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The Last or Lasting Samurai? The Impact of Secondary Education Expansion on Elite Attainment and Occupational Sorting after Japan's Meiji Restoration

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The Last or Lasting Samurai?

The Impact of Secondary Education Expansion on Elite Attainment and Occupational Sorting after Japan's Meiji Restoration*

Abstract

When societies transition from hereditary to meritocratic systems, to what extent does educational expansion broaden access to elite positions and change inherited patterns of occupational sorting? We study Japan after the Meiji Restoration, which abolished samurai hereditary privileges in public-sector positions and modernized education. Exploiting cohort-specific discontinuities in access to secondary schooling created by the expansion of public secondary schools, we find that greater access increased elite attainment among both samurai and commoner families, but most additional elites entered sectors historically associated with their family background. Many had non-elite fathers, indicating greater upward intergenerational mobility into elite status.

JEL classification

J62, I24, I26, N35

Keywords

social mobility, intergenerational mobility, secondary education, social transition, history

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1 Introduction

Over the past few centuries, many societies have undergone major social and political transformations from hereditary systems to more meritocratic ones. In such periods of profound institutional change, the expansion of education has often been a central part of broader reform efforts, as new regimes sought to widen access to state institutions, cultivate new elites, and shift the basis of recruitment from birth to education. In many such settings, general secondary education was expected to serve as a major pathway to higher education and elite positions, although its initial expansion was rarely rapid or assured given its dependence on institutional capacity and social demand (Fuller and Holsinger, 1993; World Bank, 2005). Moreover, whether such educational expansion widens economic opportunity or instead reproduces existing hierarchies has long been contested (Müller et al., eds, 1987; Meghir and Palme, 2005; Doxey et al., 2026). This raises two outstanding questions. First, did the gradual expansion of general secondary education—which still enrolled only a small share of each cohort—alter who attained elite positions (vertical mobility)? Second, did it reshape historically rooted patterns of intergenerational occupational sorting (horizontal mobility)?

We study this question in Japan after the Meiji Restoration of 1868, which abolished *samurai*’s hereditary privileges in public-sector positions and initiated major educational reforms that gradually broadened access to education. Before the Meiji Restoration, basic education had long been broadly available, yet access to higher-level education had been largely limited to the samurai class. After the Meiji Restoration, the government first expanded elementary schooling on a mass scale, whereas it expanded secondary schooling later and on a more limited scale. Public general secondary schools (hereafter public secondary schools) nevertheless became a major pathway to higher education and elite careers, effectively forming an elite-track within the education system. The schools were open in principle to applicants from all social backgrounds and admitted students on the basis of academic performance rather than hereditary status. However, access remained limited: enrollment was only about 0.5 to 2% of each cohort, largely because government resource constraints restricted the number of public secondary schools to at most one per prefecture. This restriction was removed in 1892, leading many prefectures to establish second public secondary schools over the following decade. Since students typically entered secondary school at age 13, the opening of a second school generated cohort-specific discontinuities in access to public secondary schools. We exploit these discontinuities to estimate the long-run effects of expanded access to public secondary schooling on later attainment of elite positions in the public and private sectors.

To measure long-run elite attainment, we digitize the Personnel Inquiry Records (PIR), a historical *Who's Who* directory published in 1903, 1915, 1928, 1934, and 1939. The dataset contains 83,015 distinguished individuals, including company executives and top managers, high-ranking government officials, politicians, scholars, lawyers, judges, and physicians. Throughout the paper, we use “elites” as shorthand for PIR-listed individuals, who were socially recognized as having attained elite positions. The PIR records rich biographical information, including birth year, birth prefecture, social group (i.e., former samurai families vs. commoners), education, and family background. These data allow us to link individuals to secondary school expansion in their birth prefecture. They also allow us to trace father-son relationships among PIR-listed individuals to study upward intergenerational mobility into elite status.

Before the Meiji Restoration, occupations were largely determined by hereditary social groups: samurai families worked as public servants and warriors, whereas commoner families worked in commerce, crafts, and agriculture. Our main finding is that expanded access to public secondary schooling increased elite attainment among both samurai and commoner families, but it did not fundamentally dismantle this historically rooted pattern of intergenerational occupational sorting. More concretely, the number of government elites from samurai families increased by 88%, while the number of elite high-income managers from commoner families increased by 24%. By contrast, the estimated effects on the number of government elites from commoner families and business elites from samurai families are small and statistically insignificant. We also find suggestive evidence that professional elites from commoner families increased by 23%. The expansion of public secondary schooling therefore widened access to elite status without eliminating the tendency for elite careers to remain tied to family background.

This pattern does not imply that educational expansion failed to promote mobility. Most of the additional elites had fathers who were not listed in earlier PIR editions, indicating substantial upward intergenerational mobility into elite status. At the same time, this mobility was realized largely within occupational sectors historically associated with each social group. In other words, expanded access to secondary schooling increased vertical mobility into elite status, but had limited effects on horizontal mobility across historically rooted sectors, that is, on patterns of intergenerational occupational sorting. More broadly, these findings suggest that educational expansion may increase vertical mobility without automatically changing how family background shapes which elite sectors individuals enter.

To understand the mechanisms behind why secondary schooling increased vertical mobility while limiting horizontal mobility, we examine whether several major observable constraints can account for the persistence of sectoral sorting, including differential progres-

sion to higher education, differential promotion within the national bureaucracy, and family succession pressure. These factors do not fully explain why elite careers remained closely tied to family background. Taken together, the evidence is more consistent with family-based occupational orientation, broadly understood as preferences, norms, information, and occupation-specific knowledge transmitted within families, although we cannot separately identify these components.

This study contributes primarily to three strands of literature. First, it contributes to the empirical literature on the impact of education on elite formation and intergenerational/social mobility. While a wide variety of studies document a positive correlation between education and upward intergenerational mobility (Chetty et al., 2014; Acciari et al., 2022; Fairbrother and Mahadevan, 2016; Abramitzky et al., 2025), Zimmerman (2019) and Michelman et al. (2022) show, in their respective settings, that selective higher education institutions do not necessarily help students from low-status families attain high-status careers. On the other hand, Barrios-Fernández et al. (2026) provide evidence that such institutions improve the upward mobility of children of admitted parents through marriage market and social capital exposure. We add to this literature by showing that expanded access to secondary schools widened access to elite status, but did not dismantle historically rooted sectoral sorting. Our study underscores the importance of disentangling vertical mobility into elite status from horizontal mobility across distinct elite sectors.

Second, this study contributes to the literature on the persistence of elite social status across generations, even during periods of rapid social and economic change (Clark and Ishii, 2012; Clark, 2014; Alesina et al., forthcoming; Ager et al., 2021; Shiue and Keller, 2024). For example, Alesina et al. (forthcoming) show that, even half a century after the Chinese Communist Revolution and Cultural Revolution, which sought to eliminate inequality in wealth and educational opportunities, individuals whose grandparents belonged to the pre-revolution elite earned higher income. In contrast, our setting features expanded access to public secondary schooling after a major social transition for all groups, allowing us to examine its effects on elite formation across samurai and commoner families. Within Japan, Clark and Ishii (2012) use rare samurai surnames to trace the representation of samurai descendants in elite positions and find substantial overrepresentation of samurai descendants among professional and business elites in the late twentieth century.¹ They also show, using scholarly publications, that this overrepresentation declined gradually from the early twentieth century onward, which is consistent with the possibility that expanded access to secondary education helped widen access to elite trajectories, even if it did not eliminate long-

¹This pattern is consistent with our evidence based on PIR-listed elites in the early twentieth century that samurai overrepresented elite positions relative to its population.

run status persistence. Taken together, our study bridges the first two strands of literature by providing causal evidence on how expanded access to secondary education affects social mobility during major social transformations. We show that educational expansion increased elite formation from non-elite families, but largely within sectors historically associated with each group’s family background.

Third, this study contributes to the literature on the long-run impacts of secondary education (Spohr, 2003; Ozier, 2015; Duflo et al., 2021, 2026; Sakai and Masuda, 2020; Masuda and Shigeoka, 2023; Meghir and Palme, 2005; Doxey et al., 2026).² Evidence on the long-run impacts of education remains concentrated on primary schooling, with secondary education receiving far less attention (Duflo et al., 2026). Most closely related to ours is the study by Doxey et al. (2026), who examine the U.S. high school movement, an expansive historical episode of secondary-school access, and find that new high schools substantially raised women’s labor force participation and occupational income, yet primarily benefited children from wealthier families and largely excluded Black children. Our study extends this literature by linking the long-run effects of secondary school expansion to both the vertical and horizontal dimensions of intergenerational mobility. In addition, whereas the American high school movement expanded a mass comprehensive institution, we study the expansion of an elite-track secondary school within a tracked system of the European type, whose effects on social mobility have long been contested. Relatedly, this study also contributes to the broader historical and sociological scholarship on elite formation in Japan (e.g., Sonoda et al., 1995, Aso, 1978, Takane, 1976, Takeuchi, 1981, Matsumoto and Okazaki, 2023, Clark and Ishii, 2012). Our study complements this work by providing causal evidence on how educational institutions shaped elite formation in this context.

The rest of this paper is organized as follows. Section 2 provides background on the study context and the expansion of secondary schools. Section 3 describes the data. Section 4 presents the empirical strategy and results, and Section 5 explores the underlying mechanisms. Section 6 concludes.

2 Background

The focus of this study is the expansion of secondary education after the Meiji Restoration (1868), which marked a major transition from the hereditary system of the Tokugawa period (1603–1868) to the more meritocratic society of the Meiji period (1868–1912). The Meiji Restoration first led to the abolition of various vested rights held by the samurai, followed

²There are also studies examining short- to mid-run effects of secondary schools on academic outcomes (Angrist et al., 2006; Blimpo et al., 2019; Brandt and Mkenda, 2020).

by decades of educational reform. These institutional changes are summarized below.

2.1 Transition from the Tokugawa period to the Meiji Period

For approximately 250 years during the Tokugawa period, Japan was governed by the Tokugawa family, which implemented a decentralized political system by delegating authority to the local lords. These lords governed their domains, overseeing their vassals, clans, and the local communities in accordance with the guidelines set by the Tokugawa family.

The Tokugawa family ruled the country under a rigid hereditary status system that distinguished samurai, the ruling status group associated with the shogunate and the domains, from commoners, who consisted of farmers, artisans, and merchants. This separation extended to occupation, residence, and marriage. Samurai families dominated most public-sector positions, including key roles in the government, the military, and law enforcement. However, samurai were restricted from engaging in farming and commerce, while commoners were generally excluded from official positions reserved for samurai. In castle towns, samurai and commoners typically lived in separate residential districts (Gaubatz, 2023), and marriages between the two groups appear to have been uncommon, particularly among middle- and upper-ranking samurai families (Moore, 1970).

Educational opportunities varied considerably according to social group. At the elementary level, private schools known as *terakoya* were widespread throughout the country by the late Tokugawa period and were accessible to commoners. These schools aimed to provide basic literacy and numeracy skills, such as reading, writing, and arithmetic, that were necessary to engage in business activities (Ministry of Education, 1972).³ Beyond the elementary level, however, educational opportunities were far more limited. *Hanko* (fief schools) were the main publicly supported institutions at this level, and they primarily targeted the children of samurai families. Children of upper-class samurai were required to attend fief schools as part of their preparation to take over their family occupations. The curriculum centered on the Confucian classics, which was considered essential preparation for becoming a public servant. Although there were a few fief schools and specialized private schools that accommodated commoners, the number of such schools was limited (Dore, 2010). For commoners, practical knowledge and skills were transmitted within families or acquired through the apprenticeship system (Irie, 1961).

The Tokugawa period ended in 1868 with the Meiji Restoration, achieving a largely peaceful transition of power without catastrophic civil war. In response to foreign threats,

³The foundational background of Japan’s pre-restoration educational system is detailed in the official report by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), accessible at: https://www.mext.go.jp/b_menu/hakusho/html/others/detail/mext_03454.html

the Meiji government quickly undertook extensive reforms to modernize the country. Central to these efforts were the abolition of the status system (division of samurai and commoners) and major education reforms. The dismantling of the status system was carried out through a sequence of administrative, military, and fiscal reforms that deprived the samurai of their privileges. First, in 1869, the local lords formally returned their domains to the emperor; in 1871, the government abolished the domains and replaced them with prefectures. As part of the early Meiji reorganization of legal status, former local lord and court-noble families were generally classified as *kazoku*, most former samurai families were eventually classified as *shizoku*, and most other families as *heimin*. Throughout the paper, we use “samurai” as a shorthand for individuals classified as *shizoku* or *kazoku*, and “commoner” for *heimin*.⁴ Second, the Conscription Ordinance (1873) mandated military service for eligible men, regardless of hereditary status. Third, the compulsory commutation of hereditary stipends in 1876 ended the privilege of samurai to receive the public stipend.

A merit-based system was introduced for recruitment of national government bureaucrats. The 1893 ordinance mandated that entry into the national government administrative division required passing the Higher Civil Service Examinations (HCSE), selective national qualification exams held annually from 1894 (Spaulding, 1967, Chapter 25; Shimizu, 2019, Chapter 5). The exam combined written and oral assessments, both requiring knowledge at the level of modern higher education. Democratic selection of politicians also began during this period. The first general elections for the House of Representatives were held in 1890, though suffrage was initially restricted to a small set of tax-paying males. Voting rights gradually expanded, with a major reform in 1925 extending suffrage to all adult men.

2.2 Education reforms in the Meiji Period

2.2.1 Overall education system

The Meiji government initiated the reform of education through the promulgation of the Education System Order (1872). This law introduced the fundamental principles of the new education system, emphasizing that education – rather than family background – would now determine occupational opportunities and future earnings. The law laid out a plan to establish elementary schools, secondary schools, and imperial universities, adapting a zoning

⁴These labels are operational rather than genealogical. The *shizoku* category was composed of former samurai families, while some lower-ranking samurai families were initially classified as *sotsu* and, after the abolition of that category in 1872, were incorporated into either *shizoku* or *heimin*. The *kazoku* category included former local lord, court-noble families, and later ennobled lineages. We therefore interpret the estimates as heterogeneous effects by recorded Meiji legal status, which is highly correlated with but not identical to Tokugawa ancestry. The results are nearly unchanged when *kazoku* are excluded; see Appendix Table C8.

system modeled after the French system. Although the plan was somewhat ambitious and not strictly enforced due to budgetary and other constraints, the law is widely considered a significant milestone in the development of the modern education system in Japan.

The government prioritized the expansion of elementary schools. Since the promulgation of the Elementary School Order (1886), the eight-year elementary school system, starting from the age of six, was divided into two stages: an ordinary course and a higher course, each consisting of four years of schooling. The ordinary course was compulsory, and students who completed it with adequate grades upon completion could proceed to the higher course. By 1891, the elementary school completion rate (ordinary course) reached 53.1%.

General secondary schools were one of the post-elementary institutions available to students who had completed four years of the ordinary course in elementary school.⁵ Other secondary schooling options for boys who completed elementary school included vocational schools (commercial, industrial, and agricultural), teacher training schools, and military preparatory schools (see Appendix Figure D1 for an illustration). However, general secondary schools likely served as the sole elite-track route, as they were the only institutions providing general education and because graduation from them was required for entry into Imperial Universities and other higher education institutions.

This tracked structure was deliberately modeled on European precedents, above all the German system adopted under the education reforms of the 1880s (Duke, 2009). This choice set the Japanese system apart from the contemporaneous American system. The American high school movement expanded a single type of secondary school for the masses, offering essentially the same course of study across schools (Goldin, 2001). In Japan, by contrast, general, vocational, and teacher training schools were institutionally separated from the outset, and the general track alone retained the university preparatory function, providing what Mori Arinori (Japan’s first Minister of Education) described as the education “required for the future leaders of the nation” (Duke, 2009).

Historians of education have hypothesized that such tracking systems in nineteenth-century Europe limited social mobility (Müller et al., eds, 1987). In Prussia, the German state whose school system Japan most directly drew on, the Volksschule for the masses and the Gymnasium for future elites constituted parallel tracks. Entry into the Gymnasium required Latin instruction from around age six, so that the choice of track was in practice made by parents. The differentiated secondary schools introduced in the 1880s, which taught modern foreign languages in place of Latin, drew middle- and lower-class students away from

⁵This standard was maintained until 1898. In 1899, the national government revised the system, requiring students to complete two years of the higher course in elementary school for secondary school admission. More details are provided in Section 2.2.3.

the Gymnasium, while the Gymnasium retained its monopoly over access to the university and state examinations, for which Latin remained indispensable. Similar structures emerged in France and England, where classical languages were taught only in the schools attended by bourgeois children and remained prerequisites for state qualifications and admission to the most prestigious universities. However, the Japanese system differed from these European systems in two respects. First, tracking occurred considerably later: students chose among general, vocational, and other post-elementary routes upon completing elementary school, around age twelve. Second, the curriculum of Japanese general secondary schools contained no counterpart to the classical-language requirement that functioned as a cultural gatekeeper in Europe. The Japanese system thus lacked the two institutional features that historians of education have linked to restricted access to elite positions in Europe.

2.2.2 School expansion we exploit

By 1879, there were about 800 public and private general secondary schools, comprising a mix of different types of institutions, including former fief schools and new European-style schools. However, most of these schools did not meet the standards required by the government, mainly due to shortages of public funding and qualified teachers. For example, 70% of these schools had only a single teacher. There were also significant variations in educational quality across institutions. Some schools prioritized the admission of children whose parents invested in the school, often favoring upper-class samurai (Kambe, 1990).

To cope with these issues, the government first enforced the standardization of general secondary schools under the Education Order (1879). As a result, approximately 630 private schools lost their secondary school status, leaving only 188 recognized secondary schools (including both public and private) in 1880. The government further strengthened standardization during the early 1880s by introducing more detailed curricular and organizational requirements. These regulations clarified the role of general secondary schools as institutions providing advanced general education and established standards for curricula, class hours, teacher qualifications, facilities, and equipment. As these standards were enforced, the number of general secondary schools fell to 106 by 1885. This process also reduced the direct influence of former samurai and wealthy local families over secondary education (Ministry of Education, 1972).

