Buying Public Offices, Bureaucratic Diversity, and Economic Development

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Preliminary. Comments welcome.

Abstract

I show that socioeconomic diversity and business representation in the government could contribute to the development of private enterprises. I study the institution of selling public offices during the late imperial Qing and show that it had a positive impact on early industrialization in China. In traditional Chinese society, merchants had relatively low social status and their businesses were frequently subject to government extortion and appropriation. By taking advantage of the office-selling program, the merchants were able to gain increased representation within the imperial bureaucracy. This, in turn, had a positive spillover effect on the private sector and early industrialization. I argue that changes in bureaucratic composition did not necessarily enhance the institutional environment for businesses. Instead, a more plausible mechanism is that purchasing officials had more progressive ideologies, preferences, and relationships with business interests, ultimately reducing the occurrences of arbitrary government interference and extortion.

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1 Introduction

How does socioeconomic diversity in the bureaucracy affect private businesses? When institutions are weak, private businesses are often subjected to government extortion and appropriation, resulting in weak incentives to adopt and invest in new technologies. An increased representation of business people in the government, as frequently advocated by business leaders eager to engage with political issues, could lead to more favorable treatment toward private enterprises and contribute to economic development. On the other hand, the positive impact may be limited if these representatives also engage in rent-seeking behavior. The question of whether socioeconomic diversity and business representation in the government can effectively induce economic development remains unclear.

In this paper, I examine the unique institution of selling public offices during the late imperial Qing of China (1850-1910) to investigate how the rise of the merchant class contributed to early industrialization in the country. The fiscal hardship during the late Qing necessitated the massive expansion of the office-selling program, allowing commoners to buy official appointments within the bureaucracy. A substantial and disproportionate number of candidates from merchant backgrounds entered the bureaucracy through these purchases. This policy transformed the composition of the imperial bureaucracy: Whereas the officialdom previously drew talents from scholar-elites who were trained in Confucian classics and adhered to traditional values, this new group of entrants could be culturally and politically less conservative, but more economically minded and practically driven. At a time when the decadent empire faced a pressing need for economic and social reforms, a more diverse officialdom where merchants gained unprecedented representation could have had a significant impact on economic outcomes.

While the institution is in itself of great interest, this study focuses on examining the impact of this newly empowered group on the adoption of modern technology and the establishment of new industrial firms. Early industrialization in China met fierce resistance from conservative forces. Cultural and institutional inertia enabled the government to extract, sabotage, and suppress private businesses and entrepreneurial endeavors for various economic and political reasons. As the merchant class amassed wealth and strengthened their bargaining power, they actively sought to shape policies and advocated for changes that would foster technological adoption and the creation of modern businesses. I argue that the purchase of offices served as one avenue through which merchants contributed to improving the business environment in China. While it is unlikely that they

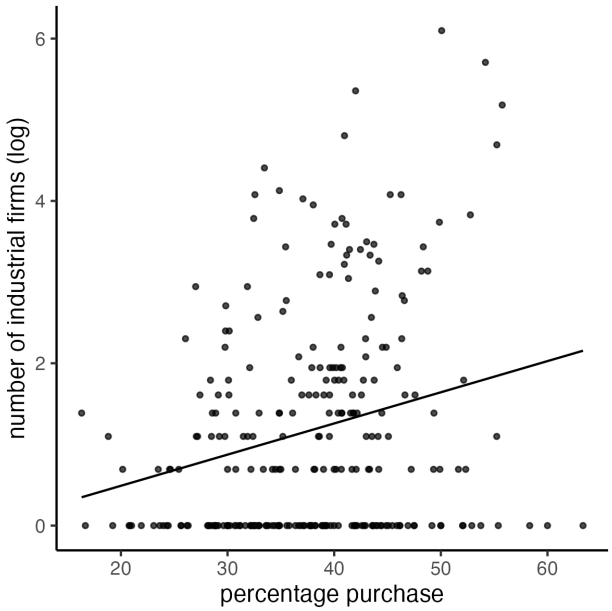
directly improved the local regulatory frameworks or institutions, given their family backgrounds, they could be more sympathetic toward and ideologically aligned with early industrialists and less prone to suppress and extort private ventures.

The empirical analysis of the paper consists of four components. First, I verify that the imperial bureaucracy did draw a significant number of candidates from the merchant class as a result of purchases–an essential assumption for this study. While comprehensive data on the family backgrounds of purchasers is lacking, I provide evidence supporting this claim based on a few historical facts. First, purchases were typically expensive, and only families with substantial financial resources could afford them. Second, the purchasing patterns in the officials' native regions align with historical records of commercial development during the Qing dynasty. Third, I argue that land tax, which serves as a reliable proxy for commercial advancement during this period, is a strong predictor of official purchases per capita.

Next, I address the main endogeneity concern within this context, which is alleviated by a random assignment mechanism in official postings. If candidates had the freedom to choose the location of their posts, commercially-driven individuals may opt for business-friendly areas that arose due to exogenous factors. However, this concern is not applicable in our study because candidates were subjected to both a recuse policy, which mandated them to be posted outside their native provinces, and a random lottery process to determine their post location when they were assigned by the central government. The percentage of purchasing officials at the prefecture level ranges from 20 to 60 percent during the observation period. With this framework, I first confirm that the geographic distribution of purchase density does not display any discernible pattern. Secondly, I demonstrate that the distributions of relevant covariates are not correlated with the distribution of purchase density at each post location.

Third, the key finding of this paper suggests that a one percentage point increase in the proportion of purchasing officials among all posts in a prefecture leads to approximately a 7% increase in the number of modern industrial companies. See figure 1 for a scatter plot of the number of modern industrial companies against the percentage of purchasing officials. This effect remains statistically significant even after accounting for various economic and geographical factors. In order to further validate this result, I conduct a placebo test to demonstrate that foreign-owned companies do not respond to changes in the composition of the local bureaucracy. During the late Qing period, the government ceded foreigners numerous extraterritorial privileges, exempting them from local regulations. Given that foreign companies faced similar market conditions, any observed effect can be attributed

Figure 1: Modern industrial companies and percentage of purchasing officials



Note: The data consist of about 260 prefectures of the 18 *han* provinces. The number of companies are plotted on a logarithmic scale as log(1 + number of companies).

solely to the makeup of the government.

Fourth, the placebo test also provides insights into the possible mechanism underlying the observed impact, that the positive effects resulted from reduced sabotage and extortion rather than substantial institutional improvements by the government. If the influx of officials with merchant backgrounds led to any significant institutional reforms, we would expect foreign companies to also respond to these positive spillovers. However, the evidence from the placebo test is consistent with the notion that the late empire played a limited role in actively promoting businesses. This mechanism is further supported by the differential outcomes observed between public and private companies established during this period. Public companies displayed much less, if any, response to changes in the composition of the local officialdom compared to their private counterparts. If officials with merchant backgrounds initiated any institutional reforms aimed at facilitating business creation, it would be expected that they would cater to the needs of public companies.

