revenue per Worker in 1993	-0.00499	-0.00824	-0.00752
	(0.00856)	(0.00857)	(0.00971)
Baseline Controls (* Log Revenue per Worker in 1993)	Yes	Yes	Yes
Industry FEs	No	Yes	Yes
Local Lords' Estates * Industry FEs	No	No	Yes
Observation (Firm)	8206	8206	8206

Robust standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Δ indicates the variable in 2017 minus 1993. For stories, we use the number of stories aboveground in 2011 and 1991, respectively. Panel A uses firms that change their located cells within our sample area for the local randomization analysis. In panel B (C), the outcome variable is a dummy variable that takes the value one if a firm exists only in 2017 (1993). *Baseline Controls* includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, and the share of unbuilt area in the Edo period,.

Table A.3: Role of Skyscrapers: Time Series Comparison of the Effect of Local Lords' Estates (OLS)

	N of Lots			Log Land Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Historical Outcomes						
Panel A: 1873						
Local Lords' Estates Share	-13.44***	-13.32***	-13.34***			
	(0.884)	(0.869)	(0.874)			
Panel B: 1912						
Local Lords' Estates Share	-13.89***	-13.72***	-13.72***	-0.442***	-0.433***	-0.436***
	(0.700)	(0.694)	(0.698)	(0.121)	(0.117)	(0.117)
Panel C: 1931						
Local Lords' Estates Share	-11.18***	-10.95***	-10.94***	-0.416***	-0.401***	-0.405***
	(1.066)	(1.053)	(1.059)	(0.0928)	(0.0897)	(0.0899)
Panel D: 1972						
Local Lords' Estates Share				0.00111	0.0110	0.00508
				(0.0459)	(0.0439)	(0.0422)
Panel E: 1983 (N of Buildings in 1986, not Lots)						
Local Lords' Estates Share	-16.06***	-14.88***	-14.94***	0.0677	0.0728	0.0636
	(2.103)	(2.040)	(2.034)	(0.0530)	(0.0514)	(0.0479)
	N of Lots			Log Land Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Modern Outcomes						
Panel F: 2012						
Local Lords' Estates Share	-25.43***	-23.49***	-23.55***	0.240***	0.246***	0.235***
	(3.277)	(3.179)	(3.182)	(0.0623)	(0.0630)	(0.0588)
Panel G: Skyscraper in 2011				N of $\geq$ 30 Stories Buildings		
				(4)	(5)	(6)
Local Lords' Estates Share				0.0321**	0.0331**	0.0321**
				(0.0158)	(0.0161)	(0.0158)
Baseline Controls	Yes	Yes	Yes	Yes	Yes	Yes
Altitude/Ruggedness	No	Yes	Yes	No	Yes	Yes
Ground Type	No	No	Yes	No	No	Yes
N in Panel A	5530	5530	5530			
N in Panel B	8133	8133	8133	7122	7122	7122
N in Panel C	7830	7830	7830	7024	7024	7024
N in Panel D				6071	6071	6071
N in Panel E	9566	9566	9566	3276	3276	3276
N in Panel F	9101	9101	9101	8971	8971	8971
N in Panel G				9542	9542	9542

Notes: Standard errors are shown in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Baseline Controls includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms. *Altitude/Ruggedness* includes the mean and standard deviation of altitude. *Ground Type* controls for earthquake risks based on their ground type. See Table 1 for the definitions of variables.

Table A.4: Role of Skyscrapers: Time Series Comparison of the Effect of Local Lords' Estates (RD)

	N of Lots			Log Land Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Historical Outcomes						
Panel A: 1873						
Local Lords' Estates Zone	-12.52***	-11.55***	-11.78***			
	(1.866)	(2.151)	(2.109)			
Panel B: 1912						
Local Lords' Estates Zone	-11.51***	-10.75***	-10.91***	-0.853***	-0.670***	-0.668***
	(1.695)	(1.971)	(1.987)	(0.238)	(0.234)	(0.234)
Panel C: 1931						
Local Lords' Estates Zone	-10.67***	-10.08***	-10.10***	-0.284**	-0.309*	-0.309*
	(1.659)	(2.020)	(1.969)	(0.139)	(0.181)	(0.179)
Panel D: 1972						
Local Lords' Estates Zone				0.149	0.0403	0.0424
				(0.151)	(0.156)	(0.161)
Panel E: 1983 (N of Buildings in 1986, not Lots)						
Local Lords' Estates Zone	-11.45***	-12.31***	-11.82***	0.317***	0.283**	0.287**
	(3.690)	(3.788)	(3.800)	(0.120)	(0.118)	(0.124)
	N of Lots			Log Land Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Modern Outcomes						
Panel F: 2012						
Local Lords' Estates Zone	-25.60***	-24.48***	-23.67***	0.674***	0.588***	0.552***
	(5.510)	(6.512)	(6.414)	(0.231)	(0.190)	(0.176)
Panel G: Skyscraper in 2011				N of $\geq$ 30 Stories Buildings		
				(4)	(5)	(6)
Local Lords' Estates Zone				0.148***	0.151***	0.138***
				(0.0566)	(0.0543)	(0.0491)
Baseline Controls	Yes	Yes	Yes	Yes	Yes	Yes
Altitude/Ruggedness	No	Yes	Yes	No	Yes	Yes
Ground Type	No	No	Yes	No	No	Yes
N in Panel A	348	348	348			
N in Panel B	343	343	343	294	294	294
N in Panel C	347	347	347	299	299	299
N in Panel D				279	279	279
N in Panel E	350	350	350	157	157	157
N in Panel F	351	351	351	341	341	341
N in Panel G				350	350	350

Notes: Standard errors are shown in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Baseline Controls includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms. *Altitude/Ruggedness* includes the mean and standard deviation of altitude. *Ground Type* controls for earthquake risks based on their ground type. See Table 1 for the definitions of variables.

Table A.5: Lot Size Persistence, Core vs. Non-core

	Inside vs Outside the Circle (*Yamanote*) Line					
	N of Lots			Log Land Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Historical Outcomes						
Panel A: 1873						
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-13.75***	-13.62***	-13.63***			
	(0.998)	(0.987)	(0.989)			
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-13.59***	-12.95***	-12.89***			
	(1.572)	(1.556)	(1.511)			
Panel B: 1912						
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-14.28***	-14.02***	-14.02***	-0.539***	-0.534***	-0.534***
	(0.793)	(0.770)	(0.779)	(0.138)	(0.134)	(0.133)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.43***	-12.04***	-12.04***	-0.196	-0.185	-0.169
	(1.547)	(1.561)	(1.562)	(0.223)	(0.210)	(0.206)
Panel C: 1931						
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-11.77***	-11.33***	-11.32***	-0.502***	-0.477***	-0.477***
	(1.260)	(1.235)	(1.234)	(0.111)	(0.108)	(0.108)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.440***	-8.416***	-8.414***	-0.232*	-0.210*	-0.209*
	(1.597)	(1.616)	(1.625)	(0.125)	(0.123)	(0.123)
Panel D: 1972						
Local Lords' Estates Share * Inside Yamanote Zone + 250 m				0.0357	0.0382	0.0354
				(0.0387)	(0.0383)	(0.0372)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m				-0.232***	-0.230***	-0.216***
				(0.0636)	(0.0634)	(0.0639)
Panel E: 1983 (N of Buildings in 1986, not Lots)						
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-18.88***	-17.54***	-17.54***	0.0726*	0.0740*	0.0729*
	(2.209)	(2.150)	(2.144)	(0.0413)	(0.0415)	(0.0402)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-6.518	-5.901	-5.911	-0.168**	-0.167**	-0.144*
	(4.669)	(4.372)	(4.381)	(0.0788)	(0.0785)	(0.0769)
	N of Lots			Log Land Price		
Modern Outcomes	(1)	(2)	(3)	(4)	(5)	(6)
Panel F: 2012						
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-29.89***	-27.54***	-27.56***	0.299***	0.296***	0.293***
	(3.512)	(3.443)	(3.494)	(0.0509)	(0.0505)	(0.0495)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.963	-8.743	-8.743	-0.143	-0.156	-0.155
	(6.286)	(6.052)	(6.068)	(0.101)	(0.0970)	(0.0973)
Panel G: Skyscraper in 2011				N of ≥ 30 Stories Buildings		
				(4)	(5)	(6)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m				0.0348**	0.0351**	0.0351**
				(0.0159)	(0.0161)	(0.0161)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m				0.0112	0.00873	0.00867
				(0.0323)	(0.0326)	(0.0320)
Baseline Controls (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes
Altitude/Ruggedness (* Inside)	No	Yes	Yes	No	Yes	Yes
Ground Type (* Inside)	No	No	Yes	No	No	Yes
N in Panel A	5530	5530	5530			
N in Panel B	8133	8133	8133	7122	7122	7122
N in Panel C	7830	7830	7830	7024	7024	7024
N in Panel D				6071	6071	6071
N in Panel E	9566	9566	9566	3276	3276	3276
N in Panel F	9101	9101	9101	8971	8971	8971
N in Panel G				9542	9542	9542

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Columns (1) and (4) are corresponding to Figure 8(a) and Figure 8(b), respectively.
Baseline Controls includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms. *Altitude/Ruggedness* includes the mean and standard deviation of altitude. *Ground Type* controls for earthquake risks based on their ground type. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.6: Lot Size Persistence, Core vs. Non-core (RD)