To concentrate resources that were scattered across multiple schools, the government issued the Secondary School Order (1886), limiting the number of publicly funded general secondary schools (hereafter public secondary schools) to at most one per prefecture. For more than one public secondary school to continue in operation, private individuals had to invest in those schools. At the same time, the administration was placed under the

authority of the Minister of Education or the prefectural governor. Due to the poor financial condition of the prefectures and the reluctance to be placed under the national government’s control, most prefectures chose to maintain only one or none of the public secondary schools. Since this regulation was strictly enforced, the number of public secondary schools remained constant for several years (see Figure 1a for the total number of schools). However, the number of graduates of public secondary schools did not decline during this period, implying that the law only affected the resource concentration rather than overall school capacity within prefectures (see Figure 1b for the total number of graduates).

The restriction on the number of schools was relaxed by the Revision of the Secondary School Order in December 1891 (effective in April 1892), allowing more than one publicly funded general secondary school per prefecture. Following this revision, the number of public secondary schools increased rapidly from around 50 to nearly 150 within a decade (Figure 1a). This increase in the number of schools was accompanied by an increase in the number of graduates, suggesting that total school capacity within prefectures also increased.

Appendix Figure D4 shows the number of prefectures that had more than one public secondary school over time. Within a decade, most prefectures established a 2nd school. In our analysis, we focus on 37 prefectures where a 2nd public secondary school was established within 10 years of the revision, that is, between 1892 and 1901. Appendix Figure D5 provides a map of these prefectures. This excludes 10 prefectures, including Tokyo, which already had a national public secondary school in addition to a local public school. The timing of the establishment of 2nd schools differed slightly across prefectures within this period. This is possibly due to differences in the time required for decision-making and implementation, the degree of resource constraints, and local demand for education. We assume that unobserved factors affecting school establishment timing vary smoothly around the year of establishment, and use a regression discontinuity design at birth-cohort level.

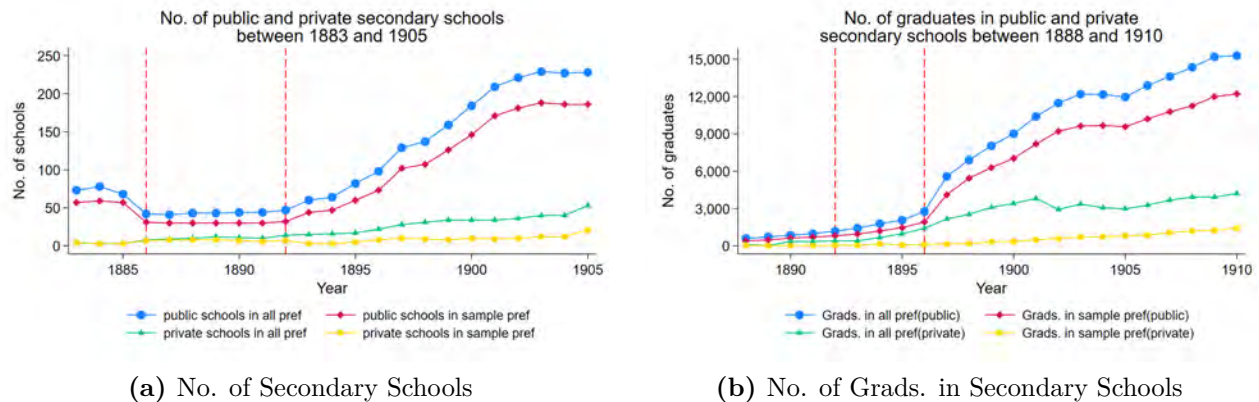
While our analysis focuses on public secondary schools, private secondary schools were always permitted by the government and continued to exist. Figures 1a and 1b show that the number of private schools and their graduates remained far below those of public schools. In addition, most private schools were concentrated in Tokyo, which is excluded from our analysis. Therefore, the number of private schools in the prefectures we study is relatively small, typically fewer than 10 in most years.

Figure 2 shows the number of secondary school students by social group from 1886 to 1898 (data is missing in 1893–1896). Until around the 1880s, almost half of secondary school students came from samurai families. This implies a large over-representation of samurai among students given that the samurai share of the population was only about 5%. For instance, in 1886, samurai were about ten times more likely to be enrolled in secondary

schools than commoners.

The number of secondary school students then dramatically increased from 1892 to 1898. In particular, the number of commoner students increased at a faster rate than that of samurai students. A possible reason is that the newly established 2nd schools were located in areas that were more accessible for commoners compared to the existing schools. We explore this pattern in more detail in Section 5.4.

Figure 1: Number of Secondary Schools and Graduates

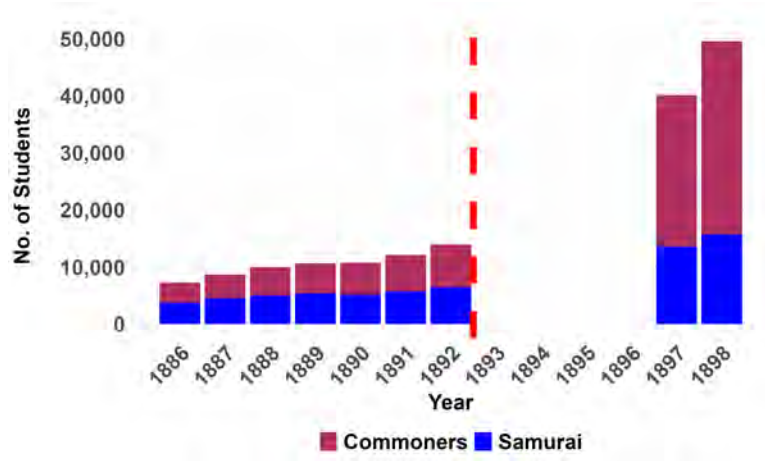


Notes: Panel (a) shows the number of public/private schools by year. “Public schools in all pref” (or “private schools in all pref”) represents the number of public (or private) secondary schools among all 47 prefectures. “Public schools in sample pref” (or “private schools in sample pref”) shows the number of public (or private) secondary schools in the subset of prefectures we use in our analysis (these are 37 prefectures that established 2nd schools in 1893–1901). Vertical lines mark the year of the Secondary School Order (1886) and the year of the Revision of the Secondary School Order (1892). Panel (b) shows the number of public/private school graduates by year. As in panel (a), we show the statistics for all 47 prefectures and the subset of prefectures used in our analysis. Vertical lines mark the year of Secondary School Order (1892) and the year of Revision of Secondary School Order + 5 (1896) since it took five years to graduate from a secondary school.

2.2.3 Institutional details of secondary schools

It is worth describing several key additional institutional features of secondary schools during our study period (approximately 1889–1905). A series of educational reforms enacted in the 1880s standardized the content and quality of secondary school education across schools throughout the country. Students attended 28 class periods per week, including 5 hours of Japanese, 6 hours of foreign language, and 4 hours of mathematics, which is comparable to the curriculum of today’s secondary schools in Japan. Furthermore, the recruitment criteria for secondary school teachers were clearly specified: candidates were required to have graduated from either an Imperial University or a teacher training school, or to have passed the national standard teacher recruitment examination. According to Ministry of

Figure 2: No. of Secondary School Students by Social Group



Notes: This figure presents the number of secondary school students by social group from 1886 to 1898. The data is missing in 1893–1896. We use two data sources: *Goinbunko Bunsho* for 1886–1892 and Mitsuihara (1898) for 1897–1898.

Education, Bureau of General Education (1905), formally qualified teachers accounted for approximately 50%.

During this period, annual secondary school fees were around 20% of GDP per capita. This implies that the fees were not prohibitively high for households with average income: for example, for a three-person households, the fee was about 7% of household income. Yet, the educational costs likely posed a barrier for poor households, given the scarcity of formal scholarship schemes at that time (Ministry of Education, 1972). The rapid expansion of primary education increased the number of students who could potentially proceed to secondary education. According to Ministry of Education (1972), the primary-school enrollment rate increased from 49% in 1890 to 96% in 1905 (Appendix Table E1).

Eligibility for secondary schools generally required applicants to be boys at least 12 years old – the minimum age for completing the higher course of elementary school unless he repeated a grade. Most schools required graduation from the higher course of elementary school and administered entrance exams due to excess demand.⁶ The actual entry age could be higher than 12 if students spent an extra year preparing for entrance exams or repeating grades. This is relevant for our regression discontinuity design. According to the national statistics of public secondary schools (Mitsuihara, 1898), the average age of first-year students, typically measured several months after entry, was 14.3. Therefore, we use age 13 as the baseline threshold in our empirical RDD specification and conduct robustness

⁶Until 1898, the national law only required completion of ordinary course of four years of elementary schools in addition to the minimum age requirement. To standardize admission nationwide, the government mandated completion of two additional years in the higher elementary course in 1899.

checks by excluding cohorts one year younger or older, confirming the stability of our results.

National statistics indicate that admission rates averaged 50% for schools established before 1891 and 75% for schools established after 1892 (Mitsuihara, 1898). In 1886, the enrollment rate at secondary schools was roughly 4 out of every 1,000 male births. By 1898, when more than half of prefectures had established 2nd schools, this rate increased to about 20 per 1,000 male births. Also it would be important to note that migration to other prefectures for secondary school attendance was uncommon. Data available for the first schools in four prefectures, i.e., Akita (1912), Chiba (1903), Mie (1906), and Shizuoka (1901), indicate that approximately 90% of their students were born within the prefecture.⁷

Secondary school education also provided access to further education and a broad range of professional careers. Among 526 students who graduated from Chiba 1st Secondary School between 1897 and 1907, 34.2% proceeded to higher education, while 26.4% entered the public sector and 20.5% entered the private sector (Appendix Table E2).⁸

3 Data

3.1 Data on secondary schools

To measure the evolution of school establishment and capacity across prefectures, we use the Ministry of Education Yearbook for 1892–1901. We digitized the prefecture-level records on the number of secondary schools, teachers, enrolled students (grades 1–5), and graduates to track educational development over this period.

3.2 Data on business, bureaucratic, and professional elites

To evaluate long-run occupational outcomes, we digitized five editions of the Personnel Inquiry Records (PIRs) published in 1903, 1915, 1928, 1934, and 1939. The PIRs are a *Who's Who* directory, listing socially distinguished individuals, including top business managers, high-ranking public officials, politicians, professional elites (physicians, scholars, and lawyers), high-income earners, medal recipients, and high-ranking military officers.⁹ These

⁷Students could apply to schools in prefectures outside of one's birth prefecture. However, it was costly for the students to live by themselves nearby the schools (Mitsuihara, 1898).

⁸Among the 312 students who graduated from Mie Second School between 1904 and 1907, which was established in a merchant town, 29.5% proceeded to higher education, 29.5% entered the public sector, and 23.4% the private sector.

⁹To identify socially distinguished individuals, the PIR sourced information from multiple directories, which include: The government's official personnel list (*Shokuin-roku*), bank and corporate directories (*Teikoku Ginkou Kaisha Youroku* and *Zenkoku Ginkou Kaisha Youroku*), the member list of the national commerce and industry chamber (*Zenkoku Shoukou Kaigisho Giin Meibo*), and the directory of Japanese

records were originally compiled as key references for identifying potential business and marriage partners.

The number of individuals listed grew from 3,267 in 1903 PIR (0.01% of the population) to 13,915 in 1915 PIR (0.03%), 25,201 in 1928 PIR (0.04%), 26,168 in 1934 PIR (0.04%), and 55,635 in 1939 PIR (0.08%). Altogether, the dataset contains 83,019 unique individuals across all editions. Throughout the paper, we use “elites” as shorthand for individuals listed in the PIR, while interpreting the outcome as socially recognized elite attainment rather than as a complete census of all elites. Because the PIR is a *Who’s Who* directory rather than a comprehensive administrative source, our outcome should be interpreted as socially recognized elite attainment rather than as an exhaustive census of all elites. At the same time, the PIR is uniquely valuable for our purposes because it provides comparable biographical information across occupations, cohorts, and prefectures. For each individual listed, the records provide biographical details such as birth year, birthplace, final education institution, and career history. We use this information to construct aggregate counts of elites by type by birth cohort and birth prefecture.

Since the PIR data are not comprehensive administrative records, potential sample selection bias is a concern. For our regression discontinuity design, however, the relevant issue is not incomplete coverage per se, but whether the probability of being listed in the PIR changes discontinuously at the cohort cutoff within a prefecture.

While we do not have complete count data for high-income managers to directly assess their sampling rate, the PIRs published in 1934 and 1939 report each listed individual’s income tax payment, which allows us to infer their income level. Using this information, we find that 83% of the high-income managers listed in the PIRs belong to the national top 0.1% of income earners. For these top income groups, we can calculate the sampling rate by comparing the number of individuals above the corresponding income thresholds who are listed in the PIR with the complete counts of taxpayers above the same thresholds in the National Tax Bureau Statistical Yearbook (Tax Bureau, Ministry of Finance, 1935, 1938). The resulting sampling rates are 44%, 29%, 22% for the top 0.01%, 0.05%, and 0.1% income earners in 1934, and 53%, 35%, 19% for the top 0.01%, 0.05%, and 0.1% income earners in 1939, respectively (see Appendix Figure B1 for the details of the calculation). These patterns indicate that PIR coverage rises with income rank, suggesting that the directory is

notables (*Nihon Shinshi-roku*) (see the 1934 PIR). The government directory includes details of all public servants in national and local governments. Similarly, the bank and corporate directories include a complete list of banks and companies whose capital exceeds a certain threshold (*Teikoku Ginkou Kaisha Youroku* 1938, p.2). Another notable source, the Japanese notables’ directory, identified affluent residents of 24 urban prefectures based on their tax contributions (*Nihon Shinshi-roku*, 1938, p.i). These diverse sources ensured that the PIRs captured a broad spectrum of distinguished individuals across government, finance, commerce, and industry, providing a comprehensive dataset for studying Japan’s economic and social elites.

especially likely to capture the most economically successful individuals.

Given our cohort-based regression discontinuity design, sample selection would become a serious issue if the sampling rate changed discontinuously at the cutoff cohort within a prefecture. This is unlikely unless secondary school graduates were more likely to appear in the PIR among high-income earners, for example because they became more socially visible. However, as shown in Panels (a)–(b) in Appendix Figure B2, the prefecture-level sampling rate (defined by the number of top 0.1% income earners in our PIR data divided by the complete count from tax statistics) is not systematically correlated with the number of secondary school graduates per birth population.

Another possible concern is that PIR sampling may be biased toward prefectures with greater demand for business or marriage matching opportunities, given the PIR’s original purpose. Such sampling bias could affect the size of the estimated effects. However, as shown in Panels (c)–(d) in Appendix Figure B2, the prefecture-level sampling rate (defined by the number of high income earners in our PIR data divided by the complete count from tax statistics) is not systematically correlated with the prefecture-level complete count of high-income earners. Furthermore, when we use the number of top 0.1% income earners in the PIR, as well as the number weighted by the inverse of the sampling rates, we obtain similar results to our main findings for commoner high-income managers (Appendix Table B1). These findings suggest that possible sample selection bias in our PIR data is unlikely to drive our empirical results. See Section 4.6 for further details.

We focus on three occupational categories of the elites: business managers, government elites, and professionals. For each occupation category, we count the number of persons who appear in at least one of five editions of PIRs and satisfy the following criteria:¹⁰

1. “High-income managers” who are either modern business managers – holding formal titles as top business managers/executives – or pre-modern family business owners. We focus on individuals who paid income tax, indicating that their income exceeded the taxable threshold of 1,000 yen per year. Those earning below this amount were exempted. Since the average GDP per capita between 1928 and 1939 was 297 yen per year, this threshold was approximately three to four times the national average income.
2. “Government elites” include national government officers, politicians, and prefectural governors.
3. “Professional elites” comprises scholars, lawyers, judges, and physicians.

¹⁰When a person is listed in multiple PIRs, we use information from all editions to classify their occupation. When an individual holds multiple occupations in his work history, he is counted as one in all of the occupation categories where the criteria are satisfied.

We then additionally define “All occupational elites” as all individuals satisfying any of the above three categories.

In this paper, we examine intergenerational mobility outcomes, distinguishing between horizontal mobility – shifts across historically rooted occupational sectors – and vertical mobility – movement from families not previously listed in the PIR into PIR-listed elite status. The horizontal mobility is measured by comparing an elite individual’s occupation with his inherited social group, which reflects the family’s occupation in the Tokugawa period. More specifically, we consider that occupations are preserved when sons of samurai families become government elite and those of commoner families become business elite positions. From this perspective, professional occupations are considered as “new types of occupations” that began to emerge during the Meiji period. While similar occupations existed in Tokugawa period, there were no official qualifications for professionals such as teachers, lawyers, judges, and physicians. It was during the Meiji period that certification examinations for these professionals were institutionalized. The expansion of public and private schools further established these professions as important routes to upward mobility through formal qualifications (Amano, 2006).

We also measure upward mobility by linking fathers and sons among PIR-listed individuals. Our main focus is on cohorts exposed to the secondary school expansion in 1892–1901, who were born around the 1880s and reached peak career age in the 1920s–1930s. These individuals are likely to be listed in the 1928, 1934, and 1939 PIRs if they became elites. In contrast, their parents’ generation, born in the 1850s–1860s and raised before the Meiji Restoration, are likely to appear in the 1903, 1915, and 1928 PIRs if they were also elites. These editions provide information about the elites’ children, such as first names, birth years, and relationships to the listed individuals. By matching names and birth years, we identify whether individuals in our main data are also listed as children of other elites in any of the five editions of PIRs. This process identifies 7,042 father-son pairs where both the elite and his father are listed in the PIRs, out of 70,168 unique father-son pairs recorded in the 1903, 1915, and 1928 editions.