In terms of contribution, this article is situated within the broader literature on the divergence and catch-up of China in relation to the Western world during the process of industrialization. I provide a political economy perspective on how merchants interacted

with the state, advanced their representation, and generated positive spillovers for the economy. The "great divergence" is often attributed to a handful of economic, institutional, and cultural constraints deeply rooted in the ideology and structure of traditional Chinese society that hindered growth in the lead-up to the examined period (Brandt, Ma, and Rawski 2014). Existing literature has explored various factors that enabled late imperial China to overcome these constraints and gradually embark on industrialization. Prominent themes include increased contact with the West that ushered in new technology and ideas, as well as disruptions to traditional economic and political arrangements that came henceforth (Bai and Kung 2015; Bai and Jia 2016; Bai 2019; Kung 2022). While these explanations offer valuable insights, they often lack an account of how agents responded to and capitalized on these shocks, initiating transformative changes. By examining the institution of office selling, this study demonstrates *one of* the channels through which merchants influenced the economy.

This article also contributes to the literature on the relationship between diversity and economic outcomes. Existing studies have explored how diversity in terms of ethnicity, culture, and geography (such as birthplace) influences economic performances of both public bureaucrats and private workers (Ager and Brückner 2013; Alesina and Ferrara 2005; Alesina, Harnoss, and Rapoport 2016; Bellini et al. 2013; Montalvo and Reynal-Querol 2005; Rasul and Rogger 2015; Shore et al. 2009). In this study, I focus on socioeconomic diversity within the bureaucracy, specifically in terms of the bureaucrats' family background and social hierarchy. I demonstrate that the introduction of individuals with merchant backgrounds into an otherwise homogeneous officialdom had a positive impact on economic development. This demographic shift within the bureaucracy reflects a gradual but broad reshuffling of social hierarchies, wherein the merchant class enhanced their bargaining power and political representation.

2 Historical background

I begin by providing an overview of the historical context. First, I describe the system of office purchases and outline the procedural steps involved. Next, I delve into the emergence of the merchant class during the late Qing period and their aspirations to gain influence and engage in political affairs. Lastly, I discuss the early industrialization endeavors that took place towards the end of the nineteenth century.

2.1 Buying into the officialdom

The practice of selling public offices was deeply entrenched within the structure of the imperial bureaucracy during the Qing dynasty. Dating back to ancient times, the system was fully institutionalized in the Ming dynasty (circa 1450) when the imperial government began the selling of *central academy* degrees to address its perennial fiscal shortage and generate additional revenue. The Qing government, similarly unable to resolve fiscal difficulties, relied on the policy to finance extraordinary expenditures like military campaigns, suppression of rebellions, disaster relief efforts, and river conservation projects. Initially, the policy was implemented intermittently during the early and mid-Qing period, utilized only when deemed necessary and discontinued once its objective was accomplished. However, the program ran at large during the late Qing when various incidents necessitated a massive expansion of the program. This expansion brought about far-reaching transformations to both the fabric of the imperial bureaucracy and the upper echelons of society.

Buying a public office is an elaborate, demanding, and costly endeavor than meets the eye. Traditionally, a commoner seeking to enter the bureaucracy followed a centralized, multi-stage, and highly competitive system by first climbing through the *proper route* of imperial examinations and then enduring a lengthy waiting period for official appointment. The practice of purchasing offices, however, offered candidates the opportunity to circumvent various checkpoints along this path. In broad strokes, a commoner may buy an entry degree and an official appointment, taking the *improper route* to become an official-elect, and then possibly many additional fees and expenses to boost his chance of actually assuming the office.[1]

First, the aspiring candidate must acquire an entry degree (either an *imperial academy student* or a *tribute student* degree) that is equivalent to passing the lowest-level *prefecture exam* and attaining the rank of *literati*. These degrees do not immediately confer any official positions but are the necessary step thereto. Following on, the candidate must then proceed to purchase the actual post itself. This is akin to passing the *provincial exam* (and

[1]The exposition in this section is minimalistic. For a detailed description of the institution of office purchasing, see the seminal work of Xu (1950) for an early account. See Kondō (1963) for a first attempt to analyze the system in a quantitative manner by tabulating officials' background using the *Records of the Gentry (Jinshen Lu)* (See section 3.1). See Kaske (2008) (in English), Wu (2011), Wu (2013), and Zhang (2022) (in English) for more recent work on the subject. The description of the imperial examination system here is also bare-bone and omits many details. See Ho (1962) and Elman (2000) for more comprehensive treatments.

possibly the highest-level *palace exam* later on) which would qualify him to fill positions at the county level. Official purchases are title and rank specific, and not attached to any specific locations. During the late Qing, local official positions up to the rank of *circuit attendant* (a position situated between the *provincial governor* and the *prefecture magistrate*) were available for purchase.[2]

Once becoming an official-elect, he enters a waiting period until assigned an actual post by the Ministry of Personnel. This process could take years due to the shortage of positions opening up and the glut of officers-to-be on the waitlist. To expedite the process and increase his chance of receiving a post, the official-elect could make additional purchases, aptly named *tricks*, and move up the waitlist. During the late Qing, even those who attained the highest level of achievement in the examination system (*presented scholars*), were subjected to prolonged waits and at times had to rely on employing tricks to get ahead. For candidates who only possessed entry degrees, whether obtained through exams or purchases, the chances of securing an official post were virtually slim.

Three important notes should be considered. First, the proper and improper routes are not mutually exclusive but are often employed in conjunction. For instance, an individual may purchase an entrance degree and subsequently take the provincial exam to qualify as an official. Alternatively, someone may pass the prefecture exam but later pay for a position. These routes should be viewed as parallel tracks with opportunities for connections along the way. In practice, many families would prepare their sons for the examinations while also resorting to purchases to compensate for unsuccessful attempts. Second, there is no perceived stigma attached to purchases vis-a-vis examinations. The system was fully sanctioned by the state and often construed as a reward for contributing to the treasury. Third, many people exploited the policy simply to elevate their social status or to secure protection from the government, rather than an explicit attempt to enter the bureaucracy. The scale of purchases extends beyond what is observed in the dataset, which only pertains to individuals who ultimately acquired positions within the officialdom.

2.2 Rising merchants during late Qing

My analysis focuses on the dynamics of the increasing involvement of merchants in politics, making it important to understand the development of this group within the context

[2]This study focuses on the purchase of substantive posts and does not include ceremonial titles, honors, and decorations.

of the late Qing.

The merchant class had long desired to enhance their social status and engage in political activities due to the traditional social hierarchy that bestowed low esteem and limited protection upon them. Traditional Confucian ethical and legal thinking, which aimed for political stability and unity, placed agricultural activities as the foundation of the economy, while viewing commerce and trade with skepticism. In contrast, scholar-officials occupied the pinnacle of the social hierarchy. The aspiration to enter this stratum of society and become officials was deeply ingrained in the collective social consciousness, a sentiment that still resonates today. It is widely documented that merchants aspired to push their sons into the bureaucracy. For example, *Wang Caisheng*, a salt merchant from *Huizhou*, admonished his son that he "should not follow my business career and be a failing son," and that "only by studying the Confucian classics (and entering the officialdom) will we elevate our family's standing."