	Boundaries Close to vs Far from the Core Area					
	N of Lots			Log Land Price		
	(1)	(2)	(3)	(4)	(5)	(6)
Historical Outcomes						
Panel A: 1873						
Local Lords' Estates Zone (Core)	-13.05***	-12.03***	-13.07***			
	(2.181)	(2.364)	(2.211)			
Local Lords' Estates Zone (Non-core)	-11.64***	-10.82***	-9.932***			
	(2.705)	(2.940)	(2.836)			
Panel B: 1912						
Local Lords' Estates Zone (Core)	-12.42***	-11.66***	-12.60***	-1.050***	-0.836**	-0.807**
	(1.890)	(1.987)	(1.918)	(0.371)	(0.366)	(0.358)
Local Lords' Estates Zone (Non-core)	-10.06***	-9.493***	-8.715***	-0.587**	-0.476*	-0.506**
	(2.709)	(2.910)	(2.801)	(0.287)	(0.247)	(0.246)
Panel C: 1931						
Local Lords' Estates Zone (Core)	-12.17***	-11.69***	-12.06***	-0.421**	-0.468**	-0.457*
	(2.489)	(2.995)	(2.999)	(0.209)	(0.236)	(0.246)
Local Lords' Estates Zone (Non-core)	-8.192***	-7.613***	-7.287***	-0.109	-0.133	-0.145
	(2.458)	(2.244)	(2.207)	(0.110)	(0.134)	(0.143)
Panel D: 1972						
Local Lords' Estates Zone (Core)				0.214	0.0654	0.0330
				(0.292)	(0.305)	(0.303)
Local Lords' Estates Zone (Non-core)				0.0780	0.0177	0.0510
				(0.152)	(0.153)	(0.151)
Panel E: 1983 (N of Buildings in 1986, not Lots)						
Local Lords' Estates Zone (Core)	-18.28***	-19.75***	-19.29***	0.513***	0.495***	0.472***
	(2.601)	(2.896)	(3.273)	(0.110)	(0.111)	(0.117)
Local Lords' Estates Zone (Non-core)	0.250	-0.455	-0.855	0.0703	0.0631	0.0906
	(6.842)	(6.700)	(6.632)	(0.189)	(0.205)	(0.210)
	N of Lots			Log Land Price		
Modern Outcomes	(1)	(2)	(3)	(4)	(5)	(6)
Panel F: 2012						
Local Lords' Estates Zone (Core)	-35.18***	-34.64***	-33.38***	1.100***	1.021***	0.930***
	(5.630)	(6.850)	(7.197)	(0.224)	(0.205)	(0.217)
Local Lords' Estates Zone (Non-core)	-9.212	-8.264	-9.362	0.0107	-0.0489	0.0308
	(7.221)	(7.262)	(7.631)	(0.206)	(0.225)	(0.234)
Panel G: Skyscraper				N of $\geq$ 30 Stories Buildings		
				(4)	(5)	(6)
Local Lords' Estates Zone (Core)				0.242***	0.246***	0.215***
				(0.0766)	(0.0750)	(0.0759)
Local Lords' Estates Zone (Non-core)				-0.0128	-0.00195	0.0246
				(0.0361)	(0.0263)	(0.0317)
Baseline Controls	Yes	Yes	Yes	Yes	Yes	Yes
Altitude/Ruggedness	No	Yes	Yes	No	Yes	Yes
Ground Type	No	No	Yes	No	No	Yes
N in Panel A	348	348	348			
N in Panel B	343	343	343	294	294	294
N in Panel C	347	347	347	299	299	299
N in Panel D				279	279	279
N in Panel E	350	350	350	157	157	157
N in Panel F	351	351	351	341	341	341
N in Panel G				350	350	350

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Columns (1) and (4) are corresponding to Figure 8(c) and Figure 8(d), respectively.
Baseline Controls includes the distance from the Edo castle, its squared term, a dummy variable indicating whether the cell is inside the *Yamanote* loop line, sea area share, Sumida river area share, the share of unbuilt area in the Edo period, latitude, longitude, their interaction term and square terms. *Altitude/Ruggedness* includes the mean and standard deviation of altitude. *Ground Type* controls for earthquake risks based on their ground type. See Table 1 for the definitions of the variables.
Local Lords' Estates Zone (Core) (*Local Lords' Estates Zone (Non-Core)*) takes a value of one if the central point of the cell is in the local lords' estate zone, and the closest boundary is the dash-dot (solid) line in Figure 1.

Table A.7: Coefficient Stability Analysis (OLS)

	N of Lots				Log Land Price				
	1873	1912	1931	2011	1912	1931	1972	1983	2011
Local Lords Estates Share (Core)	-13.63***	-14.02***	-11.32***	-27.56***	-0.534***	-0.477***	0.0354	0.0729*	0.293***
Bias-Adjusted β	-11.50	-12.51	-10.04	-24.11	-0.496	-0.392	0.0326	0.0768	0.231
$\bar{\delta}$	2.423	3.308	3.673	4.777	6.520	4.205	7.368	109.2	3.587
Local Lords Estates Share (Non-Core)	-12.89***	-12.04***	-8.414***	-8.743	-0.169	-0.209*	-0.216***	-0.144*	-0.155
Bias-Adjusted β	-9.415	-10.24	-8.312	-8.376	0.128	0.650	-0.0986	0.184	-0.301
$\bar{\delta}$	2.612	4.479	12.52	22.29	0.588	0.281	1.814	0.448	-1.056

Notes: The first rows in each panel show the coefficients using specifications in column (3) of Table A.5 using the land price or land price in each era as indicated in the top row. The second rows show the bias-adjusted coefficients proposed by Oster (2019) using the column (1) as the short regression. As suggested in this study, we set $\delta = 1$ and $R^2_{max} = 1.3\tilde{R}^2$, where $\tilde{R}^2$ is R^2 in the regression models in each column as plausible parameters. In case there are multiple solutions for the bias-adjusted beta, we show the one closest to the original beta. $\bar{\delta}$ shows the value of δ when the bias-adjusted coefficient becomes zero.

Table A.8: Coefficient Stability Analysis (RD)

	N of Lots				Log Land Price				
	1873	1912	1931	2011	1912	1931	1972	1983	2011
Local Lords' Estates Zone (Core)	-13.07***	-12.60***	-12.06***	-33.38***	-0.807**	-0.457*	0.0330	0.472***	0.930***
Bias-Adjusted β	-12.92	-11.62	-12.64	-42.23	0.0650	-0.301	0.736	0.644	1.791
$\bar{\delta}$	0.725	0.602	0.546	0.593	0.957	0.231	0.0212	0.283	0.581
Local Lords' Estates Zone (Non-core)	-9.932***	-8.715***	-7.287***	-9.362	-0.506**	-0.145	0.0510	0.0906	0.0308
Bias-Adjusted β	3.693	-23.10	-16.92	-7.282	-0.0286	0.162	0.832	-0.111	-0.511
$\bar{\delta}$	0.813	0.681	0.428	0.388	1.033	-0.0766	0.161	-0.144	-0.129

Notes: The first rows in each panel show the coefficients using specifications in column (3) of Table A.6 using the land price or land price in each era as indicated in the top row. The second rows show the bias-adjusted coefficients proposed by Oster (2019) using the column (1) as the short regression. As suggested in this study, we set $\delta = 1$ and $R^2_{max} = 1.3\tilde{R}^2$, where $\tilde{R}^2$ is R^2 in the regression models in each column as plausible parameters. In case there are multiple solutions for the bias-adjusted beta, we show the one closest to the original beta. $\bar{\delta}$ shows the value of δ when the bias-adjusted coefficient becomes zero.

Table A.9: Controlling Channels (OLS)

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-13.63***	-13.56***	-12.92***	-12.05***	-13.98***	-12.44***						
	(0.989)	(0.921)	(0.986)	(0.772)	(1.069)	(0.827)						
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.89***	-12.93***	-13.72***	-12.27***	-11.71***	-11.34***						
	(1.511)	(1.414)	(1.511)	(1.459)	(1.502)	(1.429)						
Panel B: 1912												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-14.02***	-12.96***	-13.40***	-11.64***	-13.57***	-11.38***	-0.534***	-0.491***	-0.484***	-0.396***	-0.552***	-0.369***
	(0.773)	(0.766)	(0.732)	(0.660)	(0.829)	(0.686)	(0.133)	(0.134)	(0.130)	(0.127)	(0.141)	(0.139)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.04***	-11.64***	-12.54***	-10.44***	-11.17***	-10.04***	-0.169	-0.138	-0.162	0.00578	-0.184	-0.0672
	(1.552)	(1.429)	(1.470)	(1.523)	(1.462)	(1.430)	(0.206)	(0.212)	(0.207)	(0.202)	(0.193)	(0.178)
Panel C: 1931												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-11.32***	-9.481***	-8.355***	-8.538***	-10.65***	-7.458***	-0.477***	-0.429***	-0.349***	-0.313***	-0.558***	-0.364***
	(1.234)	(1.152)	(1.294)	(1.220)	(1.331)	(1.178)	(0.108)	(0.0984)	(0.0984)	(0.0984)	(0.113)	(0.101)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.414***	-7.852***	-8.313***	-7.011***	-7.468***	-6.420***	-0.209*	-0.184	-0.165	-0.0531	-0.234*	-0.119
	(1.626)	(1.510)	(1.480)	(1.594)	(1.697)	(1.578)	(0.123)	(0.118)	(0.118)	(0.126)	(0.128)	(0.113)
Panel D: 1972												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0354	0.0221	-0.00893	0.0326	0.0475	0.0372
							(0.0373)	(0.0351)	(0.0316)	(0.0401)	(0.0396)	(0.0367)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.216***	-0.170***	-0.156***	-0.119**	-0.166***	-0.0653
							(0.0639)	(0.0594)	(0.0550)	(0.0525)	(0.0592)	(0.0476)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-17.54***	-13.96***	-9.806***	-13.32***	-17.71***	-11.56***	0.0729*	0.0671*	0.0321	0.0716*	0.0913**	0.0737*
	(2.135)	(1.691)	(1.774)	(1.826)	(2.343)	(1.650)	(0.0401)	(0.0368)	(0.0334)	(0.0395)	(0.0434)	(0.0383)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-5.911	-4.168	-4.975	-3.064	-3.656	-2.619	-0.144*	-0.0994	-0.114*	-0.0529	-0.102	-0.0191
	(4.377)	(3.865)	(3.230)	(3.951)	(3.571)	(3.288)	(0.0770)	(0.0719)	(0.0628)	(0.0688)	(0.0780)	(0.0638)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-27.56***	-21.30***	-15.90***	-19.80***	-27.20***	-17.72***	0.293***	0.288***	0.176***	0.282***	0.290***	0.258***
	(3.439)	(2.786)	(3.122)	(2.886)	(3.516)	(2.613)	(0.0491)	(0.0482)	(0.0404)	(0.0496)	(0.0515)	(0.0500)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.743	-8.286	-9.091*	-3.757	-5.467	-4.124	-0.155	-0.123	-0.106	-0.0986	-0.109	-0.0526
	(6.069)	(5.428)	(4.749)	(5.343)	(5.021)	(4.732)	(0.0973)	(0.0917)	(0.0815)	(0.0864)	(0.0867)	(0.0739)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0351**	0.0382**	0.0327**	0.0450***	0.0477**	0.0523***
							(0.0160)	(0.0166)	(0.0161)	(0.0160)	(0.0186)	(0.0188)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							0.00867	0.00809	0.0327	0.00838	0.0194	0.0112
							(0.0321)	(0.0327)	(0.0263)	(0.0342)	(0.0367)	(0.0381)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	5530	5530	5133	5530	5292	5292						
N in Panel B	8133	8133	7726	8133	7319	7319	7122	7122	6927	7122	6552	6552
N in Panel C	7830	7830	7399	7830	7830	7830	7024	7024	6884	7024	7024	7024
N in Panel D							6071	6071	6046	6071	5080	5080
N in Panel E	9566	9566	9012	9566	7742	7742	3276	3276	3256	3276	2770	2770
N in Panel F	9101	9101	8518	9101	7783	7783	8971	8971	8906	8971	7332	7332
N in Panel G							9542	9542	9000	9542	7726	7726