3.3 Over-representation of samurai and elites’ sons among elites

Before moving to the main analysis, we document the over-representation of samurai and elites’ sons among those listed in the PIRs. Table 1 shows the likelihood of individuals becoming an elite per 1,000 male births for samurai and commoners (panel A) and elite and non-elite families (panel B). We focus on cohorts born between 1876 and 1878, who were 13 years old just before the expansion of secondary schools. Panel A indicates that

samurai were substantially more likely to become elites in all occupational categories. The likelihood of becoming a government elite for samurai was approximately 9 times higher than for commoners. The likelihood of becoming a professional elite and a business manager was also 8 times and 3 times higher, respectively, for samurai than for commoners. While samurai constituted only 5% of the population, they represented 11.7% of elite business managers, 26.6% of professional elites, and 30.9% of government elites.¹¹

There are several possible reasons why samurai were overrepresented in elite positions. Most samurai were lower-class samurai who had worked for local lords and did not inherit public-sector positions after the Meiji Restoration.¹² Since they lost their jobs after the Meiji Restoration, many of them had difficulty making ends meet and were poorer than wealthy merchant families (Sonoda et al., 1995). Prior studies show substantial upward mobility among these former lower-class samurai, suggesting that education, particularly at the secondary and tertiary levels, likely played a key role in their continued elite representation (Takane, 1976; Matsumoto and Okazaki, 2023). As shown earlier in Figure 2, until the 1880s, almost half of secondary school students were samurai.

Historians have suggested several possible reasons for the over-representation of samurai in secondary and tertiary education. First, samurai from higher-status families might have had financial means to afford education as these families could keep financial and physical assets since the Tokugawa period (Sonoda et al., 1995). Second, after the abolition of the samurai class, samurai families sought to regain high-status positions, similar to their original roles (Takeuchi, 1981). Third, given that formal education was relatively new to commoners, samurai families may have been more aware of its value (Amano, 2006). Fourth, unlike commoners, samurai children had no family businesses, allowing them to pursue education (Sonoda et al., 1995). Lastly, some secondary schools in the early period were funded by samurai and explicitly targeted samurai students.

Next, Panel B shows a stronger pattern of over-representation among individuals from elite families in all occupational categories. The likelihood of becoming a high-income manager, a government elite, and a professional elite was approximately 46 times, 49 times, and 22 times higher, respectively, for individuals with elite fathers than for those with non-elite fathers. Although individuals from elite families accounted for only 0.1% of the population,

¹¹This evidence is consistent with other studies in the literature using alternative data (Aso, 1978; Aonuma, 1965). Similarly, Clark and Ishii (2012) use the rare surnames to track the descendants of samurai and peerage families and show over-representation of the names of these families among elites in the same period and even for recent years in Japan.

¹²The *kazoku* peerage were composed of former local lord, court-noble families, and lineages ennobled later under the Meiji government. Peerage titles were hereditary and conferred privileged representation in the House of Peers, but bureaucratic offices were not legally hereditary. The *kazoku* constituted only a tiny fraction of the population.

they represented 5.4% of high-income managers, 5.7% of government elites, and 2.7% of professional elites. Using the same dataset, Takayasu (2024) shows that the probability of becoming an elite for the sons of all elite fathers is about 10%, which is more than 100 times higher than the representation rate of PIR in the general male population.

Table 1: Baseline Cohorts

	No. of elites		No. of elites per 1,000 births	
	(1)	(2)	(3)	(4)
	Commoner families	Samurai families	Commoner families	Samurai families
Panel A: Samurai/Commoner families (born in 1876–1878)				
All occupational elites	583.667	124.667	1.767	8.091
High-income managers	400.333	53.000	1.212	3.440
Government elites	65.000	29.000	0.197	1.882
Professional elites	164.667	59.667	0.498	3.872
	No. of elites		No. of elites per 1,000 births	
	Non-elite families	Elite families	Non-elite families	Elite families
Panel B: Non-elite/Elite families (born in 1876–1878)				
All occupational elites	676.667	31.667	1.960	74.221
High-income managers	429.000	24.333	1.242	57.033
Government elites	88.667	5.333	0.257	12.500
Professional elites	218.333	6.000	0.632	14.063

Notes: This table shows the average number of individuals listed in the PIRs per cohort for the cohorts born between 1876 and 1878 in our 37 study prefectures. The first two columns show the average number of elites per cohort, and the last two columns show the average number of elites per 1,000 male births. Panel A shows these numbers separately by social group, and Panel B shows them by elite and non-elite families. See Section 3.2 for more detailed descriptions.

4 Empirical specification and results

4.1 Graphical results

Before conducting regression analysis, we graphically examine the relationship between an individual’s exposure to the opening of a 2nd secondary school and the probability of becoming an elite. To capture the variation in exposure to the opening of a 2nd secondary school, we define *cohort* as the difference between “the year when a birth cohort turned age 13” and “the year when the 2nd secondary school was established in the prefecture”. That is, cohort k consists of individuals who turned age 13 in the k th year relative to the establishment of the 2nd secondary school in the prefecture. For each prefecture, cohort, and social group, the probability of becoming an elite is measured by the number of individuals listed in the PIR

per 1,000 male births in that group. We create this measure for each occupational category: high-income managers, professionals, and government elites.

Figure 3, panels (a)–(f), depict the probability of attaining elite status in each occupational category over nine cohorts (from cohort -4 to cohort 4) averaged across the 37 study prefectures. For high-income managers, the probability of becoming an elite jumps up at cohort 0 only for commoners. In contrast, for government elites, the probability increases sharply at cohort 0 only for samurai. For professional elites, the probability rises between cohorts 0 and 1 only for commoners.

4.2 Empirical strategy

4.2.1 Staggered DiD

Since the timing of the 2nd secondary school establishment varied across years and prefectures, a natural starting point is a Staggered Difference-in-Differences (DiD) specification. Appendix Figure A2 shows staggered DiD estimates based on the Callaway and Sant’Anna (2021) method, using not-yet-treated units as the comparison group. Aggregating the estimates by cohorts, we find positive and statistically significant treatment effects for cohorts 0–1 (Appendix Table A1).

However, this specification also exhibits clear pre-trends. We formally test the null hypothesis that the pre-trends in pre-treatment cohorts over the window from -4 to -1 are jointly zero. For all elite occupational categories and social groups, this null hypothesis is rejected at the 1% level (see Appendix Table A2 for $\chi^2(df)$). To assess the sensitivity of these estimates to violations of parallel trends, we apply the method proposed by Rambachan and Roth (2023) (`honestdid` package in Stata). Although the robust confidence intervals generally include zero as deviations from parallel trends are allowed, Appendix Figure A1 shows that the estimated effects remain positive.¹³ We interpret the staggered DiD results as suggestive evidence of a positive effect.

Importantly, however, this does not by itself invalidate a cohort-based regression discontinuity design (RDD). The staggered DiD relies on parallel evolution across prefectures in the absence of treatment, whereas the RDD relies on a different identifying assumption: that unobserved determinants of elite attainment evolve smoothly around the cohort cutoff generated by the school opening. The relevant concern for the RDD is therefore not whether longer-run trends differed across prefectures, but whether other determinants of elite formation changed discontinuously at the same cutoff. We accordingly treat the staggered DiD

¹³For samurai government elites, the lower bound of the confidence interval reaches zero when the maximum relative violation reaches 0.38. For the other outcomes, the lower bounds include zero even under the baseline specification.

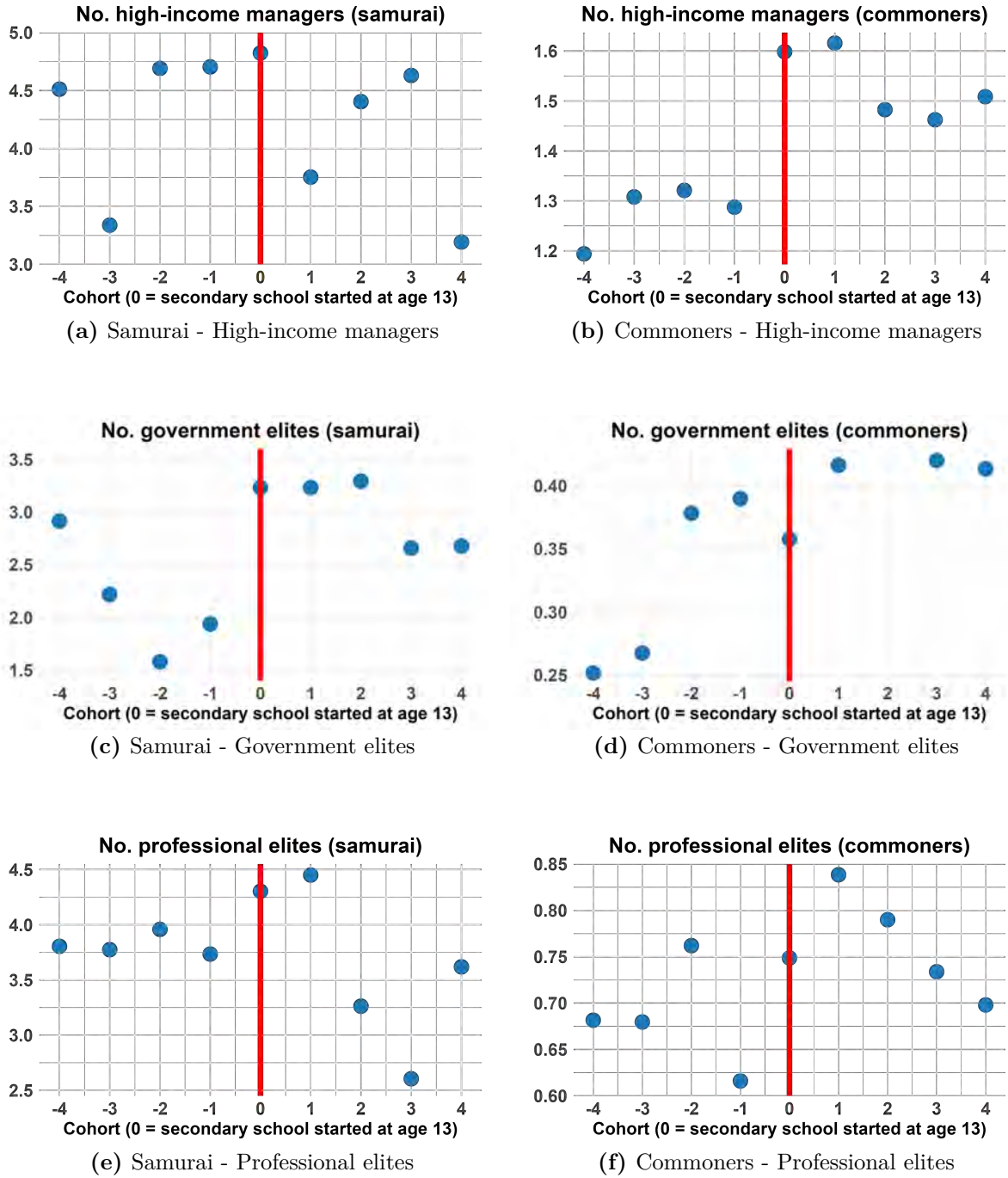


Figure 3: High-income managers, professional elites, and government elite

Notes: These figures show the number of high-income business managers, government elites, and professional elites (per 1,000 male births) averaged across prefectures for each cohort. We define cohort by “the year when a birth cohort turned age 13” subtracted by “the year when the 2nd secondary school was established in the prefecture”. For a detailed description of the outcome, see Section 3.2.

results as complementary evidence and use the RDD approach detailed below as our main specification.

4.2.2 RDD approach

As our main empirical specification, we use a regression discontinuity design at the cohort cutoff defined by whether individuals were of typical secondary school entry age when the prefecture’s 2nd secondary school was established. This design compares adjacent cohorts within a prefecture that were just too old to benefit from the new school with those that were just young enough to gain access. Identification therefore requires that, absent the school opening, observed and unobserved determinants of later elite attainment would have evolved smoothly across these nearby cohorts.

A key threat to this design would arise if families adjusted schooling decisions around the opening of a new secondary school, thereby generating discontinuous changes in cohort composition at the cutoff. In particular, families may have adjusted primary school completion in anticipation of the new school. However, Appendix Figure D2a and Figure D2b show no discernible discontinuity in either primary school graduation or graduation from advanced primary schools around the cutoff, which is inconsistent with strong anticipation or manipulation.

Under this assumption, any discontinuous change in elite attainment at the cutoff can be interpreted as the causal effect of expanded access to public secondary schools for cohorts young enough to use the new school. Specifically, we estimate the following equation:

$$\frac{N_{j,c}^{k,n}}{pop_j^n} \times 1,000 = \beta^{k,n} After_{j,c} + Trend_c^{k,n} + \delta_j^{k,n} + u_{j,c}^{k,n}, \quad (1)$$

where j is the prefecture, c is a cohort, k is an occupation category (high-income managers, government elites, or professional elites), and n is social group (i.e., samurai or commoners). As noted earlier, we focus on 37 prefectures where the 2nd secondary school was established within 10 years after 1892. In our main analysis of long-run effects, the dependent variable is the rate of elite attainment for each occupational category k . As defined in Section 4.1, this variable is calculated as the number of individuals listed in the PIR per 1,000 male births for each occupation k , social group n , prefecture j , and cohort c . To reduce measurement and estimation errors caused by inaccuracies in historical population data, we use the average male birth population in prefecture j across cohorts born between 1871 and 1896 as our measure of the birth population.

The treatment indicator variable $After_{j,c}$ equals one for cohorts who were age 13 or younger when the 2nd secondary school was established in prefecture j , and zero for cohorts

who were age 14 or older at the time of establishment. In our baseline specification, we focus on the nine cohorts centered around the cutoff, from four years before to four years after the establishment of the 2nd secondary school in the prefecture. We include a linear cohort trend, denoted $Trend_c^{k,n}$. This term controls for any smoothly varying cohort trends, such as gradually evolving local demand for secondary schooling and smooth age-related differences in the probability of later elite attainment. We verify robustness of this specification in Section 4.6 by alternatively including a squared trend term or birth-year fixed effects. We also include prefecture fixed effects, denoted by $\delta_j^{k,n}$. We cluster the standard errors at the prefecture level. Since we have only 37 prefectures in our study sample, we report p-values estimated by wild cluster bootstrap (Cameron and Miller, 2015; Roodman et al., 2019).

4.3 Secondary school capacity

Table 2: Secondary schools, secondary school graduates, and teachers

	No. schools		No. students		No. teachers	
	(1) Public	(2) Private	(3) Public	(4) Private	(5) No.	(6) per grads.
After	1.635*** [0.000]	-0.157* [0.073]	5.992*** [0.000]	0.100 [0.603]	4.745*** [0.004]	-0.064* [0.051]
No. of prefecture-cohort	333	333	333	333	297	297
Mean Dep Before	0.96	0.20	5.88	0.15	16.44	0.45
Percent Effect(%)	170	-77	102	69	29	-14

Notes: This table shows regression discontinuity estimates of the short-run effects of 2nd secondary school openings on the number of public/private secondary schools, students (measured by graduates), and teachers. The estimates are based on prefecture-year-level data from the Ministry of Education Yearbook in 1892–1901, counting the number of public/private secondary schools, graduates from public/private secondary schools (per 1,000 male births), and secondary school teachers in the prefecture (per 1,000 male births). For the number of graduates, we use a four-year lag to adjust for the time gap between school entry and graduation. “After” is an indicator variable that takes 1 in the years after 2nd school was established in the prefecture, and takes 0 otherwise. We include a cohort linear trend term and prefecture fixed effects. “Mean Dep. Before” shows the mean of the dependent variable for the 4 years before the 2nd school establishment. “Percent Effect” indicates the percentage increase in dependent variables compared to the “Mean Dep. Before”. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Using the specification in equation (1), we first examine the extent to which the number of secondary schools and their graduates increased after the establishment of the 2nd school. Since 2nd schools were established rapidly, it is possible that the additional schools merely divided the existing school resources (such as school seats and teachers) without expanding the total school capacity in the prefecture.

Table 2 shows the results. As shown in columns (1) and (2), the number of public schools increased by 1.6 after the establishment of the 2nd school. The coefficient exceeds one because some prefectures established a 3rd school soon after establishing the 2nd school. In contrast, the number of private schools declined by -0.157. This is possibly because some private schools were converted into public schools under the reform that allowed more than one public school in a prefecture.

Columns (3) and (4) indicate the results for the number of graduates (per 1,000 male births) from public and private schools in the prefecture. Since the secondary school programs lasted five years, we use a four-year lag to adjust for the time gap between school entry and graduation. The coefficient for public school graduates is positive with a magnitude of 6.0, corresponding to a 0.6 percentage-point increase in the secondary school graduation rate. Given that the number of graduates was 5.9 per 1,000 male births on average prior to the establishment of the 2nd school, this result implies that the number of graduates almost doubled. However, because the number of public schools more than doubled, this implies that 2nd and 3rd schools typically had smaller capacity than each prefecture’s first schools. The coefficient for private school graduates is small and statistically insignificant, suggesting that changes in the number of private schools have little effect on overall capacity.

Columns (5) and (6) examine the impact of teacher availability. We find that the total number of teachers increased (column (5)), but the increase was relatively smaller than that of school seats, leading to a lower average number of teachers per student in the prefecture after the school construction (column (6)). As the Secondary School Order (1886) required schools to employ only qualified teachers by specifying recruitment criteria, an increase in the number of such teachers might have taken some years.

Overall, the establishment of the 2nd school significantly increased the capacity of secondary schools in the prefecture, nearly doubling the existing school capacity and likely improving access to secondary education for potential candidates.

4.4 Long-run effects on elite attainment

We next explore the long-run effects of expanded access to secondary schools on elite attainment, as measured by PIR listing, by social group. We estimate equation (1) for the probability of becoming an elite for each occupational category.