The consideration of prestige and social standing is intertwined with economic reasoning. For merchants with limited rights during the imperial time, entering the bureaucracy provided a means to safeguard their family's business interests. Being disconnected from the government as a businessperson was risky: Property rights were not secure during this time, and merchants often faced extortion by the state, either explicitly or implicitly, being compelled to contribute a portion of their wealth to the imperial treasury. For example. the government often solicited funding from merchants to finance large-scale projects. During the late Qing period, many merchants contributed to fighting rebellious forces and paying indemnities to foreign forces. (Brandt, Ma, and Rawski 2014) describe this relationship as political patronage, where the merchants sought "protection" from the government by relinquishing a portion of their wealth in exchange for business opportunities.

This seemingly passive role of merchants should not overshadow their agency in shaping the course of history. In reality, the gradual and consistent growth of commerce empowered merchants, enabling them to accumulate substantial wealth, exert greater economic influence, and eventually pave their way to political participation. This trend was reinforced by the commercial development that occurred during the Qing dynasty. Increased exposure to the West and trade with foreign nations provided many merchants with opportunities to amass significant fortunes, thereby enhancing their capacity to influence political affairs. In fact, the dynamics between the government and the merchants during the late Qing and the early Republican period were characterized by rivalry and confrontation, defining much of the economic interactions of the era. While earlier gov-

ernments could easily subjugate the merchants, subsequent administrations often had to concede to their demands. This culminated in the passage of China's first-ever business law in 1904, a testament to the growing influence and power of the merchant class.

While the relationship between merchants and the government was multifaceted, this study provides a simplified explanation of how merchants gained access to the bureaucracy through the purchase of official positions. While the commonly cited reason for the institution of office selling is the government's need for additional revenue, it is crucial to consider the demand side of the story as well. In addition to the ruling class who had the incentive to maintain their privileges, Wu (2013) argues that the emergence of the office-selling institution was a response to the growing wealth of a newly enriched social stratum that demanded better treatment and more involvement in political decisions.

The transformation in the government's composition in terms of background may have had significant implications. The fundamental assumption of this study is that individuals who succeeded in the examination system differ from those who purchased their positions in terms of their preferences and skills. The examination system required a specific skill set that placed great emphasis on the interpretation of classical Confucian texts, political philosophy, argumentation, and writing. Candidates were evaluated based on their ability to compose well-structured and often highly stylized arguments, poems, commentaries, and official communications. While these skills may have contributed to effective governance and the perpetuation of the traditional regime, they could have also hindered early modernization efforts in nineteenth-century China. In fact, Ma (n.d.) argues that the conservative and self-preserving nature of Confucian values could have deterred industrialization in China. The entry of merchant-background individuals into politics, on the other hand, could have relieved this structural impediment. Merchants are not bound by the moral obligations of Confucian ideals to the same extent as the scholar-officials. They tend to be more inclined towards business practices and possess a deeper understanding of the needs and challenges faced by merchants in conducting their business affairs. By introducing merchant-background officials into the government, there is a possibility of shifting the priorities and perspectives within the bureaucracy, thereby potentially creating a more favorable environment for economic development and industrialization.

2.3 Early industrialization in late nineteenth century China

China's economy was predominantly agrarian until the mid-nineteenth century. Many factors contributed to this slow development, which is often grounded in economic and

political reasoning but masqueraded under moral imperatives. The conservative values and social hierarchy rooted in traditional Confucian philosophy placed agriculture as the foundation of Chinese society, undervalued and detested commercial practices, resisted attempts at modernization, and regarded scientific advancements as heretical and heterodox. From a political economy point of view, the central government prioritized order and stability, were vigilant about organized production, and preferred to keep the population tied to the land. The overreach of the merchants and private businesses, on the other hand, presented threats to the imperial rule. A second economic calculus very much resembled the Luddite sentiment: Conservative forces backed by manual laborers and traditional workshops resisted modern production methods in fear of replacement. Vested interests stemming from the established nexus between the government and *de facto* monopolies further hindered progress and were difficult to overcome (Brandt, Ma, and Rawski 2014).

The early phase of industrialization in China during the late nineteenth century, consequently, was marked by powerful resistance coming from conservative forces and heavy state intervention. Notwithstanding the tampering business environment – the increased contact with the West brought about ideas and practices that slowly infiltrated Chinese society, the defeats by foreign invaders forced the government to consider allowing private enterprises (and eventually did so), and the reformist fraction within the government gained an upper hand after the Taiping Rebellion – private initiatives to introduce new technologies still faced obstacles such as sabotage and extortion from the government. An illustrative example of this resistance occurred in 1881 when the governor of Guangdong ordered the closure of modern textile factories and confiscated their reeling machines on the ground that "only the government is allowed to procure machinery and people are not allowed to do so without permission."

3 Data

My empirical analysis is at the prefecture (*fu*) level during Qing. The sample consists of 260 prefectures in the 18 provinces under the *Han Chinese territories* (excluding Manchuria and other feudatory regions that have different administrative structures). I use the administrative map of Qing in 1820 compiled by CHGIS (2017) as the basis for my analysis.

3.1 Purchase

The purchase data are derived from the China Government Employee Database-Qing (CGED-Q), a dataset for the quantitative study of Qing officialdom.[3] The Qing officialdom was structured with a central government with various ministries and offices, as well as local governments organized hierarchically at the provincial, prefecture, and county levels. To facilitate the functioning of this bureaucracy, a comprehensive roster of government officials known as the *Records of the Gentry (Jinshen lu)* was regularly published and included high officials in the central government all the way down low-level personnel at county offices.[4] The CGED-Q database is constructed from extant volumes of these rosters. Each entry corresponds to an officeholder during a specific quarter of the year, and the database identifies his name, position, peerage and honor, place of origin, highest degree or qualification, and other information.

For my purpose, I focus on the degrees or qualifications of prefecture and county officials to infer their record of purchase. See appendix A for a classification of degrees that distinguishes between those obtained through examination and those acquired through purchase. One caveat in the data is that the *Records* only indicate the highest degree attained by the officer. As noted earlier, if a candidate had purchased an entry degree but later qualified in the provincial exam, he would be considered an exam degree holder in the data. In addition, a candidate could have passed the entry exam but earned his position via a purchase. The second purchase is not reflected in the data. In a word, the dataset understates the extent to which purchases have been used as a means to enter the bureaucracy because an exam degree could have a purchased component. However, as I will demonstrate later, this is not a major concern because there are no systematic biases in purchasing patterns across geographical regions.