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.10: Controlling Channels (RD)

	Boundaries Close to vs Far from the Core Area											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Zone (Core)	-13.07***	-14.15***	-12.25***	-10.38***	-13.04***	-11.15***						
	(2.211)	(1.998)	(2.082)	(2.027)	(2.244)	(1.900)						
Local Lords' Estates Zone (Non-core)	-9.932***	-8.710***	-9.711***	-3.485	-8.842***	-3.078						
	(2.836)	(2.816)	(2.880)	(2.599)	(2.737)	(2.590)						
Panel B: 1912												
Local Lords' Estates Zone (Core)	-12.60***	-13.53***	-11.39***	-10.05***	-12.48***	-10.63***	-0.807**	-0.907***	-0.460***	-0.845***	-0.738**	-0.940***
	(1.918)	(1.953)	(1.904)	(1.867)	(1.936)	(1.936)	(0.358)	(0.340)	(0.162)	(0.311)	(0.371)	(0.325)
Local Lords' Estates Zone (Non-core)	-8.715***	-7.692***	-8.434***	-2.097	-7.270***	-1.791	-0.506**	-0.413*	-0.403*	-0.116	-0.342	-0.0467
	(2.801)	(2.759)	(2.854)	(2.279)	(2.610)	(2.262)	(0.246)	(0.231)	(0.213)	(0.188)	(0.228)	(0.197)
Panel C: 1931												
Local Lords' Estates Zone (Core)	-12.06***	-11.96***	-9.268***	-10.41***	-12.08***	-9.863***	-0.457*	-0.469*	-0.430**	-0.428	-0.437*	-0.487*
	(2.999)	(2.901)	(2.983)	(2.789)	(3.054)	(2.798)	(0.246)	(0.267)	(0.203)	(0.265)	(0.247)	(0.287)
Local Lords' Estates Zone (Non-core)	-7.287***	-7.236***	-7.003***	-2.356	-6.563***	-2.951	-0.145	-0.177	-0.128	0.0767	-0.0794	0.104
	(2.207)	(2.024)	(2.268)	(1.984)	(2.140)	(1.989)	(0.143)	(0.146)	(0.140)	(0.140)	(0.134)	(0.128)
Panel D: 1972												
Local Lords' Estates Zone (Core)							0.0330	-0.0478	-0.0859	0.0244	0.0459	-0.0783
							(0.303)	(0.288)	(0.322)	(0.315)	(0.301)	(0.295)
Local Lords' Estates Zone (Non-core)							0.0510	0.122	0.000377	0.164	0.143	0.259**
							(0.151)	(0.146)	(0.123)	(0.116)	(0.143)	(0.117)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Zone (Core)	-19.29***	-17.04***	-12.32***	-21.31***	-19.17***	-17.83***	0.472***	0.436***	0.380**	0.466***	0.459***	0.392***
	(3.273)	(3.114)	(2.700)	(4.143)	(3.393)	(3.887)	(0.117)	(0.103)	(0.147)	(0.109)	(0.106)	(0.0854)
Local Lords' Estates Zone (Non-core)	-0.855	-3.996	-0.326	-6.892	-5.205	-10.45*	0.0906	0.159	0.107	0.179	0.140	0.251
	(6.632)	(6.148)	(5.268)	(5.820)	(6.394)	(5.408)	(0.210)	(0.191)	(0.173)	(0.174)	(0.206)	(0.155)
	N of Lots						Log Land Price					
Modern Outcomes	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel F: 2012												
Local Lords' Estates Zone (Core)	-33.38***	-30.32***	-22.73***	-33.06***	-32.83***	-27.48***	0.930***	0.816***	0.444**	0.877***	0.936***	0.739***
	(7.197)	(7.121)	(6.617)	(8.224)	(7.607)	(8.112)	(0.217)	(0.206)	(0.177)	(0.216)	(0.201)	(0.208)
Local Lords' Estates Zone (Non-core)	-9.362	-13.08*	-8.787	-8.071	-14.09*	-13.96*	0.0308	0.147	-0.0443	0.108	0.130	0.201
	(7.631)	(6.705)	(6.748)	(8.180)	(8.298)	(7.206)	(0.234)	(0.232)	(0.168)	(0.185)	(0.204)	(0.146)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Zone (Core)							0.215***	0.229***	0.207***	0.217***	0.217***	0.228***
							(0.0759)	(0.0738)	(0.0789)	(0.0675)	(0.0800)	(0.0692)
Local Lords' Estates Zone (Non-core)							0.0246	0.000368	0.0277	-0.0287	0.0308	-0.0251
							(0.0317)	(0.0374)	(0.0315)	(0.0500)	(0.0324)	(0.0464)
Confounders	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	348	348	335	348	344	344						
N in Panel B	343	343	330	343	339	339	294	294	289	294	293	293
N in Panel C	347	347	336	347	347	347	299	299	296	299	299	299
N in Panel D							279	279	277	279	279	279
N in Panel E	350	350	337	350	346	346	157	157	155	157	157	157
N in Panel F	351	351	338	351	347	347	341	341	336	341	339	339
N in Panel G							350	350	337	350	346	346

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. *Confounders* includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(b). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.11: Using Consistent Observations in 1912 or 1931 and 2012 data

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-14.44***	-14.67***	-13.95***	-13.11***	-14.52***	-13.20***						
	(0.971)	(0.929)	(0.949)	(0.855)	(0.955)	(0.860)						
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-14.15***	-13.33***	-13.76***	-12.84***	-12.34***	-11.36***						
	(1.543)	(1.511)	(1.505)	(1.504)	(1.487)	(1.447)						
Panel B: 1912												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-14.00***	-13.89***	-13.50***	-12.37***	-13.50***	-11.98***	-0.544***	-0.509***	-0.500***	-0.404***	-0.552***	-0.385***
	(0.759)	(0.721)	(0.718)	(0.684)	(0.732)	(0.677)	(0.130)	(0.128)	(0.129)	(0.124)	(0.138)	(0.132)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-13.10***	-12.35***	-12.78***	-11.56***	-11.56***	-10.52***	-0.193	-0.123	-0.141	-0.00384	-0.217	-0.0855
	(1.507)	(1.455)	(1.491)	(1.533)	(1.434)	(1.433)	(0.217)	(0.219)	(0.206)	(0.218)	(0.193)	(0.176)
Panel C: 1931												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-8.212***	-8.050***	-6.936***	-6.756***	-7.465***	-6.037***	-0.463***	-0.434***	-0.352***	-0.311***	-0.537***	-0.376***
	(1.348)	(1.281)	(1.366)	(1.313)	(1.420)	(1.341)	(0.106)	(0.0945)	(0.0962)	(0.0979)	(0.111)	(0.0966)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.156***	-7.431***	-8.059***	-6.763***	-7.077***	-5.962***	-0.195	-0.151	-0.162	-0.0421	-0.211*	-0.0861
	(1.555)	(1.479)	(1.490)	(1.549)	(1.612)	(1.530)	(0.121)	(0.117)	(0.119)	(0.118)	(0.128)	(0.112)
Panel D: 1972												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0400	0.0209	0.000581	0.0335	0.0422	0.0267
							(0.0377)	(0.0365)	(0.0322)	(0.0409)	(0.0403)	(0.0381)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.190***	-0.149***	-0.126**	-0.122**	-0.164***	-0.0633
							(0.0595)	(0.0542)	(0.0502)	(0.0522)	(0.0593)	(0.0475)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-12.91***	-11.85***	-8.398***	-10.21***	-12.88***	-9.529***	0.0969**	0.0748*	0.0561*	0.0837**	0.105**	0.0749*
	(1.950)	(1.594)	(1.624)	(1.844)	(2.128)	(1.592)	(0.0419)	(0.0394)	(0.0338)	(0.0418)	(0.0450)	(0.0406)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-4.616	-1.638	-4.152	-2.169	-2.016	-0.881	-0.134*	-0.0845	-0.0978*	-0.0742	-0.107	-0.0231
	(3.590)	(3.063)	(2.764)	(3.543)	(3.130)	(2.895)	(0.0756)	(0.0713)	(0.0587)	(0.0662)	(0.0805)	(0.0640)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-17.20***	-15.64***	-11.35***	-13.24***	-18.28***	-13.77***	0.242***	0.226***	0.159***	0.216***	0.256***	0.213***
	(3.111)	(2.474)	(2.707)	(2.982)	(3.196)	(2.556)	(0.0530)	(0.0526)	(0.0411)	(0.0520)	(0.0556)	(0.0531)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-7.388	-4.548	-6.861	-2.588	-3.040	-1.349	-0.166**	-0.132**	-0.107*	-0.129**	-0.160**	-0.101*
	(5.456)	(4.847)	(4.493)	(5.030)	(4.551)	(4.269)	(0.0688)	(0.0650)	(0.0615)	(0.0606)	(0.0673)	(0.0573)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0462***	0.0459***	0.0370**	0.0460***	0.0515***	0.0483***
							(0.0161)	(0.0163)	(0.0156)	(0.0159)	(0.0175)	(0.0173)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							0.00305	0.00239	0.0153	-0.00385	0.00937	0.00372
							(0.0131)	(0.0139)	(0.0145)	(0.0153)	(0.0126)	(0.0131)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	4757	4757	4734	4757	4743	4743						
N in Panel B	7148	7148	7117	7148	6632	6632	6904	6904	6874	6904	6388	6388
N in Panel C	6959	6959	6931	6959	6959	6959	6878	6878	6852	6878	6878	6878
N in Panel D							5356	5356	5350	5356	5014	5014
N in Panel E	7463	7463	7433	7463	6950	6950	2880	2880	2874	2880	2707	2707
N in Panel F	7402	7402	7370	7402	6955	6955	7475	7475	7443	7475	6959	6959
N in Panel G							7457	7457	7428	7457	6944	6944

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.12: Using 500 m threshold for Conley Standard Errors