Table 3 panel A shows the results for all elites including both samurai and commoners. Column (1) shows the effect on the number of all occupational elites, who were either high-income business managers, government elites, or professional elites. Columns (2)–(4) report the results for each occupational category. The coefficients are positive and statistically

Table 3: Long-run impacts of additional secondary schools: baseline specification

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.445*** [0.003]	0.295*** [0.001]	0.062 [0.381]	0.161* [0.061]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
Percent Effect(%)	18	21	15	19
<u>Panel B: Samurai</u>				
After	2.177 [0.123]	0.275 [0.714]	1.896*** [0.002]	0.798 [0.446]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	9.04	4.31	2.16	3.82
Percent Effect(%)	24	6	88	21
<u>Panel C: Commoners</u>				
After	0.381*** [0.005]	0.312*** [0.002]	-0.025 [0.729]	0.156* [0.065]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68
Percent Effect(%)	18	24	-8	23

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. The estimates are based on the prefecture-cohort level data, counting the number of individuals listed in the PIR (per 1,000 male births) by birth prefecture and birth cohort. We focus on individuals who turned 13 years old in 1888–1905 and were born in 37 prefectures that established a 2nd secondary school in 1892–1901. For a detailed description of the outcome variables, see Section 3.2. “After” is an indicator variable that takes one if the cohort was 13 years old or younger when the 2nd school was established in the prefecture, and takes 0 otherwise. We control for a cohort linear trend term and prefecture fixed effects. “Mean Dep. Before” shows the mean of the dependent variable for the four years before the 2nd school establishment. “Percent Effect” indicates the percentage increase in dependent variables compared to the “Mean Dep. Before”. In panel A, we use the total number of elites from samurai and commoner families. In panels B and C, we examine samurai and commoner elites separately. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

significant for the number of all occupational elites and the number of high-income managers. The coefficient for professional elites is positive and marginally significant, and we interpret it as suggestive evidence. On average, the establishment of an additional school in a prefecture corresponds to an increase of 0.30 high-income managers and 0.16 professional elites per 1,000 male births. These are large effects relative to the mean of the variables in the baseline cohorts, amounting to 15–21% increases among such elites.

Estimating the 2SLS specification using the number of secondary school graduates in the prefecture-cohort cell as the treatment variable, Appendix Table C11 shows that an

increase in the number of secondary school graduates (per 1,000 male births) by 1 leads to an increase in the number of elites by 0.07 (per 1,000 male births). Since each school enrolled about 46 students on per cohort on average, this implies that one additional school increased the number of elites by about 3 persons in the prefecture per cohort. Overall, these results suggest that the expansion of public secondary-school access increased exposed cohorts' later elite attainment, especially in the private sector.

Note that the positive coefficients should be interpreted as a *relative* increase in the number of elites across cohorts around the cutoff, rather than as an *absolute* expansion in the total number of elite positions. For public-sector elites, the number of positions is plausibly determined by nation- or prefecture-level demand-side factors and is therefore less responsive to cohort-specific human capital accumulation.¹⁴ Even for business elites, although new companies and managerial positions might have been created by treated individuals, PIR directories were potentially subject to page constraints. As a result, inclusion was more likely for individuals holding more prominent positions even among elites, implying that our outcome captures relative ranking within the elite group. Under this interpretation, the positive coefficients indicate that cohorts exposed to 2nd secondary school availability were more likely to win competitions for top positions relative to cohorts without such exposure, consistent with an improvement in relative human capital.¹⁵

Next, we explore the results for samurai (in panel B) and commoners (in panel C) in Table 3. In panel B, we find statistically significant effects of an additional school on the production of government elites (88% compared to the baseline mean) from samurai families. Notably, the coefficient for samurai high-income managers is small and statistically insignificant (column (2) in panel B). As shown in panel C, the coefficients for commoner high-income managers and professional elites are positive and significant. These magnitudes are substantial: about a 23–24% increase compared to the mean of baseline cohorts. In contrast, the effect on commoner government elites is small and not statistically significant.

So far, the results suggest that the effects were concentrated in sectors historically associated with each social group: public-sector elite positions for samurai families and business elite positions for commoner families, with more suggestive evidence for commoner professional elites. To quantify the aggregate effects of the new secondary schools, we calculate the

¹⁴While the number of positions in the national government likely expanded in this study period, the timing of promotion for each officer was determined by idiosyncratic factors and substantially varied across officers even among those who graduated in the same year (Moriguchi et al., 2024). Thus, our estimates are unlikely to be driven by government expansion.

¹⁵Although competition may have occurred across prefectures, both treated and untreated cohorts would have faced competitors from other prefectures to a similar extent. Such effects should therefore net out when comparing cohorts around the cutoff within prefectures. We also control for a linear cohort trend, which absorbs smoothly evolving differences in national-level competition intensity across cohorts.

percentage change in the samurai share of the occupational elites from the baseline cohorts. In the baseline cohorts, samurai accounted for 11.7% of elite business managers, 30.9% of government elites, and 26.6% of professional elites (as shown in Table 1 panel A). Our analysis reveals that the impact of having one additional secondary school across all prefectures reduces the samurai share of elites by 1.5 percentage points for high-income business managers and 1.6 percentage points for professional elites, but increases the samurai share among government elites by 19.8 percentage points.

Table 4: Long-run impacts of additional secondary schools: upward mobility

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: Samurai from elite families</u>				
After	23.287 [0.623]	38.623 [0.347]	-14.028 [0.661]	5.925 [0.785]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	79.89	39.46	29.72	22.48
Percent Effect(%)	29	98	-47	26
<u>Panel B: Samurai from non-elite families</u>				
After	1.914 [0.160]	-0.006 [0.993]	1.885*** [0.001]	0.749 [0.462]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	8.58	4.08	1.99	3.70
Percent Effect(%)	22	-0	95	20
<u>Panel C: Commoners from elite families</u>				
After	-9.999 [0.800]	-10.904 [0.708]	7.329 [0.634]	-4.702 [0.806]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	108.33	80.38	16.82	28.14
Percent Effect(%)	-9	-14	44	-17
<u>Panel D: Commoners from non-elite families</u>				
After	0.383*** [0.002]	0.314*** [0.000]	-0.032 [0.639]	0.156* [0.074]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	1.98	1.19	0.31	0.66
Percent Effect(%)	19	26	-11	24

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. The number of elites is separately counted by whether their fathers were also listed in the PIR (“elite families”) or not (“non-elite families”). The number of elites in each group is divided by the estimated birth population of the group and used as the dependent variables. Other specifications follow those in Table 3. For a detailed description of this table, see Section 4.5. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

4.5 Long-run effects on vertical intergenerational mobility

We next explore the impact of secondary school expansion on the vertical dimension of intergenerational mobility. In particular, we ask whether expanded access to secondary schools increased entry into PIR-listed elite status among children whose fathers were not listed as PIR elites. To this end, we compiled earlier editions of the PIR published in 1903, 1915, and 1928. Among the sons of individuals listed in these earlier PIR editions, we identify 4,086 sons, consisting of 1,013 samurai and 3,073 commoners, who were born in the prefecture-cohort cells used in our main analysis (see Appendix Table E5). Using name and birth year information in these PIR editions, we then identify whether these sons were also listed in the PIR as elites, and find that 997 of them were.

In Table 4, the dependent variables measure the probability of becoming an elite separately for individuals with elite fathers (samurai in panel A and commoners in panel C) and those with non-elite fathers (samurai in panel B and commoners in panel D), in each case per 1,000 male births. To construct these variables, we separately count elites based on whether their fathers were also listed in the PIRs and divide these counts by the estimated birth population of each group. For each cohort, prefecture, and social group, male births from elite fathers are measured by the total number of male children of individuals listed in the earlier PIR editions, while male births to non-elite fathers are approximated by subtracting this number from the total male birth population.

For samurai elites, the coefficient for government elites from elite families is statistically insignificant and negative (Panel A column (3)). By contrast, the coefficient for government elites from non-elite families is statistically significant and positive (Panel B column (3)). Similarly, for commoner elites, the coefficients for high-income managers and professional elites from elite families are statistically insignificant and small relative to the mean of the dependent variable (Panel C columns (2) and (4)), while those from non-elite families are positive and statistically significant (Panel D columns (2) and (4)). These results suggest that expanded access to secondary schools increased the likelihood that individuals whose fathers were not listed in earlier PIR editions later entered the PIR elite, rather than primarily preserving elite status among sons of PIR-listed fathers.

In summary, the results suggest that the secondary school expansion improved upward intergenerational mobility within the occupations historically associated with each group's family background during the Tokugawa period. In the baseline cohorts, Table 1, panel B, shows that elite families represented 5.4% of elite business managers, 5.7% of government elites, and 2.7% of professional elites. Based on the above estimates, we find that if each prefecture in our analysis had one additional secondary school, the share of individuals from elite families would decline by 1.3 percentage points among public-sector elites and by 1.1

percentage points among professional elites, with no effect on high-income business managers.

4.6 Robustness checks

Alternative specifications, bandwidths, and threshold definitions

We assess whether our results are sensitive to the specification of cohort trends, the choice of bandwidth around the cutoff, and the definition of the treatment threshold. Overall, the main findings are qualitatively robust to these alternative specifications. First, our baseline specification controls for cohort trends and age effects using a linear trend term. Appendix Table C1 shows that the results are qualitatively unchanged when we control for a quadratic trend term. As an alternative approach, we include birth-year fixed effects, which absorb national birth-cohort shocks (see Appendix Table C2 for the results). The main patterns remain: the estimates for all occupational elites, commoner high-income managers, and samurai government elites remain positive and statistically significant. The professional-elite estimates become smaller and are no longer statistically significant, so we interpret those results as suggestive rather than central.

Second, we examine sensitivity to the bandwidth around the cutoff. In the baseline specification, we use cohorts within four years before and after the establishment of the 2nd school. Appendix Table C3 shows that the results are similar when we instead restrict the sample to cohorts within two years before and after the establishment.

Third, while we set age 13 as the baseline RDD threshold based on the statistics on first-year students, some students likely entered secondary school at age 12 or 14. To assess the sensitivity of our results to this timing assumption, we exclude cohorts one year younger or one year older than the baseline cutoff in Appendix Table C4 and Appendix Table C5. We find that the results are qualitatively unchanged.

Top income earners and adjustment by sampling rate

To assess the influence of heterogeneity in PIR sampling across prefectures, we use the number of top 0.1% income earners listed in the PIRs (per 1,000 male births) as an alternative outcome and multiply this by the inverse of the prefecture-level sampling rate (Appendix Table B1). For commoners, we find similar percentage effects for top 0.1% income earners as in our baseline specification for commoner high-income managers. We then find that using the number of top 0.1% income earners multiplied by the inverse of the sampling rate yields similar percentage effects.

Influence of military careers

Since the period relevant to our long-run outcomes overlaps with the First World War, we investigate whether transitions into or out of military positions affect our results. We first examine whether the secondary school expansion is related to an alternative educational track to become an elite military officer. In this period, preparatory military schools (*Rikugun Yonen Gakko* in Japanese) were open for students aged 13-15 years old, attracting those aspiring to military careers.¹⁶ After graduating from these schools, these students entered regular military schools. Using information on final education in PIR (which also list elite military officers), we count the number of individuals in PIRs who graduated from any kind of military school. We also count the number of military servants listed in PIRs. As shown in Appendix Table C6, the establishment of additional secondary schools did not have any statistically significant impact on the number of military school graduates or the number of elite military servants.

Furthermore, to exclude the influence of retired military officers transitioning to high-income managers, we decompose the sample of high-income managers based on military experience in their career history (Appendix Table C7). Elites with military experience do not influence our results.

Influence of peerages

Top elite families among samurai, peerages (*Kazoku*, e.g. children of former local lords), could inherit some government positions even after the Meiji Restoration. To examine their influence, we exclude peerages from the elites listed in the PIRs and confirm that the results are almost unchanged from our main results (Appendix Table C8). This result is reasonable given that there are only a small number of peerages in the PIR as well as in the population.

Spillovers across prefectures

Students could apply to and enter a secondary school in prefectures other than their home prefecture. If such migration to a secondary school was prevalent, local students in prefectures that built a 2nd school in earlier periods might have been more likely to be crowded out. To the baseline specification, we add $Post_j$, a time-invariant dummy variable that takes 1 if the 2nd school was established after the median year of establishment among the sample prefectures, and its interaction with the treatment variable. The results shown in Appendix

¹⁶Preparatory military school was not free. To enroll in a preparatory military school, the applicants had to take a physical examination, followed by academic examination (Japanese, Writing, Geography, History, Mathematics, Science).

Table C9 suggest that schools established in earlier years tended to have greater treatment effects on elite production. This is inconsistent with the hypothesis that earlier schools were crowded out by entrants from other prefectures.

Establishing multiple schools in the same year

Since some prefectures established a 3rd school at the same time as establishing the 2nd school, the effect of the 2nd school may be confounded with the effect of the 3rd school. In Appendix Table C10, we include the interaction term with *Two or More Schools_j*, which is a time-invariant dummy variable set to 1 if prefectures established two or more secondary schools at the same year of the 2nd school’s establishment. The results on the coefficients of the 2nd school remain largely consistent with our main results.

Heterogeneity across prefectures

To assess the sensitivity of our baseline estimates, Appendix Figure C1 reports the coefficients obtained by sequentially excluding one prefecture from the sample in each regression. The point estimates remain close to the baseline, and their confidence intervals largely overlap, indicating that no single prefecture drives the results.

5 Interpreting occupational persistence

Our findings reveal substantial intergenerational persistence in elite occupations, even though expanded access to secondary schools increased elite attainment among both samurai and commoner families. In this section, we focus primarily on why expanded access to secondary schooling did not lead to a clear increase in commoner entry into public-sector elite positions, while also briefly considering the complementary question of why samurai did not move more strongly into private-sector elite careers. We examine possible interpretations of this persistence through two broad hypotheses: (1) commoners may have wished to become public-sector elites but faced constraints that limited their entry or advancement (the “constraints hypothesis”); and (2) occupational choices may have remained shaped by family-based occupational orientation, which may reflect preferences, norms, information, and occupation-specific knowledge transmitted within families (the “family-based occupational orientation hypothesis”).

While our data do not allow us to fully disentangle these mechanisms, they do allow us to assess several major observable constraints. In particular, we examine differential access to higher education, differential promotion within the national bureaucracy, and family

succession pressure, and find that they do not fully account for the persistent sectoral sorting by family background. Taken together, the results are more consistent with family-based occupational orientation than with any single observable constraint alone, although they do not allow us to separately identify the specific channels through which such orientation operates.

We also briefly explore whether peer composition in the new secondary schools affected later occupational choices. Using school location as a proxy for variation in peer composition, we find little indication that differences in peer composition substantially altered subsequent occupational orientation.

5.1 Higher education and advancement within the national bureaucracy

We begin by examining whether the limited entry of commoners into public-sector elite positions, even after the expansion of secondary schooling, can be explained by observable constraints on the path to, and within, the national bureaucracy. We focus on two possible sources of such constraints. First, commoners may have faced disadvantages in progressing to higher education after secondary school, which could have reduced their likelihood of passing the Higher Civil Service Examinations (HCSE). Second, even after entering the national bureaucracy, commoners may have faced disadvantages in promotion to top-ranking positions.

Access to higher education

For appointment to the administrative division of the higher civil service, all candidates had to pass the Higher Civil Service Examinations (HCSE), which required knowledge taught at higher education institutions. Thus, while family connections were unlikely to determine exam success directly, progression to higher education after secondary school may still have been an important margin through which family background influenced access to public-sector elite careers.¹⁷

¹⁷The HCSE consisted of both written and oral components. The written exam tested knowledge in six subjects: constitutional law, administrative law, public international law, private international law, economics, and public finance. The oral exam, conducted in a question-and-answer format, assessed knowledge in areas such as public finance, criminal law, international law, tax law, and constitutional law (Henshukyoku, 1925). Anecdotal evidence also suggests that family background did not determine success or failure: for example, Iwakura Tomoshige (from a peerage family, the 18th head of the Iwakura family, and a descendant of Iwakura Tomomi, a key statesman of the Meiji Restoration) is documented to have failed the civil service examination by a margin of just one point.

Higher education indeed appears to have been an important pathway into elite public-sector careers. Among HCSE passers, 81% graduated from Imperial Universities, and among top-ranking officials the share rises to 90%. Likewise, among the individuals listed in the PIR, 40% of government elites graduated from Imperial Universities, compared with only 10% of high-income business managers (see Appendix Table E6 for more details). These patterns suggest that if samurai and commoners differed substantially in progression to higher education after secondary school, such differences could have contributed to later gaps in access to public-sector elite positions.

We first examine whether samurai and commoners differed markedly in progression to Imperial Universities conditional on secondary schooling. Until 1906, there were only two Imperial Universities, in Tokyo and Kyoto. Admission required first entering one of the National Higher Schools, which served as preparatory schools for Imperial Universities. Students who entered these schools were almost automatically admitted to Imperial Universities after several years. Graduation from a secondary school was a prerequisite for applying to these institutions. Samurai were indeed overrepresented at the National Higher Schools: 52% and 30% of students there were from samurai families in 1892 and 1910, respectively (Takeuchi, 1999). However, samurai also accounted for about 52% and 32% of students in secondary schools in 1887 and 1898, respectively (see Figure 2). This comparison suggests that the overrepresentation of samurai in preparatory schools largely reflected their preexisting overrepresentation in secondary schools, rather than a large difference in progression from secondary school to higher education by family background (Takeuchi, 1999).

We next examine how secondary school expansion affected elite production by final educational attainment using the PIR. Table 5 decomposes the elite counts used in Table 3 by final education type. Panels A and B indicate that secondary school expansion increased the number of elites who graduated from Imperial Universities for both samurai and commoners, but in different occupations: government elites among samurai families and professional occupations among commoner families.¹⁸ This distinction is relevant because physicians and judges were also licensed through examinations requiring subject-specific knowledge taught in higher education.¹⁹ Panel D further shows that secondary school expansion increased the number of commoner high-income managers who did not proceed to higher education. We also find no evidence that secondary school expansion increased the number of elites

¹⁸A possible concern is that secondary school openings may have indirectly increased progression to Imperial Universities by expanding capacity at National Higher Schools. However, we find no evidence of a positive effect on capacity (enrollments) in National Higher Schools five years after each 2nd school opening (Appendix Figures D3a and D3b).