Given the dataset, I aggregate the number of officials in each prefecture between 1850 and 1864 who had acquired their positions via purchase and divided by the total num-

[3]The CGED-Q dataset (Campbell et al. 2022) can be accessed at https://doi.org/10.7910/DVN/GMQWVZ. See Chen et al. (2020) for a detailed introduction to the dataset, including the collection process, primary sources, key variables, and some descriptive results. The construction and release of the CGED-Q was supported in part by Hong Kong Research Grants Council General Research Fund grants 16601718 and 16400114 (Cameron Campbell PI) and by intramural support from the Hong Kong University of Science and Technology.

[4]The roster only lists key roles at the county offices including the county magistrate, deputy governor, secretary, sheriff/warden, director of education, etc. who are mostly ordained by the Ministry of Personnel. It does not include other low-rank or unranked staff members at the office.

ber of positions. This percentage of purchasing officials, or *purchase density*, indicates the level of influence that the merchant class had on the bureaucracy through the practice of purchasing positions. This measure provides valuable insights into the representation of merchants in the government during that period and sheds light on the level of merchant involvement in politics and governance.

3.2 Industrial development

I collect data on the number of firms established in every prefecture from 1858 to 1912 from Du (2014), which contains by far the most comprehensive secondary sources of industrial companies in the late imperial and early republic period. The data include information such as the year of establishment, the geographical location of each firm, the names of the founder(s), the initial investment made in each firm, and details regarding ownership, specifically whether the firm was foreign-owned, government-owned, or privately owned. Additionally, the dataset provides industrial classifications for each company, categorizing them into sectors such as textiles, food processing, manufacturing, and more.

3.3 Covariates

Although my empirical analysis will exploit a random assignment mechanism, for a complete analysis, I include the following control variables that affect industrial development at the prefecture level. These variables are standard within the literature.

First, I control for a host of economic variables that indicate the economic condition and business environment of the prefecture. First, I control for the prefecture population (in 1880) as an overall indicator of economic prosperity. Second, the Qing government employed a progressive tax scheme on land and levied larger taxes on richer areas. Third, following the categorization of prefectures by the government along four different dimensions of importance, I control for indicators of whether the prefecture is important in transportation, administratively complex, difficult to tax, and high in crime.

Next, I control for the influence of foreigners. Early industrialization was in part influenced by foreigners who conducted trade and set up factories at treaty ports and concession lands. Leakage from foreigners is an important channel of change during this period. I control for indicators of whether the prefecture is a treaty port and has foreign enclaves.

Lastly, I control for geographical characteristics that could affect industrial development. First, I control for the land area. Second, since waterways were still the predominant

mode of long-distance travel of goods during the period, I control for if the prefecture is coastal and has access to major waterways. Next, I control for agricultural productivity by proxying with land suitability of major crops (millet, rice, and sweet potato). They determine the traditional society's income level and could either compete with or complement industrialization efforts.

4 Empirical strategy

The goal of my empirical analysis is to estimate the causal relationship between office purchase and industrial development. I relate the number of newly established modern industrial companies N_l at prefecture location l to the percentage of officers who have explicitly made purchases to acquire an entry degree to enter the officialdom, Purchase_l:

$$N_l = \alpha + \beta PurchaseDensity_l + \Gamma' X_l + \varepsilon_l, \tag{1}$$

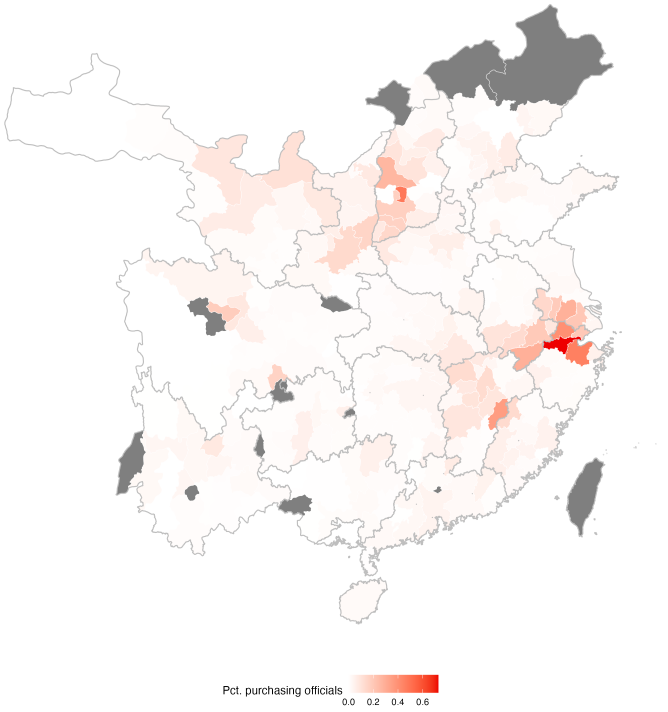
where X_l is a vector of covariates and ε_l is the error term.[5]

4.1 Merchants and official purchases

The first step in the empirical analysis aims to provide evidence that the institution of office purchase resulted in a higher representation of the merchant class within the bureaucracy. This notion is intuitively plausible: as the purchase system expanded during the late Qing period, a greater number of officials were recruited through this mechanism, and it was primarily the merchant class that took advantage of it. Although quantitative data on commercial development at the prefecture level during the mid-Qing period is limited, the purchasing patterns align with this narrative. Figure 2 shows the percentage of purchasing officials out of the total population for each prefecture. Note that prefectures in Shanxi, Shaanxi, Anhui, Jiangsu, Zhejiang, and Jiangxi all have above-average percentages of purchasing officials. These places were the most commercially active areas during the Qing, with large groups of merchants monopolizing internal trades in various industries (Zelin 2022). Therefore, it is quite likely that the more commercially active areas contributed a larger number of official purchases.

[5] In this version of the paper, my analysis is at the cross-section level because I only have purchase data for 1850 to 1864. Therefore, the results should be interpreted in light of the lasting cultural impact of the purchasing officials during this period on subsequent industrialization. I'm hoping to get purchase data from 1864 onward so that I can conduct a panel analysis.

Figure 2: Percentage of purchasing officials out of population at native place



To check the validity of the observation above, I regress the donation intensity at the native place on the land tax per capita in 1820. Although the land tax per capita is not a direct measure of commercial activity, it serves as an indicator of the region's economic development and is adjusted to account for business activities. Regions with higher levels of commercial development, such as Jiangsu, Anhui, and Shanxi, tended to have higher tax rates. In table 1, I show that there is a positive and significant relationship between the number of purchases as a percentage of the total population at the native prefecture and the land tax per capita. This finding supports the notion that regions with greater economic prosperity and commercial activity are associated with a higher intensity of office purchases. Notably, the analysis reveals that crop suitability indicators, which serve as proxies for agricultural productivity, do not significantly predict the intensity of official purchases. This suggests that agricultural productivity itself may not be a crucial determinant of the occurrence of office purchases.