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-13.63***	-13.56***	-12.92***	-12.05***	-13.98***	-12.44***						
	(1.269)	(1.162)	(1.227)	(0.939)	(1.364)	(1.003)						
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.89***	-12.93***	-13.72***	-12.27***	-11.71***	-11.34***						
	(1.738)	(1.577)	(1.700)	(1.623)	(1.710)	(1.589)						
Panel B: 1912												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-14.02***	-12.96***	-13.40***	-11.64***	-13.57***	-11.38***	-0.534***	-0.491***	-0.484***	-0.396***	-0.552***	-0.369**
	(0.978)	(0.959)	(0.903)	(0.792)	(1.044)	(0.829)	(0.148)	(0.148)	(0.140)	(0.141)	(0.163)	(0.158)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.04***	-11.64***	-12.54***	-10.44***	-11.17***	-10.04***	-0.169	-0.138	-0.162	0.00578	-0.184	-0.0672
	(1.794)	(1.607)	(1.663)	(1.700)	(1.551)	(1.481)	(0.227)	(0.234)	(0.225)	(0.221)	(0.205)	(0.185)
Panel C: 1931												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-11.32***	-9.481***	-8.355***	-8.538***	-10.65***	-7.458***	-0.477***	-0.429***	-0.349***	-0.313***	-0.558***	-0.364***
	(1.464)	(1.353)	(1.491)	(1.346)	(1.558)	(1.338)	(0.115)	(0.0988)	(0.106)	(0.0974)	(0.117)	(0.100)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.414***	-7.852***	-8.313***	-7.011***	-7.468***	-6.420***	-0.209*	-0.184	-0.165	-0.0531	-0.234*	-0.119
	(1.580)	(1.494)	(1.389)	(1.621)	(1.652)	(1.607)	(0.123)	(0.125)	(0.122)	(0.130)	(0.128)	(0.119)
Panel D: 1972												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0354	0.0221	-0.00893	0.0326	0.0475	0.0372
							(0.0410)	(0.0387)	(0.0356)	(0.0451)	(0.0435)	(0.0401)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.216***	-0.170***	-0.156***	-0.119**	-0.166**	-0.0653
							(0.0727)	(0.0654)	(0.0597)	(0.0540)	(0.0664)	(0.0474)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-17.54***	-13.96***	-9.806***	-13.32***	-17.71***	-11.56***	0.0729*	0.0671*	0.0321	0.0716*	0.0913**	0.0737*
	(2.575)	(1.985)	(2.050)	(2.018)	(2.815)	(1.802)	(0.0372)	(0.0348)	(0.0346)	(0.0393)	(0.0426)	(0.0388)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-5.911	-4.168	-4.975	-3.064	-3.656	-2.619	-0.144*	-0.0994	-0.114**	-0.0529	-0.102	-0.0191
	(4.909)	(4.434)	(3.495)	(4.480)	(3.783)	(3.642)	(0.0776)	(0.0709)	(0.0576)	(0.0658)	(0.0810)	(0.0607)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-27.56***	-21.30***	-15.90***	-19.80***	-27.20***	-17.72***	0.293***	0.288***	0.176***	0.282***	0.290***	0.258***
	(4.038)	(3.264)	(3.648)	(3.018)	(4.052)	(2.794)	(0.0609)	(0.0595)	(0.0496)	(0.0615)	(0.0628)	(0.0601)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.743	-8.286	-9.091	-3.757	-5.467	-4.124	-0.155	-0.123	-0.106	-0.0986	-0.109	-0.0526
	(6.889)	(6.509)	(5.551)	(6.223)	(5.397)	(5.311)	(0.113)	(0.104)	(0.0907)	(0.0967)	(0.0954)	(0.0753)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0351**	0.0382**	0.0327**	0.0450***	0.0477**	0.0523***
							(0.0162)	(0.0164)	(0.0159)	(0.0160)	(0.0188)	(0.0191)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							0.00867	0.00809	0.0327	0.00838	0.0194	0.0112
							(0.0295)	(0.0294)	(0.0229)	(0.0306)	(0.0329)	(0.0339)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	5530	5530	5133	5530	5292	5292						
N in Panel B	8133	8133	7726	8133	7319	7319	7122	7122	6927	7122	6552	6552
N in Panel C	7830	7830	7399	7830	7830	7830	7024	7024	6884	7024	7024	7024
N in Panel D							6071	6071	6046	6071	5080	5080
N in Panel E	9566	9566	9012	9566	7742	7742	3276	3276	3256	3276	2770	2770
N in Panel F	9101	9101	8518	9101	7783	7783	8971	8971	8906	8971	7332	7332
N in Panel G							9542	9542	9000	9542	7726	7726

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.13: Using 1000 m threshold for Conley Standard Errors

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-13.63***	-13.56***	-12.92***	-12.05***	-13.98***	-12.44***						
	(1.365)	(1.271)	(1.260)	(0.895)	(1.373)	(0.923)						
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.89***	-12.93***	-13.72***	-12.27***	-11.71***	-11.34***						
	(2.280)	(2.140)	(2.228)	(2.012)	(2.324)	(2.091)						
Panel B: 1912												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-14.02***	-12.96***	-13.40***	-11.64***	-13.57***	-11.38***	-0.534***	-0.491***	-0.484***	-0.396**	-0.552***	-0.369**
	(1.060)	(1.003)	(0.973)	(0.776)	(1.090)	(0.851)	(0.172)	(0.172)	(0.156)	(0.156)	(0.185)	(0.173)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.04***	-11.64***	-12.54***	-10.44***	-11.17***	-10.04***	-0.169	-0.138	-0.162	0.00578	-0.184	-0.0672
	(2.160)	(2.004)	(2.065)	(1.848)	(1.850)	(1.588)	(0.247)	(0.251)	(0.233)	(0.239)	(0.217)	(0.198)
Panel C: 1931												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-11.32***	-9.481***	-8.355***	-8.538***	-10.65***	-7.458***	-0.477***	-0.429***	-0.349***	-0.313***	-0.558***	-0.364***
	(1.402)	(1.337)	(1.532)	(1.142)	(1.419)	(1.180)	(0.127)	(0.121)	(0.126)	(0.106)	(0.135)	(0.119)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.414***	-7.852***	-8.313***	-7.011***	-7.468***	-6.420***	-0.209**	-0.184*	-0.165	-0.0531	-0.234**	-0.119
	(1.821)	(1.741)	(1.538)	(1.857)	(1.890)	(1.874)	(0.104)	(0.105)	(0.108)	(0.121)	(0.111)	(0.108)
Panel D: 1972												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0354	0.0221	-0.00893	0.0326	0.0475	0.0372
							(0.0397)	(0.0386)	(0.0375)	(0.0416)	(0.0443)	(0.0385)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.216***	-0.170***	-0.156**	-0.119**	-0.166**	-0.0653
							(0.0739)	(0.0652)	(0.0652)	(0.0560)	(0.0704)	(0.0521)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-17.54***	-13.96***	-9.806***	-13.32***	-17.71***	-11.56***	0.0729*	0.0671*	0.0321	0.0716	0.0913*	0.0737
	(2.808)	(2.229)	(1.994)	(1.871)	(3.026)	(1.691)	(0.0396)	(0.0402)	(0.0365)	(0.0441)	(0.0488)	(0.0499)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-5.911	-4.168	-4.975	-3.064	-3.656	-2.619	-0.144**	-0.0994	-0.114**	-0.0529	-0.102	-0.0191
	(4.759)	(4.663)	(3.712)	(4.102)	(3.061)	(3.302)	(0.0717)	(0.0673)	(0.0507)	(0.0556)	(0.0804)	(0.0564)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-27.56***	-21.30***	-15.90***	-19.80***	-27.20***	-17.72***	0.293***	0.288***	0.176***	0.282***	0.290***	0.258***
	(3.994)	(3.481)	(3.561)	(2.482)	(3.782)	(2.430)	(0.0791)	(0.0783)	(0.0610)	(0.0794)	(0.0816)	(0.0773)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-8.743	-8.286	-9.091	-3.757	-5.467	-4.124	-0.155	-0.123	-0.106	-0.0986	-0.109	-0.0526
	(7.067)	(7.489)	(6.606)	(6.568)	(6.633)	(6.579)	(0.105)	(0.0979)	(0.0930)	(0.0894)	(0.0823)	(0.0638)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0351**	0.0382***	0.0327**	0.0450***	0.0477***	0.0523***
							(0.0141)	(0.0141)	(0.0148)	(0.0150)	(0.0171)	(0.0176)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							0.00867	0.00809	0.0327*	0.00838	0.0194	0.0112
							(0.0262)	(0.0264)	(0.0197)	(0.0295)	(0.0317)	(0.0378)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	5530	5530	5133	5530	5292	5292						
N in Panel B	8133	8133	7726	8133	7319	7319	7122	7122	6927	7122	6552	6552
N in Panel C	7830	7830	7399	7830	7830	7830	7024	7024	6884	7024	7024	7024
N in Panel D							6071	6071	6046	6071	5080	5080
N in Panel E	9566	9566	9012	9566	7742	7742	3276	3276	3256	3276	2770	2770
N in Panel F	9101	9101	8518	9101	7783	7783	8971	8971	8906	8971	7332	7332
N in Panel G							9542	9542	9000	9542	7726	7726

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.14: Using Max Local Lords' Estate Size as a Treatment Variable