¹⁹In addition, due to their academic achievements, Imperial University graduates were partially or wholly exempted from such selective national qualification exams.

who proceeded to other higher education institutions (see Appendix Table E3). Together, these results suggest that, unlike public-sector and professional elite careers, becoming a high-income manager did not necessarily require additional schooling after secondary school.

In summary, the evidence does not suggest that differential progression to prestigious higher education, conditional on completing secondary education, was the main reason why commoners did not become public-sector elites. Secondary school expansion increased the number of both samurai and commoner elites who graduated from Imperial Universities, yet their occupational destinations remained markedly different.

Table 5: Educational path

	(1) High-income Managers	(2) Government Elites	(3) Professional Elites
Panel A: Imperial University (Samurai)			
After	0.740 [0.239]	1.737*** [0.000]	1.118 [0.134]
No. of prefecture-cohort	333	333	333
Mean Dep Before	1.425	1.504	2.260
Percent Effect(%)	52	115	49
Panel B: Imperial University (Commoners)			
After	0.013 [0.714]	0.015 [0.750]	0.104** [0.044]
No. of prefecture-cohort	333	333	333
Mean Dep Before	0.177	0.168	0.335
Percent Effect(%)	8	9	31
Panel C: No Higher Education (Samurai)			
After	-0.292 [0.451]	0.126 [0.393]	-0.271 [0.219]
No. of prefecture-cohort	333	333	333
Mean Dep Before	1.457	0.217	0.471
Percent Effect(%)	-20	58	-58
Panel D: No Higher Education(Commoners)			
After	0.206** [0.013]	-0.013 [0.622]	0.026 [0.376]
No. of prefecture-cohort	333	333	333
Mean Dep Before	0.847	0.074	0.117
Percent Effect(%)	24	-17	22

Notes: This table shows regression discontinuity estimates of the long-run effects of the opening of the 2nd secondary schools on the number of occupational elites by post-graduation educational path. We use the same data and specification as in Table 3, except that here we count the number of elites by type of final educational institution. Panels A and B show the results for elites who graduated from Imperial Universities, for samurai and commoners, respectively. Panels C and D show the results for elites who did not proceed to higher education, for samurai and commoners, respectively. For a detailed description of these variables, see Section 3.2. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Promotion within the national bureaucracy

It is also possible that commoners were less likely to pursue careers in the national government because they expected disadvantages in promotion to top-ranking positions after entry. For example, family-based connections may have mattered for advancement within ministries, and some families may have transmitted occupation-specific knowledge that helped officials perform well in bureaucratic careers.

To examine this possibility, we use a list of individuals who passed the Higher Civil Service Examinations (HCSE), together with their biographical information, compiled by Hata (1981). This dataset includes all individuals who passed the HCSE between 1895 and 1917, along with their full name, social group (samurai/commoner), educational background, year of passing the examination, career trajectory (initial and final positions), and other notable roles. Using information on final and other notable positions, we identify whether an official was eventually promoted to one of the top three ranks in the national government. These top three ranks were known as “imperial appointees.” The first rank consisted of minister-level positions, while the second and third ranks included vice-minister-level posts such as vice minister, director general, bureau chief, and prefectural governor.

Using these data, we examine whether samurai and commoners differed in the likelihood of promotion to these top ranks, conditional on having passed the HCSE. Specifically, we regress an indicator for promotion to the top three ranks on an indicator for samurai family background. We control for year-of-passing fixed effects in all specifications, and cluster standard errors by year of passing the HCSE. Table 6 reports the results. In column (1), without additional controls, the coefficient on samurai background is positive but statistically insignificant (coeff = 0.024, p-value = 0.217). In column (2), the coefficient declines by about half once we additionally control for graduation from Tokyo or Kyoto Imperial University. The estimate remains similar when we further control for other final educational institutions in column (3).²⁰

A remaining concern is that selection into the sample of HCSE passers may reflect differences in ability or occupational orientation between samurai and commoners. For example, if commoners were less likely than samurai to pursue public-sector careers, the pool of commoner HCSE applicants may have contained fewer high-ability candidates than the pool of samurai applicants. In that case, the coefficient on samurai background could be upwardly biased by unobserved differences in ability. To address this concern, we examine more com-

²⁰As additional controls for final educational institutions, we include fixed effects for eight National Higher Schools (preparatory schools for Imperial Universities) and two groups of private universities. Group 1 consists of Waseda and Keio Universities, and Group 2 consists of Meiji, Aoyama, Rikkyo, Chuo, Housei, and Nihon Universities.

parable subsamples of passers. In column (4), we restrict the sample to HCSE passers who graduated from an Imperial University. In column (5), we further restrict the sample to those who graduated at the top of their class from either a National Higher School or an Imperial University.²¹ In both cases, the coefficient on samurai background becomes negative and remains statistically insignificant. In Appendix Table E4, we additionally control for fixed effects for the first ministry entered and obtain similar results.

Overall, we find no evidence that samurai had systematically better promotion prospects than commoners within the national bureaucracy, conditional on having passed the HCSE and controlling for detailed educational background and academic achievement. These results suggest that differential promotion after entry into the bureaucracy is unlikely to explain why expanded access to secondary schooling did not lead more commoners to become public-sector elites.

Table 6: Promotion to top ranks at national government

	Promoted to Top Ranks				
	(1) Sample: All Passers	(2) Sample: All Passers	(3) Sample: All Passers	(4) Sample: Passers graduated Imperial Univ.	(5) Sample: Passers graduated with Top-score
Samurai	0.024 [0.217]	0.011 [0.589]	0.010 [0.598]	0.010 [0.624]	-0.149 [0.159]
Tokyo Imperial Univ.		0.184*** [0.000]	0.132*** [0.001]	0.028 [0.553]	0.214** [0.048]
Kyoto Imperial Univ.		0.142** [0.011]	0.101** [0.020]		
Observations	2046	2046	2046	1665	156
Mean	0.258	0.258	0.258	0.287	0.385
More Education Control	No	No	Yes	Yes	Yes
Ministry FE	No	No	No	No	No

Notes: This table uses the list of individuals who passed the Higher Civil Service Examinations (HCSE) compiled by Hata (1981). Columns (1)–(3) report the results for all HCSE passers. Column (4) restricts the sample to passers who graduated from an Imperial University, and column (5) further restricts the sample to those who graduated at the top of their class from either a National Higher School or an Imperial University. Bootstrap p-values reported in square brackets are clustered by year of passing the HCSE. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

²¹Information on top-scoring graduates is recorded in the student registers of these schools and is included in the HCSE passer dataset constructed by Hata (1981).

5.2 Succession pressure and family-based occupational orientation

We next examine whether occupational persistence among commoners can be explained solely by direct succession pressure within the household, or whether a broader family-based occupational orientation also mattered. By family-based occupational orientation, we mean the transmission within families of preferences, norms, information, and occupation-specific knowledge that may have shaped sectoral choices across generations. Distinct from this, direct succession pressure arises when sons are expected to inherit and continue the family business. From the individual's point of view, such pressure can operate as a constraint when preferred occupations differ from family expectations.

To assess the relative importance of these channels, we examine heterogeneity in the treatment effects by birth order. In prewar Japan, the Civil Code (1898) stipulated that family heads exclusively inherit all the property and business from their fathers and that the eldest son or adopted son should inherit the family headships from their fathers. This institutional setting implies that direct pressure to continue the family business was concentrated on the eldest son or an adopted son, whereas later-born sons were generally not expected to continue the family business within their natal household. We therefore compare two groups: (1) firstborn or adopted sons, who were expected to inherit household headship and family business, and (2) second or subsequent-born sons, who were generally not subject to such direct succession pressure. We focus on commoners in this analysis because samurai lost their privileges to inherit public-sector positions at the beginning of the Meiji period.

Table 7 reports the results. Because we do not observe birth order for elites listed only in the 10th edition of the PIR, we exclude those observations from this analysis. We first confirm in Panel A, column (1), that the coefficient for high-income managers in this restricted sample is similar to the baseline estimate in Table 3.

Panel B presents the results for firstborn or adopted elites. The coefficient for high-income managers is positive and statistically significant. Disaggregated results suggest that this increase is not driven by managers who remained only in traditional firms; rather, it is more strongly associated with those working in modern firms or in both modern and traditional firms.²² This pattern is consistent with the view that secondary schooling may have enabled heirs to modernize inherited family businesses rather than simply to continue them in traditional form.

Panel C presents the results for second or subsequent-born elites. The coefficient for

²²Managers in modern firms are identified as those holding formal titles as managers or executives in private companies. Managers in traditional firms are operationally identified as owners of firms whose names end with terms commonly associated with traditional businesses, such as *-ya*, *-ten* (shop), or *-gyo* (trade/business).

high-income managers remains positive and statistically significant, and its magnitude is similar to that for firstborn and adopted sons. However, unlike heirs, later-born sons are less likely to be corporate executives and more likely to work only in modern firms, possibly as hired managers rather than successors to family businesses.

Table 7: Long-run impacts of additional secondary schools by birth order

	High-income Managers					Government Elites	Professional Elites
	(1) All	(2) Modern Business	(3) Modern& Traditional Business	(4) Traditional Business	(5) Executives	(6) All	(7) All
Panel A: Individuals who were listed in 8th or 12th edition of PIR (commoners)							
After	0.277*** [0.006]	0.185** [0.033]	0.117** [0.032]	-0.024 [0.324]	0.203** [0.020]	-0.009 [0.876]	0.131* [0.058]
No. of prefecture-cohort	333	333	333	333	333	333	333
Mean Dep Before	1.17	0.60	0.39	0.18	0.79	0.23	0.58
Percent Effect(%)	24	31	30	-14	26	-4	23
Panel B: Eldest sons (commoners)							
After	0.375** [0.018]	0.245** [0.033]	0.239*** [0.008]	-0.110** [0.012]	0.333*** [0.009]	-0.027 [0.721]	0.325*** [0.002]
No. of prefecture-cohort	333	333	333	333	333	333	333
Mean Dep Before	1.53	0.71	0.57	0.25	1.05	0.37	0.72
Percent Effect(%)	24	35	42	-43	32	-7	45
Panel C: Younger sons (commoners)							
After	0.265** [0.017]	0.143 [0.120]	0.088 [0.211]	0.034 [0.333]	0.140 [0.178]	-0.024 [0.795]	0.029 [0.777]
No. of prefecture-cohort	333	333	333	333	333	333	333
Mean Dep Before	1.09	0.60	0.31	0.17	0.70	0.29	0.66
Percent Effect(%)	24	24	28	19	20	-9	4

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of commoner occupational elites by birth order. We use the same data and specification as in Table 3 panel C except that we divide the sample by the birth order of individuals, which is either firstborn or adopted elites (Panel B) or second or subsequent-born elites (Panel C). For a detailed description of this table, see Section 5.2. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Notably, even among later-born sons, who were much less likely to face direct succession pressure under the prewar household system, the coefficient for government elites remains small and insignificant. This pattern suggests that direct family succession pressure is unlikely to fully explain the persistence of occupations among commoner elites and is instead more consistent with a broader family-based occupational orientation, potentially operating through preferences, norms, information, and occupation-specific knowledge transmitted within families. Taken together with the earlier finding that commoners did not appear to face systematically worse promotion prospects within the national bureaucracy after entry, these results are more consistent with family-based orientation toward particular sectors than with direct succession pressure or promotion barriers alone.

5.3 Why samurai did not become business elites

One possible explanation for why commoners were more likely than samurai to become business elites is that private-sector careers offered higher pecuniary returns. In the PIR, only 36.6% of government elites earned above the income-tax threshold, whereas all high-income managers did so by construction. Consistent with this pattern, the civil service pay scale indicates that even the highest-ranking officials earned less than the upper tail of private-sector elites.²³

However, this explanation alone cannot account for the samurai pattern. If pecuniary returns were the dominant consideration, it remains difficult to explain why samurai who gained improved access to secondary schooling did not move more strongly into private-sector elite careers. This pattern suggests that samurai may have remained more strongly oriented toward public-service careers, or that family background may have been more closely aligned with entry into such careers than with private-sector elite careers. Our data do not allow us to cleanly distinguish among these possibilities. At a minimum, however, the evidence indicates that earnings differences alone cannot account for why expanded access to secondary schooling did not lead more samurai to become business elites.

5.4 Peer composition

We also briefly explore whether peer composition in the new secondary schools influenced later occupational choices. Using the historical location of the 2nd school as a proxy for variation in peer composition, we find that schools in merchant towns tended to enroll a

²³In 1938, the Prime Minister earned 9,600 yen, and the average salary of vice ministers was 6,500 yen, placing top government officials within at least the top 0.25% of the income distribution. In the PIR, however, incomes in the range of 5,000–10,000 yen fell into the lower 20–30% of high-income earners, defined as those with incomes above the tax-paying threshold.

larger share of commoner students than schools in samurai towns. However, heterogeneity in treatment effects by school location does not provide strong evidence that greater exposure to peers from different family backgrounds substantially altered subsequent occupational orientation. Overall, the results do not provide strong evidence that exposure to peers from different family backgrounds substantially weakened preexisting family-based occupational patterns. Detailed results are reported in Appendix F.

6 Concluding remarks

This study examines the long-run effects of secondary school expansion on elite attainment and intergenerational mobility in early modern Japan. We find that expanded access to public secondary schools increased later elite attainment among both samurai and commoner families, but it did not fundamentally dismantle historically rooted sectoral sorting. Most additional samurai elites entered public-sector leadership positions, whereas most additional commoner elites entered business occupations, with suggestive evidence of entry into new professional occupations. At the same time, many of these additional elites had fathers who were not listed in earlier PIR editions. Secondary schooling thus widened access to elite status and increased vertical mobility, but had limited effects on horizontal mobility across historically rooted sectors.

Regarding mechanisms, the evidence suggests that several major observable constraints, including progression to higher education, promotion within the national bureaucracy, and family succession pressure, do not fully explain why sectoral sorting remained closely tied to family background. Taken together, the results are more consistent with family-based occupational orientation, broadly understood as preferences, norms, information, and occupation-specific knowledge transmitted within families, than with any single observable constraint alone.

More broadly, our findings suggest that the expansion of elite-track education after major institutional change can widen access to elite positions without fully breaking the link between family background and sectoral pathways to elite status. In this sense, our evidence from historical Japan resembles other settings in which traditional institutions continue to shape economic opportunities and career choices, such as caste-based networks in India (Munshi and Rosenzweig, 2006). At the same time, caution is needed in extending these findings to contemporary developing countries. The students who entered the newly established secondary schools were likely drawn disproportionately from non-poor families able to afford tuition and foregone earnings. Our results therefore speak more directly to the effects of expanding elite-track post-elementary education for relatively advantaged households than

to the effects of schooling expansion for the poorest populations.

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1 Appendix

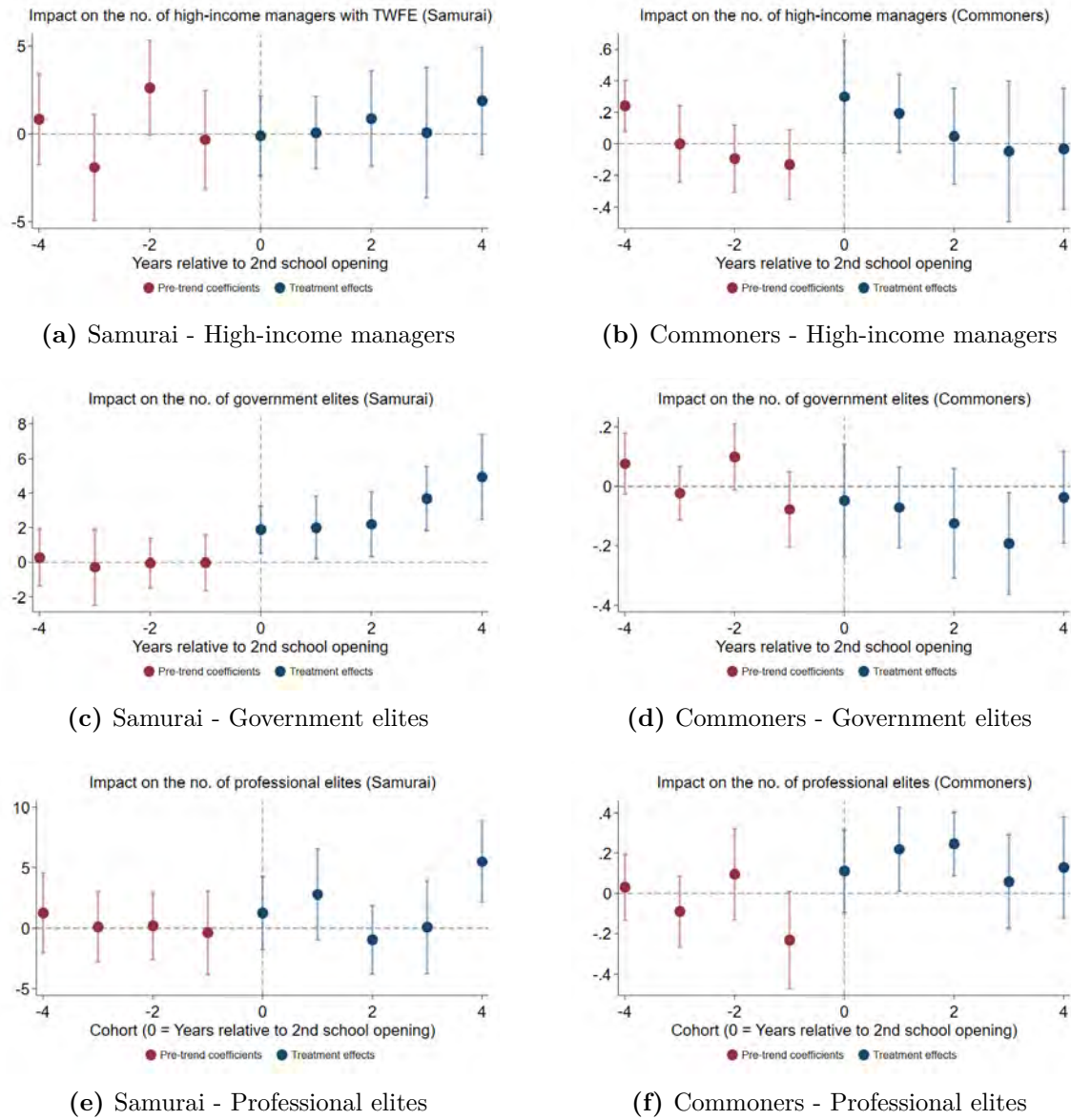
A Staggered DiD

Table A1: Staggered DiD estimates

	(1) High-income managers	(2) Government elites	(3) Professional elites
<u>Panel A: All</u>			
ATTC	0.202 [0.141]	0.003 [0.972]	0.191** [0.042]
No. of prefecture	37	37	37
ATTC window	t = 0–1	t = 0–1	t = 0–1
<u>Panel B: Samurai</u>			
ATTC	-0.032 [0.973]	1.942*** [0.002]	2.006 [0.185]
No. of prefecture	37	37	37
ATTC window	t = 0–1	t = 0–1	t = 0–1
<u>Panel C: Commoners</u>			
ATTC	0.248* [0.074]	-0.059 [0.421]	0.164* [0.067]
No. of prefecture	37	37	37
ATTC window	t = 0–1	t = 0–1	t = 0–1