4.2 Identification: random assignment of officials to posts

The validity of estimating β relies on the critical institutional setup under which eligible candidates were randomly assigned their posting locations. f candidates have the freedom

Table 1: Purchase density at native places

	Number of purchases as a percentage of population	
	(1)	(2)
Tax per capita (1820)	0.907***	0.926**
	(0.262)	(0.291)
Control variables	N	Y
R^2	0.051	0.128
Num. obs.	226	226

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

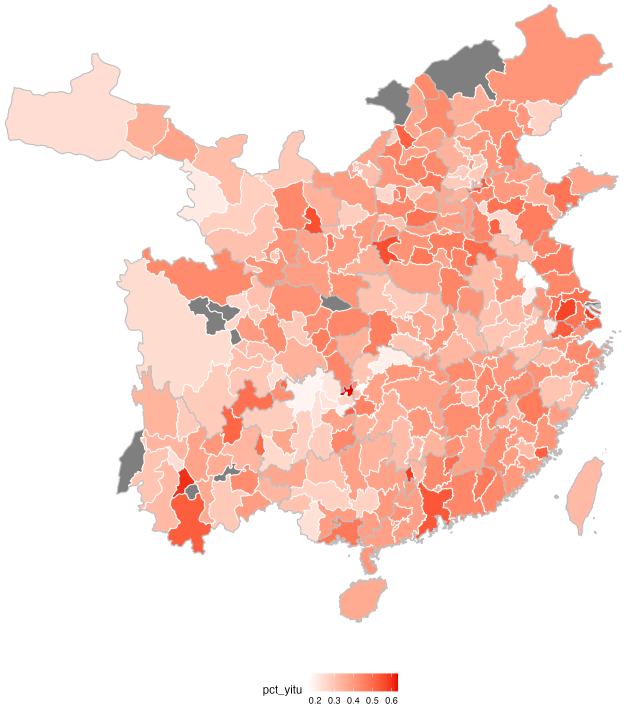
to choose their preferred locations, it introduces the possibility of bias in the estimation. For instance, purchasing officers may opt for locations that are more favorable for business and industrial development, such as prefectures situated near treaty ports or major waterways. In this scenario, any differences in outcomes observed across prefectures could be attributed to variations in factor endowments rather than the influence of the purchasing officials. Furthermore, officers may have a preference for staying close to their family origins, which could coincide with more developed areas. Consequently, any differences in outcomes between prefectures may simply be a result of persistence, where initially prosperous areas continue to thrive due to the presence of these new entrants.

These two concerns are effectively addressed by the institutions of the imperial bureaucracy, which actively strive to prevent officers from selectively choosing their posting locations. Measures are in place to counteract biases and favoritism in the appointment system during the Qing dynasty (Wei 1992).

To mitigate the influence of hometown preferences, the Qing appointment system employed a comprehensive system of recusal. Officials below the provincial rank were generally prohibited from holding offices in their province of origin or residence. Additionally, for contiguous provinces, officials must be located at least 500 *li* (288 kilometers) away from their county of origin or residence.

The Qing court also implemented a process that ensured the assignment of officers to posts was based on randomness. First, candidates were on a waitlist, and the timing of their appointments was typically uncertain as positions became available randomly. On the other hand, candidates were obliged to accept an appointment when it was their turn and could not excuse themselves if they found their assigned position undesirable. Second, the assignment procedure followed a lottery drawing process, where each candidate took turns to draw a lot from a vase. This allocation mechanism generates plausibly

Figure 3: Percentage of purchasing officials out of the total number of officials



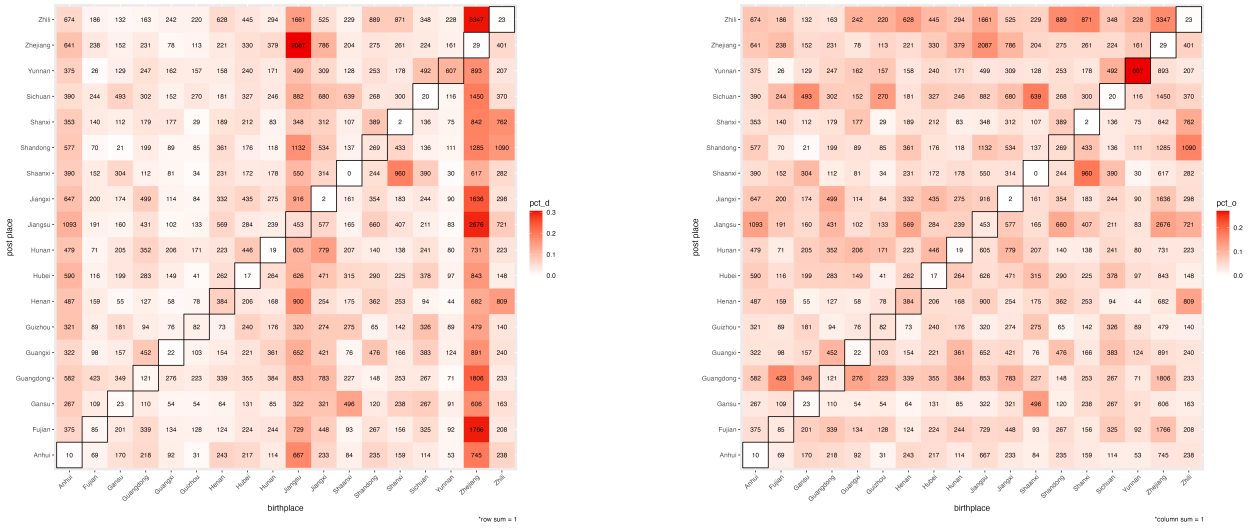
exogenous variation in purchase density at the prefecture level.

I verify this mechanism with the following observation - for candidates with the same native province, there is little systematic pattern in where they would hold an office. As a first pass, figure 3 shows the purchase density at each prefecture. There is no discernible pattern as far as geography is concerned.

Figure 4 shows the distribution of officials by native place (column) and post place (row). Figure 4a is from the perspective of the destination, where, for a given post province, the color indicates the percentage of each origin native province, such that each row sums up to 1. Figure 4b is from the perspective of the origin, where, for a given native province, the color indicates the percentage of each destination post province, such that each column sums up to 1. The second figure shows that there is no apparent pattern for each origin province, and all officials originating from one province are posted almost randomly across the country. Notably, the diagonal entries are mostly minute (with the exception of Yunnan which allowed self-posting due to its geographical distance and cultural dissimilarities from the rest of the provinces.)

To further confirm this random assignment mechanism, I perform a balance check on

Figure 4: Distribution of purchasing officers by native place and post place



(a) (b)

Notes: The rows are the post (destination) provinces and the columns are the native (origin) provinces. The color intensity indicates the percentages. In panel (a), the percentages are calculated for each origin province as a percentage of the destination province, (i.e., each row sums up to 1.) In panel (b), the percentages are calculated for each destination province as a percentage of the origin province, (i.e., each column sums up to 1.)

the covariates. If the random assignment is true, then relevant covariates should be randomly distributed with respect to the purchase density. Because the variable of interest is continuous, the primary statistic is the Pearson correlation between each covariate and the percentage of purchases. The first two columns of table 2 present the correlations using both the unadjusted and weight-adjusted samples, respectively, where the weights are calculated using the propensity score method taking the purchasing density as a continuous treatment variable. For complete independence between treatment and covariates, the test also uses interaction terms and high-order terms of degrees up to 3, but the table only presents estimates of the first-order terms. The adjusted correlations are generally below 0.1, indicating good balance of covariates. In addition to treatment-covariate correlations, the third column presents the Kolmogorov-Smirnov (KS) statistics between the weighted and unweighted samples for each covariate. The statistics are close to 0 and indicate that the adjusted sample is representative of the original population.