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m	-14.38***	-14.28***	-13.70***	-12.71***	-14.81***	-13.19***						
	(0.988)	(0.921)	(1.000)	(0.784)	(1.081)	(0.826)						
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m	-13.61***	-13.87***	-14.57***	-13.16***	-12.42***	-12.29***						
	(1.648)	(1.533)	(1.659)	(1.569)	(1.635)	(1.531)						
Panel B: 1912												
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m	-14.82***	-13.59***	-14.19***	-12.24***	-14.34***	-11.88***	-0.588***	-0.538***	-0.548***	-0.445***	-0.610***	-0.414***
	(0.781)	(0.773)	(0.748)	(0.674)	(0.833)	(0.700)	(0.144)	(0.143)	(0.141)	(0.136)	(0.151)	(0.145)
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m	-12.74***	-12.43***	-13.35***	-11.09***	-11.93***	-10.89***	-0.163	-0.142	-0.161	0.0181	-0.188	-0.0832
	(1.672)	(1.548)	(1.614)	(1.636)	(1.573)	(1.514)	(0.240)	(0.244)	(0.241)	(0.236)	(0.221)	(0.210)
Panel C: 1931												
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m	-12.03***	-9.942***	-8.930***	-9.037***	-11.32***	-7.770***	-0.528***	-0.472***	-0.399***	-0.355***	-0.631***	-0.417***
	(1.287)	(1.201)	(1.398)	(1.204)	(1.432)	(1.259)	(0.120)	(0.107)	(0.107)	(0.108)	(0.125)	(0.109)
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m	-8.892***	-8.427***	-8.748***	-7.512***	-7.895***	-6.951***	-0.225	-0.212	-0.174	-0.0712	-0.248*	-0.145
	(1.851)	(1.709)	(1.697)	(1.798)	(1.944)	(1.793)	(0.138)	(0.134)	(0.134)	(0.135)	(0.144)	(0.129)
Panel D: 1972												
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m							0.0291	0.0192	-0.0113	0.0269	0.0424	0.0349
							(0.0391)	(0.0372)	(0.0328)	(0.0427)	(0.0414)	(0.0393)
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m							-0.232***	-0.185***	-0.159***	-0.130**	-0.179***	-0.0738
							(0.0670)	(0.0620)	(0.0593)	(0.0554)	(0.0621)	(0.0489)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m	-18.66***	-14.71***	-10.71***	-14.11***	-18.90***	-12.05***	0.0806*	0.0814**	0.0436	0.0822**	0.102**	0.0906**
	(2.215)	(1.768)	(1.843)	(1.929)	(2.487)	(1.721)	(0.0419)	(0.0379)	(0.0357)	(0.0409)	(0.0452)	(0.0390)
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m	-6.370	-5.052	-5.380	-3.477	-3.870	-3.244	-0.174**	-0.127*	-0.126*	-0.0800	-0.133*	-0.0446
	(4.688)	(4.207)	(3.455)	(4.191)	(3.781)	(3.510)	(0.0794)	(0.0747)	(0.0667)	(0.0733)	(0.0805)	(0.0657)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m	-29.45***	-22.58***	-17.37***	-21.10***	-29.21***	-18.66***	0.293***	0.293***	0.178***	0.280***	0.288***	0.259***
	(3.592)	(2.919)	(3.335)	(3.039)	(3.652)	(2.741)	(0.0499)	(0.0479)	(0.0401)	(0.0508)	(0.0522)	(0.0507)
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m	-9.521	-9.686*	-9.869**	-4.452	-5.953	-5.150	-0.161	-0.127	-0.103	-0.103	-0.114	-0.0527
	(6.470)	(5.860)	(5.032)	(5.600)	(5.495)	(5.133)	(0.105)	(0.0987)	(0.0874)	(0.0936)	(0.0932)	(0.0792)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Max Local Lords' Estate Size * Inside Yamanote Zone + 250 m							0.0373**	0.0410**	0.0349**	0.0483***	0.0513***	0.0564***
							(0.0165)	(0.0172)	(0.0172)	(0.0168)	(0.0194)	(0.0194)
Max Local Lords' Estate Size * Outside Yamanote Zone + 250 m							0.00613	0.00511	0.0330	0.00527	0.0176	0.00845
							(0.0343)	(0.0350)	(0.0284)	(0.0366)	(0.0369)	(0.0414)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	5530	5530	5133	5530	5292	5292						
N in Panel B	8133	8133	7726	8133	7319	7319	7122	7122	6927	7122	6552	6552
N in Panel C	7830	7830	7399	7830	7830	7830	7024	7024	6884	7024	7024	7024
N in Panel D							6071	6071	6046	6071	5080	5080
N in Panel E	9566	9566	9012	9566	7742	7742	3276	3276	3256	3276	2770	2770
N in Panel F	9101	9101	8518	9101	7783	7783	8971	8971	8906	8971	7332	7332
N in Panel G							9542	9542	9000	9542	7726	7726

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.15: Using 200 m-level Data

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-45.02***	-44.54***	-40.90***	-40.07***	-46.57***	-41.67***						
	(4.362)	(3.953)	(4.390)	(3.477)	(4.687)	(3.629)						
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-48.18***	-48.22***	-49.96***	-45.62***	-41.92***	-40.02***						
	(6.910)	(6.344)	(6.922)	(7.051)	(6.900)	(6.959)						
Panel B: 1912												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-47.62***	-42.69***	-43.47***	-38.89***	-45.79***	-37.82***	-0.868***	-0.755***	-0.816***	-0.608***	-0.881***	-0.577***
	(3.461)	(3.442)	(3.339)	(2.990)	(4.212)	(3.065)	(0.215)	(0.209)	(0.216)	(0.193)	(0.223)	(0.209)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-44.65***	-42.53***	-45.50***	-39.17***	-42.10***	-40.11***	-0.154	-0.109	-0.137	0.0956	-0.0198	0.0675
	(6.966)	(6.880)	(6.568)	(7.282)	(6.373)	(5.920)	(0.273)	(0.283)	(0.273)	(0.259)	(0.264)	(0.242)
Panel C: 1931												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-39.88***	-32.04***	-29.58***	-29.88***	-37.53***	-26.02***	-1.093***	-0.855***	-0.650***	-0.780***	-1.159***	-0.747***
	(5.067)	(4.894)	(5.218)	(4.814)	(5.528)	(4.963)	(0.226)	(0.185)	(0.184)	(0.187)	(0.230)	(0.182)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-32.70***	-30.84***	-33.52***	-29.18***	-29.39***	-27.34***	-0.316*	-0.261	-0.309*	-0.148	-0.396*	-0.247
	(7.460)	(6.721)	(6.825)	(7.619)	(7.993)	(7.430)	(0.192)	(0.186)	(0.179)	(0.203)	(0.206)	(0.192)
Panel D: 1972												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0277	0.0308	-0.0498	0.0331	0.0492	0.0400
							(0.0484)	(0.0432)	(0.0430)	(0.0501)	(0.0495)	(0.0478)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.299***	-0.253***	-0.198***	-0.146**	-0.213**	-0.0800
							(0.0832)	(0.0789)	(0.0704)	(0.0670)	(0.0851)	(0.0659)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-72.53***	-55.30***	-42.41***	-55.60***	-75.02***	-49.31***	0.104*	0.102**	0.0213	0.136**	0.140**	0.129**
	(9.946)	(8.467)	(8.941)	(8.754)	(10.89)	(8.050)	(0.0591)	(0.0499)	(0.0488)	(0.0566)	(0.0593)	(0.0532)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-20.74	-10.15	-25.94	-8.202	-11.48	-7.286	-0.220***	-0.178**	-0.121*	-0.0790	-0.171*	-0.0871
	(23.35)	(19.96)	(18.54)	(20.13)	(17.94)	(17.00)	(0.0834)	(0.0789)	(0.0715)	(0.0773)	(0.0914)	(0.0854)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-107.3***	-78.78***	-62.39***	-77.99***	-109.2***	-72.32***	0.363***	0.371***	0.208***	0.382***	0.378***	0.354***
	(15.84)	(13.40)	(14.86)	(13.49)	(16.24)	(12.59)	(0.0685)	(0.0633)	(0.0596)	(0.0677)	(0.0697)	(0.0675)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-25.04	-20.26	-40.51*	-5.177	-20.33	-17.18	-0.280**	-0.260**	-0.181	-0.170	-0.223**	-0.155
	(29.78)	(26.53)	(24.57)	(26.04)	(25.71)	(24.68)	(0.131)	(0.126)	(0.111)	(0.113)	(0.110)	(0.0982)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0903	0.104*	0.0967*	0.138***	0.123**	0.151**
							(0.0549)	(0.0571)	(0.0566)	(0.0535)	(0.0596)	(0.0604)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							0.00364	0.0135	0.0646	0.0170	0.0395	0.00963
							(0.0861)	(0.0865)	(0.0762)	(0.0933)	(0.0850)	(0.0918)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	1486	1486	1447	1486	1445	1445						
N in Panel B	2222	2222	2193	2222	1993	1993	2022	2022	2012	2022	1864	1864
N in Panel C	2099	2099	2066	2099	2099	2099	1968	1968	1962	1968	1968	1968
N in Panel D							2163	2163	2163	2163	1804	1804
N in Panel E	2584	2584	2534	2584	2097	2097	2030	2030	2028	2030	1670	1670
N in Panel F	2414	2414	2367	2414	2091	2091	2513	2513	2508	2513	2054	2054
N in Panel G							2584	2584	2534	2584	2097	2097

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.16: Donuts Hole Approach

	Boundaries Close to vs Far from the Core Area											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Zone (Core)	-15.87***	-16.64***	-14.45***	-12.88***	-15.85***	-13.73***						
	(3.337)	(2.883)	(3.538)	(3.280)	(3.397)	(2.996)						
Local Lords' Estates Zone (Non-core)	-16.19***	-15.07***	-15.45***	-10.01***	-15.71***	-9.718***						
	(2.302)	(2.457)	(2.323)	(3.241)	(2.309)	(3.207)						
Panel B: 1912												
Local Lords' Estates Zone (Core)	-14.96***	-15.27***	-12.84***	-12.23***	-14.78***	-12.27***	-0.871**	-0.929**	-0.234	-0.777**	-0.741*	-0.818**
	(2.851)	(2.505)	(3.023)	(2.567)	(2.855)	(2.358)	(0.410)	(0.427)	(0.200)	(0.324)	(0.409)	(0.367)
Local Lords' Estates Zone (Non-core)	-17.17***	-16.71***	-16.18***	-11.34***	-16.53***	-11.64***	-1.101***	-0.903**	-0.747**	-0.565**	-0.901**	-0.370
	(3.141)	(3.218)	(3.139)	(3.605)	(3.057)	(3.442)	(0.413)	(0.376)	(0.315)	(0.272)	(0.411)	(0.262)
Panel C: 1931												
Local Lords' Estates Zone (Core)	-17.15***	-16.27***	-11.23***	-13.87***	-17.35***	-13.18***	-0.267	-0.328	-0.211	-0.339	-0.290	-0.480**
	(4.271)	(3.823)	(4.234)	(3.685)	(4.237)	(3.507)	(0.258)	(0.270)	(0.239)	(0.224)	(0.264)	(0.243)
Local Lords' Estates Zone (Non-core)	-12.68***	-11.59***	-11.52***	-5.494	-12.44***	-5.912*	-0.322	-0.211	-0.258	-0.308	-0.294	-0.115
	(2.939)	(2.754)	(2.543)	(3.880)	(3.144)	(3.567)	(0.270)	(0.226)	(0.240)	(0.198)	(0.281)	(0.167)
Panel D: 1972												
Local Lords' Estates Zone (Core)							0.298	0.270	0.0532	0.187	0.317	0.163
							(0.348)	(0.349)	(0.357)	(0.354)	(0.356)	(0.368)
Local Lords' Estates Zone (Non-core)							0.0997	0.0878	0.0403	0.176	0.136	0.180
							(0.290)	(0.285)	(0.241)	(0.219)	(0.283)	(0.216)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Zone (Core)	-24.58***	-21.82***	-11.43**	-23.44***	-25.76***	-20.41***	0.674***	0.617***	0.478**	0.525***	0.705***	0.444***
	(4.898)	(5.100)	(4.991)	(5.969)	(4.549)	(4.978)	(0.200)	(0.197)	(0.193)	(0.159)	(0.195)	(0.145)
Local Lords' Estates Zone (Non-core)	-8.503	-10.57	-4.993	-7.526	-13.69*	-11.76	0.312	0.325	0.285	0.268	0.403	0.279
	(9.546)	(8.751)	(7.372)	(10.49)	(8.189)	(9.017)	(0.263)	(0.255)	(0.208)	(0.217)	(0.255)	(0.195)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Zone (Core)	-45.81***	-40.69***	-25.37***	-40.92***	-47.32***	-35.35***	1.320***	1.235***	0.575**	1.123***	1.352***	1.058***
	(9.198)	(9.430)	(9.592)	(9.905)	(8.654)	(8.817)	(0.235)	(0.250)	(0.227)	(0.251)	(0.235)	(0.252)
Local Lords' Estates Zone (Non-core)	-21.75*	-23.20**	-16.18*	-11.76	-27.51**	-17.48	0.0633	0.0992	-0.128	-0.0512	0.197	0.0725
	(11.87)	(9.799)	(9.577)	(13.87)	(10.99)	(11.38)	(0.340)	(0.352)	(0.222)	(0.261)	(0.326)	(0.228)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Zone (Core)							0.329**	0.322***	0.294**	0.274***	0.348***	0.274***
							(0.128)	(0.113)	(0.118)	(0.0899)	(0.125)	(0.0813)
Local Lords' Estates Zone (Non-core)							-0.0814	-0.0989	-0.0822	-0.218	-0.0630	-0.213
							(0.114)	(0.132)	(0.106)	(0.153)	(0.106)	(0.144)
Confounders	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	329	329	317	329	325	325						
N in Panel B	316	316	305	316	312	312	272	272	266	272	270	270
N in Panel C	325	325	315	325	325	325	271	271	268	271	271	271
N in Panel D							252	252	250	252	252	252
N in Panel E	327	327	315	327	323	323	147	147	144	147	147	147
N in Panel F	329	329	317	329	325	325	318	318	315	318	316	316
N in Panel G							327	327	315	327	323	323