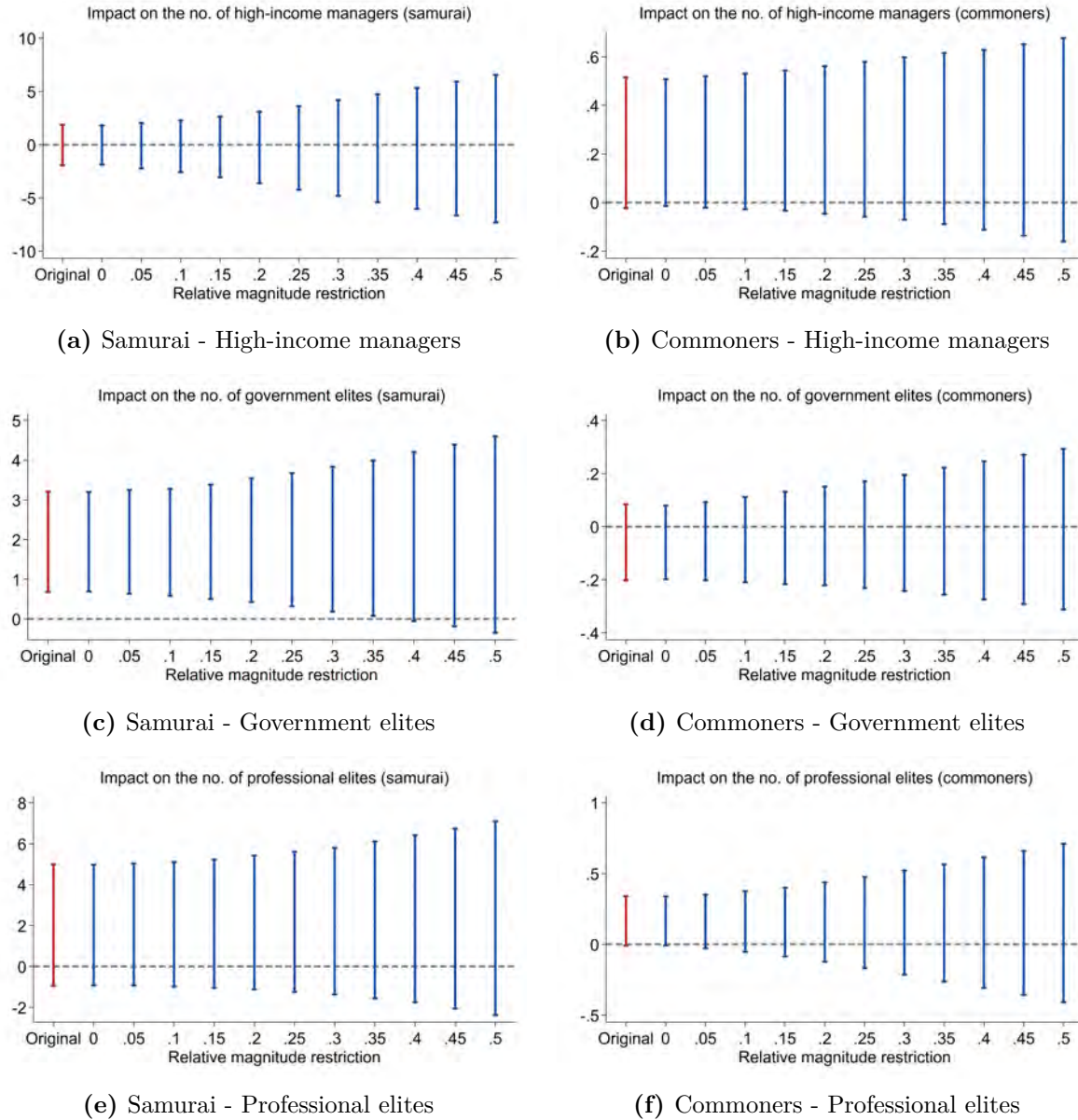
Notes: This figure presents the results of staggered DiD estimation of the long-run effects of 2nd secondary school openings on the number of samurai and commoner occupational elites. We use the method proposed by Callaway and Sant’Anna (2021) and implemented by csdid package in Stata. We focus on the individuals who turned age 13 in 1888–1905 and were born in 37 prefectures that established 2nd secondary school in 1893–1901. We use only not-yet-treated units as comparison. The estimates are based on the prefecture-cohort level data, counting the number of individuals listed in the PIRs (per 1,000 male births) by birth prefecture and birth cohort. The estimated results are collapsed average treatment effects on the treated (ATTC) average over event times $t = 0, 1$. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we examine samurai and commoner elites separately. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Figure A1: Staggered DiD



Notes: This figure presents the results of staggered DiD estimation of the long-run effects of 2nd secondary school openings on the number of samurai and commoner occupational elites. We use the method proposed by Callaway and Sant’Anna (2021) and implemented by csdid package in Stata. We focus on the individuals who turned age 13 in 1888–1905 and were born in 37 prefectures that established 2nd secondary school in 1893–1901. We use only not-yet-treated units as comparison. The estimates are based on the prefecture-cohort level data, counting the number of individuals listed in the PIRs (per 1,000 male births) by birth prefecture and birth cohort. We aggregate the estimates by cohort. Panels (a)-(b) show the estimates for “High-income Managers” defined as individuals in the PIRs who are employed in a private sector and pay any positive amount of income or corporate tax. Panels (c)-(d) show the estimates for “Government elites” defined as individuals in the PIRs who are either national government officers, politicians, or prefectural governors. Panels (e)-(f) show the estimates for “Professional elites” among commoners defined as individuals in the PIRs whose occupation is either scholars, lawyers, judges, or physicians. For a detailed description of the outcome, see Section 3.2. The bars represent 95% confidence intervals.

Figure A2: Honest DiD



Notes: This figure presents the results of staggered DiD estimation of the long-run effects of 2nd secondary school openings on the number of samurai and commoner occupational elites. We use the method proposed by Rambachan and Roth (2023) and implemented by honestdid package in Stata. We focus on the individuals who turned age 13 in 1888–1905 and were born in 37 prefectures that established 2nd secondary school in 1893–1901. The estimates are based on the prefecture-cohort level data, counting the number of individuals listed in the PIRs (per 1,000 male births) by birth prefecture and birth cohort. We aggregate the estimates by cohort. Panels (a)–(b) show the estimates for “High-income Managers” defined as individuals in the PIRs who are employed in a private sector and pay any positive amount of income or corporate tax. Panels (c)–(d) show the estimates for “Government elites” defined as individuals in the PIRs who are either national government officers, politicians, or prefectural governors. Panels (e)–(f) show the estimates for “Professional elites” among commoners defined as individuals in the PIRs whose occupation is either scholars, lawyers, judges, or physicians. For a detailed description of the outcome, see Section 3.2. The bars represent 95% confidence intervals.

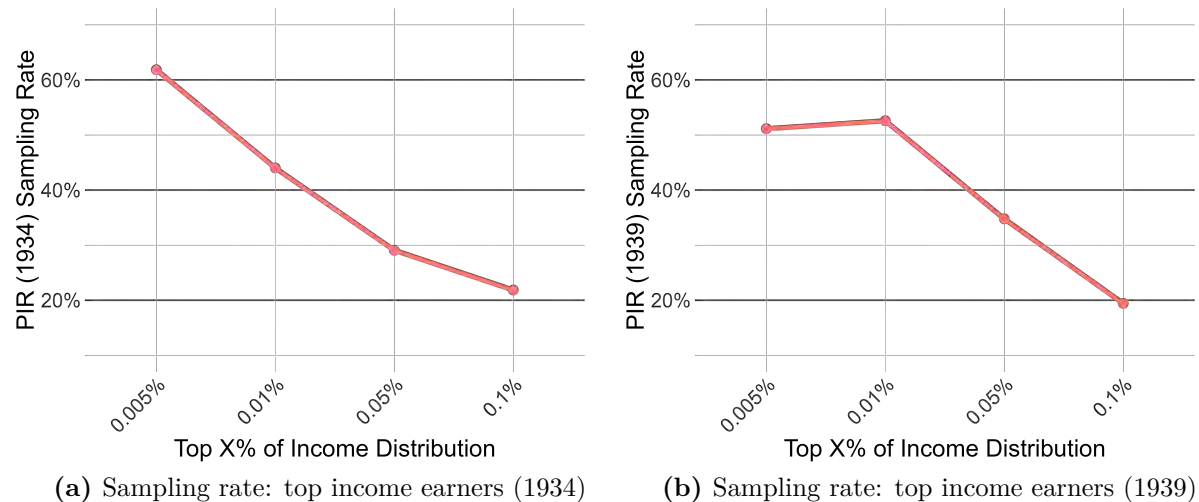
Table A2: Staggered DID: pretrend test

	$\chi^2(\text{df})$		
	High-income Managers	Government Elites	Professional Elites
All	859.146(32)	615.495(32)	1762.870(32)
Samurai	202.131(32)	819.893(32)	564.866(32)
Commoners	1234.712(32)	731.626(32)	1695.590(32)

Notes: In this table, we test the null hypothesis that the pretrend in pre-treatment cohorts within a window from -4 to -1 equals 0. Degrees of freedom are in parentheses. The definitions of the outcome variables are the same as Appendix Table A2.

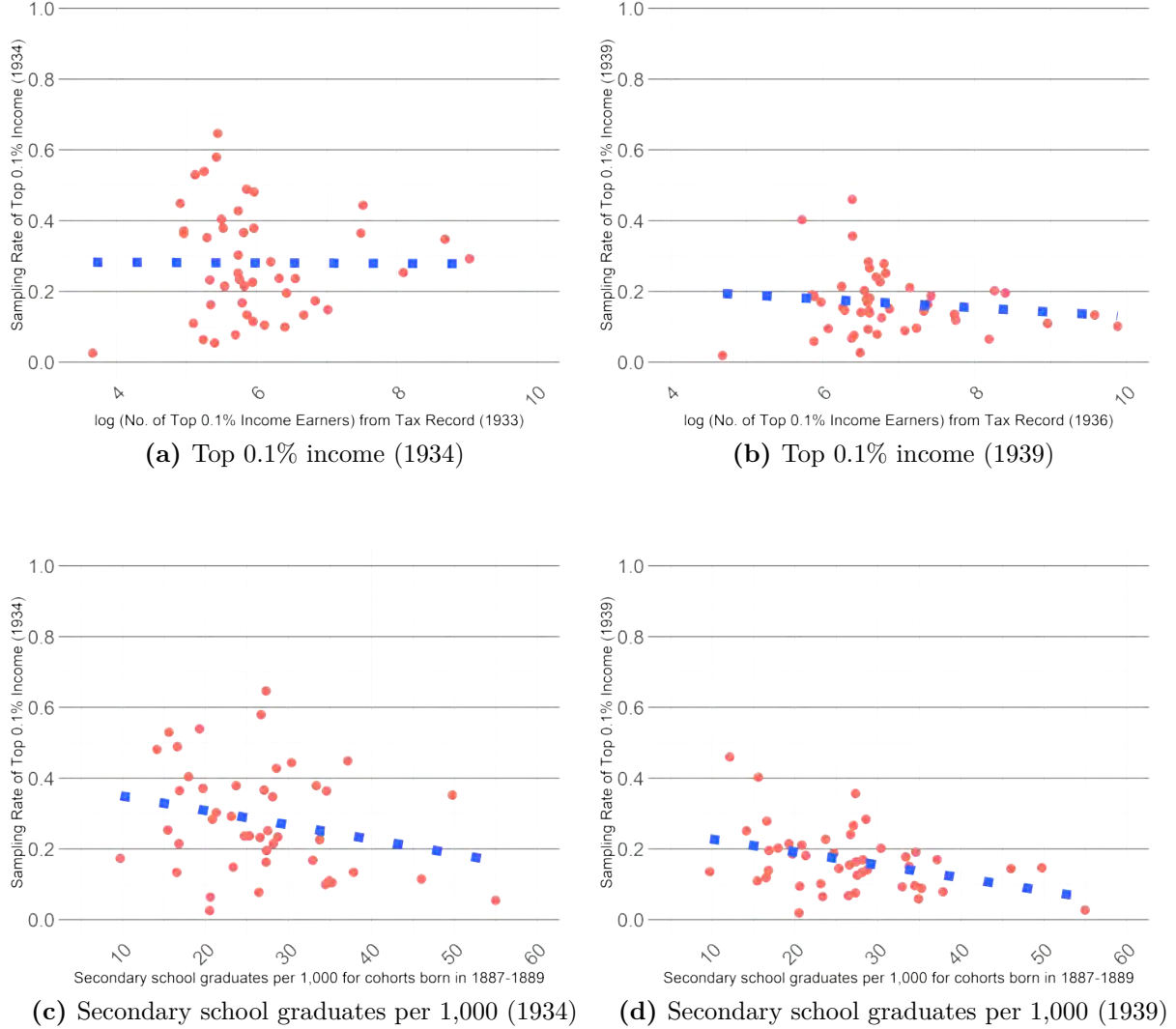
B Criteria of PIR

Figure B1: Sampling rate of top income earners



Notes: These figures show sampling rates of high-income earners in the 1934 and 1939 PIR by national top-income percentile, following Moriguchi et al. (2024). The sampling rates and the top income percentiles are computed from the complete count data in the National Tax Bureau Yearbook. To define the top 0.005%, 0.01%, 0.05%, and 0.1% income earners, we follow Moriguchi and Saez (2006) and use the number of income tax payers and the amount of income tax paid by income bracket from the *National Tax Bureau Statistical Yearbook* (*Shuzei-kyoku Toukei Nenpousho* in Japanese) and the number of adults from the population census to compute the threshold (99.9th, 99.95th, 99.99th, and 99.995th percentile) value of income tax payment. For the top income earners listed in PIR (1934), we use income tax statistics of 1933. For the top income earners listed in PIR (1939), we use income tax statistics of 1938. See Section 3.2 for discussions about these figures.

Figure B2: Sampling rate of PIR vs. tax records and secondary school graduates



Notes: In panels (a)–(b), we show the relationship between the sampling rate of high-income earners listed in the PIR and $\log(\text{number of top 0.1\% earners from Tax Record})$ at the prefecture level. In panels (c)–(d) show the relationship between the sampling rate of high-income earners listed in the PIR and the $\log(\text{no. of secondary school graduates per 1,000 male births in the 1887–1889 birth cohorts})$ at the prefecture level. The sampling rate is calculated as the number of top 0.1% income earners listed in the PIR divided by the number of top 0.1% earners in the income-tax records. The sampling rates and the top income percentiles are computed from the complete count data in the National Tax Bureau Yearbook. Each panel overlays a prefecture-level OLS regression line (dotted blue line). See Section 3.2 for discussions about these figures.