Table 2: Correlation between purchase density and covariates at the post place

Variable	Unadjusted corr.	Adjusted corr.	Kolmogorov-Smirnov
Area	-0.174	-0.045	0.022
Population in 1880	0.127	0.041	0.027
North	-0.010	-0.023	0.002
Main river	-0.041	-0.004	0.002
log(River length)	-0.109	-0.029	0.014
Important in transportation	0.048	0.020	0.004
Important in business	0.079	0.013	0.001
Difficult to tax	0.106	0.025	0.002
High crime rate	0.071	-0.002	0.007
Foxmillet suitability	0.079	0.006	0.020
Rice suitability	0.070	0.006	0.012
Sweet potato suitability	-0.010	0.013	0.023
Treaty port	0.072	0.012	0.002
Foreign enclave	0.118	0.036	0.003
Incidence of the Boxer Rebellion	0.077	0.021	0.004

5 Results

5.1 Effect of office purchase on industrialization

Before delving into the estimation results of model 1, it is important to outline the specifications used and discuss the model fit. In addition to the linear model, two alternative specifications are considered: a logarithmic-transformed model and a Poisson model. The main rationale is that the outcome variable is a count variable with a long right tail and a few large outliers (Shanghai, Guangzhou, Beijing, and Wuhan which were the largest industrialization centers.) Although the log-transformed model with 1 added to the outcome variable is slightly clumsy in terms of the interpretation, it can still reasonably yield the semi-elasticity for outcome values away from zero.[6] The Poisson specification is a natural choice to model count data. Because of the large number of zeros in the outcome variable (see figure 1), I also include a zero-inflated model that flexibly accounts for the occurrences of zeros in a mixture model that first explains if a prefecture had any companies at all and then, conditional on having any, models the count of companies. As we shall see, the occurrences of zeros are almost exclusively predicted by the population, sug-

[6] A common alternative transformation approach that bypasses the "plus 1" problem is to use the inverse hyperbolic sine (arcsin) transformation. I find the results to be quantitatively similar.

Table 3: Number of modern industrial companies

	Number of firms							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.972***	0.037***	0.096***	0.114***	0.620**	0.018*	0.070***	0.083***
	(0.252)	(0.010)	(0.002)	(0.003)	(0.225)	(0.007)	(0.003)	(0.004)
Control variables	N	N	N	N	Y	Y	Y	Y
RMSE	33.818	1.287	5.399	2.675	27.420	0.878	3.238	3.292
R^2	0.054	0.053			0.389	0.561		
Num. obs.	264	264	264	264	259	259	259	259
Log Likelihood			−4117.587	−2786.836			−1624.610	−1234.085

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

gesting that the overall economic condition is the primary driver of firm creation. In terms of model fit, the linear model is less credible because the results are driven primarily by outliers. The root-mean-squared error (RMSE), as a measure of model fit, strongly favors the nonlinear specifications.

Table 3 presents the estimation results of model 1. The estimates of the effect of purchasing officials on the number of companies created are significant across the specifications. Specifically in the Poisson specification, the semi-elasticity, that is, a one percentage point increase in the purchasing officials leads to an increase of the number of companies by about 7%. The zero-inflated model yields a slightly larger estimate of the semi-elasticity, which is reasonable because the occurrences of zeros have been partially accounted for by the zero model. The log-transformed model yields a much smaller estimate that a one percent increase in the purchase is translated into an increase in firm number by about 2%.

5.2 Comparing to foreign companies

I perform a placebo test by looking at the impact of office purchases on firm creation by foreign investors. The motivation is that foreign investors were not subject to the same regulatory framework as their domestic counterparts but otherwise faced similar market conditions. The *Treaty of Shimonoseki/Maguan* of 1985 ceded extraterritorial privileges to foreigners to establish companies at treaty ports freely. They were not constrained by local officials and did not face as much red-taping and extortion as domestic entrepreneurs. Although the government later relaxed the regulation on domestic ventures, resistance remained and it was far from a free environment. On the other hand, these foreign investors faced similar market conditions because their investments were primarily through quasi-joint ventures with domestic involvements. Many domestic businessmen took advantage of the treaty and sought collaboration with foreigners during this period to secure a more

Table 4: Number of foreign-owned industrial companies

	Number of foreign-owned industrial companies							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.007	0.002	0.064**	0.099**	0.004	0.000	−0.031	0.091
	(0.007)	(0.002)	(0.022)	(0.036)	(0.007)	(0.002)	(0.109)	
Control variables	N	N	N	N	Y	Y	Y	Y
RMSE	0.976	0.244	0.925	1.359	0.843	0.203	0.290	0.001
R^2	0.004	0.003			0.271	0.323		
Num. obs.	264	264	264	264	259	259	259	259
Log Likelihood			−125.298	−68.767			−23.381	−12.456

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

friendly business environment. Domestic investors and managers offered resources, connections, knowledge, and expertise to these companies which, therefore, faced very similar market conditions. Consequently, any differences in the outcomes observed can be primarily attributed to variations in the regulatory framework to which the companies were subjected, with local officials playing a significant role in shaping these conditions.

Table 4 presents the results of the main model with the number of foreign-owned industrial companies as the outcome variable. The estimates are both smaller in magnitude and not statistically significant after controlling for proxies of market conditions. This suggests that the establishment of foreign companies did not respond to the composition of the local bureaucracy. A higher representation of purchasing officials did not spill over to foreign-owned companies.

The lack of response from foreign investors to the composition of the local bureaucracy suggests that the presence of purchasing officials did not lead to comprehensive institutional changes that would benefit all companies uniformly. This observation is consistent with the narrative that, during the late empire and the early Republic era, the government's involvement in economic development was mainly negative rather than proactive. The objective of the government during this period was not to actively initiate changes, whether ideological or institutional, that would foster industrialization or economic growth. Instead, the limited economic progress that occurred can be attributed to the relaxation of previous suppressive measures on private enterprises. It was the removal of these barriers that allowed the economy to develop and experience a modest degree of success.