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(b). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.17: Using Polynomial Controls (500 m Window)

	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Zone (Core)	-6.611***	-7.014***	-6.397***	-3.752***	-7.232***	-4.876***						
	(1.615)	(1.765)	(1.506)	(1.221)	(1.748)	(1.480)						
Local Lords' Estates Zone (Non-core)	1.896	1.715	2.007	4.821	3.518	5.771*						
	(2.955)	(3.023)	(3.049)	(3.182)	(2.865)	(3.263)						
Panel B: 1912												
Local Lords' Estates Zone (Core)	-7.505***	-7.878***	-7.270***	-4.576***	-8.073***	-5.682***	-0.583*	-0.635**	-0.415	-0.586*	-0.542	-0.642**
	(1.429)	(1.642)	(1.355)	(1.305)	(1.675)	(1.671)	(0.335)	(0.300)	(0.259)	(0.310)	(0.348)	(0.306)
Local Lords' Estates Zone (Non-core)	4.559*	4.477*	4.742*	7.436***	5.975**	8.583***	0.0405	-0.143	0.0154	0.237	0.147	0.148
	(2.691)	(2.643)	(2.821)	(2.675)	(2.637)	(2.841)	(0.228)	(0.248)	(0.217)	(0.190)	(0.236)	(0.222)
Panel C: 1931												
Local Lords' Estates Zone (Core)	-8.248***	-8.086***	-7.902***	-6.329***	-8.680***	-6.405***	-0.308	-0.311	-0.327	-0.360	-0.298	-0.390*
	(2.066)	(2.479)	(2.063)	(2.115)	(2.283)	(2.436)	(0.228)	(0.213)	(0.204)	(0.234)	(0.229)	(0.226)
Local Lords' Estates Zone (Non-core)	1.435	0.996	1.318	4.016	1.291	3.074	0.289*	0.216	0.362*	0.414*	0.269	0.312
	(3.343)	(3.486)	(3.270)	(3.706)	(3.444)	(3.935)	(0.168)	(0.161)	(0.187)	(0.239)	(0.172)	(0.216)
Panel D: 1972												
Local Lords' Estates Zone (Core)							-0.0110	-0.0821	-0.0146	-0.0434	-0.00475	-0.112
							(0.229)	(0.220)	(0.250)	(0.223)	(0.231)	(0.212)
Local Lords' Estates Zone (Non-core)							-0.0108	-0.0131	-0.0252	0.0179	-0.0160	-0.00727
							(0.0878)	(0.0800)	(0.0758)	(0.103)	(0.0945)	(0.0913)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Zone (Core)	-7.793***	-6.963**	-6.810***	-7.923***	-7.854**	-6.005*	0.402***	0.361***	0.426***	0.351***	0.401***	0.293***
	(3.008)	(2.775)	(2.119)	(3.028)	(3.260)	(3.177)	(0.0853)	(0.0853)	(0.122)	(0.0772)	(0.0771)	(0.0829)
Local Lords' Estates Zone (Non-core)	4.035	3.844	3.209	5.245	0.570	2.761	-0.154	-0.108	-0.143	-0.112	-0.144	-0.109
	(5.838)	(5.734)	(5.389)	(5.760)	(5.678)	(5.515)	(0.131)	(0.128)	(0.113)	(0.126)	(0.129)	(0.123)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Zone (Core)	-13.80**	-12.31**	-11.15**	-12.92**	-13.20**	-9.379*	0.590***	0.510**	0.488**	0.453**	0.554***	0.307
	(5.702)	(5.623)	(5.534)	(5.186)	(6.036)	(5.663)	(0.227)	(0.218)	(0.201)	(0.223)	(0.211)	(0.205)
Local Lords' Estates Zone (Non-core)	1.921	-0.0194	0.890	6.333	-3.743	-0.149	-0.137	-0.133	-0.107	-0.177	-0.0950	-0.177
	(9.707)	(9.728)	(9.152)	(10.23)	(10.63)	(11.12)	(0.148)	(0.139)	(0.1000)	(0.152)	(0.140)	(0.136)
Panel G: Skyscraper in 2011							N of ≥ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Zone (Core)							0.164	0.145	0.156	0.142	0.161	0.100
							(0.106)	(0.107)	(0.116)	(0.105)	(0.112)	(0.109)
Local Lords' Estates Zone (Non-core)							-0.0338	0.000273	-0.0514	-0.0574	-0.0210	-0.0193
							(0.0533)	(0.0484)	(0.0528)	(0.0631)	(0.0475)	(0.0646)
Running Variable (1st–4th)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Confounders	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	668	668	640	668	655	655						
N in Panel B	644	644	623	644	632	632	557	557	551	557	550	550
N in Panel C	659	659	635	659	659	659	571	571	564	571	571	571
N in Panel D							518	518	515	518	518	518
N in Panel E	666	666	640	666	655	655	299	299	295	299	296	296
N in Panel F	672	672	644	672	659	659	646	646	639	646	638	638
N in Panel G							666	666	640	666	655	655

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Running Variables (1st-4th) includes w_i, $w_i * d_{i,core}$, $w_i * d_{i,noncore}$, $(1 - w_i) * d_{i,core}$, $(1 - w_i) * d_{i,noncore}$, $\ldots$, $w_i d^4_{i,core}$, $w_i d^4_{i,noncore}$, $(1 - w_i) d^4_{i,core}$, and $(1 - w_i) d^4_{i,noncore}$. w_i is an indicator variable taking one if cell i is closer to the core boundary than non-core boundary and 0 otherwise; $d_{i,core}$ is the distance from the core boundary; and $d_{i,noncore}$ is the distance from the non-core boundary. *Confounders* includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(b). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.18: Using Polynomial Controls (750 m Window)

	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Zone (Core)	-8.395***	-7.511***	-7.957***	-5.831***	-9.989***	-6.595***						
	(1.958)	(2.126)	(2.027)	(1.786)	(1.670)	(1.570)						
Local Lords' Estates Zone (Non-core)	-6.050**	-5.866*	-5.569*	-1.990	-4.410	-0.967						
	(2.978)	(3.011)	(2.955)	(2.859)	(2.729)	(2.875)						
Panel B: 1912												
Local Lords' Estates Zone (Core)	-8.601***	-7.644***	-7.756***	-5.196***	-10.01***	-6.135***	-1.053***	-0.933***	-0.882***	-0.949***	-1.039***	-0.832***
	(1.906)	(2.100)	(1.993)	(1.825)	(1.733)	(1.733)	(0.330)	(0.313)	(0.256)	(0.311)	(0.333)	(0.308)
Local Lords' Estates Zone (Non-core)	-3.056	-2.891	-2.256	1.314	-1.921	1.725	-0.208	-0.219	-0.249	0.0256	-0.166	0.0736
	(2.887)	(2.884)	(2.823)	(2.695)	(2.711)	(2.804)	(0.305)	(0.258)	(0.307)	(0.253)	(0.295)	(0.215)
Panel C: 1931												
Local Lords' Estates Zone (Core)	-10.15***	-8.499***	-8.465***	-6.991***	-11.04***	-6.455***	-0.604***	-0.486***	-0.570***	-0.475***	-0.586***	-0.425**
	(2.397)	(2.459)	(2.354)	(2.246)	(2.280)	(2.153)	(0.189)	(0.172)	(0.181)	(0.176)	(0.189)	(0.170)
Local Lords' Estates Zone (Non-core)	-3.080	-3.084	-2.641	1.185	-2.247	0.786	-0.0668	-0.0431	-0.0588	0.139	-0.0775	0.0822
	(2.459)	(2.564)	(2.346)	(2.543)	(2.397)	(2.718)	(0.172)	(0.166)	(0.175)	(0.211)	(0.168)	(0.200)
Panel D: 1972												
Local Lords' Estates Zone (Core)							-0.0148	-0.0997	-0.0479	-0.0163	-0.00981	-0.108
							(0.218)	(0.216)	(0.232)	(0.220)	(0.220)	(0.217)
Local Lords' Estates Zone (Non-core)							-0.0299	0.00992	-0.0333	0.0213	-0.0295	0.0156
							(0.0833)	(0.0848)	(0.0747)	(0.0883)	(0.0851)	(0.0808)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Zone (Core)	-10.67***	-8.194**	-6.972**	-7.828**	-10.89***	-5.463*	0.334***	0.323***	0.328***	0.319***	0.334***	0.278***
	(3.722)	(3.429)	(3.077)	(3.650)	(3.592)	(3.287)	(0.0968)	(0.0820)	(0.104)	(0.0887)	(0.0959)	(0.0817)
Local Lords' Estates Zone (Non-core)	0.984	0.404	1.036	4.048	-1.021	0.835	-0.0721	-0.000136	0.00936	0.0194	-0.0762	-0.0104
	(5.349)	(5.067)	(5.280)	(5.534)	(4.992)	(5.125)	(0.112)	(0.117)	(0.107)	(0.103)	(0.105)	(0.0954)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Zone (Core)	-25.80***	-21.54***	-18.16***	-19.77***	-25.38***	-14.78**	0.584***	0.483**	0.394**	0.529**	0.543***	0.332*
	(6.857)	(6.653)	(6.262)	(6.136)	(6.682)	(6.004)	(0.212)	(0.207)	(0.195)	(0.207)	(0.207)	(0.199)
Local Lords' Estates Zone (Non-core)	-12.62	-12.80	-12.80	-4.939	-14.22	-8.618	-0.231	-0.158	-0.231*	-0.242	-0.201	-0.206
	(9.305)	(8.716)	(9.118)	(9.259)	(9.044)	(8.870)	(0.157)	(0.148)	(0.136)	(0.152)	(0.144)	(0.132)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Zone (Core)							0.168*	0.145	0.141	0.161*	0.173*	0.0961
							(0.0906)	(0.0899)	(0.0954)	(0.0847)	(0.0905)	(0.0832)
Local Lords' Estates Zone (Non-core)							0.0500	0.0619	0.0157	0.000940	0.0582	0.0114
							(0.0641)	(0.0624)	(0.0515)	(0.0651)	(0.0641)	(0.0686)
Running Variable (1st–4th)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Confounders	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	961	961	895	961	911	911						
N in Panel B	904	904	858	904	875	875	775	775	755	775	751	751
N in Panel C	915	915	872	915	915	915	790	790	773	790	790	790
N in Panel D							699	699	696	699	699	699
N in Panel E	940	940	889	940	906	906	400	400	396	400	397	397
N in Panel F	962	962	896	962	915	915	886	886	877	886	873	873
N in Panel G							940	940	889	940	906	906