Table B1: Sampling rate for top-income earners in samurai/commoners

	Top 0.1% income earners			
	Main		Inverse sampling rate	
	1934 (1)	1939 (2)	1934 (3)	1939 (4)
<u>Panel A: All</u>				
After	0.074 [0.171]	0.114* [0.058]	0.147 [0.509]	0.329 [0.104]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	0.602	0.767	2.174	1.921
Percent Effect(%)	12	15	7	17
<u>Panel B: Samurai</u>				
After	0.096 [0.830]	-0.988 [0.115]	-0.237 [0.921]	-1.483 [0.384]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	1.638	2.196	6.756	5.595
Percent Effect(%)	6	-45	-4	-27
<u>Panel C: Commoners</u>				
After	0.085 [0.130]	0.143** [0.022]	0.207 [0.366]	0.369** [0.036]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	0.551	0.705	1.950	1.727
Percent Effect(%)	15	20	11	21

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of top 0.1% income earners. In columns (1)–(2), We use the same data and specification as in Table 3. In columns (3)–(4), we also use the same data and specifications as in Table 3, except that the dependent variable is weighted by the inverse sampling rate. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we examine samurai and commoner elites separately. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

C Different specification with RD approach

Table C1: Controlling for squared trend term

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.352*** [0.008]	0.234** [0.012]	0.025 [0.719]	0.138 [0.118]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
Percent Effect(%)	14	16	6	16
<u>Panel B: Samurai</u>				
After	1.894 [0.208]	0.006 [0.990]	2.021*** [0.003]	0.642 [0.545]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	9.04	4.31	2.16	3.82
Percent Effect(%)	21	0	93	17
<u>Panel C: Commoners</u>				
After	0.325** [0.012]	0.273*** [0.009]	-0.055 [0.437]	0.142* [0.081]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68
Percent Effect(%)	16	21	-17	21

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data and specification as in Table 3 except that we include a quadratic trend term here. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we examine samurai and commoner elites separately. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C2: Controlling for birth year fixed effect

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.301** [0.014]	0.198** [0.029]	0.027 [0.710]	0.126 [0.174]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
Percent Effect(%)	12	14	6	15
<u>Panel B: Samurai</u>				
After	1.974 [0.150]	0.011 [0.989]	2.004*** [0.002]	0.600 [0.578]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	9.04	4.31	2.16	3.82
Percent Effect(%)	22	0	93	16
<u>Panel C: Commoners</u>				
After	0.254** [0.031]	0.228** [0.029]	-0.061 [0.415]	0.126 [0.182]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68
Percent Effect(%)	12	18	-19	18

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data and specification as in Table 3 except that here we include a birth year fixed effect instead of using a linear cohort. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we separately examine samurai and commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C3: 2 years before and after

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.423** [0.024]	0.352*** [0.004]	0.000 [0.997]	0.128 [0.288]
No. of prefecture-cohort	185	185	185	185
Mean Dep Before	2.52	1.47	0.48	0.84
Percent Effect(%)	17	24	0	15
<u>Panel B: Samurai</u>				
After	1.857 [0.358]	0.042 [0.965]	1.252 [0.124]	1.312 [0.373]
No. of prefecture-cohort	185	185	185	185
Mean Dep Before	9.10	4.70	1.76	3.85
Percent Effect(%)	20	1	71	34
<u>Panel C: Commoners</u>				
After	0.406** [0.019]	0.394*** [0.004]	-0.068 [0.356]	0.135 [0.300]
No. of prefecture-cohort	185	185	185	185
Mean Dep Before	2.16	1.30	0.38	0.69
Percent Effect(%)	19	30	-18	20

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data and specification as in Table 3 except that here we narrow the cohorts to two years before and after the establishment instead of four years before and after establishment. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we separately examine samurai and commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C4: Exclude cohort -1

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.491*** [0.003]	0.358*** [0.006]	0.120* [0.082]	0.119 [0.284]
No. of prefecture-cohort	296	296	296	296
Mean Dep Before	2.43	1.41	0.40	0.86
Percent Effect(%)	20	25	30	14
<u>Panel B: Samurai</u>				
After	2.871* [0.074]	0.899 [0.440]	2.039*** [0.002]	1.078 [0.356]
No. of prefecture-cohort	296	296	296	296
Mean Dep Before	9.03	4.18	2.24	3.85
Percent Effect(%)	32	21	91	28
<u>Panel C: Commoners</u>				
After	0.385** [0.014]	0.345*** [0.009]	0.010 [0.902]	0.106 [0.319]
No. of prefecture-cohort	296	296	296	296
Mean Dep Before	2.09	1.27	0.30	0.71
Percent Effect(%)	18	27	3	15

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data and specification as in Table 3 except that we exclude the cohort just before the secondary school expansion here. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we examine samurai and commoner elites separately. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C5: Exclude cohort + 1

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.333** [0.027]	0.248** [0.016]	0.044 [0.566]	0.095 [0.297]
No. of prefecture-cohort	296	296	296	296
Mean Dep Before	2.43	1.42	0.43	0.84
Percent Effect(%)	14	17	10	11
<u>Panel B: Samurai</u>				
After	1.956 [0.190]	0.618 [0.464]	1.907*** [0.003]	0.398 [0.726]
No. of prefecture-cohort	296	296	296	296
Mean Dep Before	9.04	4.31	2.16	3.82
Percent Effect(%)	22	14	88	10
<u>Panel C: Commoners</u>				
After	0.293** [0.030]	0.264** [0.021]	-0.047 [0.527]	0.116 [0.206]
No. of prefecture-cohort	296	296	296	296
Mean Dep Before	2.09	1.28	0.32	0.68
Percent Effect(%)	14	21	-15	17

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data and specification as in Table 3 except that we exclude the cohort just one year after the secondary school expansion here. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we examine samurai and commoner elites separately. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C6: Military-related outcomes

	(1) Military Servants	(2) Military School Grads.	(3) Landlords
<u>Panel A: All</u>			
After	-0.031 [0.532]	0.000 [0.997]	0.017 [0.553]
No. of prefecture-cohort	333	333	333
Mean Dep Before	0.30	0.13	0.24
Percent Effect(%)	-11	0	7
<u>Panel B: Samurai</u>			
After	0.080 [0.859]	0.047 [0.885]	0.087 [0.713]
No. of prefecture-cohort	333	333	333
Mean Dep Before	1.70	0.79	0.57
Percent Effect(%)	5	6	15
<u>Panel C: Commoners</u>			
After	0.006 [0.883]	0.004 [0.911]	0.006 [0.822]
No. of prefecture-cohort	333	333	333
Mean Dep Before	0.21	0.09	0.22
Percent Effect(%)	3	4	3

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of military-related elites that here we restrict the sample of elites who graduate from military schools (column (1)), higher-ranking of military servants (column (2)), or landowners (column (3)). We use the same data and specification as in Table 3. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we separately examine samurai and commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C7: Military vs. non-military high-income managers

	High-income Managers		
	(1) All	(2) Military	(3) Non-military
<u>Panel A: All</u>			
After	0.295*** [0.001]	-0.018 [0.295]	0.313*** [0.000]
No. of prefecture-cohort	333	333	333
Mean Dep Before	1.42	0.07	1.35
Percent Effect(%)	21	-25	23
<u>Panel B: Samurai</u>			
After	0.275 [0.714]	-0.220 [0.161]	0.495 [0.513]
No. of prefecture-cohort	333	333	333
Mean Dep Before	4.31	0.39	3.93
Percent Effect(%)	6	-57	13
<u>Panel C: Commoners</u>			
After	0.312*** [0.002]	0.000 [0.991]	0.312*** [0.003]
No. of prefecture-cohort	333	333	333
Mean Dep Before	1.28	0.05	1.23
Percent Effect(%)	24	0	25

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of high-income managers. We use the same data and specification as in Table 3 except that here we restrict the sample of total high-income business managers (column (1)), high-income managers who have a military experience (column (2)) or high-income managers who do not have a military experience (column (3)). In panel A, we use the total number of high-income managers in samurai and commoner families. In panels B and C, we separately examine samurai and commoner high-income managers. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C8: Excluding Kazoku

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.435*** [0.002]	0.284*** [0.001]	0.058 [0.396]	0.160* [0.059]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.42	1.42	0.42	0.84
Percent Effect(%)	18	20	14	19
<u>Panel B: Samurai</u>				
After	1.760 [0.212]	-0.034 [0.973]	1.705*** [0.005]	0.699 [0.507]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	8.91	4.30	2.04	3.80
Percent Effect(%)	20	-1	84	18
<u>Panel C: Commoners</u>				
After	0.381*** [0.005]	0.312*** [0.002]	-0.025 [0.729]	0.156* [0.065]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68
Percent Effect(%)	18	24	-8	23

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data and specification as in Table 3 except that here we exclude *Kazoku* (former local lords, Daimyo and Kuge) from the samurai elites. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we separately examine samurai and commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C9: Prefectures established secondary schools in early years vs. later years

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.675*** [0.000]	0.406*** [0.000]	0.139* [0.070]	0.267** [0.019]
Post × After	-0.499*** [0.002]	-0.242** [0.043]	-0.166** [0.012]	-0.230** [0.030]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
<u>Panel B: Samurai</u>				
After	3.200** [0.049]	0.806 [0.413]	2.447*** [0.001]	1.087 [0.304]
Post × After	-2.226 [0.189]	-1.155 [0.324]	-1.200* [0.052]	-0.627 [0.458]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	9.04	4.31	2.16	3.82
<u>Panel C: Commoners</u>				
After	0.549*** [0.001]	0.394*** [0.000]	0.010 [0.888]	0.249** [0.015]
Post × After	-0.365** [0.012]	-0.179 [0.128]	-0.078 [0.161]	-0.202** [0.038]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data as in Table 3 but here we include “Post” that takes 1 if the 2nd school was established after the median year of establishment among the sample prefectures and its interaction term with “After”. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we separately examine samurai and commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C10: Prefectures with two or more secondary schools

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
After	0.357** [0.019]	0.313*** [0.007]	0.027 [0.722]	0.049 [0.684]
2 or more schools × After	0.172 [0.320]	-0.037 [0.764]	0.070 [0.319]	0.218* [0.071]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
<u>Panel B: Samurai</u>				
After	3.339** [0.027]	1.380 [0.193]	2.032*** [0.002]	0.925 [0.374]
2 or more schools × After	-2.262 [0.164]	-2.152** [0.048]	-0.266 [0.673]	-0.247 [0.768]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	9.04	4.31	2.16	3.82
<u>Panel C: Commoners</u>				
After	0.265* [0.090]	0.314** [0.019]	-0.075 [0.311]	0.040 [0.713]
2 or more schools × After	0.227 [0.142]	-0.004 [0.971]	0.096* [0.071]	0.225** [0.032]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68

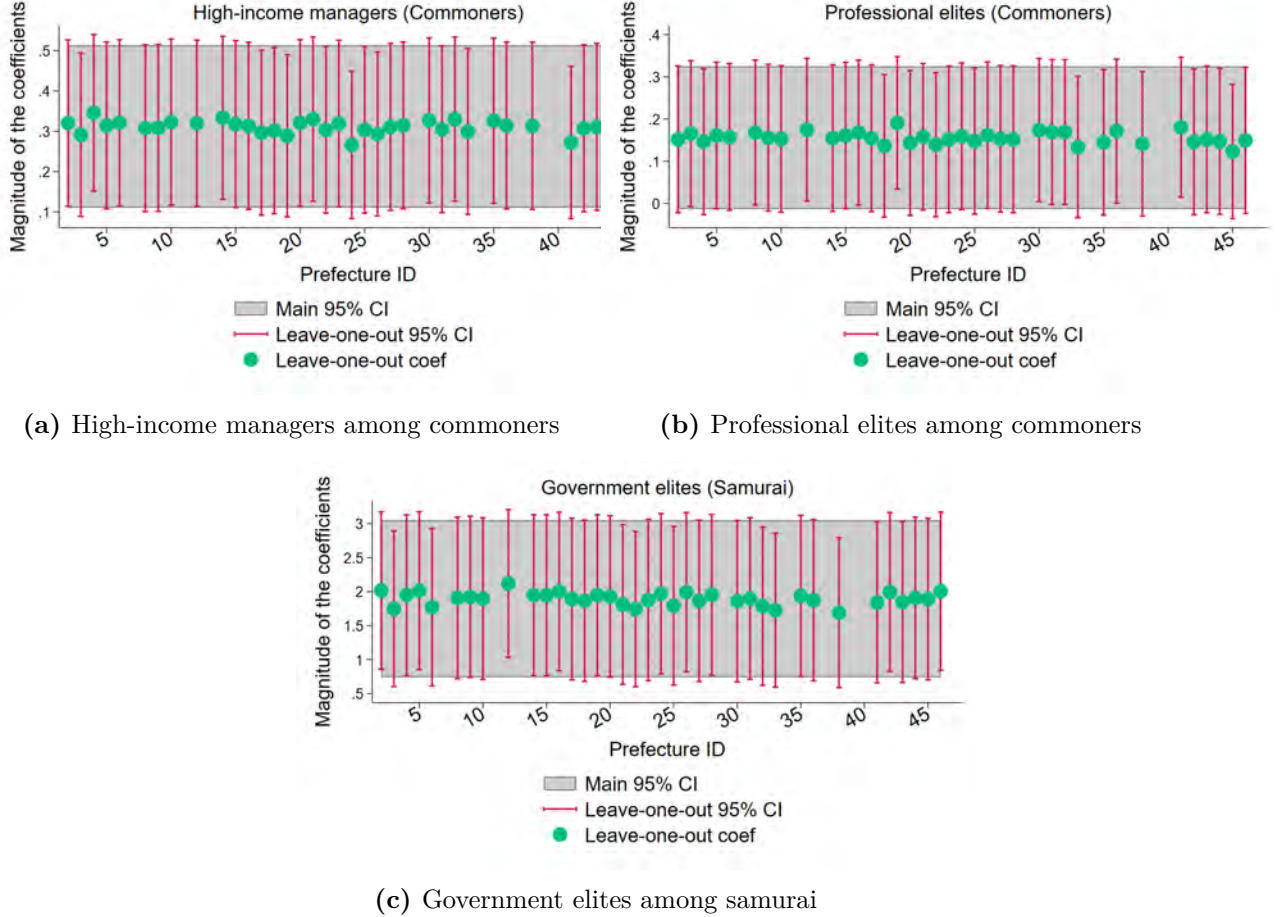
Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of high-income managers. We use the same data and specification as in Table 3 except that here we include “Two or More Schools” which is a time-invariant dummy variable set to 1 if the prefecture established two or more secondary schools at the same year of the 2nd school’s establishment and its interaction term with “After”. In panel A, we use the total number of elites in samurai and commoner families. In panels B and C, we separately examine samurai and commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table C11: Regression with an instrumental variable

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
Grads. per 1000 male	0.073** [0.002]	0.048** [0.016]	0.010 [0.364]	0.026* [0.049]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
Percent Effect(%)	3	3	2	3

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites. We use the same data as in Table 3. We use the 2nd school establishment as an instrument for the 2nd school establishment. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

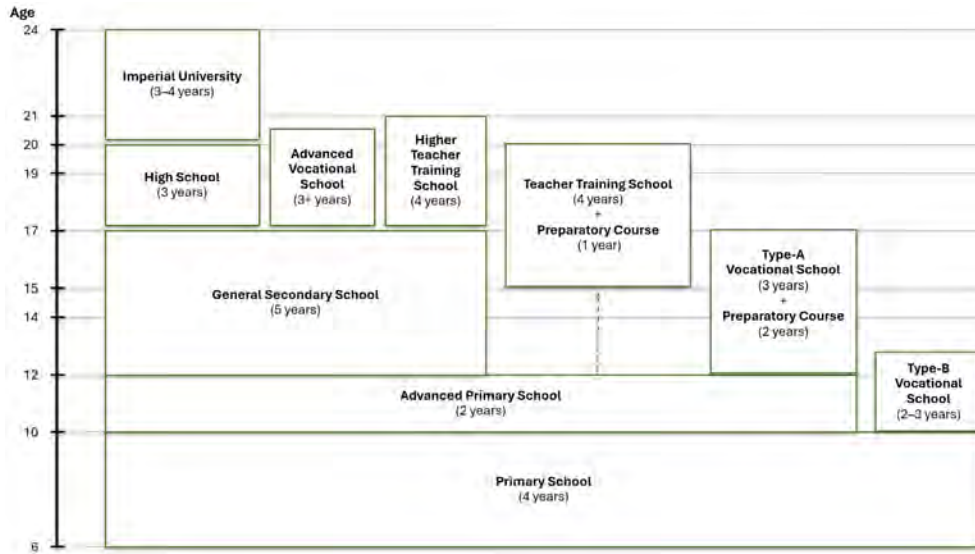
Figure C1: Leave-one-prefecture-out estimates



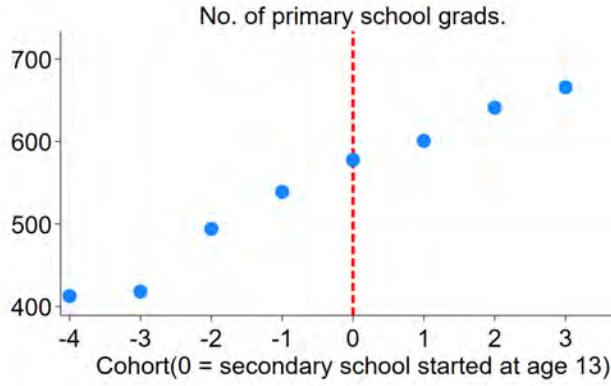
Notes: This figure shows leave-one-prefecture-out RDD estimates of the long-run effects of 2nd secondary schools on the number of occupational elites. We use the same data and specification as in Table 3, excluding one prefecture at a time from the sample. In panels (a) and (b), we show the results of high-income managers and professional elites from commoner families. In panel (c), we show the results of government elites from samurai families.

D Additional Figures

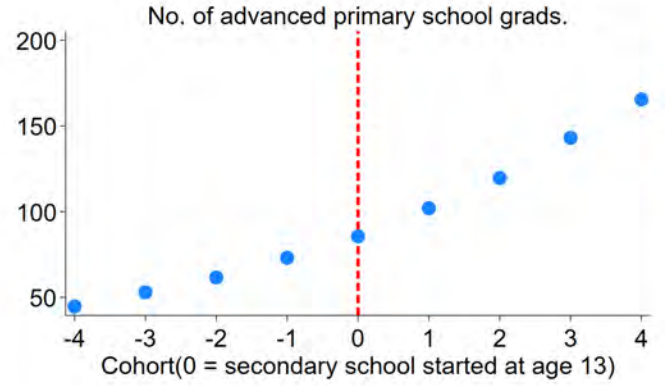
Figure D1: Education Track around 1900



Notes: This figure presents the main educational pathways around 1900 relevant to this study. The figure is based on the school-system for 1900, the 1899 Technical School Regulations, the 1899 Commercial School Regulations, and the regulations governing teacher training schools reported in Ministry of Education (1972).