Table 5: Number of private and public modern industrial companies

(a) Number of private companies

	Number of private companies							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.814***	0.040***	0.092***	0.104***	0.521**	0.021**	0.069***	0.080***
	(0.201)	(0.009)	(0.002)	(0.003)	(0.171)	(0.007)	(0.004)	(0.004)
Control variables	N	N	N	N	Y	Y	Y	Y
RMSE	26.957	1.261	4.973	2.467	20.792	0.860	3.031	2.726
R^2	0.059	0.064			0.450	0.566		
Num. obs.	264	264	264	264	259	259	259	259
Log Likelihood			−3520.343	−2361.889			−1442.715	−1080.420

(b) Number of public companies

	Number of public companies							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.030	0.005	0.043***	0.079***	0.013	0.001	0.030*	0.072**
	(0.016)	(0.004)	(0.009)	(0.013)	(0.014)	(0.004)	(0.013)	(0.025)
Control variables	N	N	N	N	Y	Y	Y	Y
RMSE	2.127	0.556	1.603	1.355	1.717	0.452	1.174	1.008
R^2	0.013	0.006			0.363	0.339		
Num. obs.	264	264	264	264	259	259	259	259
Log Likelihood			−420.460	−298.840			−257.308	−199.453

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

5.3 Public versus private companies

This mechanism is further substantiated by comparing the establishment of public companies to private companies. Table 5 presents the estimation results of the main model using the number of private and public companies as the outcome variables. The establishment of public companies responded little, if at all, to the composition of the local officialdom compared to their private counterparts. This observation provides further support for the argument that the presence of purchasing officials did not lead to significant positive changes in the business environment that would equally benefit all types of companies. Public companies faced fewer instances of extortion compared to private companies (though they are not entirely free from it because most "public" companies were run by private business owners.) On the other hand, if the purchasing officials have brought positive changes to the business environment through their expertise, resources, connections, or institutional reforms that secured property rights, we would expect public companies to also exhibit a strong response to the composition of the local bureaucracy. However, the limited impact on public companies suggests that the influence of purchasing officials was primarily centered around private enterprises, in which the government merely played a negative role.

6 Conclusion

I have demonstrated the significant role of merchants in propelling industrialization during late imperial China, specifically through the channel of purchasing public offices. My study highlights the importance of bureaucratic diversity as a potent instrument for effecting changes. The inclusion of individuals who were supportive of business interests and espoused progressive ideologies within the bureaucracy was sufficient to have a tangible and positive impact on the economy. This positive effect primarily stemmed from the reduction in the suppression of private ventures and businesses, which had long impeded the much-needed economic transformation in China.

The results indicate that merchants strategically exploited a weakness in the imperial structure to their advantage, utilizing their influence to create a more favorable business environment. This, in turn, had positive spillover effects on the early industrialization attempt. While this particular channel represents a mitigation of a negative institutional feature, it is important to recognize that merchants had pursued various other channels to actively advocate for a better business environment by bargaining with the government and effecting changes in society. My study aligns with the broad historical narrative during this period in which a gradual and positive feedback loop emerged in which a merchant class both grew their wealth and power and successfully lobbied for better business protection. This study contributes to our understanding of the mechanisms through which merchants influenced the trajectory of industrialization in late imperial China, emphasizing the agency of merchant actors in shaping economic outcomes.

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Appendix A Classification of degrees

Following Kondō (1963), I classify the following degrees as exam degrees: *jinshi*, *juren*, five types of non-purchased *tributary students (gongsheng)*. I classify the following degrees as purchased degrees: *academy student (jiansheng)*, including *linjian, zengjian, fujian*, and *jiansheng*, and purchased *tributary students (gongsheng)*, including *lingong, zenggong, fugong*, and *gongsheng*.

Appendix B Full tables

Table B.1: Purchase density at native places

	Number of official purchases as a percentage of population	
	(1)	(2)
Tax per capita (1820)	0.907***	0.926**
	(0.262)	(0.291)
Area		−6.238
		(3.554)
Population in 1880 (mil.)		0.000
		(0.020)
Main river		0.121**
		(0.046)
log(River length)		−0.015
		(0.056)
Important in transportation		0.004
		(0.045)
Important in business		−0.008
		(0.057)
Difficult to tax		0.049
		(0.046)
High crime rate		0.076
		(0.050)
Foxmillet suitability		−0.040
		(0.022)
Rice suitability		−0.015
		(0.022)
Sweet potato suitability		0.001
		(0.024)
R^2	0.051	0.128
Num. obs.	226	226

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Table B.2: Number of modern industrial companies

	Number of firms							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.981***	0.037***	0.096***	0.114***	0.602**	0.018*	0.070***	0.083***
	(0.254)	(0.010)	(0.002)	(0.003)	(0.223)	(0.007)	(0.003)	(0.004)
Area					−98.586	−2.828	−8.324*	0.838
					(135.023)	(4.314)	(4.137)	(4.273)
Population in 1880 (mil.)					8.566***	0.490***	0.470***	0.350***
					(1.935)	(0.062)	(0.018)	(0.019)
North					5.058	0.391**	1.280***	1.030***
					(4.519)	(0.144)	(0.074)	(0.079)
Main river					1.051	0.097	0.208***	0.251***
					(4.180)	(0.134)	(0.063)	(0.067)
log(River length)					−4.619	−0.101	−0.444***	−0.499***
					(3.922)	(0.125)	(0.056)	(0.056)
Important in transportation					−4.238	0.233	−0.139*	−0.142*
					(4.008)	(0.128)	(0.058)	(0.058)
Important in business					0.780	0.014	−0.029	−0.353***
					(5.012)	(0.160)	(0.087)	(0.084)
Difficult to tax					6.349	0.070	0.301***	0.173**
					(4.306)	(0.138)	(0.054)	(0.055)
High crime rate					−0.628	0.216	0.237**	0.131
					(4.477)	(0.143)	(0.085)	(0.085)
Foxmillet suitability					−4.200*	−0.101	−0.125***	−0.099***
					(1.904)	(0.061)	(0.026)	(0.028)
Rice suitability					−3.693	0.033	0.210***	0.147***
					(1.984)	(0.063)	(0.029)	(0.031)
Sweet potato suitability					−0.120	0.074	−0.247***	−0.272***
					(2.194)	(0.070)	(0.033)	(0.038)
Treaty port					8.238	0.795***	0.710***	0.572***
					(6.988)	(0.223)	(0.065)	(0.061)
Foreign enclave					52.135***	1.209***	0.939***	0.881***
					(9.226)	(0.295)	(0.066)	(0.061)
Incidence of the Boxer Rebellion					0.033	0.106	−0.021	−0.229*
					(6.305)	(0.201)	(0.085)	(0.090)
RMSE	33.992	1.290	5.416	2.678	27.437	0.877	3.237	3.294
R^2	0.054	0.053			0.388	0.563		
Num. obs.	261	261	261	261	259	259	259	259
Log Likelihood			−4097.012	−2781.050			−1622.865	−1234.136

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Table B.3: Number of private modern industrial companies