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Running Variables (1st-4th) includes w_i, $w_i * d_{i,core}$, $w_i * d_{i,noncore}$, $(1-w_i) * d_{i,core}$, $(1-w_i) * d_{i,noncore}$, $\ldots$, $w_i d^4_{i,core}$, $w_i d^4_{i,noncore}$, $(1-w_i) d^4_{i,core}$, and $(1-w_i) d^4_{i,noncore}$. w_i is an indicator variable taking one if cell i is closer to the core boundary than non-core boundary and 0 otherwise; $d_{i,core}$ is the distance from the core boundary; and $d_{i,noncore}$ is the distance from the non-core boundary. *Confounders* includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(b). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.19: Using Polynomial Controls (1000 m Window)

	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Zone (Core)	-7.610***	-6.499***	-6.929***	-5.041**	-8.568***	-5.624***						
	(2.355)	(2.357)	(2.326)	(2.141)	(1.979)	(1.832)						
Local Lords' Estates Zone (Non-core)	-8.745***	-9.268***	-7.758***	-5.333**	-7.742***	-4.702*						
	(2.682)	(2.729)	(2.608)	(2.530)	(2.478)	(2.508)						
Panel B: 1912												
Local Lords' Estates Zone (Core)	-6.735***	-5.701**	-5.822**	-3.796*	-7.292***	-4.280**	-1.213***	-1.119***	-1.129***	-1.032***	-1.214***	-0.972***
	(2.314)	(2.333)	(2.311)	(2.102)	(2.042)	(1.908)	(0.288)	(0.273)	(0.263)	(0.271)	(0.295)	(0.273)
Local Lords' Estates Zone (Non-core)	-8.158***	-8.736***	-7.059**	-4.573*	-7.663***	-4.286	-0.404	-0.421*	-0.402	-0.176	-0.334	-0.0436
	(2.916)	(3.034)	(2.860)	(2.711)	(2.821)	(2.840)	(0.258)	(0.236)	(0.266)	(0.235)	(0.244)	(0.215)
Panel C: 1931												
Local Lords' Estates Zone (Core)	-9.110***	-7.612***	-7.097***	-6.365***	-9.486***	-5.722***	-0.760***	-0.675***	-0.698***	-0.510***	-0.746***	-0.484**
	(2.653)	(2.550)	(2.447)	(2.394)	(2.449)	(2.153)	(0.213)	(0.210)	(0.220)	(0.193)	(0.208)	(0.189)
Local Lords' Estates Zone (Non-core)	-6.196**	-6.635**	-4.370*	-1.717	-5.740**	-2.455	-0.0256	-0.0906	0.0190	0.312**	-0.0409	0.215
	(2.569)	(2.728)	(2.241)	(2.434)	(2.481)	(2.578)	(0.134)	(0.117)	(0.136)	(0.150)	(0.136)	(0.140)
Panel D: 1972												
Local Lords' Estates Zone (Core)							-0.152	-0.221	-0.196	-0.122	-0.149	-0.203
							(0.195)	(0.192)	(0.201)	(0.199)	(0.197)	(0.195)
Local Lords' Estates Zone (Non-core)							-0.0236	-0.0358	-0.0524	0.0408	-0.0227	0.00347
							(0.0738)	(0.0785)	(0.0709)	(0.0763)	(0.0742)	(0.0730)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Zone (Core)	-12.11***	-9.585***	-6.658**	-8.322**	-9.809***	-4.341	0.244**	0.240***	0.185*	0.239**	0.232**	0.186**
	(3.756)	(3.395)	(2.730)	(3.476)	(3.516)	(3.058)	(0.112)	(0.0870)	(0.111)	(0.0996)	(0.108)	(0.0836)
Local Lords' Estates Zone (Non-core)	7.096	6.471	11.00**	11.77**	5.115	8.888	0.0214	0.000461	0.0411	0.0967	0.0141	-0.00889
	(4.824)	(4.880)	(4.791)	(5.493)	(4.979)	(5.554)	(0.0940)	(0.0961)	(0.0926)	(0.0953)	(0.0923)	(0.0861)
	N of Lots						Log Land Price					
Modern Outcomes	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel F: 2012												
Local Lords' Estates Zone (Core)	-26.79***	-22.74***	-17.09***	-19.12***	-22.80***	-13.25**	0.505**	0.421**	0.296	0.527***	0.481**	0.379**
	(6.780)	(6.293)	(5.645)	(5.945)	(6.438)	(5.676)	(0.203)	(0.189)	(0.185)	(0.195)	(0.202)	(0.185)
Local Lords' Estates Zone (Non-core)	-7.794	-9.591	-2.332	0.562	-10.87	-3.640	-0.106	-0.125	-0.182	-0.0922	-0.0931	-0.127
	(7.438)	(7.508)	(6.754)	(7.843)	(7.530)	(7.727)	(0.149)	(0.142)	(0.124)	(0.143)	(0.143)	(0.124)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Zone (Core)							0.249***	0.218**	0.213**	0.223***	0.249***	0.180**
							(0.0947)	(0.0892)	(0.0901)	(0.0809)	(0.0936)	(0.0763)
Local Lords' Estates Zone (Non-core)							-0.0357	-0.0165	-0.0622	-0.118*	-0.0349	-0.119*
							(0.0523)	(0.0537)	(0.0459)	(0.0627)	(0.0525)	(0.0675)
Running Variable (1st–4th)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Confounders	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	1257	1257	1143	1257	1160	1160						
N in Panel B	1169	1169	1086	1169	1123	1123	1001	1001	955	1001	961	961
N in Panel C	1166	1166	1102	1166	1166	1166	998	998	976	998	998	998
N in Panel D							881	881	877	881	881	881
N in Panel E	1207	1207	1126	1207	1156	1156	498	498	493	498	495	495
N in Panel F	1240	1240	1131	1240	1166	1166	1115	1115	1103	1115	1100	1100
N in Panel G							1207	1207	1126	1207	1156	1156

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Running Variables (1st-4th) includes w_i, $w_i * d_{i,core}$, $w_i * d_{i,noncore}$, $(1 - w_i) * d_{i,core}$, $(1 - w_i) * d_{i,noncore}$, $\ldots$, $w_i d^4_{i,core}$, $w_i d^4_{i,noncore}$, $(1 - w_i) d^4_{i,core}$, and $(1 - w_i) d^4_{i,noncore}$. w_i is an indicator variable taking one if cell i is closer to the core boundary than non-core boundary and 0 otherwise; $d_{i,core}$ is the distance from the core boundary; and $d_{i,noncore}$ is the distance from the non-core boundary. *Confounders* includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(b). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).