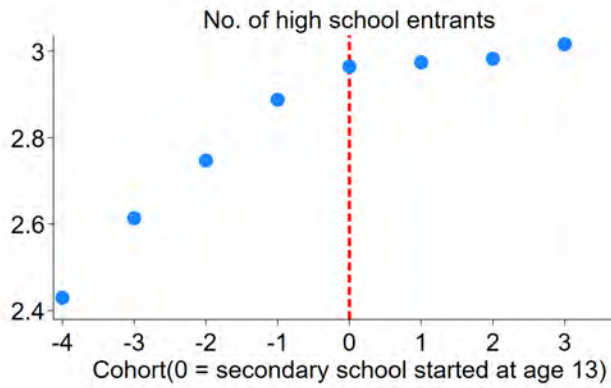


(a) Primary school graduates

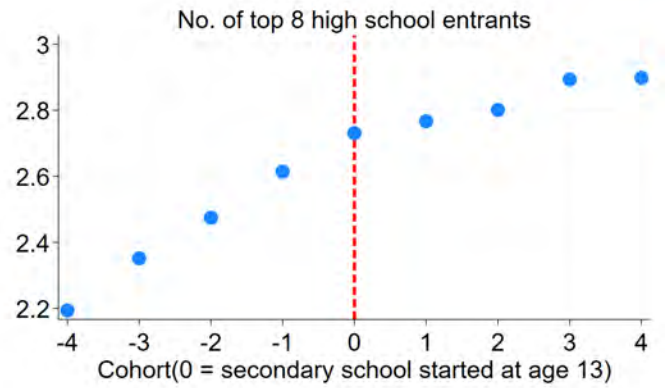


(b) Advanced primary school graduates

Notes: These figures show the number of primary school graduates and advanced primary school graduates (per 1,000 male births) averaged across prefectures for each cohort. We define cohort by “the year when a birth cohort turned age 13” subtracted by “the year when the 2nd secondary school was established in the prefecture”. For a detailed description of the outcome, see Section 3.2.



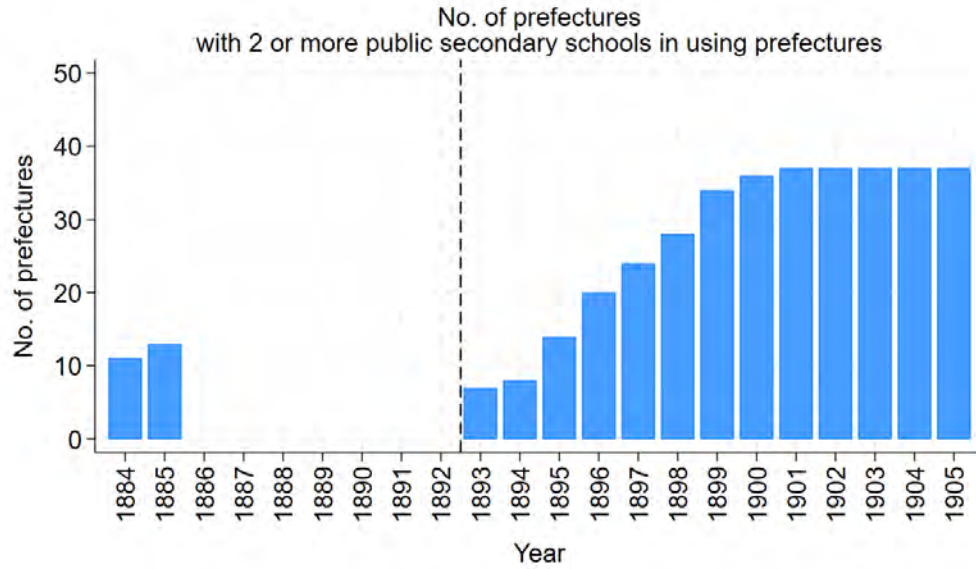
(a) High school entrants



(b) Top 8 high school entrants

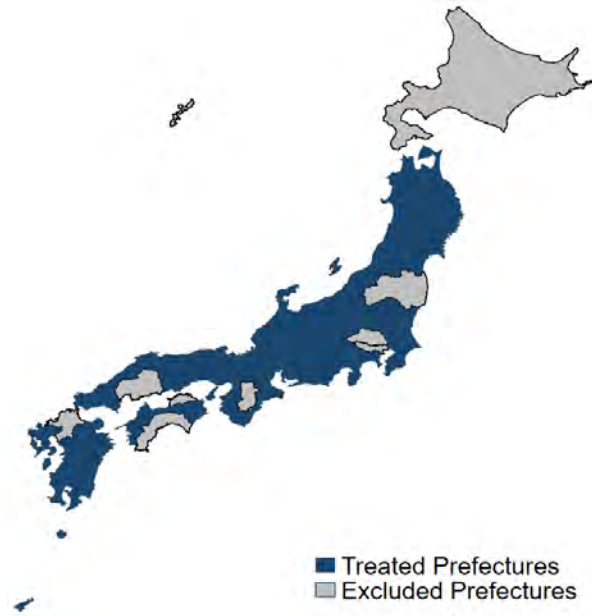
Notes: These figures show the number of high school entrants and top 8 high school entrants (per 1,000 male births) averaged across prefectures for each cohort. We define cohort by “the year when a birth cohort turned age 13” subtracted by “the year when the 2nd secondary school was established in the prefecture”. For a detailed description of the outcome, see Section 3.2.

Figure D4: No. of Prefectures with Two or More Secondary Schools



Notes: This figure shows the number of prefectures with two or more secondary schools by year. We focus on the subset of prefectures that we use in our analysis (37 prefectures that established 2nd schools in 1893–1901).

Figure D5: Prefectures focused in the main analysis



Notes: This figure displays the map of all 47 prefectures in Japan. For our analysis, we focus on 37 prefectures (blue) that established 2nd secondary schools between 1893 and 1901 and did not simultaneously establish both 1st and 2nd schools.

E Additional Tables

Table E1: Enrollment Rate at primary school

Year	Enrollment rate		
	All	Male	Female
1890	49%	65%	31%
1895	61%	77%	44%
1900	82%	91%	72%
1905	96%	98%	93%

Notes: The table reports primary school enrollment rates for all children and separately for boys and girls. The data sources are from Ministry of Education (1972).

Table E2: Outcomes of Chiba 1st school

Graduation years	Graduates	Higher education	Public sector	Private sector	Others
1897–1907	526	180 (34.2%)	139 (26.4%)	108 (20.5%)	99 (18.8%)

Notes: The table reports the post-graduation destinations of students who graduated from Chiba 1st Secondary School between 1897 and 1907. The figures are calculated from the data reported in , based on the school’s graduate register. Percentages in parentheses are calculated relative to the total number of graduates.

Table E3: Educational path

	High-income Managers	Government Elites	Professional Elites
Panel A: Other Higher Education (Samurai)			
After	-0.173 [0.748]	0.034 [0.903]	-0.049 [0.915]
No. of prefecture-cohort	333	333	333
Mean Dep Before	1.430	0.442	1.087
Percent Effect(%)	-12	8	-4
Panel B: Other Higher Education (Commoners)			
After	0.093 [0.126]	-0.028 [0.342]	0.026 [0.541]
No. of prefecture-cohort	333	333	333
Mean Dep Before	0.254	0.080	0.232
Percent Effect(%)	37	-35	11

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of occupational elites by post-graduation education paths. We use the same data and specification as in Table 3 except that here we count the number of elites by the type of final education institutions. Panel A and Panel B show the results for the elites who graduated from other higher education institutions. For a detailed description of these variables, see Section 3.2. In panel A, we use the samurai families. In panels B, we examine commoner elites. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table E4: Promotion to top ranks at national government with ministry FE

	Promoted to Top Ranks		
	(1) Sample: All Passers	(2) Sample: Passers graduated Imperial Univ.	(3) Sample: Passers graduated with Top Score
Samurai	-0.005 [0.803]	-0.011 [0.648]	-0.108 [0.128]
Tokyo Imperial Univ.	0.085** [0.033]	0.055 [0.158]	0.253* [0.084]
Kyoto Imperial Univ.	0.035 [0.370]		
Observations	1805	1471	148
Mean	0.277	0.307	0.405
More Education Control	Yes	Yes	Yes
Ministry FE	Yes	Yes	Yes

Notes: This table uses the list of individuals who passed the Higher Civil Service Examinations (HCSE) (Hata, 1981). Column (1) shows the results for the individuals who passed the HCSE, column (2) shows the results for the passers who graduated from imperial universities, and column (3) shows the results for the passers who graduated from a National Higher school or an Imperial Universities at the top score when they graduated. Bootstrap p-values reported in square brackets are clustered at the year when individuals entry to the national government. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.

Table E5: Total number of sons of elite/non-elite families (born in the prefecture-cohorts in our RDD sample)

	(1) No. of sons from elite families	(2) No. of sons from non-elite families
All	4,086	3,107,684
Samurai	1,013	137,664
Commoners	3,073	2,970,019

Notes: This table shows the number of sons of elite and non-elite families who were born in the prefectures and cohorts we use in our main analysis (37 prefectures $\times$ 9 cohorts). “No. of sons from elite families” is the total number of sons of individuals who are listed in PIRs published in 1903, 1915, and 1928. “No. of sons from non-elite families” is calculated by subtracting “No. of sons from elite families” from the male birth population.

Table E6: Share of individuals who graduated from higher education institutions among occupational elites

	Cohorts born in 1876–1878			Cohorts born in 1889–1891		
	(1) High-income Managers	(2) Government Elites	(3) Professional Elites	(4) High-income Managers	(5) Government Elites	(6) Professional Elites
<u>Panel A: All</u>						
Imperial Univ. graduates	0.10	0.42	0.46	0.16	0.61	0.60
Other Higher Education graduates	0.13	0.28	0.36	0.25	0.21	0.29
No Higher Education graduates	0.76	0.29	0.17	0.59	0.18	0.11
<u>Panel B: Samurai</u>						
Imperial Univ. graduates	0.26	0.51	0.60	0.37	0.80	0.72
Other Higher Education graduates	0.28	0.33	0.29	0.33	0.12	0.20
No Higher Education graduates	0.46	0.16	0.11	0.30	0.08	0.08
<u>Panel C: Commoners</u>						
Imperial Univ. graduates	0.08	0.38	0.41	0.14	0.56	0.58
Other Higher Education graduates	0.11	0.26	0.39	0.24	0.23	0.30
No Higher Education graduates	0.80	0.35	0.20	0.62	0.21	0.12

Notes: This table shows the share of elites across occupations by final education institutions. Columns (1)–(3) show the share of elites who turned 13 just before the expansion of the secondary schools (1876–1878), and columns (4)–(6) show the share of elites born after the expansion (1889–1891).

F Additional Evidence on Peer Composition

To explore whether peer composition in the new secondary schools may have influenced later occupational choices, we classify the location of the 2nd schools according to whether they were established on sites associated with former castles and fief schools, or in merchant towns with more commercial activity. School location is informative not only about the historical origins of the school, but also about the likely social composition of students and aspects of school culture.

This distinction matters because, before the Secondary School Order of 1886, even public schools depended heavily on local private donations and in-kind contributions. Former samurai and local elites often supported schools by providing funds, land, residences, and the facilities of former fief schools. The location of a secondary school was therefore closely related to the social groups that sustained it, and this likely influenced both the background of enrolled students and the broader school environment.

On this basis, we divide the 2nd schools into two categories by location. The first consists of schools built on the site of a former fief school or established within former castle grounds or samurai residential areas. Because these schools were closely connected to former samurai communities, we refer to them as schools in “samurai towns.” The second consists of schools located in areas not directly associated with former samurai residences, typically in towns adjacent to castles or in merchant districts. We refer to these as schools in “merchant towns.” Appendix Figure F1 presents the classification results across prefectures on a map. Among the 37 prefectures in our study, 73% established their 1st schools in samurai towns. By contrast, only 43% established their 2nd schools in samurai towns. This suggests that the 2nd schools were more likely than the 1st schools to be located in merchant towns.

School location was also related to student composition, especially for the 2nd schools.²⁴ Appendix Figure F2 shows the average share of commoner students from 1886 to 1898 by school type and location.²⁵ The share of commoner students in 2nd schools was 78.0% in merchant towns and 69.5% in samurai towns. This pattern suggests that the location of the 2nd schools may have made them relatively more accessible to commoners than the 1st schools. It is also consistent with the earlier evidence in Figure 2 that the increase in commoner students after the expansion of the 2nd schools was larger than that of samurai students.

²⁴Kikuchi (2003) similarly notes that the historical background of the area in which a secondary school was established affected the share of commoner students.

²⁵The primary sources for these data are *GoinBunko Bunsho* for 1886–1892 and Mitsuihara (1898) for 1897–1898. Prefectures lacking data on both samurai and commoner students in the 1st and 2nd schools were excluded. This means that prefectures without 2nd schools in 1897–1898 are not included in the calculation for the corresponding data points. We do not observe the intervening years 1893–1896.

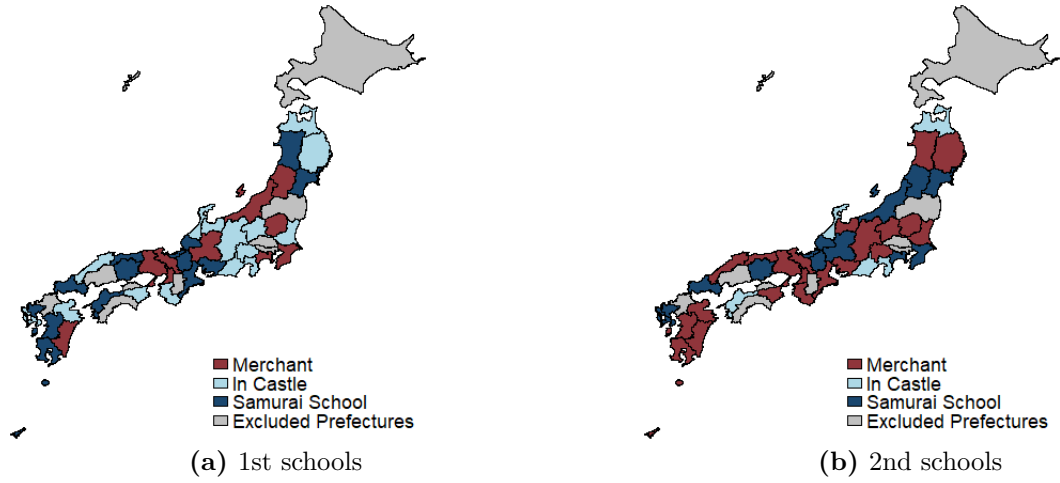
These differences in student composition suggest that school location provides a useful proxy for variation in peer environments across the 2nd schools. We therefore examine whether the effects of secondary school expansion differed depending on whether the new school was established in a samurai town or a merchant town.

Appendix Table F1 reports the heterogeneous treatment effects by school location. For samurai families, the estimated effect on government elites is positive and statistically significant in both samurai towns and merchant towns, and somewhat larger in samurai towns, although the difference is not precisely estimated. By contrast, the estimated effects on samurai high-income managers are small and insignificant in both types of locations.

For commoner families, the estimated effect on high-income managers is positive and statistically significant in both samurai towns and merchant towns, with similar magnitudes across the two. The estimated effect on government elites remains negative and insignificant regardless of school location. For professional elites, the estimates are somewhat larger in samurai towns than in merchant towns, although the difference is not statistically precise.

Taken together, these results do not provide strong evidence that greater exposure to peers from different family backgrounds substantially changed later occupational orientation. Even though 2nd schools in merchant towns enrolled a larger share of commoner students, the effects of secondary school expansion remain broadly similar across school locations. If anything, the evidence suggests that differences in peer environments did not overturn the tendency for elite occupations to remain closely tied to family background.

Figure F1: Town classification in 1st schools and 2nd schools



Notes: This figure shows a classification of prefectures depending on the location of 1st/2nd secondary schools. We use three categories: first, schools were built on a former fief school (“samurai schools”) second, schools established within old castle grounds or samurai residences (“in castle”), third, schools located in areas unassociated with *Kazoku* or samurai, but typically in towns next to castles or merchant areas (“merchant towns”). Panel (a) shows the classification of prefectures depending on the location of 1st school. Panel (b) shows the classification of prefectures depending on the location of 2nd school.

Figure F2: Share of commoners and samurai in the 1st and 2nd secondary schools



Notes: This figure shows the fraction of students from commoner families among all public secondary school students between 1886 and 1898, separately by 1st and 2nd schools and by school locations. The data is missing in 1893–1896. For a detailed description about this table, see Section 5.4.

Table F1: Commoners in Samurai Town vs. Merchant Town

	(1) All Occupational Elites	(2) High-income Managers	(3) Government Elites	(4) Professional Elites
<u>Panel A: All</u>				
Samurai Town $\times$ After	0.499*** [0.007]	0.276** [0.025]	0.082 [0.295]	0.216* [0.073]
Merchant Town $\times$ After	0.404*** [0.007]	0.309*** [0.001]	0.048 [0.550]	0.119 [0.199]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.43	1.42	0.43	0.84
p-value (Samurai town $\times$ After = Merchant town $\times$ After)	0.58	0.79	0.64	0.45
<u>Panel B: Samurai</u>				
Samurai Town $\times$ After	2.303 [0.222]	0.318 [0.754]	2.315*** [0.008]	0.354 [0.750]
Merchant Town $\times$ After	2.082 [0.175]	0.242 [0.794]	1.576*** [0.004]	1.137 [0.316]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	9.04	4.31	2.16	3.82
p-value (Samurai town $\times$ After = Merchant town $\times$ After)	0.90	0.95	0.28	0.39
<u>Panel C: Commoners</u>				
Samurai Town $\times$ After	0.428*** [0.006]	0.301** [0.024]	-0.040 [0.599]	0.241** [0.021]
Merchant Town $\times$ After	0.346** [0.018]	0.320*** [0.003]	-0.014 [0.868]	0.091 [0.351]
No. of prefecture-cohort	333	333	333	333
Mean Dep Before	2.09	1.28	0.32	0.68
p-value (Samurai town $\times$ After = Merchant town $\times$ After)	0.59	0.87	0.65	0.17

Notes: This table shows regression discontinuity estimates of the long-run effects of 2nd secondary school openings on the number of samurai or commoner occupational elites by school location. We use the same data and specification as in Table 3 panel (c) except that we divide the sample by the location of the 2nd school in the prefecture, which is either a samurai town (panel A, C) or a merchant town (panel B, D). For a detailed description about this table, see Section 5.4. Bootstrap p-values reported in square brackets are clustered at the prefecture level. ***, **, and * mean significance at the 1%, 5%, and 10% levels, respectively.