	Number of firms							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.814***	0.040***	0.092***	0.104***	0.521**	0.021**	0.069***	0.080***
	(0.201)	(0.009)	(0.002)	(0.003)	(0.171)	(0.007)	(0.004)	(0.004)
Area					−67.249	−2.687	−10.426*	−0.317
					(102.331)	(4.231)	(4.537)	(4.597)
Populuation in 1880 (mil.)					8.070***	0.490***	0.479***	0.364***
					(1.466)	(0.061)	(0.020)	(0.021)
North					2.459	0.379**	1.050***	0.813***
					(3.424)	(0.142)	(0.077)	(0.084)
Main river					1.852	0.115	0.288***	0.359***
					(3.168)	(0.131)	(0.067)	(0.072)
log(River length)					−3.202	−0.116	−0.390***	−0.489***
					(2.973)	(0.123)	(0.060)	(0.060)
Important in transportation					−3.197	0.185	−0.088	−0.099
					(3.041)	(0.126)	(0.061)	(0.062)
Important in business					−0.777	0.037	−0.155	−0.422***
					(3.798)	(0.157)	(0.089)	(0.087)
Difficult to tax					3.863	0.017	0.130*	0.018
					(3.262)	(0.135)	(0.058)	(0.059)
High crime rate					−1.308	0.178	0.200*	0.156
					(3.392)	(0.140)	(0.087)	(0.089)
Foxmillet suitability					−3.223*	−0.089	−0.088**	−0.069*
					(1.443)	(0.060)	(0.027)	(0.030)
Rice suitability					−3.203*	0.017	0.179***	0.117***
					(1.504)	(0.062)	(0.031)	(0.033)
Sweet potato suitability					−0.523	0.046	−0.254***	−0.264***
					(1.663)	(0.069)	(0.033)	(0.038)
Treaty port					5.008	0.758***	0.667***	0.511***
					(5.295)	(0.219)	(0.070)	(0.066)
Foreign enclave					45.103***	1.225***	0.951***	0.868***
					(6.993)	(0.289)	(0.071)	(0.066)
Incidence of the Boxer Rebellion					1.715	0.088	0.064	−0.074
					(4.776)	(0.197)	(0.087)	(0.092)
RMSE	26.957	1.261	4.973	2.467	20.792	0.860	3.031	2.726
R^2	0.059	0.064			0.450	0.566		
Num. obs.	264	264	264	264	259	259	259	259
Log Likelihood			−3520.343	−2361.889			−1442.715	−1080.420

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Table B.4: Number of public modern industrial companies

	Number of firms							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.030	0.005	0.043***	0.079***	0.013	0.001	0.030*	0.072**
	(0.016)	(0.004)	(0.009)	(0.013)	(0.014)	(0.004)	(0.013)	(0.025)
Area					0.483	0.300	−3.803	−10.280
					(8.450)	(2.223)	(9.846)	(14.354)
Populuation in 1880 (mil.)					0.471***	0.140***	0.256***	−0.081
					(0.121)	(0.032)	(0.064)	(0.090)
North					0.101	0.025	0.622*	0.695*
					(0.283)	(0.074)	(0.277)	(0.336)
Main river					0.070	−0.005	0.034	0.835*
					(0.262)	(0.069)	(0.240)	(0.375)
log(River length)					0.238	0.075	0.597*	0.709*
					(0.245)	(0.065)	(0.244)	(0.303)
Important in transportation					−0.079	0.044	−0.079	−0.332
					(0.251)	(0.066)	(0.220)	(0.328)
Important in business					−0.248	−0.054	−0.423	−0.639
					(0.314)	(0.083)	(0.288)	(0.438)
Difficult to tax					−0.060	−0.052	−0.201	−0.896**
					(0.269)	(0.071)	(0.202)	(0.302)
High crime rate					−0.108	0.046	0.363	0.369
					(0.280)	(0.074)	(0.293)	(0.498)
Foxmillet suitability					−0.112	−0.022	−0.076	−0.082
					(0.119)	(0.031)	(0.096)	(0.125)
Rice suitability					0.032	0.023	0.250*	0.230*
					(0.124)	(0.033)	(0.099)	(0.117)
Sweet potato suitability					0.061	0.052	−0.033	−0.322
					(0.137)	(0.036)	(0.112)	(0.192)
Treaty port					−0.050	0.097	0.546*	0.688**
					(0.437)	(0.115)	(0.245)	(0.244)
Foreign enclave					3.625***	0.658***	1.175***	1.103***
					(0.577)	(0.152)	(0.262)	(0.295)
Incidence of the Boxer Rebellion					0.330	0.086	0.277	−0.490
					(0.394)	(0.104)	(0.274)	(0.337)
RMSE	2.127	0.556	1.603	1.355	1.717	0.452	1.174	1.008
R^2	0.013	0.006			0.363	0.339		
Num. obs.	264	264	264	264	259	259	259	259
Log Likelihood			−420.460	−298.840			−257.308	−199.453

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.

Table B.5: Number of foreign-owned industrial companies

	Number of firms							
	(Linear)	(Log)	(Poisson)	(Zero-inflated)	(Linear)	(Log)	(Poisson)	(Zero-inflated)
Percent purchase	0.007	0.002	0.064**	0.098**	0.003	0.000	−0.031	0.091
	(0.007)	(0.002)	(0.022)	(0.036)	(0.007)	(0.002)	(0.109)	
Area					1.581	0.003	−520.550*	29.050
					(4.151)	(0.999)	(244.730)	
Population in 1880 (mil.)					0.138*	0.039**	2.431**	4.545
					(0.059)	(0.014)	(0.874)	
North					−0.075	−0.003	23.686	14.862
					(0.139)	(0.033)	(2480.165)	
Main river					0.088	0.023	−3.028	0.474
					(0.128)	(0.031)	(1.990)	
log(River length)					0.024	0.005	6.796	−20.835
					(0.121)	(0.029)	(3.799)	
Important in transportation					−0.273*	−0.050	−2.904	2.702
					(0.123)	(0.030)	(1.942)	
Important in business					−0.258	−0.048	1.439	17.839
					(0.154)	(0.037)	(2.185)	
Difficult to tax					−0.083	−0.018	−2.474	5.466
					(0.132)	(0.032)	(1.713)	
High crime rate					−0.187	−0.035	−4.617	20.872
					(0.138)	(0.033)	(2.450)	
Foxmillet suitability					0.041	0.014	−1.217	19.888
					(0.059)	(0.014)	(0.706)	
Rice suitability					−0.111	−0.034*	−1.176	−9.325
					(0.061)	(0.015)	(0.739)	
Sweet potato suitability					−0.207**	−0.054**	−0.394	5.674
					(0.067)	(0.016)	(0.651)	
Treaty port					−0.302	0.012	8.076*	−18.252
					(0.215)	(0.052)	(3.687)	
Foreign enclave					1.511***	0.385***	−1.150	49.329
					(0.284)	(0.068)	(2.073)	
Incidence of the Boxer Rebellion					0.446*	0.091	0.084	−0.619
					(0.194)	(0.047)	(1.696)	
RMSE	0.982	0.246	0.929	1.360	0.843	0.203	0.290	0.001
R^2	0.004	0.003			0.270	0.323		
Num. obs.	261	261	261	261	259	259	259	259
Log Likelihood			−125.003	−68.657			−23.381	−12.456

Note: $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.