Table A.20: Using Predicted Land Price to Define the Core Area

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Core	-15.59***	-15.59***	-15.24***	-14.30***	-15.30***	-13.93***						
	(1.082)	(1.021)	(1.059)	(0.814)	(1.095)	(0.796)						
Local Lords' Estates Share * Non-Core	-10.35***	-10.23***	-9.796***	-10.73***	-10.88***	-10.61***						
	(1.286)	(1.232)	(1.215)	(1.111)	(1.185)	(1.170)						
Panel B: 1912												
Local Lords' Estates Share * Core	-15.08***	-14.79***	-14.69***	-13.19***	-14.44***	-12.50***	-0.682***	-0.650***	-0.655***	-0.454***	-0.708***	-0.483***
	(0.978)	(0.931)	(0.946)	(0.828)	(1.021)	(0.784)	(0.138)	(0.131)	(0.134)	(0.127)	(0.144)	(0.130)
Local Lords' Estates Share * Non-Core	-11.23***	-10.37***	-10.31***	-10.14***	-10.80***	-10.75***	-0.0750	-0.0130	-0.0392	-0.0865	-0.130	-0.0956
	(0.894)	(0.920)	(0.895)	(0.858)	(0.868)	(0.845)	(0.184)	(0.186)	(0.183)	(0.180)	(0.180)	(0.168)
Panel C: 1931												
Local Lords' Estates Share * Core	-10.71***	-10.33***	-9.011***	-8.696***	-9.936***	-8.203***	-0.577***	-0.543***	-0.510***	-0.357***	-0.593***	-0.375***
	(1.554)	(1.438)	(1.511)	(1.422)	(1.643)	(1.352)	(0.117)	(0.106)	(0.109)	(0.111)	(0.120)	(0.103)
Local Lords' Estates Share * Non-Core	-6.622***	-5.656***	-5.386***	-5.776***	-5.728***	-4.721***	-0.179	-0.134	-0.0757	-0.172	-0.302**	-0.232**
	(1.404)	(1.278)	(1.400)	(1.391)	(1.466)	(1.378)	(0.118)	(0.0977)	(0.102)	(0.109)	(0.126)	(0.106)
Panel D: 1972												
Local Lords' Estates Share * Core							-0.0306	-0.0251	-0.0918**	0.0215	-0.0228	0.0744
							(0.0491)	(0.0451)	(0.0365)	(0.0492)	(0.0492)	(0.0493)
Local Lords' Estates Share * Non-Core							-0.0110	-0.0337	0.00568	-0.0333	0.0236	-0.0342
							(0.0499)	(0.0433)	(0.0447)	(0.0449)	(0.0494)	(0.0433)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Core	-12.72***	-12.08***	-7.184***	-11.06***	-12.72***	-12.21***	0.0401	0.0515	-0.0338	0.0822	0.0675	0.137**
	(2.364)	(2.056)	(1.864)	(2.191)	(2.466)	(2.041)	(0.0557)	(0.0493)	(0.0408)	(0.0532)	(0.0568)	(0.0555)
Local Lords' Estates Share * Non-Core	-10.13***	-7.128***	-7.849***	-8.349***	-8.132**	-2.791	-0.0229	-0.0404	0.00435	-0.0108	0.0188	-0.0366
	(3.328)	(2.485)	(2.645)	(2.768)	(3.304)	(2.103)	(0.0613)	(0.0526)	(0.0502)	(0.0510)	(0.0593)	(0.0424)
	N of Lots						Log Land Price					
Modern Outcomes	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel F: 2012												
Local Lords' Estates Share * Core	-23.02***	-22.02***	-16.63***	-18.64***	-22.37***	-19.60***	0.259***	0.266***	0.0941*	0.297***	0.280***	0.376***
	(3.546)	(2.985)	(3.188)	(3.318)	(3.541)	(2.996)	(0.0683)	(0.0646)	(0.0507)	(0.0673)	(0.0689)	(0.0747)
Local Lords' Estates Share * Non-Core	-9.875**	-5.167	-7.228*	-7.295*	-8.043	-2.393	0.0920**	0.0902**	0.0972**	0.0758*	0.0713	-0.0539
	(4.960)	(3.530)	(4.156)	(4.324)	(4.941)	(3.664)	(0.0421)	(0.0378)	(0.0392)	(0.0394)	(0.0437)	(0.0503)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Core							0.0757***	0.0770***	0.0582**	0.0793***	0.0886***	0.0909***
							(0.0261)	(0.0260)	(0.0237)	(0.0273)	(0.0289)	(0.0298)
Local Lords' Estates Share * Non-Core							-0.00867	-0.00841	-0.00811	-0.00569	-0.00477	-0.00631
							(0.00837)	(0.00738)	(0.00901)	(0.00783)	(0.00845)	(0.00914)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	5078	5078	5036	5078	5018	5018						
N in Panel B	7661	7661	7610	7661	6930	6930	6904	6904	6874	6904	6388	6388
N in Panel C	7332	7332	7284	7332	7332	7332	6878	6878	6852	6878	6878	6878
N in Panel D							6050	6050	6043	6050	5061	5061
N in Panel E	8931	8931	8870	8931	7301	7301	3260	3260	3253	3260	2755	2755
N in Panel F	8427	8427	8366	8427	7313	7313	8971	8971	8906	8971	7332	7332
N in Panel G							8919	8919	8860	8919	7294	7294

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).
We use the median of $\widehat{Log\ Land\ Price}_{2012}$ to divide into the core and non-core area. We obtain $\widehat{Log\ Land\ Price}_{2012}$ by (1) regressing *Log Land Price* on *Baseline Controls* in Table 3(a) using celss without local lords' estates, (2) predict Log Land Price by these explanatory variables including the cells we did not use in (1) by interpolation.

Table A.21: Controlling for The Number of Local Lords' Estates

	Inside vs Outside the Circle (*Yamanote*) Line											
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Historical Outcomes												
Panel A: 1873												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-13.10***	-12.83***	-12.14***	-11.70***	-13.45***	-12.12***						
	(0.849)	(0.829)	(0.875)	(0.747)	(0.924)	(0.798)						
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-12.16***	-11.95***	-12.72***	-11.79***	-11.04***	-10.93***						
	(1.546)	(1.454)	(1.543)	(1.482)	(1.546)	(1.465)						
Panel B: 1912												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-13.82***	-12.32***	-13.03***	-11.38***	-13.49***	-10.92***	-0.476***	-0.432***	-0.434***	-0.379***	-0.517***	-0.373***
	(0.678)	(0.701)	(0.732)	(0.628)	(0.707)	(0.661)	(0.137)	(0.138)	(0.133)	(0.133)	(0.141)	(0.139)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-11.77***	-10.78***	-12.05***	-10.08***	-11.06***	-9.451***	-0.0954	-0.0636	-0.0986	0.0277	-0.142	-0.0725
	(1.593)	(1.470)	(1.510)	(1.569)	(1.528)	(1.467)	(0.232)	(0.235)	(0.233)	(0.228)	(0.212)	(0.199)
Panel C: 1931												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-12.40***	-9.985***	-9.344***	-9.611***	-11.77***	-8.011***	-0.548***	-0.487***	-0.428***	-0.426***	-0.662***	-0.479***
	(1.195)	(1.132)	(1.317)	(1.162)	(1.289)	(1.221)	(0.121)	(0.109)	(0.106)	(0.112)	(0.121)	(0.110)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-9.910***	-8.535***	-9.643***	-8.433***	-8.965***	-7.121***	-0.300**	-0.259**	-0.267**	-0.196	-0.362**	-0.259**
	(1.843)	(1.693)	(1.689)	(1.766)	(1.922)	(1.749)	(0.137)	(0.131)	(0.131)	(0.133)	(0.141)	(0.124)
Panel D: 1972												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							-0.00832	-0.00738	-0.00335	-0.0195	-0.00761	-0.0130
							(0.0352)	(0.0335)	(0.0290)	(0.0380)	(0.0357)	(0.0346)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.271***	-0.206***	-0.149***	-0.183***	-0.231***	-0.124***
							(0.0598)	(0.0553)	(0.0523)	(0.0514)	(0.0554)	(0.0466)
Panel E: 1983 (N of Buildings in 1986, not Lots)												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-19.81***	-15.36***	-12.88***	-15.25***	-19.50***	-11.90***	0.0501	0.0613	0.0579	0.0473	0.0612	0.0554
	(2.055)	(1.671)	(1.684)	(1.869)	(2.255)	(1.694)	(0.0412)	(0.0378)	(0.0359)	(0.0412)	(0.0423)	(0.0382)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-9.029**	-6.071	-9.055***	-5.609	-6.019	-3.049	-0.174**	-0.107	-0.0800	-0.0841	-0.139*	-0.0413
	(4.426)	(4.006)	(3.248)	(3.973)	(3.672)	(3.414)	(0.0792)	(0.0755)	(0.0666)	(0.0733)	(0.0794)	(0.0672)
	N of Lots						Log Land Price					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Modern Outcomes												
Panel F: 2012												
Local Lords' Estates Share * Inside Yamanote Zone + 250 m	-33.22***	-25.22***	-21.82***	-24.96***	-32.38***	-20.78***	0.201***	0.212***	0.142***	0.175***	0.193***	0.170***
	(3.405)	(2.895)	(3.177)	(2.995)	(3.372)	(2.702)	(0.0435)	(0.0427)	(0.0353)	(0.0441)	(0.0457)	(0.0449)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m	-16.59***	-13.67**	-16.94***	-10.62*	-12.30**	-7.977	-0.272***	-0.220**	-0.151*	-0.231**	-0.228**	-0.158**
	(6.194)	(5.674)	(4.887)	(5.469)	(5.374)	(5.051)	(0.101)	(0.0955)	(0.0805)	(0.0920)	(0.0917)	(0.0806)
Panel G: Skyscraper in 2011							N of $\geq$ 30 Stories Buildings					
							(7)	(8)	(9)	(10)	(11)	(12)
Local Lords' Estates Share * Inside Yamanote Zone + 250 m							0.0253	0.0303	0.0260	0.0348*	0.0362	0.0399*
							(0.0199)	(0.0204)	(0.0201)	(0.0191)	(0.0224)	(0.0223)
Local Lords' Estates Share * Outside Yamanote Zone + 250 m							-0.00476	-0.00260	0.0238	-0.00511	0.00421	-0.00440
							(0.0376)	(0.0381)	(0.0344)	(0.0387)	(0.0414)	(0.0430)
Confounders (* Inside)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Public Uses (* Inside)	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Construction Costs (* Inside)	No	No	Yes	No	No	No	No	No	Yes	No	No	No
Historical Proxies for Costs (* Inside)	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes
WWII Shocks (* Inside)	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
N in Panel A	5530	5530	5133	5530	5292	5292						
N in Panel B	8133	8133	7726	8133	7319	7319	7122	7122	6927	7122	6552	6552
N in Panel C	7830	7830	7399	7830	7830	7830	7024	7024	6884	7024	7024	7024
N in Panel D							6071	6071	6046	6071	5080	5080
N in Panel E	9566	9566	9012	9566	7742	7742	3276	3276	3256	3276	2770	2770
N in Panel F	9101	9101	8518	9101	7783	7783	8971	8971	8906	8971	7332	7332
N in Panel G							9542	9542	9000	9542	7726	7726

Notes: Standard errors are in parentheses. We allow a within-300 m correlation in the error terms. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Confounders includes *Baseline Controls*, *Yamanote*, and *Altitude/Ruggedness* used in Table 3(a). *Public Use* includes the distance to the nearest station in 2017 and 1950, the share of land used as hospitals and universities, parks, and utility and service facilities. *Construction Costs* includes the average floor-area ratio (FAR), the average road width, and average block area. *Historical Proxies for Costs* includes the share of area specified as commercial area by regulation, the distance from the historical main roads (*gokaido*), and average block area in the 1850s. *WWII Shocks* includes the share of the destructed area during WWII, the descendants' estates or other land of high-ranked ex-local-lord family (*Hakushaku*) in 1931, these land of other ex-local-lord family in 1931, military infrastructure in 1931, and non-individual landowners' land in 1931. See Table 1 for the definitions of variables. We add interaction terms between the inside dummy and control variable. (and constant term).